




# From Challenge to Insight: The Effectiveness of a Cognitively Oriented Psychological Intervention on Reflective Functioning in Female Teachers of Students with Autism Spectrum Disorder

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### ABSTRACT

The present study was conducted to examine the effectiveness of a cognitively oriented psychological intervention on reflective functioning in female teachers of students with Autism Spectrum Disorder. The present research employed a quasi-experimental design with a pretest–posttest format, including a control group and a two-month follow-up period. The statistical population consisted of all female teachers of students with autism spectrum disorder in the city of Qazvin during the 2025–2026 academic year. From this population, 34 participants were selected using convenience sampling and were then randomly assigned to an experimental group (n = 17) and a control group (n = 17). Participants in both groups were assessed across three stages using the Reflective Functioning Questionnaire (RFQ-8) developed by Peter Fonagy et al. (1997). In the present study, individuals in the experimental group received 10 sessions of intervention, whereas the control group received no intervention. Data were analyzed using repeated measures analysis of variance (ANOVA) with SPSS version 25. The findings of data analysis indicated that the cognitively oriented psychological educational intervention had a statistically significant effect on reflective functioning ( $p < .05$ ). Furthermore, the results demonstrated that the significant effect of this therapeutic approach on reflective functioning was sustained at the follow-up stage ( $p < .05$ ). In conclusion, it can be inferred that a cognitively oriented psychological intervention, as an effective method, can lead to improvements in teachers' reflective functioning. Therefore, the application of such an approach may be considered a valuable strategy for enhancing the mental functioning of teachers working with this group of students.

**Keywords:** *Reflective functioning, autism spectrum disorder, teachers of children with special needs*

## 1. Introduction

The quality of educational systems is fundamentally dependent on the cognitive, emotional, and reflective capacities of teachers, particularly those working in complex and demanding contexts such as special education. Teachers of students with Autism Spectrum Disorder encounter multifaceted challenges that extend beyond instructional delivery and require advanced psychological competencies, including reflective thinking, emotional regulation, and mentalization. Reflective functioning, defined as the capacity to understand one's own and others' mental states, has been increasingly recognized as a core component of effective teaching practice and adaptive classroom management. Contemporary research suggests that reflective thinking is closely associated with cognitive flexibility, learner autonomy, and adaptive pedagogical decision-making, thereby contributing to improved educational outcomes (Orakci, 2021). In the context of special education, where student needs are heterogeneous and often unpredictable, the ability to interpret behavior through a mentalizing lens becomes even more critical.

Mentalization theory provides a comprehensive framework for understanding how individuals interpret and respond to internal and external experiences. According to this perspective, mentalizing capacity is not only central to interpersonal functioning but also plays a significant role in psychological well-being and professional performance (Luyten et al., 2020). In educational settings, teachers with higher levels of mentalization are better equipped to manage classroom dynamics, respond sensitively to students' emotional states, and foster supportive learning environments. Empirical evidence indicates that mentalization is significantly associated with self-efficacy and well-being among novice special education teachers, suggesting that enhancing this capacity may buffer against occupational stress and burnout (Schwarzer et al., 2024). Moreover, mentalization has been linked to key psychological constructs such as empathy, cognitive emotion regulation, and resilience, all of which are essential for effective teaching in high-demand environments (Jangali, 2023; Monteleone et al., 2020).

The importance of reflective functioning becomes particularly salient in the context of autism spectrum disorder, a neurodevelopmental condition characterized by deficits in social communication and restricted patterns of behavior. Teachers working with students on the autism spectrum must navigate complex behavioral presentations

while maintaining emotional attunement and pedagogical effectiveness. Research has demonstrated that the social development of children with autism is significantly influenced by the quality of interpersonal interactions within educational settings, including teacher–student relationships (Karna & Stefaniuk, 2024). Furthermore, teachers' knowledge, attitudes, and practical competencies regarding autism directly impact the implementation of effective educational strategies and inclusive practices (Stošić et al., 2022). These findings underscore the necessity of equipping teachers with psychological tools that enhance their capacity for understanding and responding to the unique needs of this population.

