

Predicting the level of empathy based on the amount of reading fiction books (novels) and emotional intelligence with the mediation of mindfulness

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ABSTRACT

The ability to empathize is a critical component of emotional intelligence and plays a vital role in interpersonal relationships, particularly among future educators. This study examines the predictive role of reading fiction (novels) and emotional intelligence in empathy levels, with mindfulness as a mediating variable, among student teachers at Farhangian University of Mashhad. A sample of 300 participants completed standardized questionnaires assessing emotional intelligence (EQ), frequency of fiction reading, mindfulness (MAAS), and empathy (IRI). Structural equation modeling (SEM) was employed to analyze the direct and indirect effects of the variables. Results indicated that both fiction reading and emotional intelligence significantly predicted higher empathy levels ($\beta = 0.32$ and $\beta = 0.41$, respectively, $p < 0.01$). Mindfulness partially mediated this relationship, accounting for 28% of the variance in empathy scores. These findings suggest that cultivating emotional intelligence and encouraging fiction reading, along with mindfulness practices, may enhance empathic abilities in teacher trainees. The study highlights the importance of integrating literary engagement and emotional skills training into teacher education programs to foster more compassionate educators.

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Introduction

Empathy, a cornerstone of effective teaching, enables educators to understand students' emotional and cognitive needs, fostering inclusive learning environments that promote both academic achievement and psychological wellbeing. This multifaceted construct encompasses both cognitive empathy the capacity to understand others' perspectives and affective empathy the ability to share and respond to others' emotional experiences (Davis, 1983). Recent research has increasingly highlighted the role of fiction reading in enhancing empathic capabilities through promoting perspective-taking and emotional immersion (Bal & Veltkamp, 2013). Concurrently, emotional intelligence (EI) has been identified as a significant predictor of empathic accuracy and prosocial behavior in educational settings. However, the mediating role of mindfulness a state of non-judgmental present-moment awareness in these relationships remains underexplored and represents a critical gap in our understanding of empathy development mechanisms.

The theoretical foundation for the relationship between fiction reading and empathy stems from transportation theory, which posits that when readers become emotionally transported into fictional narratives, they experience profound psychological changes (Bal & Veltkamp, 2013). Oatley's simulation hypothesis suggests that fiction provides a "flight simulator for the mind," allowing readers to practice social cognition and emotional understanding through vicarious experiences with fictional characters. This theoretical framework is supported by empirical evidence demonstrating that reading literary fiction significantly improves theory of mind abilities compared to popular fiction or non-fiction reading (Kidd & Castano, 2013). The mechanism underlying this relationship involves readers' identification with characters and their emotional investment in fictional narratives, which facilitates the development of social-cognitive skills transferable to real-world interpersonal contexts.

Research by Alatawi and Harshan (2023) demonstrates that fiction reading cultivates empathy through multiple psychological processes. When readers engage with fictional characters, they form collaborative representational links that enable them to experience less self-versus-other distinction, fostering enhanced understanding of others' emotional states. The process involves what Keen (2006) termed "narrative empathy," defined as the psychological process whereby recipients of narrative texts grasp and vicariously experience characters' mental states. This emotional immersion allows readers to transcend mental and physical boundaries, accepting the feelings and perceptions of others through literary engagement.

Empirical investigations have consistently demonstrated the empathy-enhancing effects of fiction reading across different populations. Bal and Veltkamp (2013) conducted two experimental studies showing that empathy was influenced over a period of one week for participants who read fictional stories, but only when they were emotionally transported into the narrative. Their findings revealed that high emotional transportation led to increased empathy among fiction readers, while absence of transportation was associated with decreased empathic responding. Similarly, research with Filipino adolescents and young adults found that individuals who engaged more in fiction reading demonstrated higher empathy capacity, with this relationship being particularly pronounced among female participants (Ubaldo & Dy, 2021).

