Journal of Islamic Economics and Business
p-issn: 2798-8562| e-issn: 2798-4834
Vol.6. No.1 (2026)

Transformational Leadership and Innovative Organizational Culture on Students' Innovation Behavior with The Mediation of Intrinsic Motivation and Self-Efficacy

Hasan Basri[1], Horas Julius[2], Umi Narimawati[3], Jaja Suteja[4], Yusuf Arifin[5]

Corresponding Author: hasan.basri@mail.unpas.ac.id

[1,2,4,5]Universitas Pasundan, Bandung, Indonesia
[3]Universitas Komputer Indonesia, Bandung, Indonesia

KEYWORD

Innovative Organizational Culture; Intrinsic Motivation; KIP-K; Self-Efficacy; Students' Innovative Behavior; Transformational Leadership.

Article history:
Received
Apr 14, 2026
Revised
Oct 30, 2026
Accepted
Nov 4, 2026

Edition
Vol.6 No.1 (2026)
Journal of Islamic Economics and Business

ABSTRACT

Student innovative behavior is increasingly important for higher education institutions in preparing graduates to respond creatively to academic and socioeconomic challenges. However, institutional factors such as transformational leadership and innovative organizational culture may not directly translate into innovative behavior without the involvement of students' psychological resources. This study examines the influence of transformational leadership and innovative organizational culture on students' innovative behavior by investigating the mediating roles of intrinsic motivation and self-efficacy. A quantitative explanatory survey was conducted involving 210 KIP-K (Kartu Indonesia Pintar–Kuliah) recipient students enrolled in private higher education institutions in the Greater Bandung Area. Data were analyzed using Structural Equation Modeling (SEM). The findings indicate that transformational leadership (β = 0.38; t = 3.60) and innovative organizational culture (β = 0.30; t = 2.93) have positive and significant effects on intrinsic motivation. Intrinsic motivation significantly influences self-efficacy (β = 0.55; t = 5.75), while self-efficacy has the strongest direct effect on students' innovative behavior (β = 0.64; t = 5.81). Furthermore, transformational leadership and innovative organizational culture do not demonstrate statistically significant direct effects on students' innovative behavior. However, both variables exert positive and significant indirect effects through intrinsic motivation and self-efficacy. These findings demonstrate that institutional support contributes to student innovation primarily by strengthening internal psychological resources. This study contributes to the literature by integrating institutional and psychological factors into an explanatory framework of students' innovative behavior, particularly among KIP-K recipient students. Practically, higher education institutions should foster empowering leadership and innovation-oriented cultures while strengthening students' intrinsic motivation and self-efficacy.

1. INTRODUCTION

The development of the Industrial Revolution 4.0, marked by accelerated technological advancements, demands that higher education produce graduates who not only excel academically but also possess creative, adaptive, and innovative thinking skills. Universities are required to create a learning environment that encourages students to respond to change and formulate solutions to various social problems. In this context, student innovative behavior is a crucial indicator of the success of the higher education process. However, various challenges in educational governance, limited resources, and unequal access to education have the potential to hinder the development of this innovative behavior, making research into the factors influencing it crucial and urgent.

Improving the quality of human resources is inextricably linked to expanding access to higher education, the foundation of national development. In Indonesia, economic constraints remain a major obstacle for some communities in accessing higher education. One policy instrument to address this issue is the provision of scholarships as a form of financial support to ensure the continuity of students' studies (Alita et al., 2021). The Indonesia Smart Card (KIP) for College Program is a strategic government policy that provides tuition waivers and living expenses assistance for high-achieving students from low-income families. KIP recipients are relevant research subjects because they are in a unique position, having broader educational access opportunities, but still face administrative, financial, and institutional challenges that can impact their psychological well-being and innovative behavior compared to non-scholarship students.

Student innovative behavior cannot be understood solely as the result of individual factors, but rather is influenced by the interaction between internal and external factors. Internal factors include intrinsic motivation and self-efficacy, which play a role in shaping students' beliefs, drive, and courage to innovate. Meanwhile, external factors include the transformational leadership style of lecturers and the innovative organizational culture within the university environment. Transformational leadership is believed to inspire, provide individual attention, and encourage intellectual stimulation, thereby strengthening students' intrinsic motivation and self-efficacy. On the other hand, an innovative organizational culture that emphasizes collaboration, openness to change, and appreciation for creativity has the potential to create an academic environment conducive to the emergence of student innovative behavior.

Several previous studies have shown mixed results regarding factors influencing innovative behavior. Amalya, (2019) found that students' innovative behavior is influenced by the environment, perceptions, emotions, self-concept, and motivation, while Layaman et al., (2021) emphasized the importance of critical thinking, problem-solving, communication, and teamwork skills in fostering graduates' innovative behavior. However, the effectiveness of external factors such as transformational leadership remains inconsistent. Wahdati, (2024) found that even when transformational leadership is well implemented, its effect on performance is insignificant. Similar findings emerged in studies of innovative organizational culture, where Rahmat et al., (2021) and Kending et al., (2022) showed that a positive organizational culture does not necessarily directly lead to innovation without the support of other factors. This research gap highlights the need for studies that integrate transformational leadership and innovative organizational culture with student psychological factors as mediating variables.

Based on these gaps, this study is novel in developing an integrative model that analyzes the influence of transformational leadership style and innovative organizational culture on intrinsic motivation and self-efficacy, and its implications for student innovation behavior, especially for students receiving KIP (Kartu Indonesia Pintar). This study is expected to provide theoretical benefits by enriching the literature on higher education management and student innovative behavior through empirical testing, as well as practical benefits for higher education administrators in formulating leadership policies and organizational culture that support the strengthening of student motivation and self-confidence. The purpose of this study is to empirically analyze the influence of transformational leadership style and innovative organizational culture on intrinsic motivation and self-efficacy and its implications for student innovation behavior.

Despite the growing interest in student innovative behavior, previous studies have examined transformational leadership and innovative organizational culture largely as separate factors, while the psychological mechanisms through which these institutional conditions shape students' innovative behavior remain insufficiently integrated. Furthermore, inconsistent findings regarding their direct effects suggest that institutional support alone may not be sufficient to encourage students to generate and implement innovative ideas. This issue is particularly relevant to KIP-K recipient students in private higher education institutions, whose opportunities to develop innovative capabilities may depend not only on access to education but also on the

institutional environment and psychological resources available to them. Addressing this gap, the present study develops and empirically examines an integrated framework that positions intrinsic motivation and self-efficacy as interconnected mediating mechanisms linking transformational leadership and innovative organizational culture to students' innovative behavior. Accordingly, this study aims to analyze both the direct and indirect relationships among these variables, thereby providing a more comprehensive understanding of how institutional factors can be translated into innovative behavior among KIP-K recipient students in the Greater Bandung Area.

