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## Regular Article

# The relationships between parental attachment, peer attachment, automatic thoughts, and mindfulness skills among Iranian adolescents

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## Abstract

This study aimed to examine the relationship between parental attachment, peer attachments, and automatic thoughts with adolescent mindfulness skills in Iranian adolescents, drawing on internal working models and social cognitive theory. The data was collected from a sample of Iranian adolescents in Tehran using standardized measurement instruments previously developed by researchers. The collected data was analyzed using both simple and multiple regression analyses. The results revealed a positive and significant association between parental attachment and peer attachments with adolescent mindfulness skills. Conversely, automatic thoughts were found to have a negative impact on adolescent mindfulness skills. These findings suggest that strengthening attachments can contribute to the enhancement of mindfulness skills in adolescents, while addressing automatic thoughts is crucial in preventing the erosion of mindfulness skills. Consequently, experts can design interventions that focus on improving attachments and addressing automatic thoughts to promote adolescent mindfulness skills.

**Keywords:** automatic thoughts; internal working models; mindfulness skills; parental attachment; peer attachment; social cognitive theory

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## Introduction

The period of adolescence begins when physical puberty starts and continues to affect various aspects of an individual's life, including their physical, social, intellectual, and psychic realms (Talathi & Mhaske, 2017). Adolescents encounter numerous emotional and mental challenges on a daily basis, particularly as they navigate a complex world influenced by social media, academic expectations, family problems, and more. These ongoing pressures are further intensified by the fact that adolescents are still developing their ability to experience well-being, regulate their emotions, manage stress, and balance responsibilities (Crosnoe, 2021). One construct that has been associated with well-being and stress management, especially in adolescents, is mindfulness skills (Ivtzan et al., 2016; Teal et al., 2019). Mindfulness is defined as "paying attention in a particular way: on purpose, in the present moment, non-judgmentally" (Kabat-Zinn, 1994, p. 4). Accordingly, Brantley (2005) stated that mindfulness skills are the ability to focus on the present moment and be aware of what is happening now; it is the feeling of acknowledgement and acceptance of whatever feelings, thoughts, and body sensations are encountered.

Although the practice of mindfulness skills dates back to the 6th century when Buddhists embraced it as a tradition that can be cultivated through various meditation techniques (Duarte & Pinto-Gouveia, 2016), it has recently garnered significant attention from scholars and practitioners in the field of psychology (Bunjak et al., 2022; Wu et al., 2022). Research has demonstrated that engaging in mindfulness enables teenagers to pause and contemplate before responding, thereby proving advantageous in their day-to-day circumstances and personal dispositions (Bluth et al., 2015; Kostova et al., 2019). Furthermore, mindfulness skills may hold particular value for adolescents grappling with mental health concerns (Crosnoe, 2021). Mindfulness skills encompass attention, self-regulation, refocusing, and a comprehensive understanding of thoughts, feelings, and sensations (Hayes et al., 2004). They contribute to narrowing the gap between action and impulse. Mindfulness skills have the potential to minimize dissociation and enhance adaptive functioning in therapeutic practice (Sharma et al., 2016).

Despite the considerable attention given to mindfulness by scholars, previous research has highlighted the influential role of both external experiences and internal thoughts on adolescents' mindfulness abilities (Johnson & Wade, 2019; Tan & Martin, 2015; Tan, 2016). For example, Tan (2016) found that factors such as parental influence and interactions with peers can significantly shape adolescents' mindfulness skills. Scholars have also demonstrated that individuals who have secure attachments, both with their parents and peers, tend to exhibit higher levels of mindfulness (Barcaccia et al., 2020; Chen et al., 2021). This could be attributed to the fact that secure attachment relationships (e.g., parental attachment and peer attachment) provide a sense of emotional

safety and stability, which in turn facilitates individuals' ability to be present and grounded in the present moment (Dansby Olufowote et al., 2020).

Parental attachment is defined as "attachment is one specific and circumscribed aspect of the relationship between a child and caregiver that is involved with making the child safe, secure and protected" (Benoit, 2004. p. 541. p. 541). It encompasses feelings of trust, security, and receiving love and care from parents (Benoit, 2004; Delgado et al., 2022). The role of parental attachment is crucial in the emotional and social development of children, as well as their ability to establish healthy relationships in the future (Mónaco et al., 2019). Conversely, peer attachment refers to the emotional connection and bond that forms between individuals of similar age or social standing, typically peers (Gorrese & Ruggieri, 2012; Laible et al., 2000). It involves experiencing acceptance, a sense of belonging, and support from friends or peers. Peer attachment holds significance for adolescents as it provides opportunities for social interaction, emotional support, and the cultivation of social skills (Delgado et al., 2022).

