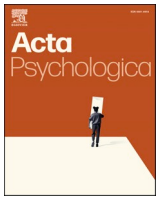
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Cultivating a creative ecosystem: the role of inclusive leadership in educational success

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ABSTRACT

This research examines the association between inclusive leadership, teacher happiness, and the institute climate for creativity in the context of Malaysian education. The study adopted a quantitative research design, and data were gathered from 419 teachers from different educational institutes. The results reveal that inclusive leadership increases teacher creativity and teacher happiness, and institute culture for creativity mediates this path. Also, the moderating effects of polychronicity show that individual differences should be taken into account to enhance teachers' creativity. This research contributes to the development of an integrated approach based on the emotional, cognitive, and organizational approaches that explain the impact of leadership on creativity in the educational setting. The implications stress the importance of educational leaders practicing and promoting a culture that is welcoming for all teachers while at the same time promoting their welfare, thus resulting in better teaching and learning. This research contributes to the existing body of knowledge on leadership and creativity and provides important implications for practitioners and policymakers who seek to improve the level of innovation in education.

1. Introduction

Creativity has become increasingly essential in education, particularly due to technological advancements, evolving educational expectations, and emerging pedagogical challenges (Anderson et al., 2022; Zhi & Wang, 2023). Teachers, as key players in educational systems, hold the potential to drive meaningful change by fostering creativity in classrooms. This creativity not only enhances the learning experience but also equips students with the skills necessary to navigate an ever-evolving world. In the context of rapid technological advancements and shifting societal demands, fostering creativity among teachers has become more critical than ever. Education systems across the globe are striving to prepare students for a future that demands adaptability, critical thinking, and problem-solving skills. The creativity of educators serves as a catalyst in achieving these objectives by promoting innovative teaching methods, dynamic classroom environments, and inspiring student engagement. Indeed, employee creativity is a key driver of organizational success across all sizes, types, and industries (Jia et al., 2024). It enables innovation and solutions that address current challenges and anticipate future needs, helping organizations thrive in competitive environments (Żywiołek et al., 2022). In today's rapidly changing business landscape, with swift shifts in technology and consumer expectations, creativity is crucial for organizations seeking to stand out (Aldabbas et al., 2023). Companies like Google and Apple have harnessed employee creativity to revolutionize their industries through innovative problem-solving and product development (Tirabeni et al., 2016). Similarly, smaller firms that encourage creativity can quickly respond to market changes, maintaining a competitive edge against larger players.

Thus, fostering employee creativity is essential for organizational success and relevance in today's dynamic business environment (Cai et al., 2020). Teacher creativity is critical for building a progressive and sustainable system (Alzghoul, Algraibeh, Khawaldeh, & Khaddam, 2023). Teacher creativity is operationalized as the ability of educators to

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generate novel, practical ideas for improving teaching effectiveness and enhancing student outcomes (Tierney et al., 1999). Creative teachers inspire critical thinking and deep engagement, enhancing learning outcomes (Han & Abdrahim, 2023). Their creativity extends to innovative curriculum design, adaptable teaching strategies, and engaging learning environments (Setyorini & Khuriyah, 2023). During the COVID-19 pandemic, teachers utilized technologies like video conferencing and virtual labs to maintain student engagement in remote learning. In project-based learning, teachers guide students in solving real-world problems, fostering creativity and problem-solving. Creative teachers cultivate curiosity and exploration, enhancing students' creative thinking skills. This prepares students for a world where adaptability and problem-solving are highly valued. Educators embracing creativity have implemented flipped classrooms, and replacing traditional lectures with interactive discussions and activities promoting deeper learning (Tamsah et al., 2021). These innovative methods have improved both student performance and satisfaction.

Additionally, teacher creativity significantly contributes to institutional success (Shermukhammadov, 2022). Innovative teaching methods enhance the reputation of educational institutions, making them more attractive to prospective students and faculty. Thus, fostering teacher creativity benefits students and institutions, keeping education systems competitive in a rapidly changing landscape (Pllana, 2019). As education systems strive to prepare students for a future demanding critical thinking and innovation, nurturing teacher creativity becomes increasingly crucial. Encouraging teacher creativity is essential for building a future-ready education system that meets society's evolving demands and produces well-rounded, creative individuals.

Leadership is crucial in shaping employee creativity across organizational settings. Studies show that styles like transformational, servant, and charismatic leadership positively foster creativity (Amtu et al., 2019). Transformational leaders motivate employees to innovate and challenge the status quo (Ripki et al., 2020). Servant leadership focuses on employee development and well-being, creating a nurturing, creative environment (Fabiana, 2023). Similarly, charismatic leaders boost confidence and enthusiasm, leading to higher creative output. Inclusive leadership has gained attention for enhancing creativity. Inclusive leaders create environments where all employees feel valued and encouraged to contribute diverse perspectives (Nguyen et al., 2024), fostering creativity through openness and innovation. They provide psychological safety, enable creative risks without fear of failure and drive innovation by encouraging the free sharing of creative ideas (Castillo-Acobo et al., 2022). Inclusive leadership is operationalized as the extent to which leaders exhibit openness, accessibility, and supportiveness, creating an environment where teachers feel valued and encouraged to contribute innovative ideas (Carmeli et al., 2010). In education, inclusive leadership is vital for promoting teacher creativity. Diverse educational settings benefit as inclusive leaders encourage collaboration and experimentation with new teaching. Supported teachers are more likely to take creative risks, adopt innovative pedagogies, and engage students effectively, enhancing learning outcomes (Aboramadan et al., 2022). Thus, inclusive leadership supports teacher creativity and improves educational practices and student success. While prior research underlines creativity's benefits, much of it has been confined to Western contexts (Kutsak et al., 2023; Machali et al., 2021), overlooking non-Western educational environments such as Malaysia, where traditional teaching methods persist amidst calls for innovation. This research explicitly addresses this contextual gap by examining how inclusive leadership, a leadership style emphasizing openness, accessibility, and diversity, may uniquely foster teacher creativity in Malaysian educational settings. The distinctive cultural, organizational, and institutional factors characterizing Malaysia provide a compelling justification for investigating inclusive leadership's role in enhancing teacher creativity, thereby directly addressing an essential gap in current educational leadership research.

Nevertheless, the connection between inclusive leadership and teacher creativity is not straightforward. Psychological health, organizational culture, and personality characteristics (for example, openness) influence the effects of leadership on creativity. It is, therefore, important to explore the mediating and moderating variables so as to get a clear pictureof how leadership influences creativity. Drawing from the past literature, we advance a dual mediating role to explain the effects of inclusive leadership on teacher creativity, a topic that has received scant attention in the context of educational management. The first mediator is teacher happiness, which relates to the emotional well-being of a teacher. Teacher happiness is defined as the positive emotional state arising from satisfaction and well-being in their professional roles, influenced by workplace support and inclusivity (Thompson & Bruk-Lee, 2021). Teachers with high job satisfaction and perceived job satisfaction are likely to exhibit creative behaviors because of high self-generated motivation (Thompson & Bruk-Lee, 2021). They are also more robust, improving their capacity to investigate novel concepts and be creative (Huang et al., 2021). In education, therefore, the happiness of teachers must be promoted since this enhances creativity and positive student performance. In clarifying our conceptualization, it is important to distinguish clearly between the terms "job satisfaction" and "perceived job satisfaction." Job satisfaction refers to teachers' affective evaluation and emotional response toward their current job role and work conditions (Zhu, 2013). In contrast, perceived job satisfaction indicates teachers' cognitive appraisal or interpretation of their satisfaction level in relation to their expectations, institutional support, and perceived fairness within their working environment (Rodriguez et al., 2016). This distinction is critical, as emotional responses (job satisfaction) and cognitive evaluations (perceived job satisfaction) may independently or interactively influence creative behaviors. Thus, our study specifically emphasizes teachers' affective job satisfaction (i.e., emotional well-being) as a key mediator linking inclusive leadership and creativity.

The second mediator is the institutional climate for creativity, which determines the creativity level of an educational institution. The institutional climate for creativity is conceptualized as the extent to which the organizational environment supports risk-taking, experimentation, and innovation in teaching practices (Kim & Yoon, 2015). While closely related, the terms "institutional climate for creativity" and "organizational climate for creativity" differ subtly yet significantly in research terminology. "Organizational climate for creativity" typically refers to broad organizational-level constructs reflecting shared perceptions of policies, practices, and norms facilitating creativity within a corporate or industrial context (Ghosh, 2015). Conversely, "institutional climate for creativity," particularly in educational contexts, specifically denotes the structured, cultural, and environmental conditions within educational institutions (such as schools and universities) that directly support risk-taking, experimentation, and innovation in teaching practices (Kim & Yoon, 2015). Thus, in our study, we consciously use the term "institutional climate for creativity" to precisely reflect our research focus on educational settings rather than the broader organizational settings typically implied by the alternative term.