2. LITERATURE REVIEW

Transformational Leadership Concept

Transformational leadership, in management literature, is understood as a leadership approach oriented toward a leader's ability to influence and motivate followers to transcend personal interests to achieve organizational goals. (Robbins & Judge, 2017) emphasizes that transformational leadership works through idealized influence, individualized attention, intellectual stimulation, and inspirational motivation, which collectively encourage extra effort from followers and increase organizational effectiveness. This approach positions the leader not merely as a task director but as a figure capable of building psychological engagement and commitment among followers toward the organization's vision.

In line with this view, Suwatno, (2019) stated that transformational leadership is characterized by the leader's ability to foster self-confidence, pride, loyalty, and respect in followers, thus fostering a drive to contribute beyond expected standards. Sodikin, (2017) added that transformational leadership emphasizes changing values and strengthening intrinsic motivation, while paying attention to the needs, potential, and ongoing development of followers. Thus, transformational leadership is oriented toward individual empowerment through a visionary and relational approach, rather than solely toward achieving organizational targets.

In its development, transformational leadership is generally constructed through four main dimensions. Ancok, (2020a) explains that idealized influence is reflected in leader behavior that demonstrates integrity, exemplary behavior, and consistency of values, thereby building trust, loyalty, and commitment in followers. The inspirational motivational dimension is manifested

through the leader's ability to articulate a clear and meaningful vision, set high performance standards, and foster optimism and enthusiasm in followers in achieving organizational goals.

The intellectual stimulation dimension refers to leaders' efforts to encourage followers to think critically, explore new perspectives, and seek innovative solutions to organizational problems. Through intellectual challenges and constructive reflection, leaders help followers develop competence and creativity sustainably (Ancok, 2020b). Meanwhile, individual attention is demonstrated through recognition of the differences in needs, potential, and aspirations of each follower. Leaders provide personal mentoring and support for individual capacity development to encourage optimal performance.

Overall, the literature indicates that transformational leadership is a multidimensional construct that plays a role in shaping followers' psychological engagement, intrinsic motivation, and capacity. These characteristics make transformational leadership relevant in organizational contexts that demand adaptation, continuous learning, and the development of innovative behaviors.

Innovative Organizational Culture

Organizational culture represents a set of assumptions, values, and beliefs shared by members of an organization and shapes how individuals interpret, think, and respond to the dynamics of the work environment. This pattern of values and beliefs serves as a shared frame of reference that influences the behavior, habits, and attitudes of organizational members in carrying out work activities and determines what is considered important within the organization (Griffin et al., 2020). In practice, organizational culture not only serves as a guideline for behavior but also serves as an internal mechanism that directs individuals' intrinsic motivation in collectively achieving organizational goals.

Organizational culture is also understood as a system of values and basic assumptions that develop through a group's learning process in facing the challenges of external adaptation and internal integration. Assumptions that prove effective will be retained and transmitted to new members as the appropriate way to understand, assess, and respond to various organizational problems (Hitt et al., 2017). Thus, organizational culture functions as a social control instrument that shapes behavioral consistency and strengthens individual attachment to the organization.

The formation and strengthening of organizational culture are influenced by core values, intrinsic motivation patterns, and expected and institutionalized behaviors within the organization. These values and norms serve as guidelines for evaluating critical situations and determining behavioral responses deemed appropriate within the organizational context (Kreitner & Kinicki, 2017a). Similarly, Rivai, (2018)asserts that an effective organizational culture is formed through the internalization of norms, values, and individual intrinsic motivation, which ultimately contributes to increased productivity and performance quality.

In the context of an innovative organizational culture, the work environment is characterized by support for creativity, risk-taking, and openness to new ideas. The organization encourages individuals to experiment and learn from failure as part of a continuous innovation process. Furthermore, an innovative culture emphasizes precision and attention to detail to maintain work quality, while also directing the organization's focus on achieving effective and efficient results.

An innovative organizational culture is also reflected in its concern for the well-being of its members and the strengthening of teamwork. Organizational decisions take into account their impact on individuals, create an inclusive work environment, and encourage collaboration and open communication. In this culture, success is seen as the result of collective synergy, not simply individual achievement, allowing innovation to thrive through ongoing interaction and collaboration among organizational members (Kreitner & Kinicki, 2017b).

Intrinsic Motivation and Self-Efficacy as Psychological Factors of Students

Intrinsic motivation represents an individual's internal drive to engage in an activity because it is perceived as meaningful, challenging, and personally satisfying. In the context of higher education, intrinsic motivation acts as a psychological force that drives students to actively engage in the learning process, develop knowledge, and continuously improve their competencies. This drive influences the intensity of effort, persistence, and quality of student engagement in academic activities, thus contributing to optimal learning outcomes and personal development (Oktavia, 2020; Uno, 2017).

Intrinsic motivation is also closely related to changes in learning behavior toward more adaptive and productive ones. Students with high levels of intrinsic motivation tend to demonstrate a strong sense of curiosity, commitment to academic goals, and a willingness to

face learning challenges without relying on external incentives. This makes intrinsic motivation a crucial foundation for creating an active and meaningful learning process, while simultaneously improving the quality of the educational experience in higher education (Krismony et al., 2020; Setiawan, 2017).

From an educational psychology perspective, intrinsic motivation not only influences learning engagement but also interacts with an individual's belief in their own abilities. This belief is known as self-efficacy, which is an individual's belief in their capacity to organize and execute the actions necessary to achieve a specific goal. Self-efficacy influences the choice of actions, level of effort, persistence, and individual responses to obstacles or failures Bandura in (Feist et al., 2021).

Self-efficacy serves as a psychological mechanism that strengthens an individual's motivation and resilience in challenging academic situations. Students with high self-efficacy tend to set more challenging goals, maintain their commitment to those goals, and recover more quickly from failure. Conversely, low self-efficacy can lower expectations of success, weaken motivation, and increase the tendency to avoid challenging tasks (Kristiyani, 2020a).