Research has indicated that adolescents' general attitudes and behaviors are influenced by their interactions within the realms of parental and peer attachment (Delgado et al., 2022; Kerns, 1996). Internal working models (IWM) propose that children's experiences and attachments to their caregivers in everyday interactions can have enduring effects on their cognitive processes, beliefs, attitudes, and behaviors (Bowlby, 1982; Di Pentima et al., 2023; Furman et al., 2002). Bowlby suggests that IWMs serve as mental representations of our relationships with primary caregivers, shaping future relationships and enabling individuals to anticipate, regulate, and manipulate their surroundings (Bowlby, 1982). For example, research has found that a secure relationship with parental figures, combined with appropriate caregiver control, contributes to positive adjustment in young individuals, particularly in terms of their social and emotional development (Di Pentima et al., 2023; Soucy & Larose, 2000). While some studies have identified differences between parental and peer attachment mechanisms (Laible et al., 2000), numerous studies have concluded that parental attachment and peer attachment are interconnected and similar based on the concept of IWM (Furman et al., 2002; Thompson, 2006). Building on this understanding, the present empirical study aims to explore whether parental attachment and peer attachment have a significant impact on adolescents' mindfulness skills, drawing on the framework of IWM. Thus, the following question can be posited:

1. Is there a relationship between parental attachment and peer attachment with mindfulness, as explained by IWM?

Shedding light on IWM, it is important to consider its three dimensions: "a model of the self, a model of the other, and a model of the relationships between these dimensions" (Bowlby, 1973, 1982; Bretherton et al., 1990; Bretherton, 1990). Although parental attachment and peer attachment were selected in this study as predictors of mindfulness skills, it is important to consider the impact of individuals' internal feelings and cognitive mechanisms on mindfulness skills. In other words, individuals' thoughts and emotions regarding their internal feelings can influence their attitudes, beliefs, and behaviors (Ochsner & Gross, 2004; Stein & Levine, 2021). This idea aligns with the social cognitive theory (SCT), which suggests that personal and social factors influence individuals' attitudes, beliefs, and behaviors (Bandura, 1999). Bandura (1999) also stated that brain and cognitive development is "heavily dependent on the types of social and physical environments people select and construct." (p. 4). Given the understanding mentioned above, it can be argued that the automatic thoughts experienced by adolescents can significantly affect their development of mindfulness skills. Automatic thoughts are spontaneous, uncontrolled, and often negative thoughts that arise in response to specific situations or events (Buschmann et al., 2018; Kazdin, 1990; Schniering & Rapee, 2004). These thoughts occur without conscious effort or intentional thinking and can be triggered by various factors such as situations, individuals, or emotions (Flouri & Panourgia, 2014; Schniering & Rapee, 2004). They can greatly impact an individual's mood, behavior, and overall well-being (McKay et al., 2021). Previous research has suggested that automatic thoughts can worsen negative emotions among adolescents and children, particularly in relation to social threat, physical threat, personal failure, and hostility. However, the specific impact of automatic thoughts on mindfulness, as understood through the lens of IWM and SCT, is still limited and requires further investigation. Therefore, the present study aims to address these research gaps and questions by examining the influence of parental and peer attachments, as external factors, as well as internal feelings and emotions, specifically automatic thoughts, on the development of mindfulness skills.

1. Is there a relationship between automatic thoughts and mindfulness within the framework of IWM and SCT?

To address these research gaps and questions, the current study seeks to explore how parental attachment and peer attachment affect adolescents' mindfulness skills, with a focus on IWM. Additionally, it aims to examine the influence of automatic thoughts on adolescents' mindfulness skills, based on IWM and SCT.

## Methods

### Sample, data collection, and analysis procedure

The empirical study focused on adolescents residing in Tehran, Iran. At the time of data collection, the adolescent population in Tehran was approximately 1.8 million (United-Nations, 2019). Therefore, the study selected a sample of 300 adolescents from this population. The rationale for selecting this number is based on previous research indicating that a sample size of 300 is considered adequate for conducting an empirical research study when the population size is large, exceeding 5000 individuals (Gay et al., 2012). Furthermore, the minimum required sample size for this study was determined using G*Power software as 277, assuming a power of 0.80 (with $\alpha = 0.05$ and effect size $f^2 = 0.15$). This calculation demonstrates that our sample size exceeds the minimum requirement, indicating that it is representative of the population being studied.