Concurrent with research on fiction reading, emotional intelligence has emerged as a crucial predictor of empathic capabilities. Defined as the ability to perceive, understand, and manage emotions in oneself and others, emotional intelligence encompasses core competencies that overlap significantly with empathic processes. Research among medical students revealed significant positive correlations between empathy and emotional intelligence, suggesting that individuals with higher EI demonstrate enhanced capacity for empathic responding (Silva & Braga, 2019). The relationship between emotional intelligence and empathy is theoretically grounded in shared cognitive-emotional processes, as both constructs require accurate perception of emotional cues, sophisticated understanding of emotional experiences, and appropriate regulatory responses to emotional information.

Despite established links between fiction reading, emotional intelligence, and empathy, recent evidence suggests these relationships may not be direct but rather mediated by mindfulness—a state of open, non-judgmental awareness of present-moment experiences (Quaglia et al., 2019). Mindfulness involves observing thoughts, emotions, and perceptions without automatic reactions, promoting deeper emotional regulation and enhanced perspective-taking abilities (Creswell, 2017). Research with healthcare

professionals demonstrated that mindfulness training enhanced cognitive empathy while reducing emotional exhaustion, thereby increasing professional commitment and patient care quality ([Pérez-Fuentes et al., 2020](#)). The mechanisms through which mindfulness facilitates empathy appear to involve enhanced attention regulation, reduced emotional reactivity, and increased capacity for perspective-taking without being overwhelmed by others' emotional states.

In the context of fiction reading, mindfulness may amplify the empathy-enhancing effects of literary engagement. When readers approach fictional narratives with mindful awareness, they may more effectively process characters' emotional experiences, integrate these experiences with their own emotional understanding, and transfer these insights to real-world interpersonal situations. This process aligns with what [Alatawi and Harshan \(2023\)](#) describe as the development of mental flexibility through literature, wherein readers acquire greater information about diverse cultures and perspectives through character engagement. Similarly, mindfulness may enhance the relationship between emotional intelligence and empathy by promoting more sophisticated emotional processing and regulation, preventing the emotional numbing that can occur when individuals become overwhelmed by others' distress.

The theoretical understanding of empathy development draws from multiple frameworks that support the proposed mediating role of mindfulness. Theory of Mind emphasizes the capacity to understand one's own and others' mental states, predicting psychological variables and assigning mental state values to both self and others ([Gao, 2019](#)). Decety's empathy development framework comprises four components: emotional sharing involving self and others, individual consciousness of the self, cognitive flexibility, and emotional control ([Decety, 2007](#)). These theoretical perspectives suggest that empathy emerges through complex interactions between cognitive, emotional, and regulatory processes all of which are enhanced through mindfulness practice.

However, significant gaps remain in our understanding of how fiction reading, emotional intelligence, and mindfulness interact to predict empathy levels. While previous studies have examined bivariate relationships between these variables, few have investigated the mediating mechanisms through which these factors operate. Furthermore, most research has been conducted in Western contexts with adult populations, limiting generalizability to diverse educational settings and cultural contexts. The present study addresses these limitations by investigating the mediating role of mindfulness in the relationship between fiction reading, emotional intelligence, and empathy among student teachers a population for whom empathic competencies are essential for effective pedagogical practice.

This study examines how fiction reading habits and emotional intelligence predict empathy levels among student teachers at Farhangian University, with mindfulness as a potential mediator. Student teachers represent a particularly relevant population for empathy research, as empathic competencies are fundamental to creating supportive learning environments, understanding diverse student needs, and promoting positive educational outcomes.

Conducting this research is important due to the key role of empathy in successful interpersonal relationships and teachers' professional performance, the necessity of finding practical strategies to enhance empathy in the age of technology and individualism, and the need to identify underlying mechanisms of empathy development. The findings of this study can be used in designing teacher training programs, developing teacher education curricula, and creating evidence-based intervention strategies.

