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Leader-Member Exchange and Teacher Creativity in Nigerian Schools the Mediating Role of Paradox Mindset and Individual Ambidexterity

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ABSTRACT

This study examines the link between leader-member exchange (LMX) and teacher creativity, mediated by paradox mindset and individual ambidexterity. Using data from 1,406 Nigerian teachers in 146 schools, structural equation modeling confirmed that LMX positively influences teacher creativity, paradox mindset, and ambidexterity. Both mediators significantly relate to creative behavior. Mediation analysis revealed indirect effects of LMX on creativity via paradox mindset and ambidexterity. Findings highlight LMX as a key driver of teacher creativity, emphasizing the importance of strong leader–teacher relationships in fostering a paradox mindset and ambidexterity to enhance creativity in schools.

Introduction

In today's dynamic organizational environments, where there are competing interests and ambitions, innovation is essential for organizations to remain competitive (van Assen & Caniëls, 2022). Moreover, organizing innovation in specialized areas is no longer adequate and thus all those involved in education must exhibit some degree of creativity (van Assen & Caniëls, 2022). For organizations to be creative, people must act in both exploratory and exploitative ways (Rosing & Zacher, 2017). Creativity is essential for learning, innovation, and economic progress (Sawyer, 2015). However, in education, school leaders continue to struggle to promote teachers' creativity development (Daly et al., 2014), despite the global recognition of creativity as a fundamental 21st-century capability (Organization for Economic Cooperation and Development [OECD], 2018).

Despite increasing scientific consensus that creativity is a developable skill attainable through deliberate practice (Sawyer, 2012), empirical research on how to effectively foster creativity within schools, particularly among teachers, remains limited (Adams et al., 2025; Da'as, 2023; Özdemir et al., 2024). Research has shown that effective school leadership can be key in supporting creative thinking (Vermeulen et al., 2022). Particularly, high-quality leader-member exchange (LMX), a good quality dyadic relationship between the principal and the teacher, can provide necessary emotional and intellectual support for the growth of creative thinking and acting (Adams et al., 2025; Basu & Green, 1997; Özdemir et al., 2024). LMX suggests that leaders cultivate unique and high-quality connections with each of their teachers, characterized by respect, loyalty, and participation (Yanheng et al., 2024), which can enhance team and individual creativity (Javed et al., 2019).

Developing novel ideas is not straightforward and may require complex thinking abilities. For example, teachers exhibit high levels of creativity when they successfully deal with contradictory situations with a strong paradoxical mindset (van Assen & Caniëls, 2022). According to Liu et al. (2020), a paradoxical mindset represents the degree to which people accept and are inspired by tensions and can be adopted to assist people in utilizing conflicts and developing innovative results. Liu et al. (2020) revealed that teachers' paradoxical mindset positively influences their creative actions. In addition, principal support for a paradox

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mindset is particularly important as it is likely to support experimenting with novel pedagogical strategies while also improving and scaling what already works, defined as ambidexterity (Papachroni & Heracleous, 2020). Therefore, paradoxical thinking is likely to create a conducive ground for ambidextrous behavior, which is increasingly recognized as a critical condition for sustained innovation in schools (Da'as, 2023; Wang et al., 2024)

Considering the link between paradox mindset and ambidexterity, this article focuses on how these constructs can mediate the relationship between LMX and teachers' creativity, as this line of research is lacking in organizational studies in general (Van Neerijnen et al., 2022) and in educational literature in particular (Da'as, 2023). In addition, literature aiming to understand the effect of leadership on people and organization tends to examine leadership roles and practice while there has been less concern for the impact of their relationship with followers (Einola & Alvesson, 2021). Through a variety of mediating mechanisms, research indicates that leader-member exchange (LMX) can be an essential driver for encouraging creativity among teachers (Guo et al., 2020; W. Pan et al., 2012). Yet, there is limited empirical evidence to reveal this mechanism. This is particularly pertinent to the Global South, with a notable absence of studies from countries in sub-Saharan Africa. For instance, the meta-analysis conducted by Rockstuhl et al. (2012) on the correlates of LMX with various outcome variables lacks any studies from this region. A systematic review by Lee et al. (2020) also clarifies that LMX has a particular influence on followers' creativity yet studies from sub-Saharan Africa are also lacking.

Studying this relationship is especially important in Nigeria, where fostering teacher creativity is critical for navigating uncertainty and resource constraints. LMX may help cultivate a paradox mindset among teachers, encouraging them to embrace competing demands such as stability and change, or compliance and experimentation. This, in turn, can support ambidextrous behavior, enabling teachers to engage in generating new teaching ideas and refining existing practices. In a context like Nigeria's, where educators often face systemic limitations such as political instability and economic issues (Omirin, 2015), understanding how LMX can nurture such innovative and adaptive capacities is essential for teachers to develop capacity for dealing with the problems.

Based on these gaps in the literature, this research explored the link between LMX and teachers' creativity using paradox mindset and ambidexterity as potential mediators within the context of social exchange and the paradox theories in Nigerian schools. Therefore, this research sought to answer the following overarching research question: What are the mediating roles of paradox mindset and individual ambidexterity in the relationship between leader-member exchange and teacher creativity in Nigerian schools?

Theoretical Background

This research use social exchange and paradox theories to provide an understanding of how a high-quality relationship between leaders and teachers could promote creativity in schools (Figure 1). Social exchange theory (SET) is a widely influential theory in social sciences, helping to understand social transactions and their impact on various factors (Ahmad et al., 2023). Cropanzano et al. (2017) suggest that SET involves sequential transactions often between two parties, whereby one party adjusts their behaviors based on the deeds of the other party. This exchange begins when one person acts positively or negatively toward another, prompting a corresponding reciprocal response (Cropanzano et al., 2017). The quality of this reciprocal interaction can lead to the development of high levels of information exchange, trust, respect, support, and mutual influence between the leader and follower (Bauer & Green, 1996), which often results in increased commitment, creativity, organization citizenship behavior, and retention (Mumtaz & Rowley, 2020).

Paradoxes in social theory can be used as opportunities for building theoretically consistent and diversified approaches by addressing tensions, oppositions, and contradictions (Poole & Ven, 1989). Paradox is a "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011, p. 386). It helps comprehend how to work with contradictions and oppositions (Poole & Ven, 1989). The paradox theory suggests co-existence and integration of the competing elements. Instead of taking an "either-or" perspective in case of competing demands or situations, it requires the adoption of a "both-and" mindset (Smith & Lewis, 2011). For example, exploration and exploitation are two competing individual behaviors that might lead to tensions and therefore paradoxes. The paradox theory