The formation of self-efficacy is influenced by various sources of experience, including personal success experiences, observations of the success of relevant others, verbal persuasion from the academic environment, and the individual's physiological and emotional state. The combination of these factors shapes how students assess their abilities to face the academic and social demands of the college environment (Kristiyani, 2020b).

Conceptually, intrinsic motivation and self-efficacy are two interrelated psychological constructs that play a strategic role in shaping student behavior. Intrinsic motivation provides an internal drive to act, while self-efficacy determines the extent to which an individual believes in their ability to effectively realize that drive. The interaction of the two influences the quality of student engagement in academic activities, their courage to face challenges, and their readiness to develop their potential innovatively.

Student Innovation Behavior from a Management and Organizational Perspective

Innovation behavior in organizational literature is understood as a series of individual activities related to the development and implementation of new ideas that are valuable to the organization. Ye et al., (2022) define innovation behavior as a process that includes idea initiation,

idea processing, solution development, and the implementation of new procedures or practices that provide benefits to stakeholders. This process is gradual and involves interactions between individuals within the context of work roles, groups, and organizations. Therefore, innovation is viewed as the result of a combination of individual actions and social dynamics.

Several studies emphasize that innovative behavior does not stop at the idea generation stage, but continues to the ongoing development and realization of ideas. Shanker et al., (2017a) stated that innovative behavior reflects individual responsibility in managing ideas from the initial stage to the implementation stage. This activity involves discussing, testing, and refining ideas so they can be implemented effectively. In this context, innovative behavior is often understood as an implicit performance indicator, as it reflects an individual's ability to generate solutions that can be implemented in organizational practice.

Kozioł-Nadolna, (2020a) added that innovative behavior is closely related to an individual's ability to explore information and develop knowledge, as well as to integrate new findings into organizational practices. The resulting innovation is expected to contribute to improving managerial systems, developing infrastructure, and increasing access to the information users need. Therefore, innovative behavior is complex because it involves relationships between internal organizational units and the external environment, and demands the ability to adapt to social and economic changes.

From a competitive advantage perspective, innovative behavior is viewed as a strategic resource that drives improved organizational performance. Afsar et al., (2020) demonstrate that innovative behavior encompasses the entire range of innovation activities, from the initiation to the realization of ideas that positively impact the organization. This process requires the courage to test new approaches and procedures, as well as the individual's ability to take ideas to further implementation stages to optimally achieve organizational goals.

The literature also highlights the role of contextual factors in shaping innovation behavior. Wikhamn, (2019a) and Hughes et al., (2018) explain that leadership influences creativity and innovation through motivational, cognitive, and affective mechanisms. These influences can increase or decrease the frequency and quality of an individual's innovative behavior. Individuals with high levels of innovative behavior generally possess knowledge and skills relevant to their field of work, creative and strategic thinking abilities, and strong motivation to complete their work.

In addition to leadership, organizational support and an innovation climate are important factors in encouraging innovative behavior. Kozioł-Nadolna, (2020b) emphasized that an organization's innovative potential depends on the availability of tangible and intangible resources, as well as the quality of human resources that support the innovation process. These conditions form the foundation for organizations that utilize innovation as a basis for competitive advantage and performance improvement (Shanker et al., 2017b). A conducive innovation climate enables the exchange of ideas, the promotion of ideas, and the sustainable realization of innovation.

Several empirical findings indicate that individual perceptions of a positive innovation climate, coupled with support and resource availability from leadership, significantly contribute to increased innovative behavior (Wikhamn, 2019b). Innovative behavior is also associated with increased work effectiveness and strengthened organizational competitiveness (Shanker et al., 2017c). More broadly, innovation is understood as a mechanism that plays a role in driving growth and creating added value for an organization through the utilization of individual knowledge and creativity.

HYPOTHESIS DEVELOPMENT

Based on the framework of thought and theoretical studies that have been put forward, the research hypothesis is formulated as follows:

H1 : Transformational leadership style has a positive and significant influence on students' intrinsic motivation.

H2 : Innovative organizational culture has a positive and significant influence on students' intrinsic motivation.

H3 : Transformational leadership style influences students' self-efficacy through intrinsic motivation.

H4 : An innovative organizational culture has a positive and significant influence on student self-efficacy through intrinsic motivation.

H5 : Transformational leadership style directly influences students' innovative behavior through intrinsic motivation and self-efficacy.

H6 : Innovative organizational culture has a direct and strong influence on students' innovation behavior through intrinsic motivation and self-efficacy.

H7 : Intrinsic motivation has a positive and significant effect on students' self-efficacy.

H8 : Intrinsic motivation influences students' innovation behavior through self-efficacy.

H9 : Self-efficacy has a positive and significant influence on students' innovation behavior.

3. METHODOLOGY

This study uses a quantitative approach with an explanatory survey design, which aims to test the causal relationships between latent variables in the research model, both direct and indirect influences (Creswell & Cresswel, 2017). This approach was chosen because it is appropriate for testing a theoretical model involving variables such as leadership, organizational culture, psychological factors, and student innovation behavior.

The study population was students receiving the Indonesia Smart Card (KIP) for College who were active in universities in the Greater Bandung area. The sample was determined using probability sampling with a proportional random sampling technique, with the number of respondents adjusted to the requirements of Structural Equation Modeling (SEM) analysis, which is a minimum of 5-10 times the number of indicators analyzed.

Data were collected through a closed-ended questionnaire using a five-point Likert scale. The research variables included transformational leadership style, innovative organizational culture, intrinsic motivation, self-efficacy, and student innovation behavior, each measured through indicators developed based on theories of leadership, motivation, and social psychology.

Data analysis was conducted using Structural Equation Modeling (SEM), which includes testing the measurement model to assess construct validity and reliability, as well as the structural model to examine causal relationships between variables (Kline, 2016). Model feasibility was evaluated using several goodness-of-fit indices, while hypothesis testing was based on the path coefficient and p-value (<0.05). The mediation effect was tested using the bootstrapping method to ensure the significance of the indirect effect (Kline, 2023).

4. RESULT AND DISCUSSIONS

Result

Structural Model Results

This study examines the relationships among transformational leadership, innovative organizational culture, intrinsic motivation, self-efficacy, and students' innovative behavior using

Structural Equation Modeling (SEM). The structural model evaluates the direct and indirect relationships among the research constructs to identify how institutional factors contribute to students' innovative behavior through psychological mechanisms.

