

# Relationship of Metacognitive Strategies and Attachment Styles with School Belonging among Secondary School Students in Zahedan, Iran

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## Abstract

**Background and Purpose:** The adolescence period followed by childhood is accompanied by changes in individuals, including the tendency of being independent. This study aimed to investigate the relationship of metacognitive strategies and attachment styles with the sense of school belonging among high school students in Zahedan, Iran.

**Materials and Methods:** This correlational study was conducted on a sample consisting of 370 students selected by simple cluster-random sampling from all secondary school students in Zahedan. The required data were collected using questionnaires, namely the School Sense of Belonging Questionnaire (2004), Metacognitive State Questionnaire (1996), and Attachment Questionnaire (1991). The gathered data were analyzed in Amos software (version 22) and SPSS software (version 22) using the Pearson correlation coefficient and structural equation model.

**Results:** Based on the results, metacognitive awareness ( $\beta=0.31$ ,  $P<0.001$ ), cognitive strategy ( $\beta=0.24$ ,  $P=0.045$ ), planning ( $\beta=0.23$ ,  $P=0.003$ ), and self-review ( $\beta=0.28$ ,  $P<0.001$ ) had positive effects on the sense of school belonging. It was also revealed that a secure attachment style ( $\beta=0.17$ ,  $P=0.021$ ) had a positive effect on school belonging. Furthermore, avoidance attachment style ( $\beta=-0.27$ ,  $P<0.001$ ) and ambivalent attachment style ( $\beta=-0.23$ ,  $P=0.003$ ) negatively affected the sense of belonging to school.

**Conclusion:** It can be concluded that metacognitive strategies components had a positive and direct effect on the sense of school belonging. Moreover, a secure attachment style had a positive effect on school belonging, and an avoidance attachment style and ambivalent attachment style had negative effects on the sense of belonging to school.

**Keywords:** Schools, Metacognition, Students

## 1. Introduction

The adolescence period followed by childhood is accompanied by changes in individuals, including the tendency of being independent. During this age, adolescents pay special attention to the outside environment to gain independence. However, often the peer environment at this age is not healthy, and there are such deviations as smoking, sexual deviation, and drug use (1). The school environment is one of the alternatives that can be found for family and peer environment at this age. If the school environment could satisfy the basic needs of the teenager at this age, it would create a sense of belonging to the school. These needs include stability, increased individual independence positions, opportunities to compete, care for support, the student, and being accepted with friends (2).

The equivalent terms of the sense of belonging to

school are attachment to school, link with the school, participation in school, and school community. In the bio-ecologic or social-based approach, the sense of belonging to the public is defined as describing the quality of communication at the community level. The sense of belonging, specifically to the school, is described as the individuals' view that increases their relationship with the school environment (3). Another approach, the psychological approach to the sense of belonging to school, identifies the sense of belonging to the school as a state of psychology in which students feel themselves, and other students are cared for and supported by the school (4). According to this approach, when students face strict school rules and are punished or even expelled with the first mistake at school, they will have a lower sense of belonging than those who are easy to find in schools (5).

In another approach, it has been tried to define the sense of belonging with the result and its returns (6). According to this individual approach, the sense of belonging to the school has good grades and average in school. In another approach, the sense of belonging has been defined and measured as the level of student inclusion and activity in school assignments and extra-program activities (7). In general, it can be noted that the common element of all definitions of communication is the sense of security and independence.

Several studies have been performed to investigate school belonging. For example, the results of some studies show that this component has a positive correlation with academic motivation and achievement in students (8), willingness to participate in extra-program activities in school (9), mental and physical health (10), psychological well-being (11), high self-esteem (12), academic performance improvement, desirable behavior, and timely attendance to school (13). Students who feel they belong to school not only avoid risky behaviors, such as alcohol consumption and violence, but also help their friends avoid such deeds (14). The sense of belonging to school has a significant effect on reducing risk and carrying out risky behaviors, such as contentiousness, bullying and destruction, school escape, substance and alcohol abuse, violent behaviors, and adulthood injuries (15). Katapally Tarun et al. (16) found that male students who do not belong to their school tend to reveal behaviors like aggression and substance abuse, while female students develop depressive symptoms. To examine the future of the sense of belonging to school is as much important as to know the results of the sense of belonging to school. This study was conducted to investigate the effect of metacognitive strategies and attachment styles on the sense of school belonging among students.

One of the important factors that play a role in the sense of belonging to school in individuals is how parents respond to the needs of the child in childhood, which leads to the formation of attachment styles in the child (17). Bowlby believes that the lasting emotional bond between the child and the caregiver is called attachment (18). The main characteristic of this tendency is to search and approach the caregiver and maintain this relationship and proximity, especially in threatening situations (19). As a result of their early experiences, individuals internalize patterns of themselves and others. Bowlby believes that introspection models influence the formation and minimization of close relationships in the continuation of one's life (20).