Based on the reviewed literature, the main research question is: Does mindfulness play a mediating role in the relationship between fiction reading, emotional intelligence, and empathy among student teachers?

Method

Sample and Sampling Method

The study employed a stratified random sampling method to select a representative sample of 300 student teachers (60% female, M age = 21.4 years, SD = 2.1) from Farhangian University, Mashhad. Participants were stratified by academic year (freshman to senior) and discipline (humanities vs. sciences) to ensure diversity. Sample Size Justification: The sample size was determined using Krejcie & Morgan's (1970)

formula for finite populations: $n = (\chi^2 NP(1-P)) / (d^2(N-1) + \chi^2 P(1-P))$ Where: (chi-Square =3.841) (95% confidence level), N= 1,200 (total population of student teachers), P = 0.5 (maximum variability), d= 0.05 (margin of error). This yielded a minimum required sample of 292; we rounded to 300 to account for potential attrition. Inclusion Criteria: - Active enrollment in teacher training programs. No prior formal mindfulness training (to control for confounding effects)

Tools Used

Empathy Index or Interpersonal Reaction Index: Davis Interpersonal Reaction Scale ([Davis, 1980](#)) is a 30-item questionnaire for measuring empathy that measures four aspects of empathy, including perspective-taking, imagination, empathetic attention, and personal distress. Each item is rated on a 5-point Likert scale (from 0 = does not describe me at all to 4 = describes me very much). To score each subscale, the answers to the questions related to each scale should be added together. Because the subscales are correlated to different degrees with each other and, in particular, because the scores of personal distress are negatively correlated with other scales, it is not recommended to consider an overall score for empathy. However, the range of scores for this index is between 28 and 140. Naturally, the lower the score, the lower the empathy is assessed, and the higher the score obtained, the higher the empathy of the individual. The test-retest reliability of this instrument in the Iranian population was reported to be 0.71, and for the components of empathy including personal distress, perspective taking, empathetic attention, and imaginary empathy, it was reported to be 0.70, 0.72, 0.69, and 0.73, respectively ([Khodabakhsh, 2012](#)). In the study of Feizabadi et al. (2007), Cronbach's alpha coefficient for the subscales was obtained as follows; the subscale of empathetic attention was 0.68, imagination was 0.7, perspective taking was 0.68, and personal distress or distress was 0.71. ([Sedaghati Kesbakhhi et al., 2017](#))

Wang and Law Emotional Intelligence Questionnaire: The Emotional Intelligence Questionnaire was designed by Wang and Law (2002) to measure emotional intelligence in 16 questions and 4 components: evaluation of one's own emotions, evaluation of others' emotions, use of emotions, and regulation of emotions ([Wong, C. S., & Law, K. S., 2002](#)). The subject must express his/her level of agreement or disagreement with each statement on a 5-point Likert scale from 1 (never or very rarely) to 5 (often or always). To calculate the score of each subscale, add together the scores of each item related to that subscale. To calculate the overall score of the questionnaire, add together the scores of all items in the questionnaire. The score range of this questionnaire will be between 16 and 80. The higher the score obtained from this questionnaire, the greater the level of emotional intelligence and vice versa. In the research of Heidari (2016), the content and face validity and criterion validity of this questionnaire have been evaluated as appropriate. And also, the Cronbach's alpha coefficient calculated in this study for this questionnaire was estimated to be above 0.7 ([Fallah et al., 2024](#))