For the purpose of data collection, researchers employed random sampling. The intended sample for the research consisted of adolescents aged 12–18 years old in Tehran, Iran, during the academic year 2020–2021.As a result, 15 schools located in different areas of Tehran were approached. After obtaining permission and approval from the school principals to collect data from students, one of the authors randomly distributed the questionnaire among students of various age groups. Prior to distributing the questionnaire, the purpose of the questionnaire, the study procedure, and instructions on how to complete it were explained to the students. The researcher remained present with

**Table 1.** Demographic variables ($N = 300$)

| Variables | Frequency | Percentage |
|---|---|---|
| **Age (years)** | | |
| 1215 | 141 | 47 |
| 15.118 | 159 | 53 |
| **Gender** | | |
| Male | 115 | 39 |
| Female | 185 | 61 |
| **Grade** | | |
| 9 | 27 | 9 |
| 10 | 142 | 47.3 |
| 11 | 131 | 43.7 |

**Table 2.** Descriptive statistics, normality, and multicollinearity

| Variables | Mean | SD | Skewness | Kurtosis | VIF |
|---|---|---|---|---|---|
| 1. Parental attachment | 3.935 | 0.275 | −1.471 | 0.236 | 2.015 |
| 2. Peer attachment | 4.124 | 1.251 | 0.588 | −0.451 | 1.945 |
| 3. Automatic thoughts | 2.754 | 0.894 | 0.149 | −0.320 | 2.194 |
| 4. Mindfulness skills | 4.381 | 1.102 | 1.524 | −1.217 | 1.324 |

SD = standard deviation; VIF = variance inflation factor.

the students while they completed the questionnaire and addressed any inquiries, they had regarding the measurement items. By distributing 310 questionnaires among students, 300 of them were completed and deemed eligible for inclusion in the data analysis procedure. The overall outline of demographic variables is shown in Table 1.

To test the research hypotheses and questions, the first step involved conducting linear regression. In this phase, the unstandardized coefficient beta (B), $R$-square, and $p$-value were used as criteria to determine the significance of the path analysis. In the subsequent step, multiple linear regression was employed to provide an overall assessment of the impact of the independent variables (automatic thoughts, parental attachment, and peer attachment) on the dependent variable (adolescent mindfulness). Multiple linear regression is a statistical technique that utilizes two or more independent variables to predict the outcome of a dependent variable. During this procedure, the unstandardized (B) and standardized ($\beta$) coefficient beta, standard error, $t$-value, and $p$-value were examined to assess the significance of the relationships.

### Measurement instruments

To develop the measurement instruments, the initial step involved preparing the questionnaire in its original English version. Subsequently, the back-translation method was utilized to translate the questionnaire from English to Persian. All respondents were required to record their responses using a five-point Likert scale, where ("1 = strongly disagree and 5 = strongly agree"). In order to assess the face validity of the finalized Persian questionnaire, it was distributed among 5 expert teams with expertise in children and adolescent psychology. After engaging in discussions with the expert teams, certain revisions were made to enhance the readability and content of the measurement instruments. Moreover, considering that the intended sample for the empirical study consisted of adolescents between the ages of 12 and 18, the questionnaire's simplicity, comprehensibility, and readability were pretested among 20 students. Through individual face-to-face interviews with the students, their comments and feedback regarding the survey were reviewed and taken into account. Subsequently, after making several revisions, the final version of the questionnaire was prepared.

### Mindfulness skills

The measurement of this construct was conducted using the Child and Adolescent Mindfulness Measure, developed by

Greco et al. (2011). A total of 10 items were utilized to assess this construct. An example item from the measure is "I become upset with myself when I experience emotions that do not seem logical." The reliability of these measurement items was assessed through testing the alpha coefficient, resulting in a value of ($\alpha = 0.895$).

### Automatic thoughts

To assess the Children's Automatic Thoughts Scale, a total of 40 items were adopted from a study conducted by Schniering and Rapee (2002). This construct comprises four subdimensions: physical threat (e.g., "I'm going to have an accident"), social threat (e.g., "I'm worried that I'm going to get teased"), personal failure (e.g., "I will never be as good as other people are"), and hostility (e.g., "other kids are stupid"). The alpha coefficient for this construct was calculated to be ($\alpha = 0.923$), indicating high internal consistency.