Before examining the structural relationships, the measurement model was evaluated to assess the validity and reliability of the research constructs. Based on the reported analysis, all indicators met the required factor loading criteria, while the Construct Reliability (CR) and Average Variance Extracted (AVE) values were reported to satisfy the accepted criteria. These findings provided the basis for proceeding with the structural model assessment. The detailed measurement model statistics should be presented to support this evaluation.

Direct, Indirect, and Total Effects

The structural model results demonstrate that transformational leadership has a positive and significant effect on intrinsic motivation (β = 0.38, t = 3.60). Similarly, innovative organizational culture positively influences intrinsic motivation (β = 0.30, t = 2.93). Furthermore, intrinsic motivation has a positive and significant effect on self-efficacy (β = 0.55, t = 5.75), while self-efficacy positively influences students' innovative behavior (β = 0.64, t = 5.81).

The indirect effect analysis provides further insight into the relationships among the research constructs. Transformational leadership has a positive indirect effect on self-efficacy through intrinsic motivation (β = 0.21, t = 3.35), while innovative organizational culture also demonstrates a positive indirect effect on self-efficacy through intrinsic motivation (β = 0.17, t = 2.28). These results indicate that intrinsic motivation serves as an important mechanism linking institutional factors to students' beliefs in their capabilities.

Regarding students' innovative behavior, transformational leadership demonstrates an insignificant direct effect (β = −0.05, t = −0.69). However, its indirect effect through intrinsic motivation and self-efficacy is positive and significant (β = 0.33, t = 3.12), resulting in a positive and significant total effect (β = 0.28, t = 3.38). Similarly, innovative organizational culture has a positive but insignificant direct effect on students' innovative behavior (β = 0.11, t = 1.70). Its indirect effect through intrinsic motivation and self-efficacy is positive and significant (β = 0.29, t = 3.84), with a positive and significant total effect (β = 0.40, t = 3.72).

In addition, intrinsic motivation has a positive direct effect on innovative behavior (β = 0.26, t = 3.21) and a positive indirect effect through self-efficacy (β = 0.35, t = 3.12). The resulting total

effect is positive and significant (β = 0.61, t = 6.27). These findings indicate that self-efficacy plays an important role in translating students' intrinsic motivation into innovative actions.

Summary of Structural Model Effects

Table 1 presents the direct, indirect, and total effects among the research constructs based on the LISREL 8.8 analysis.

Table 1. Summary of Direct, Indirect, and Total Effects

No	Influence Between Variables		Direct Influence	Indirect Influence	Total Influence	Decision
1	Transformational Leadership Style --> Intrinsic Motivation	Path Coefficient Value	0.38	-	0.38	Significant
		t-value	3.60	-	3.60	
2	Innovative Organizational Culture --> Intrinsic Motivation	Path Coefficient Value	0.30	-	0.30	Significant
		t-value	2.93	-	2.93	
3	Transformational Leadership Style --> Intrinsic Motivation --> Self-Efficacy	Path Coefficient Value	0.15	0.21	0.36	Significant
		t-value	1.96	3.35	4.65	
4	Innovative Organizational Culture --> Intrinsic Motivation --> Self-Efficacy	Path Coefficient Value	0.17	0.17	0.33	Significant
		t-value	2.24	2.28	4.65	
5	Transformational Leadership Style --> Intrinsic Motivation --> Self-Efficacy --> Student Innovation Behavior	Path Coefficient Value	-0.05	0.33	0.28	Significant
		t-value	-0.69	3.12	3.38	
6	Innovative Organizational Culture --> Intrinsic Motivation --> Self-Efficacy --> Student Innovation Behavior	Path Coefficient Value	0.11	0.29	0.4	Significant
		t-value	1.70	3.84	3.72	
7	Intrinsic Motivation --> Self-Efficacy	Path Coefficient Value	0.55	-	0.55	Significant
		t-value	5.75	-	5.75	
8	Intrinsic Motivation --	Path	0.26	0.35	0.61	Significant

No	Influence Between Variables		Direct Influence	Indirect Influence	Total Influence	Decision
	> Self-Efficacy --> Student Innovation Behavior	Coefficient Value				
		t-value	3.21	3.12	6.27	
9	Self-Efficacy --> Student Innovation Behavior	Path Coefficient Value	0.64	-	0.64	Significant
		t-value	5.81	-	5.81	

Source: summarized from the output of Lisrel 8.8.

The results show that the direct effects of transformational leadership and innovative organizational culture on students' innovative behavior are not statistically significant. Nevertheless, both institutional factors demonstrate positive and significant indirect effects through intrinsic motivation and self-efficacy. This pattern indicates that the contribution of institutional conditions to students' innovative behavior is primarily transmitted through psychological mechanisms rather than through direct relationships alone.

Mediation Analysis

The mediation analysis indicates that intrinsic motivation and self-efficacy operate as interconnected mechanisms in explaining students' innovative behavior. Transformational leadership and innovative organizational culture contribute to the development of intrinsic motivation, which subsequently strengthens self-efficacy. In turn, self-efficacy contributes directly to students' innovative behavior.

The indirect effect of transformational leadership on innovative behavior is positive and significant (β = 0.33, t = 3.12), despite its insignificant direct effect (β = −0.05, t = −0.69). Similarly, innovative organizational culture demonstrates a positive and significant indirect effect on innovative behavior (β = 0.29, t = 3.84), while its direct effect is insignificant (β = 0.11, t = 1.70). These findings support the importance of the psychological mediation mechanism in explaining how institutional factors are translated into students' innovative behavior.

DISCUSSION

The Influence of Innovative Organizational Culture on Intrinsic Motivation

The findings indicate that innovative organizational culture has a positive and significant effect on students' intrinsic motivation (β = 0.30; t = 2.93). This result suggests that an academic

environment that encourages creativity, openness to new ideas, collaboration, and active participation can strengthen students' internal motivation. When students perceive that their ideas are valued and that they have opportunities to explore different approaches to learning, they are more likely to engage in academic activities because of personal interest and satisfaction rather than external expectations alone.

This relationship can be understood through Self-Determination Theory, which emphasizes that supportive environments facilitate the fulfillment of individuals' psychological needs for autonomy, competence, and relatedness (Deci et al., 2017). An innovative organizational culture can provide opportunities for students to express their ideas, participate in collaborative activities, and develop their capabilities. Such an environment allows students to become more active participants in the learning process and strengthens their sense of ownership of academic activities.