Five-factor Mindfulness Questionnaire: This questionnaire was designed by Bauer et al. in 2006 in 39 items and 5 components. These 5 components include: observation, action with awareness, non-judgment of inner experience, description and non-reactivity. The subject must express his/her level of agreement or disagreement with each statement on a 5-point Likert scale from 1 (never or very rarely) to 5 (often or always). The range of scores on this scale is 39-195. A total score is obtained from the sum of the scores of each subscale, which indicates that the higher the score, the greater the mindfulness. According to the results, the internal consistency of the factors was appropriate and the alpha coefficient ranged from 0.75 (in the non-reactive factor) to 0.91 (in the descriptive factor). The correlation between the factors was moderate and significant in all cases and ranged from 0.15 to 0.34 ([Neuser, J., 2010](#)). In a study conducted on the validation and reliability of this questionnaire in Iran, the test-retest correlation coefficients of the questionnaire in the Iranian sample were observed between $r = 0.57$ (related to the non-judgmental factor)

and $r = 0.84$ (observational factor). Also, the alpha coefficients were found to be acceptable (between $\alpha = 0.55$ related to the non-reactive factor and $\alpha = 0.83$ related to the descriptive factor [\(Arfaee & Bidgoli, 2012\)](#)).

The Fiction Reading Frequency Questionnaire (FRFQ) is a 15-item self-report measure assessing the frequency and breadth of engagement with fictional literature (novels, short stories) using an unbounded Likert scale (0 = Never to 5 = Very frequently*). Total scores range from 0 to 75, with higher scores indicating greater reading engagement. Psychometric Properties - Reliability: - Cronbach's $\alpha = 0.93$ (pilot study, $N = 50$), demonstrating excellent internal consistency. - Test-retest reliability: $r = 0.88$ (4-week interval, $n = 30$).

Procedure

Following official approval from the university's ethics committee, the study was conducted through in-person questionnaire administration to ensure high response quality and participant engagement. The data collection and analysis proceeded as follows: 1- Ethical Approval & Preparation: Obtained necessary permissions from Farhangian University's research ethics board. Scheduled sessions with participants during regular university hours to maximize attendance. 2- On-Site Data Collection: Questionnaires were distributed in person in classroom settings under researcher supervision. Participants completed: Fiction Reading Frequency Questionnaire (FRFQ) - Interpersonal Reactivity Index (IRI) - Wong & Law Emotional Intelligence Scale (WLEIS) - Five Facet Mindfulness Questionnaire (FFMQ) - Researchers provided clear instructions and remained available to address questions. 3- Data Entry & Validation: Responses were manually entered into a secure database with double-checking for accuracy. Incomplete or inconsistent responses were excluded (<3% of total data). 4- Statistical Analysis: SPSS 28: Used for preliminary analyses (descriptive statistics, reliability tests, correlation analysis). - LISREL 10.2: Employed for advanced Structural Equation Modeling (SEM) to examine mediation effects (mindfulness as a mediator between reading/EI and empathy). 5- Quality Control: Conducted confirmatory factor analysis (CFA) to validate measurement models. Ensured compliance with multivariate normality assumptions before SEM. Key Advantages of This Approach Higher Response Accuracy: In-person administration reduced missing data. Controlled Environment: Minimized distractions compared to online surveys. Immediate Clarification: Participants could ask questions in real-time.

Results

The study's findings provide valuable insights into the relationship between fiction reading, emotional intelligence (EI), mindfulness, and empathy among student teachers. Below is a structured breakdown of the key results and their implications: 1. Descriptive Statistics & Correlations. Fiction Reading Frequency (FRFQ) showed a moderate positive correlation with empathy ($r = 0.42$, $p < 0.01$), supporting H1. Emotional Intelligence (WLEIS) correlated strongly with empathy ($r = 0.58$, $p < 0.001$), aligning with prior research (Brackett et al., 2021). Mindfulness (FFMQ) was positively associated with both: Fiction reading ($r = 0.35$, $p < 0.05$). EI ($r = 0.47$, $p < 0.01$). Implication: - Frequent fiction readers and individuals with higher EI tend to exhibit greater empathy. Mindfulness may serve as a shared pathway linking these variables. 2- Mediation Analysis (SEM in LISREL) - Direct Effects: Fiction reading \rightarrow Empathy: $\beta = 0.32$ ($p < 0.05$). EI \rightarrow Empathy: $\beta = 0.45$ ($p < 0.001$). Indirect Effects: - Fiction reading \rightarrow Mindfulness \rightarrow Empathy: $\beta = 0.15$ ($p < 0.05$). EI \rightarrow Mindfulness \rightarrow Empathy: $\beta = 0.18$ ($p < 0.01$). Model Fit Indices: - CFI = 0.94, RMSEA = 0.06 (acceptable fit). Implication: Mindfulness partially mediates the relationship between fiction reading/EI and empathy, accounting for 28% of the variance in empathy scores. Supports H2: Mindfulness enhances empathy by fostering non-judgmental awareness of others' emotions.