Three classifications of attachment styles can be provided, namely a secure attachment style and two insecure attachment styles, including avoidant and anxious (21). These styles comprise stable patterns of cognitions and behaviors that become manifested in later interpersonal close relationships (e.g., trust and cooperation) and in the intrapersonal relationship (e.g., mental health and

emotional well-being). The findings of numerous studies have suggested that children's attachment style is linked with their socioemotional development and functioning (22). Securely attached children have specifically been shown to manifest more effective emotional regulation, higher sociability, and greater psychological well-being, compared to children with an insecure-avoidant, anxious, or disorganized attachment style (23).

Metacognitive strategies are another important factors that play a role in the sense of belonging to the school. Metacognition can be considered as learning how to learn and it can be specialized in metacognition how to monitor thinking and learning and how to use it in practice. In other words, the main meaning of metacognition is cognition. Metacognition is our ability to be aware of what we know and what we do not know. The term metacognition refers to the awareness of self-learning or how to learn (24). Metacognitive strategies are methods that learners use to design learning, supervise learning activities, and evaluate the results of learning activities. These strategies provide tools for self-regulation and self-management to achieve optimal learning outcomes for learners and regulate cognitive and emotional-social strategies.

Metacognition can be divided into metacognitive knowledge (knowledge about declarative knowledge) and metacognitive control (or meta strategic knowledge, that is knowledge about strategies and their effective uses) (25). All these metacognitive aspects make a major contribution to music learning and practice. Metacognition allows performers and music students to understand the task demands of a musical piece (metacognitive knowledge), identify potentially difficult passages (metacognitive control), select appropriate cognitive and physical strategies (meta strategic knowledge) that work best for them (metacognitive knowledge about themselves as musicians), and decide how to effectively structure learning/practice/performance in relation to such factors (metacognitive control). Students and performers also monitor and regulate the real effectiveness of their chosen strategies (metacognitive monitoring). It has been shown empirically that metacognition is associated with studying, learning, critical thinking, problem-solving, and decision making, which are essential for educational success (26). Metacognition plays an essential role in successful learning. To investigate metacognitive activity and determine effective metacognitive components, successful learning is important. Students who have a strong internal motivation for learning and competence use complex cognitive processes, such as expansion or organization (27).

Although several studies have been conducted on the relationships between the research variables, to the best of the researcher's knowledge, no specific research o has been dedicated to investigate the relationship of metacognitive strategies and attachment styles with the sense of school belonging. Therefore, due to the poverty

of the study and the paradoxicality of some researches in this field, the present study aimed to investigate the relationship of metacognitive strategies and attachment styles on the sense of school belonging among secondary school students in Zahedan, Iran.

### Materials and Methods

The present study was conducted in the form of a correlational design based on structural equation modeling. The statistical population of this study ( $n=56,220$ ) consisted of all secondary school students (both genders) in Zahedan, within the school year of 2019-20. According to the statistical population and the type of research, the simple cluster random sampling method was used to select the samples, and the Cochran formula was used to determine the number of subjects. The final sample size was determined at 370 cases according to the Cochran formula. Among this population, 200 (54%) and 170 (46%) students were boys and girls, respectively. The mean age scores of the subjects were obtained at  $17.8\pm 3.2$  and  $17.3\pm 2.9$  for male and female students, respectively. It was reported that 156 (42.1%) and 214 (57.9%) of the cases were studying in the first year (10<sup>th</sup> grade) and second year (11<sup>th</sup> grade) of secondary school, respectively.

Regarding the ethical considerations, the research objectives and procedures were explained to all cases orally, and they were informed of the possibility of study withdrawal at any research stage. Moreover, informed

consent was obtained from all participants and they were assured of anonymity and confidentiality in this study. To ensure the work process, all questionnaires were administered by the researcher.

**School Sense of Belonging Questionnaire:** This questionnaire, initially designed by Barry et al. in 2004, was revised by Barry and Betty in 2005. It consists of six subscales, including a sense of belonging to peers, teacher support, sense of respect and justice in school, participation in society, person-to-school relationship, and scientific participation. This questionnaire is designed to sound positive sentences on a 5-point Likert scale (from I completely agree to completely disagree) (28). The reliability coefficient of the questionnaire was obtained at 0.75 for the whole questionnaire and 0.73, 0.89, 0.75, 0.84, 0.69, and 0.78 for peer sense, teacher support, sense of respect and justice in school, participation in society, person-to-school relationship, and scientific participation, respectively (28). The reliability of this instrument was estimated at 0.86 in this study using the Cronbach alpha coefficient.