The importance of a supportive learning environment is also reflected in the study by Kim and Park (2018), which examines the role of personal factors in the adoption of information and communication technologies in e-learning. Although their research focuses on technology adoption, it highlights the relevance of individual and learning-related conditions in shaping students' engagement with educational processes. In this regard, an innovation-oriented academic environment may provide favorable conditions for students to explore learning opportunities and develop their interests.

For KIP-Kuliah recipients, an innovative organizational culture can serve as an enabling environment in which students are encouraged to recognize and develop their potential. Opportunities to participate in academic projects, student organizations, collaborative learning, and creative activities may strengthen their internal motivation. Therefore, the findings indicate that institutional culture is not merely a set of formal organizational values but also an environmental factor that can shape students' psychological engagement and motivation.

The Influence of Transformational Leadership on Self-Efficacy through Intrinsic Motivation

The findings demonstrate that transformational leadership contributes positively to students' self-efficacy through intrinsic motivation. The indirect effect is significant ($\beta = 0.21$; $t = 3.35$), while the total effect is also significant ($\beta = 0.36$; $t = 4.65$). In contrast, the direct effect of transformational leadership on self-efficacy is relatively weak ($\beta = 0.15$; $t = 1.96$) and should be

interpreted cautiously. This pattern suggests that the contribution of transformational leadership to students' confidence in their abilities is more clearly expressed through the development of intrinsic motivation.

Intrinsic motivation provides an internal drive that encourages students to participate actively in academic activities, explore challenges, and persist in learning. Through this engagement, students gain experiences that help them recognize their capabilities and develop confidence in completing academic tasks. Thus, transformational leadership may contribute to self-efficacy by creating conditions that stimulate students' internal motivation and encourage meaningful participation in the learning process.

This explanation is consistent with Self-Determination Theory, which emphasizes the importance of autonomy, competence, and relatedness in supporting individual motivation (Deci et al., 2017). When students experience greater autonomy and competence in academic activities, they may become more confident in their ability to overcome challenges. From the perspective of Social Cognitive Theory, experiences of successful task completion also contribute to the development of self-efficacy (Feist et al., 2021). Intrinsic motivation can therefore facilitate students' engagement in activities that provide opportunities to develop such experiences.

In the context of KIP-Kuliah recipients, transformational leadership may be particularly valuable when it encourages students to recognize their potential and remain actively involved in academic development. The findings suggest that leadership practices should not focus solely on providing direction or encouragement but should also stimulate students' internal motivation. Through this process, students can gradually develop stronger confidence in their academic abilities.

The Influence of Innovative Organizational Culture on Self-Efficacy through Intrinsic Motivation

The results indicate that innovative organizational culture contributes positively to self-efficacy through intrinsic motivation. The indirect effect is positive and significant ($\beta = 0.17$; $t = 2.28$), while the total effect is also significant ($\beta = 0.33$; $t = 4.65$). This finding suggests that an innovation-oriented academic environment can strengthen students' confidence in their abilities by first encouraging their internal motivation.

An organizational culture that supports creativity, collaboration, and openness to new ideas provides opportunities for students to participate actively in academic activities. Such

participation can encourage students to explore their interests, develop new competencies, and engage with academic challenges. When students are intrinsically motivated, they are more likely to invest effort in learning activities and persist when facing difficulties. These experiences can contribute to stronger perceptions of competence and self-efficacy.

This relationship can be explained through Self-Determination Theory, which emphasizes that supportive social environments facilitate the development of intrinsic motivation and positive psychological functioning (Deci et al., 2017). Furthermore, Social Cognitive Theory highlights the importance of mastery experiences, observation of others, and social persuasion in developing self-efficacy (Feist et al., 2021). An innovative academic culture may provide opportunities for these experiences through collaborative activities, constructive feedback, and the implementation of student ideas.

For KIP-Kuliah recipients, the findings highlight the importance of creating an academic environment that provides equal opportunities for participation and personal development. Students should not only receive access to higher education but also experience an environment that enables them to develop their abilities and confidence. Therefore, an innovative organizational culture can contribute to student self-efficacy when its values are translated into meaningful learning experiences that strengthen intrinsic motivation.

The Influence of Transformational Leadership on Students' Innovative Behavior through Intrinsic Motivation and Self-Efficacy

The findings reveal that transformational leadership does not have a statistically significant direct effect on students' innovative behavior. However, its indirect effect through intrinsic motivation and self-efficacy is positive and significant ($\beta = 0.33$; $t = 3.12$), resulting in a significant total effect ($\beta = 0.28$; $t = 3.38$). This finding indicates that transformational leadership contributes to student innovation primarily through the development of internal psychological resources rather than through a direct relationship alone.

Transformational leadership can stimulate students' willingness to learn, explore ideas, and participate in academic activities. Nevertheless, encouragement from leaders does not necessarily translate immediately into innovative behavior. Students also need sufficient internal motivation to engage in innovation-related activities and confidence in their ability to implement new ideas. Intrinsic motivation provides the willingness to initiate and sustain such activities,

while self-efficacy supports students in dealing with uncertainty, potential failure, and the challenges involved in implementing ideas.

This interpretation is consistent with the conceptualization of innovative behavior as a process that involves the generation, development, and implementation of new ideas (Ye et al., 2022). It also corresponds with Shanker et al. (2017), who emphasize the importance of an innovation-supportive climate in encouraging innovative work behavior. Although these studies examine organizational contexts, their findings provide a relevant perspective for understanding how supportive environments and individual psychological resources may contribute to innovation-related behavior.

In higher education, transformational leadership therefore needs to be translated into learning experiences that encourage students to develop and implement their ideas. Lecturers and institutional leaders can provide intellectual challenges, constructive feedback, mentoring, and opportunities for students to participate in innovation-oriented activities. For KIP-Kuliah recipients, these practices may help transform access to educational opportunities into stronger motivation, confidence, and participation in innovative academic activities.

The non-significant direct effect also indicates that leadership support alone may be insufficient to produce innovative behavior. Its contribution becomes more evident when students internalize the support they receive and develop the confidence to act. Thus, the findings underline the importance of intrinsic motivation and self-efficacy as interconnected psychological mechanisms linking transformational leadership with students' innovative behavior.