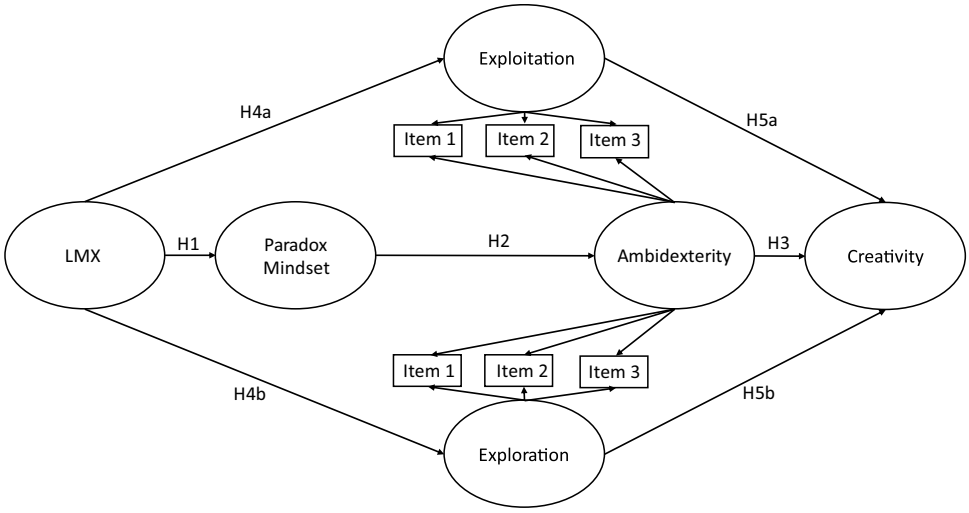

Figure 1. Conceptual model of the present study.

suggests the need to develop the capacity to embrace both behaviors simultaneously rather than preferring one over another (Miron-Spektor et al., 2018)

This study draws on paradox and social exchange theories to explore how LMX supports teachers in developing a paradox mindset, enabling them to balance exploitative and explorative behaviors for creative outcomes. Rooted in social exchange theory, LMX emphasizes reciprocal, high-quality relationships that foster mutual support and resource sharing (Andersen et al., 2020). Followers receive rewards for aligning with their leader's authority, forming a reciprocal leader – follower relationship (Erdogan & Liden, 2002). Strong dyadic exchanges create a safe space that encourages paradoxical thinking, helping individuals see tensions as natural and manage contradictions constructively (Miron-Spektor et al., 2018). This mindset is essential for navigating ambidexterity, which demands balancing exploration and exploitation (Boemelburg et al., 2023).

This study offers a novel theoretical contribution by integrating Social Exchange Theory with Paradox Theory to propose a sequential mediation model linking LMX to teacher creativity through paradox mindset and ambidexterity. While LMX has been widely associated with positive employee outcomes, its role in fostering a paradox mindset has not been theorized in educational contexts. By proposing that high-quality relationships with school leaders can encourage teachers to think paradoxically, this study extends Social Exchange Theory beyond its traditional relational outcomes to include deeper cognitive shifts (see Erdogan & Liden, 2002; Lyons & Scott, 2012). Furthermore, this article argues that this paradox mindset enables ambidextrous behavior, where teachers simultaneously pursue novel strategies and refinement of existing methods, a condition essential for sustained creativity (Figure 1). Unlike dual-path models of creativity that often treat exploration and exploitation as mutually exclusive or sequential (see Gupta et al., 2006; Rosing & Zacher, 2017), our model positions them as interwoven processes activated by paradoxical thinking. This specific pathway has not been empirically or conceptually developed in education literature. Therefore, this research represents a significant theoretical advancement in understanding how leadership can drive innovation within the growing complexity of school environments.

The following sections will introduce each concept in the model shown in Figure 1 and the theoretical grounds for the proposed associations.

Leader-Member Exchange

LMX refers to the dyadic interaction between the leader and follower that develops over time (Graen & Uhl-Bien, 1995), which can be defined as the quality of the dyadic relationship between the school principal and the teacher in an educational context (Daniëls et al., 2020; Flores et al., 2020; Huang & Yin, 2024; Özdemir et al., 2024; Vermeulen et al., 2022). Unlike the traditional understanding of leadership that leaders treat all their followers in the same way, LMX suggests that leaders vary in how they treat their followers through

different types of exchanges, resulting in various quality relationships between the leader and each follower within the same organization (Martin et al., 2016). A low LMX was linked to the employment contract and mainly includes economic exchanges based on the completion of work. In contrast, a high LMX reinforce followers' capability and willingness to perform at a high level (Martin et al., 2016). A high LMX relationship fosters trust, motivation, empowerment, job satisfaction, performance (Martin et al., 2016), creativity, commitment, organization citizenship behavior, and affective commitment, as well as lower levels of turnover intention (Mumtaz & Rowley, 2020). Research also found that this dyadic relationship between principals and teachers was positively related to teacher innovative behavior, self-efficacy, and emotional labor (Flores et al., 2020; Huang & Yin, 2024; Vermeulen, 2022).

LMX has primarily been studied in Western contexts, which differ culturally and structurally from Nigeria. In Nigeria, the high-power distance and centralized authority foster a top-down, managerial leadership style (Bush & Glover, 2016). Despite this, the country's collectivist culture encourages close, supportive relationships between school leaders and teachers (Beycioglu et al., 2019). Thus, while LMX may manifest differently in Nigeria, it remains a useful framework for enhancing teacher behavior and practices in this cultural setting.

Teacher Creativity

Amabile (1988) defines creativity as "the production of novel and useful ideas by an individual or small group or individuals working together" (p. 126). This definition highlights two points. First novel ideas could be a product of an individual or a group, suggesting that creativity could be examined individually and collectively. The second point concerns creativity's novelty and usefulness aspect (Harvey & Berry, 2023). Novelty is closely related to fluency, the number of ideas (fluency), the extent to which ideas fall into different categories (flexibility) and originality (uniqueness of ideas from others). In contrast, usefulness discerns creative ideas from crazy and bizarre ones, requiring them to be relevant to the problem at hand or acceptable within the standards of a given domain (Harvey & Berry, 2023).

The present research focus specifically on teacher creativity, which refers to teachers who bring together and integrate multiple and various "educational theories, stances, and models" regarding teaching and learning in novel ways to cater to the needs of each unique learner (Bramwell et al., 2011). Creative teachers are intellectual risk-takers who develop novel teaching practices, meaning they are open to failure by showing a willingness to try new ideas and approaches in their classrooms (Adams et al., 2025; Da'as, 2023). Trying new practices allows teachers to use alternative novel approaches and to discover the ones that work or are useful (Henriksen & Mishra, 2013). However, in Nigeria, political instability undermines teacher creativity by causing resource shortages, frequent policy changes, and restrictions on curriculum content (Omirin, 2015). These factors limit teachers' freedom to innovate and discourage them from addressing sensitive topics, ultimately stifling creative teaching practices.

Paradox Mindset

When faced with conflict, individuals tend to resolve tension by choosing one option over another, which may yield short-term gains but leaves underlying issues unresolved (Gaim et al., 2022; Miron-Spektor et al., 2018; Smith & Lewis, 2011). In contrast, a paradox mindset embraces tensions as opportunities for growth, adaptability, and long-term sustainability. This mindset differs from traditional or contingency approaches by valuing the coexistence of opposing demands (Gaim et al., 2022). The paradox mindset refers to the thinking approach of those who "tend to value, accept, and feel comfortable with tensions and see tensions as opportunities, confront them, and search for both/and strategies" (Miron-Spektor et al., 2018, p. 27). A paradox mindset concerns individuals who accept, embrace, and are energized by the tension led by contradictory ideas (Larocca, 2023), requiring them to navigate and managing tensions rather than attempting to resolve them (Rubin et al., 2023) because tensions can offer opportunities for creative solutions (Rubin et al., 2023). A paradoxical mindset, therefore, allows for unlocking the positive potential of tensions (Miron-Spektor et al., 2018). It can reduce the tensions associated with conflicting, interdependent and persistent demands, support the development of creative ideas and innovative work behavior (Liu et al., 2020), and enable resilience and long-term sustainability of achieved outcomes (Smith & Lewis, 2011).