**Metacognitive State Questionnaire:** This questionnaire, developed by Weissman and Beck (1978), consists of three scales of brevity, validity, and ability and four components, namely metacognitive awareness, cognitive strategy, planning, and self-review, for each component of five items (29). Since metacognitive state variables change over time and in different situations and

**Table 1.** Mean of research variables

Variable	M	SD
School belonging	75.73	11.87
Teacher support	18.98	3.31
Participation in society	8.21	2.02
A sense of justice and respect	17.73	3.58
Feeling positive to school	11.75	2.16
Person-school relationship	8.49	2.40
Scientific participation	10.64	2.15
Metacognitive awareness	14.88	2.43
Cognitive strategy	14.38	2.18
Planning	13.78	3.18
Self-review	13.87	2.51
Secure attachment	20.35	4.13
Avoidance attachment	19.40	4.49
Ambivalent attachment	17.16	4.09

**Table 2.** Correlation coefficient among variables

Variable	1	2	3	4	5	6	7	8
School belonging	1							
Metacognitive awareness	0.26**	1						
Cognitive strategy	0.28**	0.65**	1					
Planning	0.20*	0.23**	0.24**	1				
Self-review	0.35**	0.28**	0.32**	0.31**	1			
Secure attachment	0.37**	0.26**	0.23**	0.24**	0.29**	1		
Avoidance attachment	-0.28**	-0.32**	-0.18**	-0.19**	-0.37**	-0.41**	1	
Ambivalent attachment	-0.32**	-0.35**	-0.29**	-0.27**	-0.22**	-0.26**	-0.29**	1

\*\* $P<0.001$ , \* $P<0.05$

the test-retest method will not be suitable (29) to determine the reliability of the metacognitive state components; therefore, the factor analysis method was used. The validity coefficient range of 0.70-0.83 has been reported in a study performed on a statistical sample of students in the 8<sup>th</sup>-12<sup>th</sup> grade. The reliability of this tool was confirmed using the Cronbach alpha coefficient ( $\alpha=0.81$ ).

**Attachment Questionnaire:** This scale, designed by Collins and Reid (1991), includes self-assessment of relationship creation skills and self-description of attachment relationships shaping methods relative to attachment graphics. This instrument consists of 18 articles and 3 subscales of secure attachment, avoidance attachment, and ambivalent attachment. The scores are rated on a 5-degree Likert scale (1=in no way consistent with my characteristics to 5=fully match my characteristics) (30). The validity coefficient of this questionnaire was reported to be 0.97 on 105 boys and girls in Tehran. The validity of this questionnaire was also revealed to be appropriate (30). In this study, Cronbach alpha coefficient reliability values for secure attachment subscale, avoidance attachment, and ambivalent attachment were calculated at 0.71, 0.7, and 0.79, respectively.

The data were analyzed in Amos software (version 22) and SPSS software (version 22) using the correlation coefficient, Pearson correlation matrix, multiple regression, and structural equation modeling. The indirect path was calculated using the bootstrap method. The significance level in this study was 0.05.

**Results**

The sample consisted of 370 secondary school students. Table 1 presents the descriptive status of the research variables among the subjects.

According to Table 1, the mean scores of the school belonging variable, metacognitive strategies, and attachment were obtained at  $75.73\pm 11.87$ ,  $56.91\pm 8.11$ , and  $59.95\pm 10.92$ , respectively. Table 2 summarizes the correlation coefficients between the research variables.

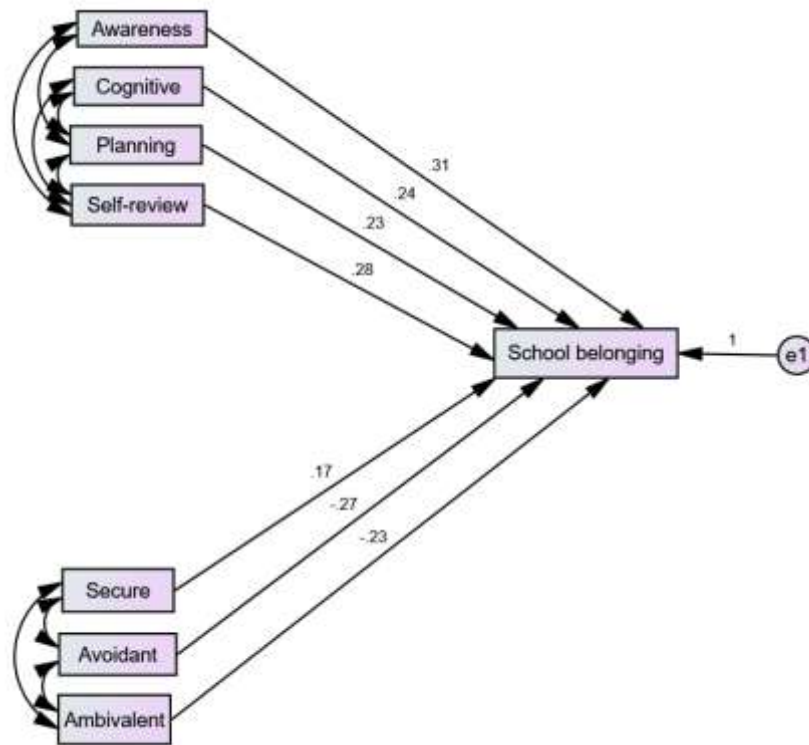
As can be seen in Table 2, there is a significant relationship among school belonging, attachment styles, and metacognitive strategies.