A positive organizational culture empowers teachers with the means and the freedom to experiment with new strategies of educating (Bendak et al., 2020). Creativity makes the teachers feel that they have the mandate of implementing new ideas that would enhance the teaching and quality of education. Thus, the mediating role of the institutional climate for creativity means that inclusive leadership is contingent upon the organizational context that determines the relationship between leadership and creativity. This study conceptualizes the leadership and creativity relationship as mediated by teacher happiness and institutional climate for creativity, which are considered two distinct yet complementary aspects of the relationship. Teacher happiness is the individual level emotional state of being well and satisfied with the job, and this is the important driver of intrinsic motivation and personal resiliency (Moskowitz & Dewaele, 2021). From the perspective of leadership, it reflects how inclusive leadership is the one that creates a

supportive psychological environment to empower teachers to work creatively. Conversely, the organizational level institutional climate for creativity defines the collective environment for innovation, experimentation, and risk-taking (Olsson et al., 2019). In this context, we argue that inclusive leadership creates organizational norms and allocates resources for teachers to translate their creative ideas into action in the classroom. These mediators are essential because teacher creativity is a function of personal psychological resources and enabling organizational context. The emotional readiness and motivation for creative engagement are fueled by teacher happiness. Still, the institutional climate for creativity is where the structural and cultural support for implementing innovative ideas takes hold. Hence, these constructs are not interchangeable; they are interdependent. For example, a happy teacher may have insufficient organizational resources, a supportive climate to actualize creative ideas, or a supportive institutional climate without emotional well-being to motivate teachers to think creatively. Incorporating both, teacher happiness and institutional climate for creativity, the framework taps into the intersectional routes by which inclusive leadership nurtures teacher creativity. By combining the dual mediating approach, the role of leadership in education is further understood as bridging the gap between individual emotional well-being and organizational-level support. In addition, it gives more detail about how inclusive leadership is simultaneously helpful to emotional and structural conditions of creativity and why leadership in its entirety plays a role in educational settings.

We also suggest polychronicity, as a moderating variable. Polychronicity refers to the individual trait that reflects a preference for multitasking and handling multiple activities simultaneously, which facilitates creativity and adaptability (Poposki & Oswald, 2010). We acknowledge the importance of definitional precision concerning the concept of polychronicity. Although broadly classified as an individual trait, polychronicity specifically pertains to an individual's cognitive orientation toward managing multiple tasks concurrently (Conte & Gintoft, 2005). Thus, it is a cognitive trait characterized by preference, comfort, and effectiveness in simultaneous task management, reflective of underlying cognitive processes related to attention, information processing, and mental flexibility (Howard & Cogswell, 2023). Our manuscript explicitly adopts this cognitive conceptualization, emphasizing its relevance for understanding creative behaviors, particularly within dynamic educational environments.

This trait is especially beneficial in teaching, where a teacher is involved in a number of processes, such as lesson planning and assessment (Poposki & Oswald, 2010). The current study argues that polychronicity can moderate the association between inclusive leadership and both mediators: teacher happiness and climate for creativity. This is because the teachers who benefit most from multitasking may do so to a greater extent when implementing inclusive leadership in fostering creativity. Those less keen on multitasking may not do so well. Therefore, polychronicity defines how inclusive leadership impacts teacher creativity with consideration of individual differences.

Given these considerations, this study is guided by the following explicit research questions:

1. **RQ1:** To what extent does inclusive leadership influence teacher creativity within the context of Malaysian educational institutions?
2. **RQ2:** How do teacher happiness (emotional dimension) and institutional climate for creativity (organizational dimension) mediate the relationship between inclusive leadership and teacher creativity?
3. **RQ3:** How does polychronicity moderate the relationships between inclusive leadership, teacher happiness, institutional climate, and teacher creativity?

This study proposes to establish these relationships within the context of the Malaysian education sector. Several problems identified within the Malaysian education system include declining student interest and motivation, and an increasing mismatch between skills taught and market demands despite recent educational reforms(Da Wan et al., 2022). The development of the digital economy has put more pressure on the system to prepare students for the future in terms of critical thinking and creativity skills. These challenges, therefore, point to the need for more creativity in the teaching methods that are used. It is teachers who have a major task in solving these problems. Encouraging creativity in teachers would effectively bring about change and enhance the quality of education in Malaysia. Malaysia presents an ideal empirical context to examine the theoretical framework proposed by this research, primarily because of its distinctive blend of traditional pedagogical approaches and modern educational reforms aimed at fostering innovation and creativity. Given that most leadership-creativity studies are rooted in Western contexts (Alzghoul, Algraibeh, Khawaldeh, & Khaddam, 2023; Oliinyk et al., 2024), Malaysia offers a crucial opportunity to test whether theories of inclusive leadership and teacher creativity hold across varied cultural, organizational, and institutional contexts. Thus, rather than merely being a descriptive backdrop, the Malaysian educational sector is strategically positioned as a critical methodological site that can validate, extend, and refine existing theoretical models, providing robust evidence supporting inclusive leadership practices' universal applicability and theoretical robustness in cultivating educational creativity.

Existing research on employee creativity often focuses separately on cognitive, emotional, or organizational factors, neglecting their interactive complexities. Contemporary insights suggest these elements collectively influence behavior (Ahmad, Samad, & Han, 2023). This study integrates cognition (polychronicity), emotions (happiness), and organizational context (institutional climate for creativity) to examine teacher creativity comprehensively. By investigating how inclusive leadership interacts with teacher happiness and institutional climate, our research presents a holistic framework demonstrating how leadership promotes creativity through cognitive engagement, emotional support, and supportive organizational environments. Furthermore, most creativity research originates from Western contexts, potentially missing dynamics present in non-Western countries (Ahmad et al., 2022). Creativity varies significantly across cultures due to diverse institutional and societal norms. Our study within Malaysia's education sector contributes fresh insights into creativity dynamics in a non-Western context, where leadership and educational traditions uniquely interact. Malaysia's struggle between traditional and modern educational approaches renders this research particularly timely and relevant.

Additionally, creativity literature predominantly emphasizes business contexts or student-focused educational settings. Despite their crucial role in developing future workforces and fostering student creativity, little attention is given to teachers' creative behaviors. Addressing this significant gap, our research shifts attention to teacher creativity, examining how leadership and organizational factors shape their innovative practices. Understanding factors supporting teacher creativity enables institutions to enhance teaching innovation, benefiting student outcomes and institutional success. Our research specifically investigates how leadership influences teacher creativity through emotional (happiness) and organizational (institutional climate) mediators. It further introduces polychronicity, defined as individuals' preference to simultaneously handle multiple tasks, as a moderating cognitive variable, offering insights into individual differences affecting leadership's impact on creativity. Polychronicity enhances cognitive flexibility and adaptability, key factors supporting creative problem-solving (Ahmad, Samad, & Han, 2024). Teachers high in polychronicity effectively leverage emotional well-being and supportive organizational climates to produce innovative teaching outcomes.

Emotionally, teacher happiness comprises intrinsic motivation and positive affect, which are vital for creative engagement (Moskowitz & Dewaele, 2021). Inclusive leadership establishes psychologically safe environments that nurture emotional well-being, enabling teachers to explore innovative practices with optimism and persistence (Jha et al.,

2024). Institutionally, a climate supportive of creativity provides structural and cultural conditions encouraging innovation, collaboration, risk-taking, and resource accessibility (Karatepe et al., 2020). Teachers can actualize ideas effectively within such environments, reinforcing their cognitive and emotional resources.

Our findings illustrate how polychronicity moderates relationships between inclusive leadership, teacher happiness, institutional climate, and teacher creativity. Teachers who display high polychronicity skills transform positive leadership and supportive organizational environments into creative achievements. The teaching process requires structured support for teachers who exhibit low levels of polychronicity because these educators show connections among cognitive elements and emotional aspects and organizational requirements. This research contributes theoretically by uniting emotional well-being analysis with cognitive adaptability assessment and organizational climate evaluation. Our research clarifies the mechanism through which inclusive leadership creates creativity by combining these various dimensions thereby enriching the academic understanding of educational leadership and creativity. The holistic approach merges theoretical understanding with practical solutions to develop teacher creativity especially within non-Western educational contexts.

This paper establishes an integrative research framework based on social exchange theory (SET) (Blau, 1964) to explain the conceptual foundations of our study. The theory of social exchange suggests that inclusive leadership enables teachers and leaders to exchange benefits which create environments that are psychologically safe and emotionally supportive and organizationally supportive. The framework shows that inclusive leadership creates direct effects on teacher creativity. The two complementary mediators of teacher happiness and institutional climate for creativity help inclusive leadership produce indirect positive effects on creativity. The research model establishes that individuals who exhibit polychronic tendencies will regulate the mediated effects between inclusive leadership and teacher creativity outcomes. A comprehensive presentation of this defined framework enhances theoretical cohesion by defining how different constructs function together in the study.

The novelty of this research lies explicitly in its integrative and multidimensional approach to understanding creativity, bridging three previously isolated domains: emotional factors (teacher happiness), cognitive traits (polychronicity), and organizational conditions (institutional climate for creativity). Previous studies have largely treated these elements independently, thereby neglecting the complex interactions that realistically characterize educational settings. Furthermore, by grounding the research in social exchange theory (SET), the study provides robust theoretical justifications, clearly linking inclusive leadership to teacher creativity via these interconnected pathways. This explicit delineation addresses critical theoretical gaps and clarifies the unique relevance of this study in advancing scholarly understanding of leadership and creativity in education.