While research is scarce on teacher paradoxical mindset, there is a high need for this cognitive ability. Ben-Peretz and Flores (2018) argue that teachers need to navigate the growing tensions in education between externally imposed accountability and the exercise of professional autonomy. Therefore, paradoxical thinking enables teachers to reconcile competing demands in increasingly multicultural and outcome-driven school environments, such as delivering standardized content while addressing diverse student needs, without sacrificing their core professional values. This mindset supports teacher agency, promotes adaptability, and helps sustain ethical and innovative teaching practices amid policy pressures and cultural complexity.

Exploitation

Exploitation refers to engagement in behaviors associated with already discovered states (Aston-Jones & Cohen, 2005), routine activities, and utilizing available knowledge (Mom et al., 2009). It involves "selecting, implementing, improving and refining existing certainties" (Mom et al., 2007, p. 910) to optimize task performance (Mu et al., 2022) to enhance efficiency through stabilization (March, 1991). Exploitation-oriented individuals focus on familiar tasks, drawing on past experience to refine well-learned actions while filtering out novel or disruptive information to maintain task focus (Good & Michel, 2013; Rosing & Zacher, 2017). Based on research on organizational behavior, teacher exploitation can refer to behaviors focused on refining, applying, and maximizing available knowledge, skills, and teaching practices to enhance effectiveness in the classroom (Da'as, 2023; Özdemir et al., 2024) suggests that this is related to feedback learning that supports continuity, for example, learning transfer from the organization to teams and individuals.

Exploration

Exploration involves risk-taking and experimenting with new alternatives (March, 1991). When exploring, individuals deviate from routines, implement something new, and do not rely on established knowledge (Rosing & Zacher, 2017). They discover and try out new ideas and knowledge and engage in flexible and innovative behaviors (Mu et al., 2022). Their actions are characterized by seeking alternatives and disengagement from the existing task (Mu et al., 2022). In education, this refers to experimenting with new teaching methods, i.e., integrating innovative technologies, trying new instructional strategies, and adapting teaching practices to meet diverse student needs. In this process, teachers generate new ideas based on their intuition and interpretations, contribute these ideas to their team's collective knowledge, and eventually, this shared knowledge becomes embedded in the school's routines or organizational culture (Da'as, 2023).

Ambidexterity

Paradox theory provides a framework for understanding how tensions coexist and can be productive if managed effectively (Hahn & Knight, 2021). For example, both exploration and exploitation are required for organizations to achieve their desired goals, referring to organizational ambidexterity (Clauss et al., 2021; Good & Michel, 2013; March, 1991; O'Reilly & Tushman, 2008). The concept can be examined at the organizational and individual levels (Rosing & Zacher, 2017). The present article is interested in the individual level. At the individual level, "ambidexterity is an individual's behavioral capacity to engage in and alternate between opposing task elements" (Kauppila & Tempelaar, 2016, p. 1022). It necessitates integrating and balancing the two dimensions (exploration and exploitation) to effectively address the needs associated with a changing environment (Fourné et al., 2019). This can be achieved through their dynamic capability of producing new ideas and practices and using available assets simultaneously (O'Reilly & Tushman, 2008). For instance, teachers can experiment with innovative teaching strategies they have developed or learned from others while integrating these approaches with traditional methods, such as lecturing, to enhance their overall effectiveness (Bingham & Burch, 2019). Due to ongoing policy changes and political tensions, developing such abilities is critical in the Nigerian educational context. An unstable environment might allow teachers more opportunities to explore new teaching practices more often than usual to adapt to the changing conditions and student needs (Pietsch et al., 2023).

Clauss et al. (2021) noted that while exploration and exploitation make sense individually, combining them creates tension due to their contradictory nature, making it challenging to excel at both. Ambidexterity involves managing these tensions by balancing the demands of both dimensions (Good & Michel, 2013). In this regard, literature offers multiple perspectives on the possibility of the existence of both dimensions. Some researchers opposed the idea that both dimensions would create tension in the first place, suggesting that the two can be viewed as orthogonal and, therefore, both can be achieved simultaneously (Gupta et al., 2006). For example, as an exploration action, a teacher can learn a new practice from their colleagues. At the same time, the teacher can learn from their own experiences, which can be characterized as exploitation. A second perspective involves the sum approach, characterized by the joint effect of both dimensions. This means a compensatory balance, where higher degrees of both dimensions indicate high ambidexterity actions and a stronger aspect could compensate for a weaker one (Rosing & Zacher, 2017). Despite multiple perspectives, a systematic review reported that most available studies viewed exploration and exploitation as two orthogonal dimensions, while only one paper measures individual ambidexterity from a continuum (Pertusa-Ortega et al., 2021). Although empirical evidence from educational research remains limited, it suggests that ambidexterity can take various forms (Pietsch et al., 2022), is context-dependent (Pietsch et al., 2023), and may influence outcomes such as teacher creativity (Da'as, 2023), innovation (Dedering & Pietsch, 2025; Pietsch & Mah, 2024), and student achievement (Pietsch et al., 2025).

Hypotheses

LMX and Teachers' Paradoxical Mindsets

A paradoxical mindset is a malleable personal trait that can be influenced and changed through external factors, including leadership behaviors (Tan et al., 2024). When the dyadic relationship between the leader and follower is low-quality, the follower might develop a sense of suspicion about support. Therefore, they will prefer to remain more formal and limit themselves to the scope of work and show less willingness to deal with complexity (Yan et al., 2024). On the other hand, a good relationship emphasizes mutual trust, respect, and obligation between leaders and followers (Graen & Uhl-Bien, 1995), which provides psychological safety and support, allowing teachers to engage with seemingly contradictory demands that involve high risk (Rubin et al., 2023). Moreover, high-quality relationships provide followers greater autonomy and decision-making authority (Graen & Uhl-Bien, 1995). This enhanced sense of agency is a critical foundation for paradoxical thinking, as individuals with higher autonomy are more likely to tolerate ambiguity, embrace contradictions, and integrate opposing demands constructively (Schädeli, 2024).

While there is a lack of research examining the LMX and paradoxical mindset in education, based on these theoretical arguments (Graen & Uhl-Bien, 1995; Rubin et al., 2023; Schädeli, 2024), this article suggests that a good relationship between the principal and teachers could support paradoxical thinking. Particularly, Nigeria's political instability and constant educational policy changes create uncertainty and conflicting expectations for educators (Omirin, 2015). Under such circumstances, a good relationship with the principal offers teachers psychological safety that empowers teachers to engage more constructively with contradictory demands. Therefore, it is hypothesized that:

H1: LMX positively affects teachers' paradox mindsets.