### Parental and peer attachment

To measure this construct, the Parental and Peer Attachment Scale inventory, consisting of 25 measurement items developed by Gullone and Robinson (2005), was utilized. An example item from the scale is "I like to get my parents' point of view on things I'm concerned about." The alpha coefficient value for these measurement items was also found to be acceptable ($\alpha = 0.910$).

Moreover, in order to control for variables and examine their impact on the research hypotheses and constructs, gender and age were chosen as control variables in the model (Bernerth & Aguinis, 2016).

### Results

Prior to conducting linear regression, it is necessary to perform certain statistical analyses to assess the psychometric properties and descriptive statistics of the dataset. This phase involves examining the means, standard deviation, testing for normality using skewness and kurtosis, and conducting a multicollinearity test using the variance inflation factor (VIF). The results of these procedures are presented in Table 2. According to the table, the test of normality indicates that the data is distributed normally, as the values fall within the threshold of ±2 (Hair et al., 2013). Additionally, the results of the VIF test for multicollinearity demonstrate that all constructs in the study have values below the acceptable range of 2.5 (Johnston et al., 2018).

The study examined the influence of three separate factors on mindfulness using simple linear regression in SPSS (V.23). The findings are presented in Table 3. The results indicate that parental attachment has a positive impact on mindfulness ($B = 0.136$; $R^2 = 0.184$; $p$-value = 0.001), peer attachment also has a positive impact on mindfulness ($B = 0.190$; $R^2 = 0.225$; $p$-value = 0.001), and automatic thoughts have a negative impact on mindfulness ($B = −0.187$; $R^2 = −0.184$; $p$-value = 0.001). Since the beta

**Table 3.** Results of testing simple linear regression

| | Mindfulness | | |
|---|---|---|---|
| Variables | B | $R^2$ | p-value |
| Parental attachment | 0.136 | 0.184 | 0.001 |
| Peer attachment | 0.190 | 0.225 | 0.001 |
| Automatic thoughts | −0.147 | −0.220 | 0.001 |

**Table 4.** Results of testing multiple regression

| | Unstandardized coefficient | | Standardized coefficient | | |
|---|---|---|---|---|---|
| Variables | B | S.E. | β | t-value | p-value |
| Parental attachment | 0.090 | 0.030 | 0.178 | 3.038 | 0.003 |
| Peer attachment | 0.114 | 0.037 | 0.187 | 3.571 | 0.002 |
| Automatic thoughts | −0.093 | 0.010 | −0.141 | −2.395 | 0.017 |

B = unstandardized beta; S.E. = standard error; β = standard beta.

coefficients for all three independent variables were greater than 0.05 and the p-values were less than 0.05, it can be concluded that they were significant and accepted.

During the second phase of testing the impact of independent variables on dependent variables, multiple linear regression was utilized. This type of regression involves adding two or more predictors (independent variables) to the model simultaneously in order to assess their collective impact on a criterion variable (dependent variable) (Aiken et al., 2003; Marill, 2004; Uyanık & Güler, 2013). In this study, parental attachment, peer attachment, and automatic thoughts were included as the three independent variables in the multiple linear regression. Additionally, gender and age were included as control variables to examine their significance and influence on the outcome measures. However, the control variables did not yield any significant findings and did not result in any changes to the multiple regression model.

Table 4 displays the outcomes of the multiple linear regression analysis. The standardized effects of parental attachment on mindfulness (β = 0.178; t = 3.038; p-value = 0.003), peer attachment on mindfulness (β = 0.187; t = 3.571; p-value = 0.002), and automatic thoughts on mindfulness (β = −0.141; t = −2.395; p-value = 0.017) were found to be statistically significant and supported. Accordingly, it can be argued that high levels of parental and peer attachment have a positive impact on adolescent mindfulness. Conversely, the presence of automatic thoughts in adolescents is likely to have a negative impact on mindfulness.

## Discussion and implications

The objective of this study was to examine how parental attachment and peer attachment, through the IWM framework, shape adolescents' internal feelings and emotions. Additionally, it aimed to explore how automatic thoughts, as an internal factor, influence the development of mindfulness skills in adolescents, drawing on the frameworks of IWM and SCT. Through a comprehensive theoretical foundation and various statistical analyses, the results indicated that parental attachment and peer attachment had a positive influence on adolescent mindfulness skills, whereas automatic thoughts had a negative impact on such skills.