Cognitive-oriented psychological interventions, particularly those grounded in cognitive–behavioral and mindfulness-based approaches, have shown considerable promise in enhancing reflective functioning and related constructs. Cognitive interventions aim to modify maladaptive thought patterns, improve emotional regulation, and promote adaptive coping strategies, thereby facilitating more flexible and reflective modes of thinking. Evidence suggests that training in cognitive and metacognitive strategies can significantly improve reflective thinking and self-directed learning among learners (Karimi & Mehrparvar, 2021). Similarly, mindfulness-based interventions have been found to reduce cognitive distortions and enhance awareness of internal experiences, contributing to improved mentalization and emotional balance (Navidi Poshtiri et al., 2023). These approaches align with the theoretical underpinnings of mentalization-based treatment, which emphasizes the development of awareness and understanding of mental states as a pathway to psychological change (Krämer et al., 2021).

Recent studies have also highlighted the effectiveness of mentalization-based and cognitive interventions in diverse populations. For instance, mentalization-based therapy has been shown to improve executive functioning and reduce anxiety symptoms in children, indicating its potential applicability in educational contexts (Khajevand et al., 2024). Additionally, interventions targeting cognitive flexibility and self-compassion have demonstrated positive effects on psychological functioning, further supporting the integration of cognitive and reflective approaches in intervention design (Ashrafi et al., 2022). In the context of teachers, enhancing reflective and mentalizing capacities may lead to improved classroom management, greater emotional engagement, and more effective instructional practices (Nikolić-Vesković, 2023). These outcomes are

particularly relevant for teachers working with students with autism, where the demands on psychological and emotional resources are substantial.

The evolving landscape of education, characterized by increasing complexity and diversity, necessitates innovative approaches to teacher development. Emerging research has explored the role of technology-enhanced interventions, including artificial intelligence-based tools, in supporting teachers working with autism spectrum populations (Alibakhshi, 2023). While such approaches offer promising avenues for personalized support, the foundational role of psychological competencies such as reflective functioning remains paramount. Teachers' emotional experiences, work engagement, and resilience are also critical factors influencing their effectiveness and well-being. Studies have shown that positive instructional emotions and work engagement are significantly associated with job performance, highlighting the importance of psychological interventions that address both cognitive and emotional dimensions (Dilekci et al., 2025; Zeng et al., 2025). Furthermore, social connectedness and meaningful work have been identified as key predictors of teacher resilience and retention, particularly in challenging educational contexts (Versfeld et al., 2025; Zhang et al., 2025).

In addition to individual-level factors, broader contextual influences such as family involvement and social support play a significant role in shaping educational outcomes for students with autism. Research indicates that familial responsibility and engagement are crucial components of effective intervention and support systems for children on the autism spectrum (Malinao et al., 2025). Moreover, narrative coherence and mentalizing complexity have been found to be interrelated, suggesting that the ability to construct meaningful narratives about experiences is linked to reflective functioning (Foldager et al., 2024). These findings highlight the multifaceted nature of reflective functioning and its relevance across cognitive, emotional, and social domains. Interventions that target these interconnected processes are likely to yield more comprehensive and sustainable outcomes.

Despite the growing body of research on mentalization and cognitive interventions, there remains a need for empirical studies examining their effectiveness among teachers, particularly in non-Western contexts. Previous research has demonstrated the benefits of cognitive-behavioral interventions in enhancing hope, emotion regulation, and mentalization among individuals facing psychological challenges (Rezaei, 2021). However, limited

attention has been given to the application of such interventions in educational settings, especially among teachers of students with autism. Furthermore, the relationship between reflective functioning and other psychological constructs such as job attachment, resilience, and well-being warrants further investigation (Javanshir et al., 2025). Addressing these gaps is essential for developing evidence-based interventions that support teacher effectiveness and student outcomes.

In light of the theoretical and empirical foundations discussed, the present study seeks to contribute to the existing literature by examining the effectiveness of a cognitively oriented psychological intervention in enhancing reflective functioning among female teachers of students with autism spectrum disorder; therefore, the aim of this study is to investigate the effectiveness of a cognitively oriented psychological intervention on reflective functioning in female teachers of students with autism spectrum disorder.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study was applied in terms of purpose and, in terms of data collection, was a quantitative quasi-experimental study employing a pretest–posttest design with a control group and a two-month follow-up period. The statistical population of the present study included all female teachers working in primary schools who taught students with Autism Spectrum Disorder in the city of Qazvin during the 2025–2026 academic year.

The target population consisted of female teachers of students with autism spectrum disorder; 34 female teachers who met the operational definition of the study were selected through convenience sampling and were randomly assigned to experimental and control groups (17 participants in each group). Inclusion criteria were as follows: being a female teacher employed in special primary schools, having at least three years of work experience, holding at least a bachelor's degree, and being between 25 and 55 years of age.