Paradox Mindset and Teachers' Ambidextrous Behavior

A highly paradoxical mindset could help teachers manage explorative – exploitative behavior and excel despite working under high-tension conditions (Ben-Peretz & Flores, 2018). Ambidexterity requires individuals to combine exploration that increases their action repertoire, new practices, and exploitation that encourages the use of existing knowledge (Rosing & Zacher, 2017). This task poses a paradox (Van Neerijnen et al., 2022). Teachers often have to face such paradoxes in their daily work as they have to deal with increased pressure of accountability and maintain their autonomy to adapt to the diverse needs of students, requiring a mindset that can handle tensions (Ben-Peretz & Flores, 2018). Boemelburg et al. (2023) suggested that

a paradoxical mindset could moderate the paradoxical tensions associated with exploration and exploitation and optimize their influence on performance. Paradoxical cognition capability might diminish the risk of using established cognitive frames because those individuals see tensions as opportunities and accept, value and feel comfortable with them (Lewis, 2000). Such ability might undermine linear thinking, which helps individuals effectively navigate through situations whereby individuals need to switch between exploration and exploitation tasks over time (Papachroni & Heracleous, 2020). Therefore, it is proposed that

H2: A paradox mindset of teachers affects their ambidextrous behavior.

Individual Ambidexterity and Teacher Creativity

Individuals need both exploration and exploitation to become creative (Harada & Xin, 2020). An ambidextrous person must face the tensions of balancing and simultaneously demonstrating both explorative and exploitative behaviors, which refers to a dynamic capability of producing new ideas and making use of the available ones (O'Reilly & Tushman, 2008). This ability can enhance the capacity of teachers for producing novel ideas (Da'as, 2023). Producing original ideas is highly associated with the exploration dimension (Wang et al., 2024) which requires risk-taking, experimenting with new alternatives (March, 1991) deviating from routines, and implementing something new (Rosing & Zacher, 2017). In addition, exploitation that implies individuals effectively using their current knowledge and pursuing efficiency can be related to usefulness (Gupta et al., 2006) as a key aspect of creativity (J. Zhou & George, 2003). However, both dimensions suggest contradictory action strategies and need to be integrated to produce novel ideas (Gebert et al., 2010), particularly in education, where teachers navigate through externally imposed accountability and exercise professional autonomy (Ben-Peretz & Flores, 2018). Therefore, teachers need to engage in a high level of exploration and exploitation activities to deal with the complexity of the school environment by developing and implementing innovative ideas for teaching (Da'as, 2023). Therefore, it is hypothesized that

H3: Teachers' ambidexterity positively affects their creativity.

LMX and teachers' Exploration and Exploitation Behaviors

During exploration activities, employees tend to seek out new knowledge that they did not know before (Mu et al., 2022). This is characterized by radical learning (Tushman & O'Reilly, 1996). On the other hand, an exploitative behavior may stem from learning from their own action (Gupta et al., 2006), referring to more incremental learning (Tushman & O'Reilly, 1996). Leadership can facilitate both types (Keller & Weibler, 2015; Özdemir et al., 2024). Jansen et al. (2009) argued that the quality of leader – employee interactions can guide employees toward either exploitative or explorative behaviors. High-quality relationships enable leaders to promote both stability and innovation by modeling a broad range of behaviors. Such relationships also foster intrinsic and extrinsic motivation, which drive explorative and exploitative actions, respectively (Pandey & Sharma, 2009). In education, these arguments were partly supported by Özdemir et al. (2024) investigating the role of LMX and ambidexterity in the Turkish education context. They found that the quality of the dyadic exchange with the school principal was positively related to engagement in the exploration activities of those teachers, stressing that interpersonal communication matters in complex contexts like schools. Hence, in this study, it is hypothesized that

H4a,b: LMX positively relates to both exploration and exploitation

Exploration and Exploitation Behaviors and Teachers' Creativity

Both exploitation and exploration are key traits of employees that could lead to creativity in companies (Wang et al., 2024) and in educational organizations (Da'as, 2023). Exploitation could still support creative

teaching by encouraging employees to narrow their attention and concentrate strongly on the task at hand (Good & Michel, 2013). This high level of concentration through existing knowledge might support the improvement of current action (Rosing & Zacher, 2017) and even the development of new ideas and solutions because high concentration means strong mental dedication to the tasks, which is likely to bring about flexibility and divergence from established processes. Exploration, on the other hand, is even more closely related to creative employee behaviors. Explorative action involves actively taking risks, experimenting with new ideas, and seeking new knowledge (March, 1991) instead of relying on established practices or knowledge (Rosing & Zacher, 2017). Investigating the role of exploration and exploitation in Israeli schools, Da'as (2023) found that these behaviors can provide teachers with the necessary support for developing novel ideas. Therefore, in the present study, it is hypothesized that:

H5a,b: Both exploration and exploitation positively relate to teacher creativity

The Mediating Role of Ambidexterity and Paradox Mindset in the Relationship Between LMX and Teacher Creativity

Finally, considering the direct effect hypotheses above, several indirect hypotheses could also be proposed:

H6a: LMX will be indirectly related to teacher creativity through exploitation.

H6b: LMX will be indirectly related to teacher creativity via exploration.

H6c: LMX will be indirectly related to teacher creativity through Ambidexterity and Paradox mindset.

H6d: Paradox mindset will be indirectly related to teacher creativity via ambidexterity.

Methods

This study is based on the cross-sectional survey design. The following sections describe the study site, sample, data collection, measures, and data analysis procedures

Context and Background

This research was carried out in Nigeria. Nigeria is a country in western Africa with a varied topography that includes arid and humid equatorial climates. Its people are the most diverse aspect of the country, speaking hundreds of languages including Yoruba, Igbo, Fula, Hausa, Edo, Ibibio, Tiv, and English. The nation is rich in natural resources, particularly substantial deposits of natural gas and petroleum. The Federal Ministry of Education is in charge of overseeing education in Nigeria. The implementation of state-controlled policies pertaining to public education and state schools falls under the purview of local authorities. Kindergarten, Primary, Secondary, and Tertiary education are the four segments of the education system. Since Nigeria's declaration of independence from Britain, instability has characterized the country's federal administration, making it difficult to properly implement a cohesive set of education policy.

Nigeria's education system is characterized by regional variations in financing, curriculum, and quality. At the moment, Nigeria has the greatest number of youths learning outside of schools worldwide. Nigerian students have two options for their educational systems: public, where they only have to pay for the Parents Teachers Association (PTA), and private, where they must also pay for extracurricular activities, sports, exams, computers, and other expensive costs. English is the language of instruction in Nigerian schools. Nigerian school leadership has numerous problems due to the political sway and authority of the state government (Ikegbusi et al., 2016; Ogunode et al., 2023). Politics in the field of education was mostly centered on godfatherism and quota systems, which had a negative impact on the nation's educational

leadership and made progress in science, technology, and socioeconomics more slowly. In many states, the ministry or commission in charge of education appoints school heads. Every Minister or Commissioner for Education is a politician, and when they make an appointment, they always consider the interests of their party.