2. Literature review

2.1. Underpinning theory

SET is the theoretical foundation for this study and provides a valuable theoretical lens through which to understand the reciprocal leader-employee interactions that can produce positive outcomes in the organizational context. As argued in SET, the benefits include reinforcing the parties' cycle based on the mutual exchange of trust, support, and effort (Ahmad et al., 2021; Blau, 1964; Guo et al., 2021). In particular, this framework is very relevant for inclusive leadership and teacher creativity. Inclusive leadership is present in an environment that values teachers, where teachers are respected, and openness, accessibility, and supportiveness are present. This psychological safety (Umrani et al., 2024) encourages teachers to trust and to create creative behavior in return for the support they receive. For instance, if leaders seize value in diverse perspectives, give teachers autonomy, and encourage risk-taking, teachers will be more likely to be innovative in their ideas and teaching practices. These exchange dynamics are operationalized by teacher happiness and institutional climate for creativity as dual mediating constructs. This means that creative engagement is a critical motivator for teacher happiness, as well as for the emotional well-being and job satisfaction that come from the implementation of inclusive leadership practices. Happy and satisfied teachers, according to SET, will reciprocate by investing effort in creative work when their leaders provide them with such support. At the same time, the institutional climate for creativity is the structural and cultural support leaders offer teachers to experiment and innovate. Inclusive leadership is dynamic, where emotional and organizational support is provided in return for creative contributions from teachers, resulting in more creative teachers overall (Nguyen et al., 2024).

Although Eisenberger et al. (1986) organizational support theory (OST) is also a relevant theoretical framework because of their focus on how perceived organizational support has the potential to promote employee commitment and performance, SET provides a more suited explanation of the relational dynamics that lie at the heart of this study. Whereas SET considers both interpersonal exchanges and give and take in the relationship between leaders and employees, OST concentrates on the impact of structural and institutional factors on employees' behavior. This emphasis on the dual sides of this emphasis is most relevant in the context of inclusive leadership because it evaluates the emotional well-being of teachers and the organizational environment where their creativity is enabled. By examining the complex ways in which leadership produces individual and institutional outcomes in exchange processes that are intrinsic to inclusion, SET allows us to explore leadership. For this research's objectives, SET is more valuable than OST use. The relational and reciprocal dynamic on which inclusive leadership influences teacher creativity is reflected in its structure. We use the SET framework to highlight the interplay between creativity and emotional well-being and organizational climate to offer a thorough view of the processes that foster creative outcomes in educational settings.

2.2. Hypotheses development

Creativity is a cornerstone of innovation and progress in education, as it fosters students' critical thinking, problem-solving, and adaptability (Hernández-Torrano & Ibrayeva, 2020). Creativity is conceived in teaching as the capacity to foster novel and effective ideas to improve learning outcomes (Tamsah et al., 2021). According to Amabile and Khaire (2008), creativity is a function of the interplay of individual abilities, motivation, and environmental factors; creativity needs supportive organizational climates and leadership. Previous studies have shown that creative teachers develop progressive curricula, implement creative pedagogical approaches, and engage students to contribute to the success of education (Patston et al., 2021). These findings stress the need to study how leadership and organizational factors facilitate creativity in educational contexts. A leadership role is important in shaping both individual and organizational aspects of employee creativity (Wang, Liu, & Fan, 2024; Zheng et al., 2024). A growing body of research has been done to show how transformational, servant and inclusive leadership facilitates creativity (Arici & Uysal, 2022; Żywiołek et al., 2022). Transformational leaders encourage teachers to question traditional practices, and servant leaders focus on teachers' well-being and development to create an environment that supports innovation (Cai et al., 2013). Particularly in educational settings, inclusive leadership, that is, openness, supportiveness, and psychological safety, has become a particularly important phenomenon. Teachers are valued, encouraged to experiment with new ideas, and the resulting individual creativity and institutional innovation are enhanced. There is growing body of literature on the leadership styles, however, little has been explored about how these leadership styles work in culturally diverse

and non-Western educational contexts, especially in Malaysia.

Recently, inclusive leadership, characterized by openness, accessibility, and availability in leader-follower interactions (Fu et al., 2022), has been linked to creativity by creating psychologically safe environments where employees feel free to share ideas and take creative risks without fear of criticism. Inclusive leaders value diverse perspectives, fostering creativity by ensuring employees feel their unique contributions are appreciated (Carmeli et al., 2010). In fostering organizational creativity, leadership creates the environment, motivates members, and inspires innovations. For example, several types of leadership styles, including transformational, authentic, and servant leadership, have been extensively researched regarding their effect on enhancing creativity and organizational performance. For example, Zuo et al. (2024) indicated the significant influence of transformational leadership on corporate entrepreneurship in encouraging competitiveness via innovative practices. Rehman and Zeb (2023) also looked at the relationship between authentic leadership and green creativity, as well as the psychological environment and leadership style's role in environmentally sustainable outcomes. These studies provide important insights, but they are largely limited to particular organizational settings (e.g., corporate entrepreneurship, sustainability) and depart from the context of education, which is the focus of this study. Further, inclusive leadership is different from transformational or authentic; it is open, accessible, and tends to support diversity. In contrast to transformational leadership, which is leader-centric based on inspiring and motivating followers to accomplish extraordinary results, inclusive leadership combines to deliver a psychologically safe environment through which all people are valued and encouraged to contribute (Asghar et al., 2023). This aspect is particularly critical in educational settings, where diverse teacher backgrounds, experiences, and perspectives can be leveraged to foster creativity and innovation. Although existing research highlights the importance of leadership styles in promoting employee creativity, recent bibliometric reviews and systematic literature analyses highlight critical theoretical and practical gaps (Figueiredo et al., 2022; Tummers & Kruyen, 2014). Inclusive leadership has been under-investigated primarily compared to other leadership approaches, such as transformational or servant leadership, especially in non-Western educational contexts like Malaysia. Furthermore, existing reviews identify a lack of integrative frameworks combining emotional well-being (teacher happiness), cognitive traits (such as polychronicity), and organizational conditions (institutional climate) within a unified theoretical model. Practically, there is a pronounced gap in applying such comprehensive theoretical models to educational institutions striving to foster innovative teaching practices in culturally diverse settings. Addressing these gaps, the present study offers novelty by explicitly developing and testing a comprehensive, integrative framework within the unique and scientifically relevant Malaysian educational context.

The present study focuses on inclusive leadership due to the fact that it is a factor that resembles the collaborative and inclusive environments that are inherent in the educational context, which needs to foster creativity not only at an individual level but also in the context of the institutional climate. Furthermore, relevant work on the role of leadership in promoting sustainability and green campus initiatives primarily focuses on sustainability dimensions (Shah Shah Attaullah et al., 2024), and ignores the more subtle emotional and cognitive mechanisms through which leadership promotes creativity in education. Inclusive leadership closes this gap by focusing on emotional well-being (teacher happiness) and workplace climate (institutional climate for creativity) because both are important to the development of innovative teaching practices. Supported teachers are more likely to develop new curricula or integrate technology, enhancing student outcomes. Inclusive leadership helps overcome institutional constraints that may stifle innovation, enabling teachers to take creative risks that benefit their development and student learning. Grounded in SET, which posits that workplace relationships are based on reciprocal exchanges of trust, support, and effort (Blau, 1964), this study proposes that inclusive leadership influences teacher creativity. Inclusive leaders demonstrate openness and support, fostering trust and a positive environment. According to SET, teachers reciprocate this support by investing more effort and engaging creatively. This mutual exchange creates a climate where teachers feel safe to innovate and experiment, thereby boosting their creative contributions. Thus, inclusive leadership directly and indirectly fosters teacher creativity through supportive and trusting relationships.

H1. Inclusive leadership is positively related to teacher creativity in the education sector.

Teacher happiness refers to a teacher's emotional state of contentment and satisfaction in their professional role. Defined as "a positive emotional state resulting from the appraisal of one's job or job experiences" (Thompson & Bruk-Lee, 2021), happiness is significantly influenced by leadership. Research has consistently linked happiness to greater resilience, willingness to take risks, and innovative behaviors (Ahmad, Han, & Kim, 2024). Supportive leadership styles, particularly inclusive leadership characterized by openness, accessibility, and psychological safety, create environments where teachers feel valued and respected, directly boosting their happiness (Katsaros, 2024). Inclusive leaders engage teachers in decision-making, provide support, and encourage open communication, enhancing their sense of belonging and purpose at work (Choi et al., 2017). In educational settings, this leads to teachers feeling safe to share ideas and concerns, reducing stress from workloads and institutional demands and fostering a positive work environment.