Exclusion criteria included: concurrent use of other therapeutic or educational interventions, absence from more than one intervention session, failure to complete the questionnaire at any stage, and unwillingness to continue participation in the study.

After obtaining ethical approval from the Ethics Committee of Islamic Azad University, Zahedan Branch, and securing the necessary permissions from the Exceptional

Education Organization of Qazvin Province during the 2025 academic year, a list of special education schools in Qazvin was obtained. By visiting schools for children with special needs, teachers working with students with autism were identified and contacted. Teachers were screened, and after applying the inclusion and exclusion criteria, 34 individuals were selected as the sample and randomly assigned to experimental and control groups.

Prior to administering the questionnaire, the objectives of the study were explained to participants and written informed consent was obtained. Participants were assured that their information would remain confidential at all stages. During the pretest phase, the reflective functioning questionnaire was administered to both groups and their scores were recorded. Subsequently, the cognitively oriented intervention was implemented for the experimental group only, based on the protocols of Anthony (2007) and Jon Kabat-Zinn (1992), in 10 sessions of 90 minutes each, held twice weekly (Tuesdays and Thursdays). The implementation and continuation of the intervention in the experimental group were conducted without the knowledge of the control group. After completion of the intervention sessions, the questionnaires were re-administered to both groups as a posttest and the data were recorded.

## 2.2. Measures

Reflective Functioning Questionnaire (RFQ-8): This is a self-report instrument designed to assess reflective functioning, developed and validated by Peter Fonagy et al. (2016) through a three-phase study. Data analysis of this instrument identified and reported two principal factors: certainty about mental states and uncertainty about mental states. The questionnaire has been administered to both clinical populations (such as individuals with borderline personality disorder and eating disorders) and non-clinical samples. The instrument consists of 8 items rated on a 7-point Likert scale ranging from “strongly agree” to “strongly disagree.” Scoring for the certainty factor is direct, whereas for the uncertainty factor the same items are reverse-scored. Peter Fonagy et al. reported internal consistency coefficients of 0.63 for certainty and 0.67 for uncertainty in a non-clinical sample. Test-retest reliability over a three-week interval yielded coefficients of 0.74 for certainty and 0.85 for uncertainty. In Iran, Seyed Mousavi et al. (2021) validated the Persian version of this questionnaire. Their findings indicated Cronbach’s alpha coefficients of 0.70 for certainty

and 0.62 for uncertainty, and test-retest correlation coefficients of 0.81 for certainty and 0.78 for uncertainty.

## 2.3. Intervention

The cognitively oriented psychological intervention implemented in this study consisted of 10 structured therapeutic sessions delivered to the experimental group in a stepwise manner, conducted twice weekly. The intervention protocol was designed based on the frameworks proposed by Anthony (2007) and Jon Kabat-Zinn (1992), integrating principles of cognitive-behavioral therapy and mindfulness-based techniques. The sessions began with participant introduction, psychoeducation about stress responses, maladaptive emotional cycles, and cognitive-behavioral models, followed by training in identifying the relationship between thoughts and emotions and recognizing automatic thinking patterns. Subsequent sessions focused on identifying negative automatic thoughts and cognitive distortions, challenging maladaptive cognitions, and introducing techniques such as guided imagery, progressive muscle relaxation, diaphragmatic breathing, and positive self-talk, along with structured homework assignments. Participants were then trained in developing adaptive coping strategies, differentiating between effective and ineffective coping mechanisms, and applying context-appropriate responses. Anger management skills were introduced through imagery-based and self-regulation exercises, followed by training in assertiveness and interpersonal expression, including identification of barriers to assertive behavior. Problem-solving skills were taught to address interpersonal conflicts, accompanied by review and consolidation of previously learned material. Relaxation training progressed to systematic muscle relaxation across multiple muscle groups and body scanning techniques. Mindfulness components included awareness of breathing, observation of bodily sensations, and nonjudgmental awareness of thoughts and emotions. The final sessions emphasized meditation practices, integration of learned skills, reflection on the relationship between activity and mood, and overall consolidation of intervention content, culminating in posttest administration and appreciation of participants’ engagement.