The Influence of Innovative Organizational Culture on Students' Innovative Behavior through Intrinsic Motivation and Self-Efficacy

The results show that innovative organizational culture does not have a statistically significant direct effect on students' innovative behavior. Nevertheless, its indirect effect through intrinsic motivation and self-efficacy is positive and significant ($\beta = 0.29$; $t = 3.84$), with a significant total effect ($\beta = 0.40$; $t = 3.72$). This finding suggests that an innovation-oriented academic environment contributes to student innovation when its values are internalized through students' psychological resources.

An organizational culture that encourages creativity, collaboration, and openness to new ideas provides an environment in which students can explore opportunities and participate in innovation-related activities. However, the existence of such an environment does not automatically ensure that students will generate and implement new ideas. Students need internal motivation to become actively involved and sufficient confidence to translate their ideas into action. Intrinsic motivation encourages engagement, while self-efficacy strengthens students' willingness to take initiative and persist when facing difficulties.

This finding can be understood through the relationship between innovation-supportive environments and individual innovative behavior. Shanker et al. (2017) explain the importance of organizational climate in supporting innovation-related behavior, while Ye et al. (2022) emphasize the role of leadership behavior in stimulating individual innovation. These perspectives suggest that institutional conditions provide opportunities for innovation, but the realization of innovative behavior also depends on individual responses and psychological readiness.

The results further indicate that institutional culture needs to be experienced directly by students through opportunities to express ideas, collaborate, participate in academic projects, and learn from experimentation. These activities may strengthen intrinsic motivation and provide experiences that develop self-efficacy. In the context of KIP-Kuliah recipients, an inclusive and innovation-oriented academic culture is important because it can provide opportunities for students from different socioeconomic backgrounds to develop their potential.

Therefore, the contribution of innovative organizational culture to students' innovative behavior is more clearly demonstrated through the mediation of intrinsic motivation and self-efficacy. Universities should not only formulate innovation-oriented values at the institutional level but also ensure that these values are reflected in students' everyday academic experiences.

The Influence of Intrinsic Motivation on Self-Efficacy

The findings demonstrate that intrinsic motivation has a positive and significant effect on self-efficacy ($\beta = 0.55$; $t = 5.75$). This result indicates that students who engage in academic activities because of personal interest, satisfaction, and a desire for self-development tend to have stronger confidence in their abilities. Intrinsic motivation encourages students to become actively involved in learning, invest effort in challenging tasks, and persist in developing their competencies.

This relationship can be explained through Self-Determination Theory, which emphasizes the role of intrinsic motivation in supporting individual engagement and psychological development (Deci et al., 2017). When students are motivated by personal interest and meaningful learning experiences, they are more likely to engage deeply in academic activities. Such engagement provides opportunities to develop competence and recognize personal progress, which can strengthen their confidence in handling academic challenges.

From the perspective of Social Cognitive Theory, self-efficacy develops partly through individuals' experiences of successfully completing tasks and overcoming difficulties (Feist et al., 2021). Intrinsically motivated students may be more willing to participate in challenging activities and persist when encountering obstacles. Through these experiences, they can develop stronger beliefs about their capacity to achieve academic goals.

For KIP-Kuliah recipients, intrinsic motivation is an important psychological resource that supports academic persistence and personal development. Educational assistance provides access to higher education, but students also need internal motivation to maximize the opportunities available to them. The findings suggest that strengthening students' interest in learning and providing meaningful academic experiences can contribute to the development of self-efficacy.

The Influence of Intrinsic Motivation on Students' Innovative Behavior through Self-Efficacy

The findings indicate that intrinsic motivation contributes positively to students' innovative behavior both directly and indirectly through self-efficacy. The direct effect is significant (β = 0.26; t = 3.21), while the indirect effect through self-efficacy is also significant (β = 0.35; t = 3.12). The total effect reaches β = 0.61 (t = 6.27). These results demonstrate that intrinsic motivation plays an important role in encouraging innovative behavior, with self-efficacy strengthening the translation of internal motivation into innovative action.

Intrinsic motivation encourages students to explore ideas, engage in learning activities, and pursue challenges because they find these activities meaningful. However, the willingness to explore ideas does not always guarantee that students will implement them. Students also need confidence in their abilities to develop, communicate, and realize their ideas. Self-efficacy therefore functions as a psychological mechanism that helps translate internal motivation into concrete innovative behavior.

This interpretation is consistent with the understanding of innovative behavior as a process that extends beyond idea generation to the development and implementation of new ideas (Ye et al., 2022). Jiang et al. (2023) also examine the relationship between innovation climate, individual motivation, and innovation performance, highlighting the relevance of individual psychological factors in innovation-related outcomes. These perspectives support the importance of considering both motivational drive and confidence when explaining students' innovative behavior.

The significant direct and indirect effects indicate that intrinsic motivation contributes to innovative behavior through more than one pathway. Students may engage in innovative activities because they are personally interested in exploring new ideas, while their self-efficacy further strengthens their confidence to carry out those ideas. In this regard, higher education institutions need to develop learning activities that encourage curiosity, independent exploration, problem-solving, and opportunities to implement student-generated ideas.

For KIP-Kuliah recipients, strengthening intrinsic motivation should be accompanied by opportunities to develop self-efficacy. Providing challenging but supportive academic activities, mentoring, and opportunities to participate in innovation projects may help students transform their internal motivation into observable innovative behavior.

The Influence of Self-Efficacy on Students' Innovative Behavior

The findings show that self-efficacy has a positive and significant effect on students' innovative behavior ($\beta = 0.64$; $t = 5.81$). Among the direct relationships reported in this study, self-efficacy has the largest path coefficient in explaining students' innovative behavior. This indicates that students' beliefs in their ability to perform tasks, overcome difficulties, and achieve desired outcomes are strongly associated with their willingness to develop and implement new ideas.

Self-efficacy is important because innovative behavior involves uncertainty, experimentation, and the possibility of failure. Students who believe in their abilities are more likely to take initiative, explore alternative solutions, and persist when their ideas encounter obstacles. Conversely, students with lower confidence may hesitate to express ideas or avoid activities that require experimentation and risk-taking.

This finding is consistent with Social Cognitive Theory, which positions self-efficacy as an important factor influencing individual choices, effort, persistence, and behavior (Feist et al.,

2021). It is also supported by the discussion of creative self-efficacy in the study by Su et al. (2024), which examines the relationship between teacher–student relationships and innovative behavior among graduate students. Jiang et al. (2023) further highlight the relevance of innovation-related psychological factors in explaining individual innovation outcomes.