Happiness is also a key driver of creativity within organizations. Grounded SET, our research emphasizes the reciprocal relationship between inclusive leadership and teacher creativity. When teachers experience happiness from supportive leadership, they are more likely to reciprocate with increased creativity and engagement (Hudie et al., 2017). Therefore, teacher happiness mediates the relationship between inclusive leadership and creativity. Inclusive leaders foster a supportive environment that enhances teacher happiness, encouraging creative behaviors and the adoption of innovative teaching methods. This mediating process highlights the importance of emotional support and recognition in enabling teachers to take creative risks and develop new approaches that benefit both their professional growth and student outcomes.

H2. Inclusive leadership is positively related to teacher happiness.

H3. Teacher happiness is positively related to teacher creativity.

H4. Teacher happiness mediates the relationship between inclusive leadership and teacher creativity.

The institutional climate for creativity provides the structural and cultural support necessary for fostering innovation. This climate encourages teachers to experiment with novel approaches, collaborate with peers, and access resources that enhance creativity (Kim & Yoon, 2015). Inclusive leadership promotes conditions that enhance organizational and employee success by creating an institutional environment for creativity, the degree to which an organization encourages and supports risk-taking and innovation (Nguyen et al., 2024). A creative environment implies freedom of speech, taking certain risks, and the availability of tools to try out new concepts in the workplace. This climate is fostered by leaders who encourage innovations and support creative ideas and projects (Qi et al., 2019). Openness and approachability are significant facets of inclusive leaders who foster safe environments for sharing new ideas and for creative exercises. They foster cooperation, support experimentation, and offer means for creating new solutions (Wang et al., 2021). In education, such leadership encourages the teachers to try out new approaches in their teaching practices, design innovative lesson plans, and work in teams to address teaching issues, thus fostering personal and career development as well as improving students' performance.

According to the studies, creative climate enhances innovative behavior (Ghosh, 2015). This leads to innovations in education where effective teachers change their strategies, incorporate technology, and look for ways to capture the attention of the learners. A positive climate provides y to teachers and resources to take risks without the possibility of failure and encourages environments necessary for experimentation, resource availability, and collaboration crucial for innovation (Geok et al., 2024; Mutonyi et al., 2020). Therefore, while inclusive leadership improves the creative climate, it also increases teacher creativity, indicating that the creative climate mediates the leadership- creativity relationship. This is in line with SET as it presupposes that leaders and employees exchange positive behaviors during their work. Those teachers who receive support in the creative climate will be encouraged to offer their best in creating something new and innovative and use the resources provided to them to come up with new ideas, thus supporting trust and creativity (Pan et al., 2020). Therefore, the institutional climate for creativity directly increases teacher creativity and moderates the relationship between inclusive leadership and creativity by creating favorable climate for innovations.

H5. Inclusive leadership is positively related to the institute's climate for creativity.

H6. The institute's climate for creativity is positively related to teacher creativity.

H7. The institute's climate for creativity mediates the relationship between inclusive leadership and teacher creativity.

Polychronicity, the inclination toward the concurrent processing of multiple tasks, affects organizational behaviors and performance (Poposki & Oswald, 2010). While monochronic persons like to work through activities one at a time, polychronic persons are best suited for an environment that calls for handling several activities at a time (Conte & Gintoft, 2005). This trait is particularly desirable in environments that require dynamism and versatility, and it is particularly important in work that requires the use of creativity and innovation (Waheed et al., 2021). Polychronic individuals are able to work in complex and ambiguous environments. Thus, they are suitable for creative work as they can process several information streams and integrate several perspectives. They can work simultaneously on several tasks, which makes themlink ideas that at first glance may seem unrelated, thus enhancing creativity and their flexibility to experiment when solving a problem does not limit them by time as other students might be (Anser et al., 2022). The research by Fu et al. (2022) reveals that there is a positive correlation between polychronicity and creativity, especially in organizations where flexibility is required.

Polychronicity is a major cognitive trait that influences creativity (Poposki & Oswald, 2010). Previous research indicated that those with high polychronicity are more adaptive and thus problem-solving, to deal with the complexities of dynamic work settings (Ahmad, Samad, & Han, 2024). Being polychronic is more likely to be the case for polychronic teachers in educational settings, and this is why it is very valuable to encourage creativity (Fu et al., 2022). Even though polychronicity is relevant, it is not well-explored in educational contexts, particularly in its interplay with leadership and organizational climate. This study adds to understanding the influence of individual cognitive traits on teacher creativity by including polychronicity as both a predictor and a moderator. In the education sector, polychronicity is suited for creative behaviors because the teachers have to plan lessons, assess students' work, and interact with them; they have to manage all these complexities. These teachers perform well when working in conditions that involve dealing with a number of tasks and students, which fosters creativity and promotes the flexibility of the teachers in handling the classes (Sehrish, 2015). Polychronicity was expected to moderate the relationship between inclusive leadership, teacher happiness, and creativity. Thigh polychronicity teachers are more receptive to the concept of inclusive leadership, the handling of tasks and responsibilities in a team, which increases their happiness and creativity. Theoretically, polychronicity is closely associated with the institutional climate for creativity, particularly due to the cognitive flexibility it imparts to individuals (Anser et al., 2022). Polychronic individuals can manage complex informational environments effectively and are comfortable operating under ambiguous conditions, attributes especially beneficial in environments promoting creativity and innovation (Wu et al., 2020). A strong institutional climate for creativity, characterized by support for risk-taking, experimentation, and innovative teaching, demands teachers' simultaneous engagement in multiple creative endeavors, from curriculum design to technology integration (Mutonyi et al., 2020). Thus, polychronic teachers are likely to capitalize on such supportive climates more effectively, leveraging their cognitive flexibility and multitasking capability to innovate continuously. Empirically, recent studies support this reasoning, demonstrating that individuals high in polychronicity exhibit superior performance in environments emphasizing creativity and innovation (Szameitat & Hayati, 2019). Therefore, this conceptual and empirical foundation clearly justifies the theoretical link between polychronicity and institutional climates conducive to creativity. Further, polychronic teachers are expected to be more capable of harnessing a creative climate, handling multiple demands, and exhibiting creative behaviors. On the other hand, teachers with low polychronicity may be unable to make the best out of an open and innovative environment, which may make them overwhelmed with the need to multitask or work on various projects.

H8a. Polychronicity moderates the path between inclusive leadership, teacher happiness, and creativity.

H8b. Polychronicity moderates the path between inclusive leadership and the institute climate for creativity, as well as teacher creativity.

3. Methodology

3.1. Participants and procedure

The study gathered data from teachers employed across 20 educational institutions located in three major Malaysian cities: Kuala Lumpur, Penang, and Johor Bahru. These institutions were deliberately selected to represent diversity in size, type, and educational level, including primary and secondary schools and colleges, thus providing comprehensive insights across different segments of the education sector. Specifically, among these 20 institutions, 10 were secondary schools, 6 were colleges offering post-secondary education (pre-university level), and 4 were primary schools. Clearly, specifying these institutions enhances transparency regarding the research setting, allowing accurate interpretations of the findings.

Teachers were contacted face-to-face; the research team went to the targeted institutions to deliver the questionnaires. In order to maintain consistency and relevance in the study sample, participating institutions had to employ at least 50 teachers. This criterion was used to maintain a structured organizational hierarchy that is essential for evaluating the contribution of leadership to teacher creativity and organizational climate. Such institutions provided a representative context to explore formal leadership roles, such as departmental heads, and their relationship with teachers. As a result, this organizational complexity enabled a richer understanding of how leadership dynamics support creativity. In addition, with this approach, there was more variability in leadership styles and teaching practices, helping the study draw more meaningful conclusions. For this study, purposive sampling was used to choose the teachers to ensure that they are teachers from different education institutions that reflect different education sector contexts in Malaysia. Although stratified random sampling could be a preferred choice for this study, our choice of purposive sampling was strategically driven by methodological considerations. Given the objectives of our study, particularly the investigation of leadership effects in educational institutions with formal hierarchical structures, it was imperative to

include institutions employing at least 50 teachers to ensure a clearly defined organizational leadership context. Purposive sampling thus enabled the intentional selection of relevant institutions capable of providing structured and hierarchical organizational settings necessary for examining inclusive leadership dynamics effectively. While stratified random sampling is advantageous in certain contexts, the purposive approach in this study provided targeted insights and theoretical clarity appropriate for addressing our research objectives.

Before approaching the teachers, the research team got formal institutional permissions to meet the institutional protocols. Some of the challenges during this process included occasional reluctance from teachers to participate, mainly because of time constraints. In order to address this, the research team scheduled visits during non-teaching hours and emphasized that the visits were voluntary. In order to increase accessibility for participants located in varying institutional settings, the questionnaires were distributed in paper-based format. Questionnaire submission was done by using sealed envelopes for anonymity. Completed forms were to be returned to a collection box under the sole control of the research team. By using this method, individual responses were not linked to specific participants, thereby guaranteeing confidentiality and, therefore, honest and unbiased feedback. Cohen's power analysis estimated a sample size of around 400 and teachers to detect medium effect sizes (Cohen, 1992). To account for potential non-responses, 700 questionnaires were initially distributed. After three waves, 453 questionnaires were returned, with 419 valid responses remaining after data cleaning.