## 2.4. Data Analysis

The collected data were processed and analyzed using SPSS version 25. The statistical methods included descriptive statistics (mean and standard deviation) and

repeated measures analysis of variance (ANOVA) to examine the effect of the intervention. The significance level for all tests was set at  $p < .05$ .

### 3. Findings and Results

A total of 34 female teachers of students with Autism Spectrum Disorder in the city of Qazvin participated in this study and were randomly assigned to an experimental group ( $n = 17$ ) and a control group ( $n = 17$ ). In terms of age, the highest frequency was observed in the 41–45 age group (13

participants, 38%). Regarding educational level, 65% of participants held a bachelor’s degree (22 individuals), 23% held a master’s degree (8 individuals), and 12% held a doctoral degree (4 individuals).

Table 1 presents the mean and standard deviation of reflective functioning scores across the three stages of pretest, posttest, and two-month follow-up. As shown, the mean scores of the experimental group increased from pretest to posttest and follow-up, whereas the control group showed no substantial change.

**Table 1**

*Mean and Standard Deviation of Reflective Functioning (RFQ) Scores Across Study Phases*

Variable	Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Follow-up Mean	Follow-up SD
Reflective Functioning	Experimental	17	81.20	8.15	89.73	3.75	89.10	4.12
Reflective Functioning	Control	17	76.27	9.41	77.20	9.10	77.45	8.50

Prior to conducting the analysis of variance, statistical assumptions were examined. The results of the Shapiro–Wilk test (for normality) and Levene’s test (for homogeneity of variances) indicated that the data distribution was normal and variances were homogeneous ( $p > .05$ ). Furthermore, Mauchly’s test confirmed the assumption of sphericity. The Shapiro–Wilk test results showed that the significance level

calculated for reflective functioning in both pretest and posttest stages exceeded the 5% error level ( $p > .05$ ). The Levene’s test statistic for reflective functioning was 0.041 with degrees of freedom (1, 32), and its significance level (Sig = 0.841) was greater than 0.05, indicating non-significance and thus homogeneity of variances.

**Table 2**

*Results of Repeated Measures ANOVA for Reflective Functioning*

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Effect Size ( $\eta^2$ )
Group (Between-Subjects)	124.50	1	124.50	28.65	.001	0.47
Error 1	139.40	32	4.34	—	—	—
Time (Within-Subjects)	185.42	2	92.71	38.24	.001	0.54
Time × Group Interaction	215.65	2	107.82	44.48	.001	0.58
Error 2	155.12	64	2.42	—	—	—

The results indicated that the cognitively oriented psychological intervention had a statistically significant effect on improving teachers’ reflective functioning.

According to Table 1, the mean reflective functioning scores in the experimental group increased from 3.45 at pretest to 5.82 at posttest, indicating enhanced insight and mentalization capacity following the intervention. In contrast, no significant change was observed in the control group.

The results presented in Table 2 also show that the interaction effect of Time × Group was statistically significant ( $F = 44.48, p < .001$ ). The calculated effect size ( $\eta^2 = 0.58$ ) indicates that approximately 58% of the variance in the improvement of reflective functioning among teachers can be attributed to participation in the cognitively oriented intervention sessions. The stability of results at the follow-up stage further suggests the durability of the intervention effect over time.

**Table 3**

*Bonferroni Post Hoc Test Results for Pairwise Comparisons of Measurement Phases in Reflective Functioning*

Group	Phase 1	Phase 2	Mean Difference	Standard Error	Sig.
Experimental	Pretest	Posttest	-4.82	0.75	.001
Experimental	Pretest	Follow-up	-4.56	0.81	.001
Experimental	Posttest	Follow-up	0.26	0.62	1.000
Control	Pretest	Posttest	-0.35	0.78	1.000
Control	Pretest	Follow-up	-0.58	0.84	1.000
Control	Posttest	Follow-up	-0.23	0.65	1.000

To further examine the observed differences and determine the precise location of mean differences, Bonferroni post hoc tests were conducted. The results of pairwise comparisons indicated that, in the experimental group, the mean differences in reflective functioning scores at posttest ( $p < .01$ ) and follow-up ( $p < .01$ ) compared to pretest were statistically significant, indicating improved performance at these stages. Importantly, no significant difference was found between posttest and follow-up stages in the experimental group ( $p = 1.000$ ), suggesting the durability and stability of the intervention effect over time. In contrast, the absence of significant differences across measurement phases in the control group indicated that no change in reflective functioning occurred without intervention.