Sample and Data Collection

In the spring of 2023, N = 1406 Nigerian teachers nested in 146 schools participated in this cross-sectional study. Paper and pencil surveys were employed for data collection. This entailed the project team members conducting on-site visits to the schools, distributing the questionnaires, and subsequently collecting them. Participants were selected using a purposive sampling technique to allow the researchers to sample only teachers of schools without serious security problems because Nigeria is currently facing many security threats (e.g., kidnapping, human trafficking, and urban violence). Distribution of the participants based on state followed; Benue State (144 [9.6%]), Ebonyi State (146 [9.8%]), Kogi State (132 [8.8%]), Akwa-Ibom State (146 [9.8%]), Enugu State (120 [8%]), Anambra State (266 [17.8%], Federal Capital Territory (288 [19.3%], Delta State (110 [7.4%]) and Ogun State (54 [3.6%]). Furthermore, 50.6% of respondents were female and 49.4% were male. Sixty-six (45.2%) schools were located in the urban area, while 80 (54.8%) were in the rural area. Forty-four (30.1%) schools were located in low socioeconomic status areas, 54 (37%) schools were in middle socio-economic status areas and 58 (38.7%) schools were in high socio-economic areas.

Measures

Leader Member Exchange (LMX, ω = .899). LMX was captured with Graen and Uhl-Bien's (1995) seven-item scale. All items are coded on 5-point Likert-type scales. An example item is "How well does your principal recognize your potential?," coded from 1 (Not at all) to 5 (Fully). Another example item is "I have enough confidence in my principal that I would defend and justify his or her decision if he or she were not present to do so.," also coded from 1 (Stongly Disagree) to 5 (Strongly Agree).

Paradox Mindset (PMS, ω = .963). Teachers' paradox mindsets were assessed with a nine-item scale provided by Miron-Spektor et al. (2018). This unidimensional scale measures the extent to which individuals accept, embrace, and are energized by the tension caused by conflicting demands and ideas. All items were measured on a 4-point Likert-type scale, coded from 1 (strongly disagree) to 4 (strongly agree). An example item is „Accepting contradictions is essential for my success."; an other example item is „I feel uplifted when I realize that two opposites can be true."

Exploitation (EXL, ω = .816). Teachers' exploitation activities were measured by applying three items developed by Pietsch et al. (2022, 2023). These items intend to capture exploitation in the context of organizational learning, as defined by March (1991), on the individual level, following Mom et al. (2009). Accordingly, items asked teachers about their exploitation activities during the previous year (base question: "To what extent did you, during the last 12 months, engage in work-related activities that can be characterised as follows?"). All items were measured on a 4-point Likert-type scale, coded from 1 (to a very small extent) to 4 (to a very large extent). An example item is „Activities which you carry out as if it were routine".

Exploration (EXP, ω = .667). Teachers "exploration activities were measured based on the same works as teachers" exploitation. Consistent with this, all items were measured on a 4-point Likert-type scale, coded from 1 (to a very small extent) to 4 (to a very large extent). An example item is „Activities requiring quite some adaptability of you".

Teacher Creativity (TCR, ω = .919). Teachers' creativity in the workplace were measurd with three items adopted from J. Zhou and George (2001) creative behavior scale. All items were answered on a 4-point Likert-type scale (1 = strongly disagree, 4 = strongly agree). An example item is "I exhibit creativity on the job when given the opportunity to."

Data Analyses

The MPLUS 8.9 software (Muthén & Muthén, 2017) was used for data covariance-based analyses, with confirmatory factor analyses (CFAs) and structural equation models (SEMs) subsequently estimated.

A maximum likelihood estimation with robust (Huber-White) standard errors (MLR) was employed, and cluster-robust standard errors were requested through TYPE = COMPLEX, since teachers were nested within schools.

The standardized root mean square residual (SRMR) and the comparative fit index (CFI) were estimated to examine the goodness-of-fit of the basic path model, using the cutoffs for SRMR and CFI as .08 and .90, respectively (Hu & Bentler, 1999). However, the root mean square error of approximation (RMSEA) was ignored since it is sensitive to the method implemented to estimate the model parameters and does not work well with ordinal indicators (Shi & Maydeu-Olivares, 2020). In addition, the robustness of the mediation effects was examined through bootstrapped mediation analysis, providing 95% bias-corrected bootstrap confidence intervals with 1,000 bootstrap replications as suggested by Hayes (2018) and Preacher and Hayes (2008). Indirect effects are significant if the 95% confidence intervals (95% CIs) do not include zero (Hayes, 2018).

Because the data is from a single instrument, the common variance was examined by loading all items used in the analyses on a single unrotated factor as recommended by Harman (1960). The method bias in model estimates is highly unlikely if the estimated value is lower than 50% (Lance et al., 2010). The estimates indicated that the common variance is 21.4%, indicating no concern for method bias.

To examine the convergent and discriminant validity of the model and its constructs, the researchers followed the best-practice recommendations provided by Cheung et al. (2024). Specifically, the average variance extracted (AVE) for each construct (Fornell & Larcker, 1981), with an AVE ≥ .50 indicating sufficient convergent validity (Hair et al., 2010). Furthermore, 90% confidence intervals (CIs) were estimated for all correlations between constructs, applying a bootstrap procedure with 1,000 replications. Discriminant validity is supported when the lower bound of a correlation's CI does not exceed r = .70 (Cheung et al., 2024).

Finally, a full information maximum likelihood approach (FIML) was used to handle missing data because of a low percentage of missing data (5.8%).

Results

Table 1 demonstrates the results of the descriptive statistics. The mean results showed relatively high values in all variables with three scales above three. LMX (M = 3.69, SD = .83), teacher creativity (M = 3.36, SD = .66), and exploitation (M = 3.14, SD = .65). However, exploration was relatively low (M = 2.92, SD = .57), indicating that exploitation activities were relatively more common than exploration activities among teachers. In addition, all variables in the model were significantly correlated with each other ($p < .05$), ranging from the highest correlation between Exploration activities and Creativity (r = .908) and the smallest between LMX and Paradox Mindset (r = .673).

In a next step, the potential presence of multicollinearity was investigated by predicting the latent variables paradoxical mindset, exploration, exploitation, and teacher creativity with the independent and mediating variables in a linear regression model. The variance inflation factor values (VIF) for all relationships were lower than 1.20, which is considered excellent (Grewal et al., 2004; Kline, 2023). Additionally, the average variance extracted (AVE) supported the convergent validity of the investigated constructs: LMX (AVE = .687), paradoxical mindset (AVE = .589), exploitation (AVE = .664), exploration (AVE = .513), and teacher creativity (AVE = .713). Discriminant validity was also supported, as none of the 90% confidence intervals (CIs) for the correlations exceeded r = .70. The highest value was observed for the correlation

Table 1. Descriptive statistics and model fit indices.

	M	SD	LMX	PMS	EXL	EXP	TCR
LMX	3.69	.83	1				
PMS	2.91	.60	.673	1			
EXL	3.14	.65	.708	.763	1		
EXP	2.92	.57	.728	.729	.855	1	
TCR	3.36	.66	.776	.731	.708	.908	1

Note: All correlations are significant at $p<.05$. LMX = Leader-Teacher Exchange; PMS = Paradox mindset; EXL = Exploitation; EXP = Exploration; TCR = Teacher Creativity.

between exploration and teacher creativity, with the lower bound of the 90% CI at r = .633, and thus clearly below the threshold.