Data collection was carried out over three waves between March 25, 2024, and June 30, 2024. Specifically, the first wave began on March 25 and concluded by mid-April, where respondents provided demographic details and assessed inclusive leadership. The second wave occurred approximately four weeks later, from mid-April through mid-May, focusing specifically on teacher happiness and institutional climate for creativity. Finally, the third wave, completed by June 30, involved the collection of teacher creativity ratings assessed by their immediate supervisors (department heads). By clearly outlining this timeline, we aimed to minimize common method biases and enhance methodological rigor (Ahmad, Ullah, et al., 2023; Xu et al., 2022).

During this period, all teachers were fully informed about the study's purpose and their rights. Written informed consent was obtained from all teachers, ensuring they were aware of their ability to withdraw from the study at any point without consequences (Ahmad, Ahmad, Lewandowska, & Han, 2024; Ahmad, Ahmad, & Siddique, 2024). The signed consent forms were securely stored, with access limited to the research team to maintain teachers' confidentiality and data integrity. The study was conducted under the ethical waiver granted by the institutional review board (IRB) of University Utara (No: 905287). The waiver was issued because the research involves non-invasive observational procedures, adheres to the ethical standards of the 1964 Declaration of Helsinki, and does not pose any physical or psychological risk to teachers (Liu et al., 2024; Wang, Ahmad, et al., 2024; Xue et al., 2024). Table 1 below summarizes the demographic information of the 419 valid responses collected for analysis.

Table 1
Socio-demographic profile of respondents.

Demographic variables	Frequency	Percentage (%)
Gender		
Male	195	46.5
Female	224	53.5
Age		
Under 30	95	22.7
31–40	187	44.6
41–50	103	24.6
Above 50	34	8.1
Education level		
Bachelor's degree	170	40.6
Master's degree	213	50.8
Doctorate	36	8.6
Teaching experience		
<5 years	109	26
5–10 years	148	35.3
11–15 years	102	24.3
>15 years	60	14.3

3.2. Measures

This study used established, validated scales to measure key constructs known for their pre-established validity and reliability (Guan et al., 2023; Murtaza et al., 2021). The survey was administered exclusively in English to maintain methodological consistency and psychometric validity. All scales (inclusive leadership, teacher happiness, institutional climate for creativity, teacher creativity, and polychronicity) were originally developed, validated, and widely tested in English, and translating them without rigorous procedures could compromise their integrity. Additionally, English is the primary language of instruction and communication in Malaysian educational institutions, especially in urban and semi-urban areas like Kuala Lumpur, Penang, and Johor Bahru. All participants held at least a bachelor's degree, ensuring their proficiency in English. A pilot test with 20 teachers confirmed the survey's clarity, supporting its appropriateness for the target group.

Inclusive leadership (9-items) was assessed with a five-point Likert scale from Carmeli et al. (2010), evaluating leaders' openness, accessibility, and availability. For example, "The department head is open to hearing new ideas from faculty members" was rated from 1 (strongly disagree) to 5 (strongly agree). Teacher happiness was measured using 5-items from del García Junco et al. (2013). Statements like "The workplace environment at our educational institute is positive and supportive" were rated by respondents. The institute's climate for creativity (5-items) was evaluated with Kim and Yoon (2015) scale, which examines support for innovation. A sample item was, "In our institute, there are adequate resources devoted to fostering innovation in teaching and learning," rated 1 to 5. Teacher creativity was measured using a scale (9-items) from Tierney et al. (1999), focusing on creative problem-solving and innovative teaching practices. For instance, "This teacher generates novel yet practical ideas to improve teaching effectiveness or student outcomes" was rated on a five-point scale. Polychronicity (5-items), was assessed with Lindquist and Kaufman-Scarborough (2007) scale. An example item is, "I prefer to handle two or more tasks, such as teaching, grading, and mentoring, at the same time". The immediate supervisors (departmental heads) rated the creative behavior of a teacher, and the teachers rated all other items.

The study's methodology was rigorously designed to minimize bias and ensure validity. Data were collected in three waves at distinct time intervals, reducing common method bias by avoiding single-source, single-time-point responses. Structural equation modeling (SEM) using SMART-PLS further addressed measurement issues by partitioning variance into measurement and structural components, with tests of indicator and composite reliability and discriminant validity confirming that constructs were distinct.

Teacher creativity was evaluated via supervisor ratings, complementing self-reported data on other constructs, which aligns with best practices in multi-level research and reduces reliance on a single data source. Although Harman's single-factor test was used as an initial diagnostic for common method variance, the multi-wave design, SMART-PLS's analytical rigor, and external evaluations together provide robust safeguards against bias. Future research may build on these measures by incorporating triangulated data sources or marker variables for further validation.

Detailed procedural steps were transparently followed and explicitly

described to ensure methodological precision. The three-wave data collection procedure was deliberately chosen to mitigate common method bias. Additionally, supervisor ratings for the dependent variable (teacher creativity) further reduced potential biases related to self-reported data. Statistical rigor was assured through rigorous adherence to established thresholds for structural equation modeling (SEM). Factor loadings >0.70, composite reliability values above 0.70, and average variance extracted (AVE) above 0.50 were achieved, meeting the recommended thresholds. Multicollinearity was assessed and ruled out, as indicated by Variance Inflation Factor (VIF) values consistently below the threshold of 5.0. The manuscript explicitly details these thresholds and methodological safeguards, ensuring full transparency and methodological rigor addressing potential sources of bias clearly and systematically.

4. Results

The data analysis was performed using SMART-PLS software to explore the relationships among key variables: institute climate for creativity (ICC), inclusive leadership (InLd), polychronicity (POLy), teacher creativity (TCr), and teacher happiness (THP). PLS-SEM is a modern and preferred technique to explore complex models with latent variables, and perhaps this is one of the reasons that it has become one of the preferred choices among behavioral sciences scholars for data analysis (Ahmad, Samad, & Mahmood, 2024; Li et al., 2024; Yuxiang et al., 2024).

We employed PLS-SEM primarily due to our research model's predictive orientation and complexity, involving multiple mediators and moderators. Specifically, PLS-SEM is highly effective for simultaneously modeling complex interactions, mediation, and moderation effects, providing robust estimations of path coefficients and predictive power (Hair et al., 2019). Furthermore, our model includes latent constructs with multiple reflective indicators, making PLS-SEM an appropriate analytical choice due to its strength in handling complex models without restrictive assumptions about variable distributions. Thus, our selection of PLS-SEM is theoretically and methodologically justified, beyond considerations of sample size alone. Although PLS-SEM does not strictly assume multivariate normality of data distribution (Sarstedt et al., 2019), we conducted a thorough assessment of the distribution of our data. Specifically, skewness and kurtosis values were computed for each construct, and all values were found to be well within acceptable ranges (±2 for skewness and ± 7 for kurtosis, as recommended by Byrne (2001). The observed distributions thus did not violate assumptions that could impact the interpretation or robustness of results. This assessment ensures transparency regarding data characteristics, providing stronger justification for our analytical approach using PLS-SEM.

We evaluated the measurement model using key metrics (factor loadings, composite reliability, and average variance extracted (AVE), all of which met the standard (>0.5) (Fu et al., 2023; Liu et al., 2023)) and thus ensured the rigor of the analysis such that the constructs not only have high reliability and convergent validity. The Fornell-Larcker criterion and heterotrait-monotrait ratio (HTMT) of discriminant validity (<0.85) assessed the distinctiveness between constructs (Han et al., 2022; Zhou et al., 2023). Although PLS-SEM does not yield traditional goodness of fit indices, we verified structural model robustness by computing Q^2 values with blindfolding procedures (Ahmad, Ahmad, & Siddique, 2023). These values suggested acceptable predictive relevance of the endogenous constructs, supporting the integrity and reliability of the findings. We carefully examined collinearity statistics to ensure that variance inflation factor (VIF) values for all constructs were within acceptable limits, dismissing multicollinearity as a consequence.

Factor loadings were strong across all measures (>0.70), with ICC ranging from 0.739 to 0.937, InLd from 0.717 to 0.843, POLy from 0.89 to 0.922, TCr from 0.641 to 0.946, and THP exceptionally high between 0.946 and 0.967. These loadings indicate robust and consistent measurements for each construct. The R-square values demonstrated that InLd and POLy explained 53.7 % of the variance in ICC, InLd accounted for 39.8 % of THP, and ICC, THP, InLd, and POLy together explained 38.6 % of TCr. These values reflect the model's moderate to strong explanatory power.

F-square values revealed that InLd had a significant impact on ICC ($f^2 = 0.362$) and moderate effects on TCr ($f^2 = 0.218$) and THP ($f^2 = 0.123$). POLy also showed notable effects on ICC ($f^2 = 0.286$) and TCr ($f^2 = 0.253$). ICC had a substantial effect on TCr ($f^2 = 0.513$), indicating that a strong creative climate significantly drives teacher creativity, while THP contributed to TCr with a meaningful effect size of 0.094, suggesting that teacher happiness supports creativity to a lesser extent. Overall, the results emphasize the crucial roles of inclusive leadership and polychronicity in fostering a creative climate and enhancing outcomes such as teacher happiness and creativity. The high factor loadings, strong R-square values, and significant F-square contributions confirm that the model effectively captures the interplay between leadership, organizational climate, and individual outcomes. The high R^2 values for ICC and TCr are consistent with previous research indicating that organizational climate is crucial to creativity. We assessed internal consistency and convergent validity using composite reliability and AVE. All composite reliability values exceeded the 0.70 threshold, ranging from 0.938 for Inclusive Leadership (InLd) to 0.982 for THP, indicating strong reliability. AVE values were all above 0.50, from 0.628 for InLd to 0.915 for THP, demonstrating that over half the variance in indicators was explained by their constructs. Table 2 summarizes these values.