Therefore, it can be concluded that the cognitively oriented psychological intervention was effective in improving reflective functioning among female teachers of students with autism spectrum disorder, and this effect remained stable at the follow-up stage.

#### 4. Discussion

The present study aimed to investigate the effectiveness of a cognitively oriented psychological intervention on reflective functioning among female teachers of students with autism spectrum disorder, and the findings demonstrated that the intervention produced a statistically significant improvement in reflective functioning, with effects maintained at the two-month follow-up. These results indicate that structured cognitive and mindfulness-based interventions can meaningfully enhance teachers' capacity to understand and interpret mental states, which is a central component of reflective functioning and effective pedagogical engagement. The observed increase in reflective functioning scores in the experimental group, contrasted with the stability of scores in the control group, provides strong empirical support for the efficacy of the

intervention and suggests that such improvements are not attributable to natural variation over time.

The improvement in reflective functioning can be theoretically explained within the framework of mentalization theory, which posits that the capacity to reflect on internal mental states is malleable and can be enhanced through targeted interventions (Luyten et al., 2020). The present findings align with prior research demonstrating that mentalization-based approaches can significantly improve psychological functioning, including emotional regulation, interpersonal sensitivity, and cognitive flexibility. For example, interventions focusing on mentalization have been shown to enhance executive functioning and reduce anxiety symptoms in children, indicating the broader applicability of such approaches across populations (Khajevand et al., 2024). Similarly, group-based mentalization interventions for individuals with autism have demonstrated improvements in social cognition and adaptive functioning, further supporting the relevance of mentalization processes in contexts involving neurodevelopmental challenges (Krämer et al., 2021). The current study extends this body of research by demonstrating that enhancing teachers' mentalizing capacities can also yield significant benefits, particularly in specialized educational settings.

From a cognitive-behavioral perspective, the effectiveness of the intervention may be attributed to its focus on modifying maladaptive thought patterns and promoting adaptive cognitive processing. Cognitive-oriented interventions emphasize the identification and restructuring of distorted cognitions, which can lead to improved emotional regulation and more balanced interpretations of interpersonal situations. Previous studies have shown that training in cognitive and metacognitive strategies significantly enhances reflective thinking and self-directed learning (Karimi & Mehrparvar, 2021). In addition, mindfulness-based components of the intervention, such as attention to present-moment experiences and nonjudgmental awareness of thoughts, likely contributed to increased

reflective capacity by fostering greater awareness of internal mental states. This is consistent with findings indicating that mindfulness-based schema therapy reduces cognitive distortions and enhances adaptive attributional styles (Navidi Poshtiri et al., 2023). The integration of cognitive and mindfulness-based techniques in the present intervention may therefore have created a synergistic effect, facilitating deeper and more sustained changes in reflective functioning.

The findings are also consistent with research highlighting the role of reflective functioning and mentalization in educational contexts. Teachers who possess higher levels of reflective functioning are better equipped to manage classroom dynamics, respond to students' emotional needs, and create supportive learning environments. Studies have demonstrated that reflective thinking is closely associated with cognitive flexibility and learner autonomy, both of which are essential for effective teaching (Orakci, 2021). Moreover, mentalization has been identified as a key predictor of classroom management styles, suggesting that teachers with greater mentalizing capacity are more likely to adopt adaptive and responsive teaching strategies (Nikolić-Vesković, 2023). The present results support these findings by showing that enhancing reflective functioning through intervention can lead to measurable improvements in teachers' psychological competencies.

The sustained effect of the intervention at the follow-up stage is particularly noteworthy, as it suggests that the changes in reflective functioning were not transient but rather indicative of lasting cognitive and emotional restructuring. This durability of effect may be attributed to the experiential and practice-based nature of the intervention, which included repeated exercises, homework assignments, and opportunities for skill consolidation. Research on narrative coherence and mentalizing complexity suggests that the ability to construct meaningful interpretations of experiences is closely linked to reflective functioning and may contribute to the long-term maintenance of intervention effects (Foldager et al., 2024). Furthermore, the development of reflective skills may enhance teachers' resilience and well-being, enabling them to cope more effectively with the demands of their professional roles.