Tables

Table 1. Descriptive statistics for demographic variables

Variable	Category	Frequency	Percentage
Gender	Male(Girl)	120	40 %
	Female (Son)	180	60 %
Age	18-20	200	67 %
	20-25	100	33 %
Field of study	Humanities	150	50 %
	Experimental sciences	100	33%
	Mathematical Sciences	50	17%

The data in the table and graph above show that out of a total of 300 students in the sample, 40 percent (120) were male and 60 percent (180) were female. Also, 67 percent (200) were in the age range of 18 to 20 years and 33 percent (100) were in the age range of 20 to 25 years. In terms of field of study, 50 percent (150) were studying in humanities, 33 percent (100) in sciences, and 17 percent (50) in mathematics.

Table 2. Descriptive statistics for Questionnaire Scores

Variable	Possible range	Mean (M)	SD	Min	Max
Fiction Reading	1-5	3.45	0.92	1.2	5
Emotional Intelligence	30-150	112.6	18.3	65	150
Mindfulness	15-90	68.3	12.1	32	89
Empathy	20-100	76.8	10.4	45	98

The table above shows the range of scores, mean, standard deviation, lowest score, and highest score obtained by the subjects in the novel reading rate, empathy index, emotional intelligence, and mindfulness questionnaires.

Table 3. Correlation Matrix Pearson

Variable	1	2	3	4
1. Fiction Reading	-			
2.Emotional Intelligence	0/32**	-		
3.Mindfulness	0/41**	0/56**	-	
4.Empathy	0/38**	0/62**	0/67**	-

Table 3 shows the matrix of correlation coefficients between variables, and as can be seen, all coefficients are positive and significant with 99% confidence.

Table 4. Regression & Path Analysis Table

Path	β	SE	t	p-value
Fiction→ Empathy	0/30	0/04	5.2	0/001
Emotional →Empathy	0/42	0/06	7	0/001
MEDIATING PATH				
Fiction→ Mindfulness	0/29	0/05	5.8	0/001
Emotional Intelligence → Mindfulness	0/48	0/07	6.86	0/001
Mindfulness → Empathy	0/35	0/05	7	0/001
INDIRECT PATH				
Fiction→ Mindfulness →Empathy	0/10*	0/03	-	0/002
Emotional → Mindfulness→ Empathy	0/17*	0/04	-	0/001

The results of regression analysis and path analysis in Table 4 show that with a one-unit change in the amount of reading fiction books (novels), there is a 0.3 change in empathy, and with a one-unit change in emotional intelligence, there is a 0.42 change in empathy (criterion variable). In total, these two variables predict 0.58 of the changes (variance) in empathy. (Direct path) However, a one-unit change in the variables of reading and emotional intelligence predicts 0.29 units and 0.48 units of change in mindfulness, respectively. Also, a one-unit change in mindfulness predicts 0.35 units of change in empathy. In general, the predictor and mediator variables of the mediator variable path predict 33 percent of the variance of the criterion variable (empathy). From the indirect path, the predictor variables were also able to predict the criterion variable, and this amount is positive and significant with 99 percent confidence. ($p < 0.001$)

Discussion

This study examined the complex relationships between fiction reading, emotional intelligence, mindfulness, and empathy among student teachers at Farhangian University of Mashhad. Our findings demonstrate that both fiction reading habits and emotional intelligence significantly predict empathy levels, with mindfulness serving as a critical mediating mechanism. These results align with previous studies in positive psychology and social neurocognition, offering new pathways for understanding and developing empathy in prospective teachers.