Discriminant validity was confirmed using the Fornell-Larcker criterion, where the square root of each construct's AVE was greater than its correlations with other constructs (Chen et al., 2022; Peng et al., 2022) (e.g., ICC's AVE square root of 0.886 exceeded its correlations with InLd, POLy, TCr, and THP). Additionally, HTMT ratio values were below the 0.85 threshold, indicating acceptable discriminant validity. Notable correlations, such as ICC with POLy (0.649) and ICC with TCr (0.659), highlight strong links between the institute's creative climate and teachers' creative behaviors, while all HTMT values remained within acceptable limits. Overall, the composite reliability, AVE, Fornell-Larcker, and HTMT assessments confirm all constructs' high internal consistency, convergent, and discriminant validity, ensuring that the model effectively captures the relationships between leadership, organizational climate, and individual outcomes. Table 3 includes more detail.

The hypothesis testing results reveal significant relationships among the study's constructs. InLd positively impacts TCr with a beta of 0.316 ($T = 7.330$, $p < 0.001$) and significantly enhances the ICC with a beta of 0.378 ($T = 10.053$, $p < 0.001$). Additionally, ICC strongly influences TCr (beta = 0.536, $T = 10.154$, $p < 0.001$), while InLd also positively affects THP with a beta of 0.249 ($T = 6.245$, $p < 0.001$). THP further contributes to TCr (beta = 0.122, $T = 2.965$, $p = 0.003$), supporting the role of emotional well-being in enhancing creativity. The mediating effect of ICC between InLd and TCr is significant (beta = 0.202, $T = 6.493$, $p < 0.001$), as is the mediating role of THP in linking InLd to TCr (beta = 0.030, $T = 2.359$, $p = 0.019$).

Furthermore, polychronicity moderates key relationships within the model. Specifically, it strengthens the relationship between ICC and TCr (beta = 0.090, $T = 4.400$, $p < 0.001$) and between THP and TCr (beta = 0.014, $T = 2.061$, $p = 0.040$), indicating that teachers who prefer multitasking are better able to leverage a creative climate and their happiness to enhance creativity. We clarify that PLS-SEM evaluates moderation effects primarily through significant interaction terms. Although PLS-SEM traditionally does not report incremental changes in R^2 (ΔR^2) resulting from moderation in the same manner as hierarchical regression, it assesses moderation rigorously through the interaction terms' magnitude, significance, and effect size (f^2 values). Therefore, to offer rigorous insights into moderation effects, we have explicitly reported effect sizes (f^2) for interaction terms, clearly showing how polychronicity significantly moderated the relationships between inclusive

Table 2
Summary of data quality of measurement model.

Variable	ICC	InLd	POLy	TCr	THP	R Square	f Square	CR	AVE
ICC						0.537		0.948	0.785
ICC1	0.924								
ICC2	0.739								
ICC3	0.918								
ICC4	0.937								
ICC5	0.896								
InLd							0.362	0.938	0.628
InLd1		0.717							
InLd2		0.721							
InLd3		0.792							
InLd4		0.843							
InLd5		0.837							
InLd6		0.814							
InLd7		0.784							
InLd8		0.819							
InLd9		0.794							
POLy							0.286	0.959	0.823
POLy1			0.89						
POLy2			0.902						
POLy3			0.904						
POLy4			0.922						
POLy5			0.918						
TCr						0.386		0.970	0.805
TCr1				0.641					
TCr2				0.914					
TCr3				0.919					
TCr4				0.932					
TCr5				0.93					
TCr6				0.946					
TCr8				0.927					
TCr9				0.931					
THP						0.398		0.982	0.915
THP1					0.952				
THP2					0.967				
THP3					0.964				
THP4					0.953				
THP5					0.946				

Table 3
Discriminant validity.

Construct	ICC	InLd	POLy	TCr	THP
ICC	**0.886**				
InLd	0.336	**0.792**			
POLy	0.408	0.442	**0.907**		
TCr	0.312	0.416	0.474	**0.897**	
THP	0.519	0.495	0.369	0.61	**0.956**
HTMT		(0.545)	(0.649)	(0.659)	(0.652)
			(0.377)	(0.569)	(0.437)
				(0.602)	(0.592)
					(0.633)

Note: Bold diagonal values represent the square root of AVE, off-diagonal values represent correlations, and values in parentheses represent HTMT values.

leadership, teacher happiness, institutional climate, and teacher creativity. This approach aligns precisely with established PLS-SEM best practices.

While the effect of polychronicity in moderating the relationship between THP and TCr ($\beta = 0.014$) was statistically significant, we note that its effect size is small. However, this should not be dismissed outright, and even small effects can have substantive consequences in complex behavioral models. In the context of this study, this finding suggests that individual differences in cognitive style, for example, preferences for multitasking, may, in a subtle way, influence how emotional well-being translates into creative behavior. This emphasizes the complexity of how personal and organizational factors interact. Additionally, models of individual and organizational behavior often involve multifaceted processes leading to outcomes that are not uncommonly characterized by small but significant moderation effects. The result underlines the complexity of leadership-creativity relationships and indicates that even marginal moderators can guide how leadership practices are customized for individual differences. The study identifies this effect and, in doing so, paves the way for future studies of how polychronicity and other similar traits interact with other contextual and psychological variables to improve creativity. These findings highlight the importance of inclusive leadership and polychronicity in fostering a supportive climate for creativity and improving outcomes such as teacher happiness and creativity. We deliberately chose not to include these controls, guided by contemporary methodological recommendations from Bernerth and Aguinis (2016) and Becker et al. (2016), who caution against automatic or unnecessary inclusion of control variables without a strong theoretical rationale. Specifically, our theoretical framework explicitly focuses on inclusive leadership, polychronicity, institutional climate, teacher happiness, and their direct theoretical interactions and impacts on teacher creativity. Introducing demographic controls without strong theoretical reasoning could potentially introduce extraneous or confounding effects, complicating interpretation rather than clarifying results. Table 4 includes these results, and Fig. 1 identifies the full structural model of this study.

The simple slope analysis presented in Figs. 2 and 3 reveals the moderating role of POLy in the relationships between InLd and ICC and between InLd and THP. Specifically, Fig. 3 indicates that at higher levels of POLy (+1 SD), InLd has a stronger positive impact on ICC compared to average or lower levels (−1 SD). Similarly, Fig. 3 shows that inclusive leadership's positive relationship with teacher happiness becomes more pronounced as POLy increases.

Table 4
The results of full structural model.

Hypothesis	Beta values	SD	T statistics	*P* values	Lower level interval (2.5 %)	Upper level interval (97.5 %)
InLd➔TCr (H1)	0.316	0.043	7.33	0.000	0.226	0.393
InLd ➔ICC (H5)	0.378	0.038	10.053	0.000	0.311	0.45
ICC➔TCr (H6)	0.536	0.053	10.154	0.000	0.441	0.641
InLd➔THP (H2)	0.249	0.04	6.245	0.000	0.171	0.326
THP ➔TCr (H3)	0.122	0.041	2.965	0.003	0.04	0.198
InLd ➔ICC ➔TCr (H7)	0.202	0.031	6.493	0.000	0.149	0.266
Moderating Effect 2 ➔ICC➔TCr (H8b)	0.09	0.02	4.4	0.000	0.053	0.132
InLd➔THP➔TCr (H4)	0.03	0.013	2.359	0.019	0.01	0.059
Moderating Effect 1➔ THP➔TCr (H8a)	0.014	0.007	2.061	0.04	0.004	0.03