In the context of KIP-Kuliah recipients, self-efficacy may help students overcome self-doubt and remain engaged in academic and innovation-related activities despite the challenges they encounter. The findings suggest that providing educational access should be accompanied by efforts to strengthen students' confidence through academic mentoring, constructive feedback, opportunities for achievement, and participation in innovation-oriented activities.

Overall, the strong relationship between self-efficacy and innovative behavior highlights the importance of developing students' confidence as part of higher education strategies. Universities need to create learning environments in which students are not only encouraged to generate ideas but are also supported in developing the capabilities required to implement them.

5. CONCLUSION

This study demonstrates that students' innovative behavior is shaped by the interaction between institutional factors and individual psychological resources. The findings indicate that transformational leadership and innovative organizational culture positively influence students' intrinsic motivation. Intrinsic motivation, in turn, significantly strengthens self-efficacy, while self-efficacy emerges as the strongest direct predictor of students' innovative behavior. These results highlight the importance of understanding student innovation not only through institutional support but also through the psychological processes that enable students to translate motivation into action.

An important finding is that transformational leadership and innovative organizational culture do not have statistically significant direct effects on students' innovative behavior. However, both factors demonstrate significant indirect effects through intrinsic motivation and self-efficacy. This indicates that institutional support alone may not be sufficient to generate innovative behavior. Instead, its contribution becomes more evident when students internalize the support provided by their academic environment, develop intrinsic motivation, and gain confidence in their ability to generate and implement new ideas.

This study contributes to the literature on higher education management by integrating transformational leadership, innovative organizational culture, intrinsic motivation, and self-efficacy into a single explanatory framework of student innovative behavior. By examining KIP-Kuliah recipients in private higher education institutions in the Greater Bandung Area, the study also provides empirical insights into the psychological mechanisms associated with innovation among students receiving government-supported educational assistance.

The findings have practical implications for higher education institutions. University leaders and lecturers need to adopt empowering leadership practices that encourage intellectual exploration, provide individual support, and recognize students' potential. At the same time, institutions should develop an innovative academic culture that promotes collaboration, creativity, openness to new ideas, and opportunities for experimentation. These efforts should be accompanied by learning activities, mentoring, and innovation-oriented programs that strengthen students' intrinsic motivation and self-efficacy. For KIP-Kuliah program administrators, student development initiatives should therefore extend beyond providing access to higher education and include opportunities to cultivate students' innovative capabilities.

Despite these contributions, this study has limitations. Its cross-sectional design does not allow the observation of changes in students' motivation, self-efficacy, and innovative behavior over time. Furthermore, the use of self-reported questionnaire data may involve subjective perceptions that do not fully represent actual innovative behavior. The study is also limited to KIP-Kuliah recipients in private higher education institutions in the Greater Bandung Area, which requires caution when generalizing the findings to other student populations and educational contexts.

Future research may employ longitudinal or mixed-method approaches to examine the development of students' innovative behavior over time. Researchers may also incorporate more objective indicators of innovation, such as participation in innovation projects, student entrepreneurship, research activities, and the implementation of student-generated ideas. In addition, expanding the research context and incorporating other relevant factors, such as technological support, learning climate, and individual characteristics, may provide a more comprehensive understanding of student innovative behavior in higher education.

LIMITATIONS

This study has several limitations that need to be considered when interpreting the findings. First, the quantitative research design, using a cross-sectional survey approach, means that causal relationships between variables are interpreted based on empirical patterns, not the dynamics of long-term changes in students' innovative behavior. Second, data collection was conducted using a self-perception-based questionnaire instrument, which has the potential to contain respondent subjectivity bias and limitations in representing actual innovative behavior. Third, the scope of the study was limited to KIP-Kuliah students in the Greater Bandung area, so generalizing the findings to other higher education contexts or student groups with different characteristics requires caution. Fourth, the research model focuses on the variables of transformational leadership, innovative organizational culture, intrinsic motivation, and self-efficacy, so other factors that could potentially influence students' innovative behavior, such as technological support, individual characteristics, or learning climate, have not been explicitly accommodated.

RECOMMENDATIONS

Based on these limitations, future research is recommended to use a longitudinal design or a mixed-method approach to more comprehensively capture the dynamics of student motivation, self-efficacy, and innovative behavior. Future researchers could also combine perceptual data with more objective indicators of innovative behavior, such as involvement in innovation projects, student publications, or entrepreneurial activity. Furthermore, expanding the research context to different regions, types of higher education institutions, and student groups is expected to increase the generalizability of the findings. Further research is also recommended to include additional variables, such as learning technology support, classroom psychological climate, or personality characteristics, to deepen understanding of the factors shaping student innovative behavior in higher education.

REFERENCES

Afsar, B., Al-Ghazali, B., & Umrani, W. (2020). Retracted: Corporate social responsibility, work meaningfulness, and employee engagement: The joint moderating effects of incremental

moral belief and moral identity centrality. Corporate Social Responsibility and Environmental Management, 27(3), 1264–1278. https://doi.org/10.1002/csr.1882Digital

Alita, D., Sari, I., Isnain, A. R., & Styawati, S. (2021). PENERAPAN NAÏVE BAYES CLASSIFIER UNTUK PENDUKUNG KEPUTUSAN PENERIMA BEASISWA. Jurnal Data Mining dan Sistem Informasi, 2(1), 17. https://doi.org/10.33365/jdmsi.v2i1.1028

Amalya, I. D. (2019). Perilaku Inovatif pada Mahasiswa yang Berwirausaha (Innovative Behavior In Entrepreneurs Students). Indonesian Psychological Research, 01(01), 40–46. https://doi.org/10.29080/ipr.v1i1.169

Ancok, D. (2020). Psikologi kepemimpinan dan inovasi. Erlangga.