From an overall perspective based on the findings, parental attachment and peer attachment emerged as the most significant predictors of mindfulness skills among Iranian adolescents, with parental attachment and peer attachment making the highest contributions. These findings align with previous research conducted by previous scholars which highlighted the effectiveness of parental attachment in fostering mindfulness skills among adolescents (Bluth et al., 2015; Bunjak et al., 2022; Burgdorf et al., 2019; Caldwell & Shaver, 2013; Gullone & Robinson, 2005). Similarly, Chen et al. (2021) explored the positive impact of parental attachment on the enhancement of adolescents' mindfulness skills, leading to a reduction in psychological distress. Thus, the results of this study further support the notion that parental attachment and peer attachment play a crucial role in the development of mindfulness skills among adolescents.

With this realization, one implication of the present study is that attachment to one's parents and peers raises one's level of attentiveness and mindfulness abilities in adolescents. This implies that when parents offer emotional support and actively engage in their child's life, it can have a positive influence on their child's capacity for mindfulness (Parent et al., 2016). Additionally, the study reveals that peer attachment also plays a role in shaping mindfulness abilities. Adolescents who maintain positive relationships with their peers tend to display heightened levels of attentiveness and are more inclined to practice mindfulness. Furthermore, the findings of this study provide strong evidence in support of IWM theory, highlighting the substantial and influential role of parental attachment and peer attachment as crucial psychological factors that greatly contribute to the development of mindfulness skills (Bowlby, 1973, 1982). In essence, when adolescents experience feelings of worthiness, high self-esteem, positive emotions, and have supportive caregivers, their level of mindfulness skills is likely to be enhanced and improved (Delgado et al., 2022).

The result of testing the automatic thoughts on adolescent mindfulness skills, showed that automatic thoughts in a negative way would impact mindfulness skills. This result also parallels Frewen et al. (2008), who explained mindfulness skills were negatively correlated with negative thought frequency and perceptions of the ability to let go of negative thoughts. Based on the results and previous studies, it can be argued that automatic thoughts as internal perception which adolescents have own about themselves can decrease their mindfulness attitude. Simply put, automatic thoughts as uncontrollable cognitive structures lead adolescents to overcome and diminish the negative thoughts that they have about others and through having this perception their level of mindfulness skills would be decrease (Ayhan & Kavak Budak, 2021; Kumar et al., 2023). Since mindfulness skills are interconnect with accepting and considering whatever is accepting at the moment without the sense of judgment, it can be notion that automatic thoughts as unfavorable cognitive structure can erode whatever is happening in the moment though it is positive or negative. Moreover, the results of the present study provide support to both IWM and SCT in regard of considering internal cognitive structures in shaping adolescents' attitudes and behaviors. Through these lenses it can be argued that automatic thoughts as internal structure, and parental and peer attachment as two pillars of external environment could beneficially trigger mindfulness skills.

Shedding light on the study's findings and the existing theoretical background, it can be suggested that in order to enhance adolescent mindfulness skills, which play a crucial role in

reducing depression and promoting mental health and psychological development, it is important to consider the mechanisms of parental attachment and peer attachment. In simpler terms, previous research has shown that mindfulness skills serve as a foundation for healthier psychological and physical well-being (Ayhan & Kavak Budak, 2021; Tran et al., 2022), and these skills can be fostered through parental support, serving as positive role models, and cultivating positive and psychologically healthy peer relationships. Therefore, a significant implication of this study is that increasing adolescent mindfulness skills can be achieved by promoting parental support and positive role modeling, as well as fostering positive and psychologically healthy peer attachments. Looking at it from a different angle, it is crucial to prioritize the investigation and exploration of internal emotions, psychological factors, and cognitive constructs when it comes to shaping adolescents' mindfulness. In other words, disregarding internal cognitive structures such as automatic thoughts can have a detrimental effect on mindfulness skills. Therefore, it is important to take into consideration and account for these internal cognitive processes when assessing mindfulness.

### Limitations and future research agendas

While this study makes valuable theoretical and methodological contributions, it is important to acknowledge its limitations and consider them in future research. Firstly, the data collection in this study was conducted using a cross-sectional approach. Future studies could benefit from utilizing time-lagged or longitudinal perspectives to provide a more comprehensive understanding of the variables examined. Secondly, although efforts were made to address multicollinearity and conduct simple and multiple regressions to test hypotheses, the presence of cross-loading issues with the measurement instruments prevented the use of structural equation modeling. To overcome this limitation, future studies are encouraged to explore the possibility of using shortened items and employing structural equation modeling for a more robust statistical analysis. Lastly, it is worth noting that this study was conducted in Iran, a developing country with a distinct cultural background. Therefore, future researchers are advised to consider the potential variations in the impact of independent variables among developed countries.

**Competing interests.** None.

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