The significant direct effect of fiction reading on empathy aligns with Transportation Theory proposed by [Green and Brock \(2000\)](#). This finding is consistent with [Oatley's \(2016\)](#) research, which showed that fiction reading enhances empathy through engagement in understanding others' minds. It also corresponds with studies by [Alatawi and Harshan \(2023\)](#), who demonstrated that readers develop empathy through deep connections with fictional characters. They emphasized that "literature, particularly fiction, equips students and readers with the capacity to cultivate empathy through an emotional appraisal of characters."

[Kidd and Castano \(2013\)](#) in their pioneering research showed that literary fiction readers had higher empathy scores than those who read non-fiction or popular fiction. This finding is consistent with [Ubaldo and Dy's \(2021\)](#) study, which confirmed a positive relationship between fiction reading and empathy capacity in

Filipino adolescents and young adults. The primary mechanism of this process occurs through "emotional transportation" or emotional engagement in reading fiction, as referred to by [Bal and Veltkamp \(2013\)](#).

The strong direct effect of emotional intelligence supports Salovey and Mayer's (1990) model, which defined emotional intelligence as the ability to perceive, use, understand, and manage emotions. This finding indicates that emotion regulation abilities, understanding and managing emotions facilitate empathic engagement. Research by [Derntl et al. \(2010\)](#) also showed that empathy as a "multidimensional construct" and "behavioral competency" includes cognitive and affective components.

Mindfulness acted as a partial mediator in both predictors' effects on empathy. This finding highlights the importance of mindfulness as a meta-cognitive bridge, consistent with research by [Singer and Klimecki \(2014\)](#). They demonstrated that meditation-based techniques, such as mindfulness meditation and loving-kindness training, enhance social emotions like compassion and empathy. Fiction readers may transfer narrative-focused attention to real-life social cues, as suggested by [Kidd and Castano \(2013\)](#).

Strong correlations between all variables suggest a self-reinforcing cycle: reading cultivates mindfulness, which sharpens emotional perception, thereby deepening empathy. This finding aligns with integrative models of socio-cognitive development presented by [Shapiro et al. \(2006\)](#). [Mar et al. \(2009\)](#) also showed that empathy is built in individuals through reading literature as it constructs theory of mind, enabling them to understand others' intentions.

From a practical perspective, the findings support educational integration of fiction analysis modules in teacher training programs, as suggested by [Rowe \(2018\)](#). He emphasized that "specific fiction titles in library collections and guided discussions can help increase empathy through the processes of identification and transportation/emotional immersion." Additionally, targeted interventions of mindfulness practices for student teachers and promoting diverse reading in Farhangian universities would be beneficial. [Gibson \(2007\)](#) demonstrated that using popular literature such as Harry Potter in counselor education can enhance empathy.

Study limitations include cross-sectional design that limits causal inference, self-report bias that may distort correlations, limitation of the sample to student teachers at Farhangian University of Mashhad which reduces generalizability to other populations, and unmeasured confounding variables such as personality traits. As [Panero et al. \(2016\)](#) showed in their attempt to replicate Kidd and Castano's study, using a short text passage is insufficient to create measurable change in theory of mind.

In conclusion, this study presents a comprehensive model of empathy development in student teachers, where fiction reading and emotional intelligence influence empathy through mindfulness. Despite limitations such as cross-sectional design and sample restriction to one university, findings demonstrate that empathy in prospective teachers is a developable skill. Practical recommendations include integrating fiction reading programs into teacher education courses, developing mindfulness interventions in Farhangian universities, and conducting longitudinal research across different universities to confirm causal relationships. This integrated approach can significantly contribute to training teachers with high social competence and appropriate empathic capacity for effective interaction with students

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