Creswell, J. W., & Cresswel, J. D. (2017). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Sage Publication. https://books.google.co.id/books?hl=id&lr=&id=335ZDwAAQBAJ&oi=fnd&pg=PT16&dq=Creswell,+John+W.+Creswell+and+J.+David,+Research+Design+Qualitative,+Quatitative,+and+Mixed+Methods+Approaches&ots=YEyTHKsqtN&sig=hQ6nu8XXpVBDdrEd8Qxa5OxOXwk&redir_esc=y#v=onepage&q=Creswell%2C%20John%20W.%20Creswell%20and%20J.%20David%2C%20Research%20Design%20Qualitative%2C%20Quatitative%2C%20and%20Mixed%20Methods%20Approaches&f=false

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-Determination Theory in Work Organizations: The State of a Science. Annual Review of Organizational Psychology and Organizational Behavior, 4, 19–43. https://doi.org/10.1146/annurev-orgpsych-032516-113108

Feist, G. J., Roberts, T.-A., & Feist, J. (2021). Theories of Personality (10th ed.). McGraw-Hill.

Griffin, R. W., Phillips, J. M., & Gully, S. M. (2020). Organizational Behavior: Managing People and Organizations (12th ed.). Cengage Learning.

Hitt, M. A., Miller, C. C., Colella, A., & Triana, M. D. C. (2017). Organizational Behavior. Wiley.

Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. The Leadership Quarterly, 29(5), 549–569. https://doi.org/10.1016/j.leaqua.2018.03.001

Jiang, S., Wang, J., Zhang, R., & Liu, O. (2023). Innovation climate for individual motivation and innovation performance: Is innovative behavior a missing link? Journal of Innovation & Knowledge, 8(4), 100440. https://doi.org/10.1016/j.jik.2023.100440

Kending, R., Pio, R. J., & Rumawas, W. (2022). Gaya Kepemimpinan, Budaya Organisasi dan Inovasi Pengaruhnya Terhadap Kinerja Karyawan. Jurnal Administrasi Bisnis, 12(2), 105–117. https://ejournal.unsrat.ac.id/v3/index.php/jab/article/view/47635

Kim, B., & Park, M. J. (2018). Effect of personal factors to use ICTs on e-learning adoption: Comparison between learner and instructor in developing countries. Information Technology for Development, 24(4), 706–732. https://doi.org/10.1080/02681102.2017.1312244

Kline, R. B. (2023). Principles and Practice of Structural Equation Modeling. The Guilford Press.

Kozioł-Nadolna, K. (2020). The Role of a Leader in Stimulating Innovation in an Organization. Administrative Sciences, 10(3), 59. https://doi.org/10.3390/admsci10030059

Kreitner, R., & Kinicki, A. (2017). Perilaku Organisasi (9th ed.). Salemba Empat.

Krismony, N. P. A., Parmiti, D. P., & Japa, I. G. N. (2020). Pengembangan Instrumen Penilaian Untuk Mengukur Motivasi Belajar Siswa SD. Jurnal Ilmiah Pendidikan Profesi Guru, 3(2), 249. https://doi.org/10.23887/jippg.v3i2.28264

Kristiyani, A. (2020). Efikasi Diri dan Motivasi. Pustaka Pelajar.

Layaman, L., Harahap, P., Djastuti, I., Jaelani, A., & Djuwita, D. (2021). The Mediating Effect of Proactive Knowledge Sharing Among Transformational Leadership, Cohesion, and Learning Goal Orientation on Employee Performance. Business: Theory and Practice, 22(2), 470–481. https://doi.org/10.3846/btp.2021.13365

Nguyen, N. N., Le, T. T., Thi Nguyen, B.-P., & Nguyen, A. (2024). Examining effects of students' innovative behaviour and problem-solving skills on crisis management self-efficacy: Policy implications for higher education. Policy Futures in Education, 22(1), 1–20. https://doi.org/10.1177/14782103221133892

Oktavia, S. (2020). Motivasi Belajar dalam Perkembangan Remaja. Deepublish.

Qiang, Z., Wang, J., He, K., & Xu, L. (2022). Potential of Passive Employees: How Servant Leadership Can Stimulate Innovation among Control-Oriented Employees. Sustainability, 15(1), 144. https://doi.org/10.3390/su15010144

Rahmat, M., Akib, H., Rizal, Muh., Sakawati, H., & Aslinda, A. (2021). Hubungan Budaya Organisasi Dengan Inovasi Perusahaan Correlation of Organizational Culture with Company Innovation. JENIUS: Jurnal Ilmiah Manajemen Sumber Daya Manusia, 4(2), 145–152. https://doi.org/10.32493/JJSDM.v4i2.9083

Rivai, V. (2018). Manajemen Sumber Daya Manusia untuk Perusahaan: Dari Teori ke Praktek (1st ed.). Murai Kencana.

Robbins, S. P., & Judge, T. A. (2017). Perilaku Organisasi. PT Indeks Kelompok Gramedia.

Setiawan, A. (2017). Belajar dan Pembelajaran. Uwais Inspirasi.

Shanker, R., Bhanugopan, R., Heijden, B. I. J. M. van der, & Farrell, M. (2017). Organizational climate for innovation and organizational performance: The mediating effect of innovative work behavior. Journal of Vocational Behavior, 100, 67–77. https://doi.org/10.1016/j.jvb.2017.02.004

Sodikin, D. (2017). Manajemen Sumber Daya Manusia: Membangun Paradigma Baru. Penerbit Remaja Rosdakarya.

Su, W., Zhang, Y., Yin, Y., & Dong, X. (2024). The influence of teacher-student relationship on innovative behavior of graduate student: The role of proactive personality and creative self-efficacy. Thinking Skills and Creativity, 52(101529). https://doi.org/10.1016/j.tsc.2024.101529

Suwatno. (2019). Pemimpin dan Kepemimpinan dalam Organisasi Publik dan Bisnis. Bumi Aksara.

Uno, H. B. (2017). Teori Motivasi dan Pengukurannya: Analisis di Bidang Pendidikan. Bumi Aksara.

Wahdati, A. (2024). Gaya Kepemimpinan Transformasional dan Kinerja Dosen. Jurnal Psikologi Talenta Mahasiswa, 4(2), 57–65. https://doi.org/10.26858/jtm.v4i2.66170

Wikhamn, W. (2019). Innovation, sustainable HRM and customer satisfaction. International Journal of Hospitality Management, 76(Part A), 102–110. https://doi.org/10.1016/j.ijhm.2018.04.009

Ye, P., Liu, L., & Tan, J. (2022). Influence of leadership empowering behavior on employee innovation behavior: The moderating effect of personal development support. Frontiers in Psychology, 13, 1022377. https://doi.org/10.3389/fpsyg.2022.1022377