For the SEM, the researchers modeled both LMX and teachers‘ paradox mindsets as unidimensional constructs. Both measurement models demonstrated excellent fit to the data, with fit values for LMX being CFI = .984 and SRMR = .023 and for the paradox mindset scale being CFI = .987 and SRMR = .023. Because only three items measured teacher creativity, the researchers did not report fit indexes, as those will demonstrate perfect fit to the data, due to a just identified model. A detailed overview of the measurement model properties is presented in Table 2.

To examine the combined effects of exploration and exploitation, and hence assess teachers' individual ambidexterity, the construct was conceptualized using a bi-factor model. Bi-factor models hypothesize the co-existence of a general factor accounting for shared variance between facets, i.e., "orthogonal specific factors that each exert unique effects on outcomes, over and above the general factor" (Rockstuhl & Van Dyne, 2018, p. 126). In this case, exploitation and exploration are the facets, and ambidexterity is the general factor. In conceptual terms, the measure of ambidexterity, thus, aligns with the concept of ambidexterity as the sum of exploitation and exploration (Pietsch et al. 2022; Rosing & Zacher, 2017). This approach streamlines the understanding of exploration and exploitation as two interdependent and compensatory elements. While high levels of exploration and exploitation are essential for achieving high ambidexterity, each can offset lower levels of the other. Consequently, since the common variance of the exploration and exploitation items is partialized out by the common factor, i.e., ambidexterity, this procedure allows us to simultaneously examine the individual effects of these two constructs as well as the construct of ambidexterity.

To evaluate the quality of the bi-factor measurement model, the researchers followed Reise et al. (2013) and computed the percentage of uncontaminated correlations (PUC), explained common variance (ECV), and hierarchical Omega (OmegaH), utilizing the R package BifactorIndicesCalculator (Dueber, 2021). PUC quantifies the number of correlations among items that can be attributed to the general factor. ECV represents the proportion of variance among all items that can be attributed to each factor. OmegaH assesses the proportion of systematic variance in total scores that can be attributed to individual differences on the general factor (Rodriguez et al., 2016). As noted by Reise et al. (2013), the PUC is particularly useful in determining the legitimacy of forcing actual bifactor data into a unidimensional measurement model. Thus, if PUC ≥ 0.80, modeling uni-dimensionality is supported; if PUC ≤ 0.80, then ECV should be ≥0.60 and omegaH should be ≥0.70 for the general factor to support uni-dimensionality (Reise et al., 2013). In this case, PUC was 0.60, ECV was 0.82 and OmegaH was 0.80, indicating that the ambidexterity construct has some multidimensionality (the general factor accounted for 82% of the common variance of the ambidexterity items, whereas 18% of the common variance was distributed across the exploration and exploitation facets), suggesting that a bi-factor model may be a suitable approach to the data (Reise et al., 2013; Rodriguez et al., 2016). This measurement model demonstrated excellent fit to the data too (CFI = 1.000 and SRMR = .021). In this measurement model, the common variance was partialed out. Consequently, the correlations between the variables of exploitation and exploration, and the other variables in the structural equation model, fell well below r = .80 in each case. The latent correlations between ambidexterity and the other constructs were r = .713 for creativity, r = .712 for paradoxical mindset, and r = .485 for LMX, respectively. Thus, while ambidexterity is highly related to teachers "creativity, paradoxical mindset, it is moderately related to LMX. This implies that ambidexterity plays significant roles in the teachers" creativity, paradoxical mindset, and LMX.

Table 2. Measurement Model properties.

	No. Items	ω	AVE	CFI	SRMR
LMX	7	.899	.687	.984	.023
PMS	9	.963	.589	.987	.023
EXL*	3	.816	.664		
EXP*	3	.667	.513		
TCR*	3	.913	.713		

Note: *just identified model.

Table 3. Standardized direct effects with confidence intervals, variance explained, and effect sizes.

Parameter	β	SE	95%-CI	*p*	R^2	ES
Ambidexterity - > Teacher Creativity	.438	.133	[.052–.544]	< .000	.872	.500
Exploitation - > Teacher Creativity	.309	.124	[.165–.747]	< .000		.295
Exploration - > Teacher Creativity	.428	.111	[.324–.852]	< .000		.077
LMX - > Exploration	.685	.201	[.098–.989]	< .000	.469	
LMX - > Exploitation	.889	.311	[.263–.844]	< .000	.790	
Paradox mindset- > Ambidexterity	.712	.264	[.145–.871]	< .000	.507	
LMX - > Paradox mindset	.682	.261	[.156–.857]	< .000	.465	

Structural Equation Model (SEM)

The researchers started estimating the direct effects and developed an SEM to investigate the interrelationships between Teacher Creativity, Exploration, Exploitation, Ambidexterity, and Paradox Mindset. Effect sizes (ES) were estimated following Flora et al. (2025) by constraining the effect(s) of the focal explanatory variable to zero and comparing the R^2 values of the restricted and unrestricted models. We report this difference, which reflects the proportion of total explained variance uniquely attributable to the focal explanatory variable – that is, the amount of variance this variable explains beyond the contributions of all other variables in the model. This applies only to the endogenous variable *Creativity*, as all other constructs are predicted by a single explanatory variable only.

The SEM focused only on direct effects and therefore doesn't include the mediation effects. The results of the SEM (Table 3) showed evidence of a good fit of the proposed model to the data (CFI = .968, SRMR = .035). The estimation of the standardized regression coefficients yielded the following results: Ambidexterity - > Teacher Creativity (β = .438, p < .000); Exploitation - > Teacher Creativity (β = .309, p < .000); Exploration - > Teacher Creativity (β = .428, p < .000); LMX - > Exploration (β = .685, p < .000); LMX - > Exploitation (β = .889, p < .000); Paradox mindset- > Ambidexterity (β = .712, p < .000); LMX - > Paradox mindset (β = .682, p < .000). Because all relationships in the direct effect model are significant, the researchers confirm all hypotheses from H1 to H5, with effect sizes ranging from moderate to high. The model variables account for 87.2, 46.9, 79,0, 50.7, and 46.5% of the explained variance in Teacher Creativity, Exploration, Exploitation, Ambidexterity, and Paradox Mindset, respectively. This means that teachers' creativity is largely dependent on their ambidexterity, while their exploitation, exploration, and paradox mindset are dependent on LMX. On the other hand, paradoxical mindset of teachers determines their ambidexterity.

Mediation Analysis

In the second step, the researchers developed a second SEM by employing a bootstrapping procedure with 1,000 replications to generate total indirect effects, the sum of all indirect and partially indirect effects (Preacher & Hayes, 2008). The analysis results (Table 4) showed a significant total indirect effect of LMX (β = .780, 95% CI [.351, .900], p < .000) on teacher creativity. The partially indirect effects via Exploration (β = .293, 95% CI [.121, .371], p < .000) and via Exploitation (β = .274, 95% CI [.102, .333], p < .000) were also significant. However, the specific indirect effect through both Ambidexterity and Paradox Mindset together (β = .212, 95% CI [.002, .341], p = .066) was significant only in one-tailed test. Moreover, the indirect effect of Paradox Mindset on Teacher Creativity via Ambidexterity (β = .312, 95% CI [.009, .414], p < .05) was

Table 4. Standardized indirect effects with confidence intervals.