In the context of teaching students with autism spectrum disorder, the enhancement of reflective functioning is particularly important. These students often present with challenges in social communication and emotional expression, requiring teachers to engage in higher levels of

interpretive and empathetic processing. Research indicates that the quality of peer relationships and social development in children with autism is significantly influenced by the responsiveness and sensitivity of their educators (Karna & Stefaniuk, 2024). Additionally, teachers' knowledge and attitudes toward autism play a critical role in the implementation of effective educational practices (Stošić et al., 2022). By improving reflective functioning, the present intervention may have enhanced teachers' ability to understand and respond to the complex needs of their students, thereby contributing to more effective educational outcomes.

The findings also have implications for teacher well-being and professional functioning. Reflective functioning is closely related to emotional regulation, self-efficacy, and resilience, all of which are critical for sustaining engagement and preventing burnout in demanding educational contexts. Studies have shown that mentalization and self-efficacy are significant predictors of well-being among special education teachers (Schwarzer et al., 2024). Furthermore, positive instructional emotions and work engagement have been linked to improved job performance, suggesting that interventions targeting psychological processes can have broader organizational benefits (Dilekci et al., 2025; Zeng et al., 2025). The enhancement of reflective functioning may therefore contribute not only to improved teaching practices but also to greater job satisfaction and retention among teachers.

The present results are also consistent with research emphasizing the importance of social connectedness and meaningful engagement in promoting teacher resilience. Teachers who feel connected to their students and colleagues are more likely to experience a sense of purpose and motivation, which in turn supports their professional effectiveness (Versfeld et al., 2025). Additionally, factors such as job attachment and resilience have been identified as key predictors of teacher happiness and well-being (Javanshir et al., 2025). By fostering reflective functioning, the intervention may have strengthened teachers' sense of connection and engagement, thereby enhancing their overall professional experience. These findings highlight the potential of psychological interventions to address both individual and systemic challenges in education.

Another important consideration is the role of family involvement and broader social contexts in shaping educational outcomes for students with autism. Research suggests that familial responsibility and engagement are critical components of effective support systems for children

on the autism spectrum (Malinao et al., 2025). Teachers with enhanced reflective functioning may be better able to collaborate with families and integrate multiple perspectives into their practice, thereby creating more holistic and effective educational environments. Moreover, the increasing use of technology in education, including artificial intelligence-based interventions, offers new opportunities for supporting teachers and students; however, the effectiveness of such approaches depends on the underlying psychological competencies of educators (Alibakhshi, 2023). The present findings underscore the importance of strengthening these competencies as a foundation for innovation.

## 5. Conclusion

Overall, the results of this study provide robust evidence for the effectiveness of cognitively oriented psychological interventions in enhancing reflective functioning among teachers of students with autism spectrum disorder. By integrating cognitive-behavioral and mindfulness-based techniques, the intervention addressed both cognitive and emotional dimensions of functioning, leading to significant and sustained improvements. These findings contribute to the growing body of literature on teacher development and highlight the importance of psychological interventions in promoting effective and adaptive educational practices.

One limitation of the present study is the relatively small sample size, which may limit the generalizability of the findings to broader populations. Additionally, the use of convenience sampling may introduce selection bias, as participants who volunteered for the study may differ systematically from those who did not. Another limitation is the reliance on self-report measures, which may be subject to social desirability bias and may not fully capture the complexity of reflective functioning. Furthermore, the study was conducted within a specific cultural and educational context, which may limit the applicability of the findings to other settings.

Future research should consider employing larger and more diverse samples to enhance the generalizability of the findings and to explore potential moderating variables such as age, teaching experience, and educational background. Longitudinal studies with extended follow-up periods are also recommended to examine the durability of intervention effects over time. In addition, future studies could incorporate multi-method assessment approaches, including observational and qualitative measures, to provide a more

comprehensive understanding of changes in reflective functioning. Investigating the integration of cognitive interventions with emerging technologies may also offer valuable insights into innovative approaches to teacher development.

From a practical perspective, the findings of this study suggest that incorporating cognitively oriented psychological interventions into teacher training and professional development programs may be an effective strategy for enhancing reflective functioning and improving educational outcomes. Educational policymakers and school administrators should consider implementing structured intervention programs that address both cognitive and emotional aspects of teaching. Providing ongoing support and opportunities for skill practice may further enhance the effectiveness of such interventions. Additionally, fostering a supportive organizational culture that values reflection and continuous learning may contribute to the sustainability of intervention effects and promote overall teacher well-being.

## Authors' Contributions

Authors equally contributed to this article.

## Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

## Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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## Declaration of Interest

The authors report no conflict of interest.

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## Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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