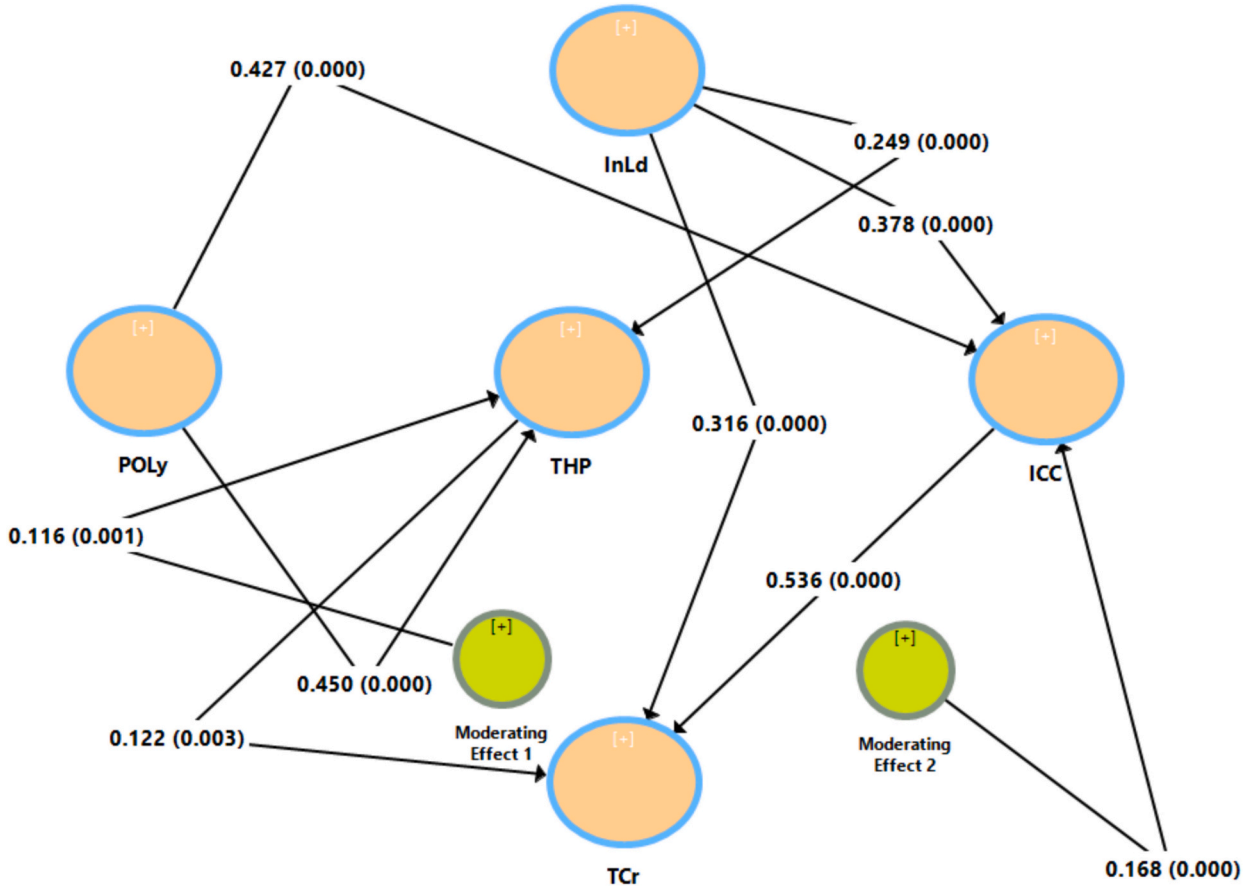


Fig. 1. The structural model.
The structural model shows that Inclusive Leadership positively influences Teacher Happiness, Institute Climate for Creativity, and Teacher Creativity. Polychronicity also enhances Teacher Happiness and Teacher Creativity. Additionally, both Teacher Happiness and Institute Climate for Creativity positively affect Teacher Creativity. Significant moderating effects exist between Polychronicity and Teacher Creativity and Institute Climate for Creativity and Teacher Creativity. All relationships are statistically significant.

5. Discussion

This study examined the relationships between inclusive leadership, teacher happiness, institutional climate for creativity, and teacher creativity within Malaysia's educational sector. Our findings offer robust empirical support for a model wherein inclusive leadership directly enhances teacher creativity and indirectly influences creative outcomes through its effects on teacher happiness and the institutional climate. These results are firmly rooted in SET, which posits that supportive, reciprocal leader-follower interactions yield positive organizational outcomes. In this context, by fostering openness, psychological safety, and supportive interpersonal relationships, inclusive leadership initiates a positive exchange process that enhances both the emotional well-being of teachers and the overall creative climate of the institution. Specifically, our analysis confirmed that inclusive leadership is positively associated with teacher creativity (H1: $\beta = 0.316$, $p < 0.001$), which aligns with previous research underscoring the pivotal role of leadership in driving innovative behavior (Latorre-Cosculluela et al., 2024). Furthermore, the significant positive relationship between inclusive leadership and teacher happiness (H2: $\beta = 0.249$) supports the theoretical proposition that leaders' supportive behaviors not only elevate employee morale but also enhance creative output by fostering a sense of well-being (Katsaros, 2024). The finding that teacher happiness itself positively influences creativity (H3: $\beta = 0.122$, $p = 0.003$) reinforces the notion that positive emotional states serve as catalysts for creative problem solving and innovation (Hudie et al., 2017).

Beyond the individual level, our study highlights the critical mediating role of the institutional climate for creativity. Inclusive leadership

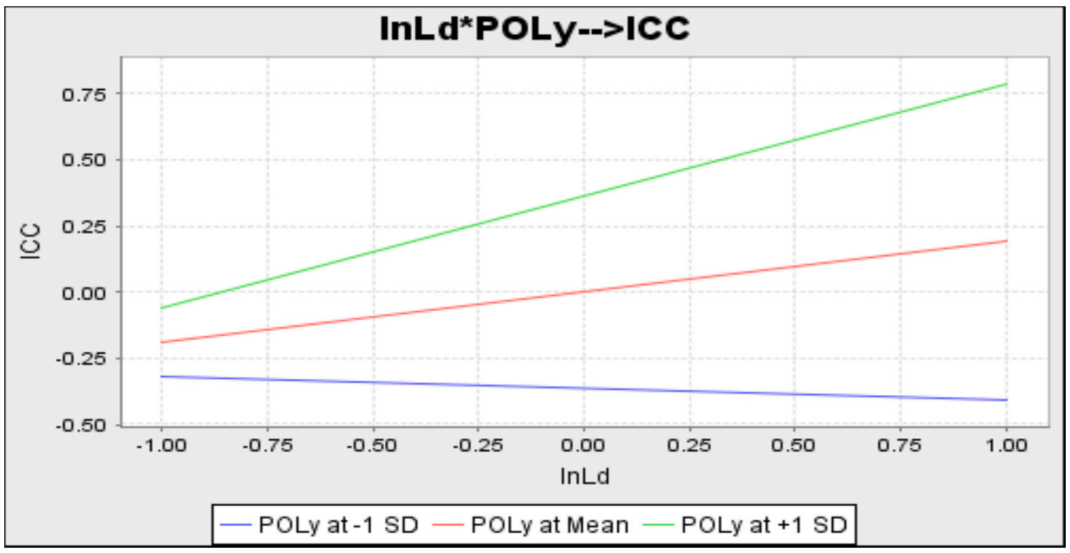


Fig. 2. Moderating effect of polychronicity on the relationship between inclusive leadership and institutional climate for creativity.

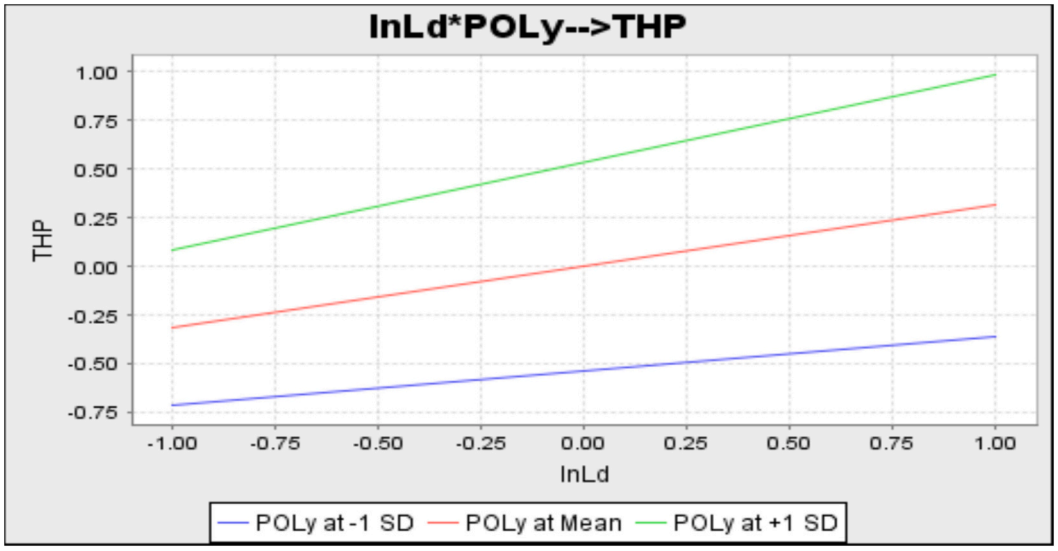


Fig. 3. Moderating effect of polychronicity on the relationship between inclusive leadership and teacher happiness.

was found to significantly improve the creative climate within educational institutions (H5: $\beta = 0.378$), echoing findings that a supportive organizational environment is essential for nurturing innovative practices (Qi et al., 2019). The mediating effect of the institutional climate was further validated (H7: $\beta = 0.202$), indicating that a positive, risk-tolerant, and resource-rich environment amplifies the impact of inclusive leadership on teacher creativity. This result expands SET by demonstrating that the broader organizational context serves as a key conduit through which leader behaviors translate into creative outcomes. Our study builds on existing theoretical models by adding polychronicity as a variable that affects the established relationships. The results from moderation analyses demonstrated that teacher ability to manage multiple tasks simultaneously (polychronicity) increases the positive effects of institutional climate on creativity (H8b) while also strengthening the relationship between happiness and teacher creativity (H8a). The study shows that teachers with better cognitive flexibility demonstrated in their capability to handle multiple tasks simultaneously can maximize both supportive leadership and favorable institutional climate for creative performance (Waheed et al., 2021). Our model provides a complete understanding of creativity by combining cognitive elements which explain the relationship between individual differences and leadership and organizational factors.