			95% Confidence Intervals		
Parameter	Estimate	SE	Lower	Upper	p
LMX - > Exploration - > Teacher creativity	.293	.069	.121	.371	< .000
LMX - > Exploitation - > Teacher creativity	.274	.060	.102	.333	< .000
LMX - > Paradox Mindset - > Ambidexterity - > Teacher creativity	.212	.115	.002	.341	> .050
Paradox Mindset - > Ambidexterity - > Teacher creativity	.312	.138	.009	.414	< .050
Total Mediation Effect	.780	.207	.351	.900	< .001

significant with a moderate effect. None of the 95% confidence intervals contained a value of zero, so all mediation effects can be considered relevant (Hayes, 2018).

These findings mean that high-quality relationships between principal and teachers are more likely to foster a paradox mindset among teachers. These relationships, in turn, encourage employee creativity by offering a nurturing and empowering atmosphere. Similar to this, leaders who are ambidexterous – that is, who strike a balance between exploration and exploitation – are more likely to cultivate LMX connections of the highest quality.

Discussion

The present research explored the link between LMX and teachers' creativity as well as the mediating roles of paradox mindset and ambidexterity in such a relationship in an under-researched context. The research showed that LMX had a significant positive direct effect on teacher creativity, exploration, exploitation, ambidexterity, and paradox mindset. These findings suggested that a high-qualtity LMX leads to better teachers' creativity as well as their ambidexterity (exploration, exploitation) and paradox mindset. These findings strengthened the tenets of social exchange and paradox theories. Social exchange theory posits that social exchange relationships determine team creativity. Social exchange interactions (support from supervisors and coworkers) positively predict employees' energy levels, which in turn leads to higher levels of creative work involvement (Ahmed, 2017). In the same vein, paradox theory, which is a specific method of handling oppositions, presents a dynamic equilibrium model of organization that illustrates how cyclical reactions to paradoxical tensions promote sustainability and may result in peak performance now that will help future success (Smith & Lewis, 2011). Buttressing these findings, Liao et al. (2010) discovered that LMX had a significant effect on team members' creativity. In essence, a leader fosters the positive correlation between their team members' paradox mindset and their ability to thrive at work, which in turn influences their creative thinking (Rubin et al., 2023). The present findings are consistent with previous research that highlights the critical role that LMX plays in shaping employees (Lee et al., 2020) and, especially, educators' creativity (Javed et al., 2019).

The findings also indicated that teachers' exploration, exploitation, and paradox mindset had significant direct effects on their creativity. In line with that, teachers likely maintain high levels of creativity even when faced with paradoxical conflicts and inconsistencies in their job because of their excellent exchange relationship with their leader (van Assen & Caniëls, 2022). According to Liu et al. (2020), teachers' creative acts are positively influenced by their paradoxical attitudes. Research indicates that a paradox mindset influences people's perception and understanding of paradoxical tensions and moderates the effects of paradoxical tensions, such as exploration and exploitation, on performance (Boemelburg et al., 2023). In related research, it has been found that employees' creativity and ambidexterity are significantly correlated (Yang & Yang, 2020). People can achieve ambidexterity by using single, cognitively complex solutions that allow them to alternate between exploring and exploiting tasks throughout time (Papachroni & Heracleous, 2020). Despite that psychological safety and role clarity, both explained indirect impacts on voice and innovation, LMX seems to be a major mediator in the relationship between performance, OCB, and creativity (Lee et al., 2023). According to Wang et al. (2024), pursuing efficiency and other exploitative behaviors increases creativity and exploratory exercises like figuring out, coming up with, and trying out various solutions for work-related issues might inspire workers to come up with more original ideas. Furthermore, the data indicate that teachers' paradox mindset had a significant direct effect on their ambidexterity. This finding agrees with the finding of Papachroni and Heracleous (2020) who indicated that paradoxical behaviors that renegotiate or transcend boundaries of exploration and exploitation can help individuals achieve ambidexterity. In line with this finding, Rosing and Zacher (2017) found that ambidexterity differs from person to person over time and is positively correlated with variations in a person's ability to innovate over the course of days and weeks.

The mediation analysis revealed that both the paradox mindset and ambidexterity of teachers significantly explain the relationship between LMX and their creativity. This is an indication that the link between LMX and teachers' creativity is mediated by variables like paradox mindset and ambidexterity of the teachers. Thus, a more pronounced paradox mindset and ambidexterity are related to a better relationship between LMX and teachers' creativity. A significant mediation effect was discovered in a related study

involving psychological characteristics that acted as mediators in the connection between LMX and creative work behaviors (Bibi & Afsar, 2018). According to Miron-Spektor et al. (2011), participants who developed paradoxical attitudes were more creative than those who invoked "either/or" thinking rather than a "both/and" mindset. Also, research has shown that paradoxical leadership positively influences team members' individual inventiveness through ambidexterity, and positively influences team invention through ambidexterity within the team (Zhang et al., 2022). Buttressing this finding, van Assen and Caniëls (2022) revealed that people with a paradoxical attitude are aware of and accept the inconsistencies that are present in invention. Thus, such people see creativity and application as enhancing or even strengthening aspects of innovation. These findings are in line with those from other world regions and disciplines.

Three things stand out in this study: First, the researchers found that teachers' exploration and exploration yield specific effects on their creativity that go beyond those of ambidexterity. This finding was made possible by the utilization of a bi-factor model for the modeling of one of the central constructs. As in other studies (Junni et al., 2013), the effects of ambidexterity and exploration on performance, in this case creativity, are more pronounced than those of exploitation. This finding, however, indicates that exploration and exploitation are two distinct factors that contribute to creative behavior in the workplace independently. The findings therefore demonstrate that, contrary to the prevailing assumptions made by Gupta et al. (2006), these two facets do not necessarily have to be orthogonal *or* ambidextrous. Rather, they can in fact be both orthogonal and ambidextrous at the same time. Second, although scholars have long advocated for a deeper investigation of individual ambidexterity through a paradox lens (Papachroni & Heracleous, 2020; Papachroni et al., 2015), empirical findings addressing this topic remain scarce. Although there are now a few studies on the subject (Boemelburg et al., 2023; Wang et al., 2024; N. Yang et al., 2024), only one has yet investigated the influence of a paradox mindset on ambidextrous behavior of employees (Liu & Zhang, 2022). Remarkably, this study partly uses similar scales to measure mindset, ambidexterity, and performance in four Chinese provinces (whereby leadership is not investigated). The findings of both studies are largely consistent: the mindset has an influence on ambidexterity, which in turn affects creativity and innovation. Thus, there are now two studies from completely different regions of the world, indicating that the ability to manage paradox tensions and to possess the capacity to engage in and alternate between opposing task elements bear the potential to influence organizational change. Third, this study shows how relevant a good and trustful relationship between leaders and followers is for creativity in the workplace in a large sub-Saharan African country. As stated by Rosing et al. (2011), p. 962), LMX as one of the "leadership theories that imply a certain degree of fluidity and flexibility can understand the relationship with innovation better than more static leadership theories." This study sheds light on the underlying mechanisms and shows *how* such leadership leads to creativity, with recently made theoretical assumptions about unlocking creative tensions in organizations through paradox approaches (Rubin et al., 2023) being empirically tested for the first time. In summary: Teachers who have a trusting dyadic relationship with their leaders are better able to navigate tensions and reconcile the competing demands of exploration and exploitation, which ultimately leads to a more creative work behavior. Considering that schools are primarily social institutions (Benoliel & Berkovich, 2021), this study, thus, makes a strong case that a social route to creativity (Rubin et al., 2023) is exceptionally promising for fostering creativity in educational organizations.

Limitations and Implications for Further Research

The generalizability of the findings of this research may be limited by some factors. One of such factors is the geographical coverage of the research which was limited to only nine (9) states out of the 36 states that make up Nigeria. Despite that the findings of this research are interesting, generalizing them to the entire population of teachers in Nigeria may be restricted. Thus, the researchers suggest that further research needs to be conducted to explore the link between LMX and creativity using a larger sample of teachers.

Secondly, no previous research on the relationship between LMX and teachers' creativity has been done in Nigeria, where the data were gathered from schools. Thus, it is not possible to compare the results obtained here with those of other studies conducted in the same setting. To fully understand the connection between LMX and teachers' creativity, more research on Nigerian schools is required. However, comparative studies in other countries and regions are also essential. This would be

particularly important concerning the paradox mindset, as a mindset represents a multidimensional combination of beliefs activated in a specific context. Consequently, according to Solberg et al. (2020), such beliefs can be divided into self-oriented and situation-oriented components, namely, individual beliefs about oneself in dealing with paradox tensions and beliefs about the context in which such tensions take place. The scale that was used only addresses the first aspect. It is, however, essential that the scale be expanded to include context-related beliefs in further studies.

Another limitation of this study is that the analysis does not account for potential boundary conditions that may shape the proposed relationships. Factors such as school climate, teacher autonomy, and cultural values may moderate the effects of LMX, paradox mindset, and ambidexterity on teacher creativity (see W. Pan et al., 2012; van Assen & Caniëls, 2022). Future research should explore these contextual variables to clarify when and under what conditions these mechanisms are most effective to enhance the model's theoretical generalizability.

Lastly, the cross-sectional nature of the data means that the relationship between the variables demonstrates only associations and does not infer any causality. Thus, it was suggested that future researchers may be able to conclude the causal relationship between LMX and teachers' creativity by replicating this study with a longitudinal dataset.

Implications for Theory Advancement

Although a paradox mindset was previously considered to be a relatively fixed personality trait (Miron-Spektor et al., 2018), the researchers' findings align with more recent assumptions that it is, in fact, a malleable state (Boemelburg et al., 2023). Given the relative novelty of this perspective, there is currently a paucity of theoretical frameworks that explicitly address the question of whether and how leadership can be linked to the development of a paradox mindset (van Boemelburg et al., 2023). In contrast with the prevailing view that a mindset can be shaped primarily by cognitive and behavioral influences (Burnette, Billingsley, et al., 2023; Burnette, Knouse, et al., 2023), the researchers' findings indicate that a paradox mindset may be particularly susceptible to social influence. This highlights the potential efficacy of fostering creativity in teachers through social mechanisms (Rubin et al., 2023). In this regard, this study provides compelling evidence in support of the argument that schools function primarily as social organizations (Sleegers et al., 2018). School leaders who cultivate high-quality, trusting, and respectful relationships with individual teachers facilitate their ability to embrace paradoxes, enabling them to reconcile the competing demands of exploitation and exploration in their daily work, thereby fostering creativity. Aligned with the tenets of social exchange theory (Deci & Ryan, 2012), the findings indicate that an individual's experience of a high-quality leader–member relationship fosters an inclination to embrace paradoxes, which, in turn, stimulates individual creativity. In alignment with Rosing et al. (2011), the researchers, thus, posit that a dynamic and fluid calibration of leadership behaviors to individual followers offers a robust foundation for fostering teacher creativity and innovativeness.

Implications for Policy and Practice

The findings of this research have both practical and policy implications. Practically, these findings implicate the roles of the school leader in that a good school leader needs to exhibit favorable LMX to have highly creative teachers. Thus, school leaders should make frantic efforts to develop their LMX behaviors. These findings also implicate teachers in that they need to develop a better paradox mindset and ambidexterity to be able to exhibit sound creative behaviors. Taking all together, this research indicates that the school leader should practice regular one-on-one meetings with the teachers, deliver prompt feedback and coaching, engage the teachers in joint goal setting, and encourage socialization, team building, empowerment, and autonomy. Such high-quality dyadic relationships could cultivate paradox mindsets and knowledge-seeking behaviors. This will encourage teachers to embrace ambiguity and uncertainty, consider different viewpoints, appreciate contradictory ideas, integrate opposing viewpoints, think broadly, adjust to shifting circumstances, question received wisdom, regard opposing solutions, and discover fresh viewpoints. Moreover, these findings have implications for school leadership policy in Nigeria because there is a need for

an appropriate school leadership policy framework that will seek professional development on leader–member exchange programs for school leaders. This will help retain school leaders who demonstrate high LMX behaviors which in turn will produce teachers that will showcase a high level of creativity.

Conclusion

To the best of the researchers' knowledge, this study is the inaugural investigation into the role of teachers' paradox mindsets and one of only a handful of studies examining individual ambidexterity in educational settings. Nevertheless, the school system is becoming increasingly uncertain and contradictory, yet paradoxical (Yurkofski & Peurach, 2023). It is evident that not all tensions can be resolved in the context of everyday school life. Therefore, all those involved in schooling must cultivate a corresponding mindset to address the mounting demands (Schaap & Vanlommel, 2024). As noted by Smith and Lewis (2011), it is preferable to address paradoxes in an organizational context proactively and systematically, rather than responding to them on an ad hoc basis as they arise. The findings of this research present a compelling argument that school leadership, and particularly LMX, represents a promising avenue for systematically addressing the paradoxical tensions and contradictive demands inherent in schools. It suggests that LMX's resources aid in developing teachers' paradox mindset and ambidexterity, which leads to more creativity on the part of the teacher.

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Authors' contributions, CRediT

Christian Ugwuanyi: Data Curation, Investigation, Project Administration, Writing – Original Draft Preparation, Writing – Review & Editing; Mehmet Şükrü Bellibaş: Conceptualization, Investigation, Validation, Writing – Original Draft Preparation, Writing – Review & Editing; Marcus Pietsch: Conceptualization, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Resources, Supervision, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing.

Availability of Data and Materials

Data is available upon reasonable requests.

Consent for Publication

All authors have reviewed and approved the final manuscript and consent to its publication in Leadership and Policy in Schools.

Ethics Approval and Consent to Participate

Ethical approval for the conduct of this research as well as permission to access the sampled schools were obtained. Before the data collection, the researchers issued informed consent forms to the teachers to fill and sign. Such exercise was done before the visits of the researchers to the various schools to ensure that the participants consented to the completion of the questionnaire items.

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