Our research establishes three main theoretical elements by showing that inclusive leadership produces teacher creativity directly and through emotional well-being and institutional support mechanisms and polychronicity acts as an individual-level moderator. Our theoretical understanding becomes more complete through the combination of emotional and organizational and cognitive perspectives which creates a complete model for future research on leadership and creativity in educational settings.

5.1. *Theoretical implications*

This study contributes substantially to the existing body of literature on leadership and creativity by extending and deepening the theoretical understanding of the mechanisms underlying teacher creativity in educational institutions. Although previous research has established a general link between leadership styles and employee creativity (Latorre-Cosculluela et al., 2024; Qi et al., 2019), our findings enrich existing theories by explicitly testing and validating a multi-dimensional

framework that incorporates emotional, organizational, and cognitive dimensions simultaneously. First, our research significantly advances SET, highlighting inclusive leadership's role as an essential catalyst for initiating positive exchanges that enhance both teacher well-being and creativity. Our findings confirm that inclusive leadership directly enhances teacher creativity and further extends previous theorization by demonstrating that this impact occurs indirectly through both emotional (teacher happiness) and organizational (institutional climate for creativity) mechanisms. Prior studies primarily examined emotional or organizational mediators in isolation (Hudie et al., 2017; Katsaros, 2024); thus, our integrative model provides a more comprehensive theoretical lens through which the leadership–creativity nexus can be understood.

Second, our study extends existing theory by integrating the cognitive dimension of polychronicity, an individual-level trait previously underexplored in creativity research. By empirically validating polychronicity as a significant moderator, our results indicate that individual cognitive flexibility, reflected in a preference for multitasking, strengthens the impact of institutional climate and emotional well-being on creativity. This finding aligns with recent theoretical advancements suggesting that individual cognitive traits critically shape how employees respond to leadership behaviors and organizational contexts (Waheed et al., 2021). By providing empirical support for the moderating role of polychronicity, our study encourages future theoretical exploration of other cognitive or personality traits as potential boundary conditions influencing creativity. Third, our research explicitly situates these theoretical advancements within the Malaysian educational context, a setting that offers unique cultural and organizational dynamics not fully explored in previous leadership–creativity studies. By demonstrating that inclusive leadership effectively enhances teacher creativity in this non-Western context, we provide robust evidence of the cross-cultural generalizability and theoretical robustness of inclusive leadership theories (Qi et al., 2019). Thus, our findings expand the boundary conditions of existing theoretical models, underscoring the importance of cultural and contextual considerations in leadership and creativity theories.

Finally, the integrated and multidimensional approach demonstrated in our study provides a clear roadmap for future theoretical development. Specifically, future researchers can build upon our framework by exploring additional psychological traits or contextual variables that might further influence creativity, potentially extending the SET framework or integrating complementary theoretical perspectives, such as self-determination theory or the job demands-resources model. In sum, our findings significantly augment existing theoretical knowledge by revealing complex interactions among emotional, cognitive, and organizational pathways in the leadership, creativity relationship, offering a robust foundation for further conceptual and empirical advances in this research domain.

5.2. Practical implications

The findings of this study offer valuable insights tailored specifically to address existing challenges within Malaysia's education sector. Malaysian educational institutions currently grapple with significant issues, such as declining student motivation, the widening mismatch between educational outcomes and workforce skills, limited innovative teaching practices, and increasing pressures of digital transformation. In this context, our results highlight several practical pathways through which institutional leaders and policymakers can strategically foster a more creative and responsive teaching environment. First, given the confirmed positive impact of inclusive leadership on teacher creativity and happiness, educational institutions should prioritize leadership development programs specifically designed to cultivate inclusive leadership behaviors. Malaysian institutions can benefit from targeted professional development workshops and leadership training initiatives that emphasize psychological safety, collaborative decision-making, and the promotion of diversity and inclusion. Equipping school principals and educational leaders with inclusive leadership competencies will help to address the motivational challenges and stimulate greater engagement among teachers, thus enhancing overall teaching innovation and effectiveness.

Second, recognizing the significance of institutional climate as a mediator, school administrators and policymakers should actively foster environments that support creativity, experimentation, and calculated risk-taking among teachers. Practical steps include creating structured innovation platforms, supporting pilot programs for new teaching methodologies, and rewarding creative initiatives. For instance, institutions could introduce 'creative innovation grants' or establish collaborative hubs where teachers can freely share and refine novel teaching ideas. Such institutional changes could directly address the existing Malaysian challenge of limited innovative classroom practices and reduce skill gaps by enhancing the adaptability and creativity of educational delivery. Third, our findings regarding the moderating role of polychronicity suggest institutions should recognize and leverage individual differences among teachers. Teachers with high cognitive flexibility, reflected in their preference for multitasking, may particularly thrive in dynamic, innovation-focused environments. Thus, institutions might consider differentiated support strategies or personalized professional development programs that acknowledge and maximize these cognitive traits. Doing so could improve institutional responsiveness and better align teachers' skills and approaches with the increasing demands of Malaysia's evolving educational and economic landscape.

Collectively, these practical implications underscore the importance of strategically investing in leadership capabilities, supportive institutional climates, and recognition of individual teacher characteristics, thereby directly addressing key challenges facing the Malaysian education sector. Such focused efforts promise not only to enhance teacher creativity but also to significantly contribute to the broader goals of educational excellence and innovation-driven growth in Malaysia.

5.3. Conclusion

This research contributes to the growing body of literature on leadership, teacher well-being, and creativity in the educational sector by examining the intricate relationships among inclusive leadership, teacher happiness, institute climate for creativity, and teacher creativity. The findings confirm that inclusive leadership significantly enhances teacher happiness and creativity, with the institute climate for creativity as a vital mediator in these relationships. Additionally, the moderating effects of polychronicity highlight the importance of individual differences in how teachers engage with their work environments. By emphasizing the role of emotional and cognitive factors, this study offers a holistic perspective that integrates various dimensions of human behavior, moving beyond traditional approaches that often isolate these aspects. The implications of our findings underscore the necessity for educational leaders to adopt inclusive practices, cultivate supportive climates, and prioritize teacher well-being to foster an innovative and effective teaching environment. Ultimately, this research provides a theoretical framework for understanding the dynamics of leadership and creativity in education and offers practical recommendations for enhancing teacher effectiveness and improving student outcomes. As educational systems continue to evolve, embracing inclusive leadership and fostering a positive climate for creativity will be essential for navigating the challenges and opportunities that lie ahead.

5.4. Limitations and future research directions

Although this study provides valuable theoretical and practical insights, certain limitations should be explicitly recognized. Firstly, our data relied partly on self-report measures, specifically for assessing inclusive leadership, teacher happiness, institutional climate, and

polychronicity. Despite employing a multi-wave data collection method and supervisor-rated teacher creativity to reduce common method bias, self-reporting can still introduce social desirability and response biases. Future research could further mitigate this limitation by incorporating more objective performance measures or observational methods alongside self-report instruments. Secondly, while the purposive sampling of educational institutions in urban and semi-urban Malaysian settings allowed for theoretically targeted insights, it may limit the generalizability of our findings. Specifically, the unique socio-cultural, institutional, and administrative contexts of selected Malaysian cities could differ from rural or other geographic contexts, thereby potentially restricting the applicability of the results. Future studies could expand the geographic scope and employ diverse sampling strategies to strengthen external validity and generalizability across Malaysia and similar contexts.

Thirdly, our cross-sectional research design, despite using multi-wave data collection to alleviate some biases, restricts our ability to draw strong causal conclusions. Although theory-driven hypotheses guided the study design, longitudinal research designs or experimental methods would be valuable to confirm causality and further validate the robustness of our theoretical model over time. Finally, our research model focused explicitly on selected emotional, organizational, and cognitive factors influencing teacher creativity, leaving other potentially influential variables unexplored. For instance, factors such as organizational resources, cultural orientations, teacher personality traits beyond polychronicity, or additional contextual variables might also significantly shape teacher creativity. Future research could integrate these factors to build a more comprehensive understanding of creativity in educational settings.

CRediT authorship contribution statement

Mingdi Jiang: Writing – review & editing, Writing – original draft, Supervision, Conceptualization. **Jing Zhang:** Writing – review & editing, Writing – original draft, Resources, Investigation. **Muhammad Zulqarnain Arshad:** Software, Resources, Methodology, Formal analysis.

Informed consent statement

Informed consent was obtained from all subjects involved in the study.

Declaration of competing interest

The authors declare no conflict of interest.

Data availability

Data will be made available on request.

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