Although the Chi-square value for the model was significant, ( $\chi^2=37.29$  with  $df=39$ ,  $P<0.001$ ), other fit indices, such as goodness of fit index, adjusted goodness of fit index, comparative fit index, were all above 0.90,

**Table 3.** Fit indices of the hypothetical model

X <sup>2</sup>	df	P	X <sup>2</sup> /df	RMSEA <sup>1</sup>	GFI <sup>2</sup>	AGFI <sup>3</sup>	CFI <sup>4</sup>	TLI <sup>5</sup>	IFI <sup>6</sup>	NFI <sup>7</sup>
52.14	39	>0.05	1.33	0.05	0.86	0.98	0.91	0.90	0.89	0.97

**1:** Root mean square error of approximation, **2:** Goodness of fit index, **3:** Adjusted goodness of fit index, **4:** Comparative fit index, **5:** Tucker–Lewis index, **6:** Incremental fit index, **7:** Norm fit index



**Figure 1.** Model of the relationship of metacognitive strategies and attachment styles with school belonging in the standardized mode

**Table 4.** Standard and non-standard regression coefficients of direct paths of the hypothetical model

Paths	B	$\beta$	Standard error	Critical ratio	P
Metacognitive awareness to school belonging	0.17	0.31	0.027	-6.34	0.001
Cognitive strategy to school belonging	0.04	0.24	0.021	-2.00	0.045
Planning to school belonging	1.62	0.23	0.546	-2.97	0.003
Self-review to school belonging	1.79	0.28	0.493	3.63	0.001
Secure attachment to school belonging	0.91	0.17	0.402	2.26	0.021
Avoidance attachment to school belonging	-0.74	-0.27	0.198	-3.71	0.001
Ambivalent attachment to school belonging	-0.98	-0.23	0.331	-2.96	0.003

and root mean square error of approximation was 0.02, indicating that the model had a good fit to the data. It has been recommended that the model Chi-square statistic be used as a goodness of fit index, in which a smaller Chi-square value is indicative of a better model fit. Therefore, additional goodness of fit indices was also used to demonstrate the model fit in Table 3.

Based on the results of Table 4, metacognitive awareness ( $\beta=0.31$ ,  $P<0.001$ ), cognitive strategy ( $\beta=0.24$ ,  $P=0.045$ ), planning ( $\beta=0.23$ ,  $P=0.003$ ) and self-review ( $\beta=0.28$ ,  $P<0.001$ ) had positive effects on the sense of school belonging. It was also revealed that a secure attachment style ( $\beta=0.17$ ,  $P=0.021$ ) had a positive effect on the sense of school belonging. Moreover, avoidance attachment style ( $\beta=-0.27$ ,  $P<0.001$ ) and ambivalent attachment style ( $\beta=-0.23$ ,  $P=0.003$ ) had negative effects on the sense of school belonging.

## Discussion

This study aimed to investigate the effect of metacognitive strategies and attachment styles on school belonging among second-grade high school students in Zahedan. The results showed that metacognitive strategies (i.e., metacognitive awareness, cognitive strategy, planning, and self-review) had a direct effect on the sense of belonging to school. The research was not found to confirm the above findings; however, this result is in line with those of studies performed by Wang (31) and Brière (32).

In explaining the effect of metacognitive strategies on the sense of school belonging, it can be said that these metacognitive states cause the growth of creativity, academic performance, and successful learning experience through facilitating obtaining successful experiences and creating the necessary opportunity for practice. Cognitive and metacognitive strategies make learners better at understanding their strengths and weaknesses, choosing realistic goals, planning for goals, and evaluating tasks, which as a result, they will have more control over their actions. Furthermore, the application of these strategies in the best way prevents cognitive interference of negative mental interactions due to the short-term memory deficits and other distraction factors (21). Therefore, teaching these strategies and learning them by learners make individuals more prepared and confident to attend exam

sessions; consequently, they make better progress in academic performance and experience a sense of school belonging.

In this study, it was revealed that the sense of school belonging had a positive relationship with secure attachment and a negative relationship with avoidance attachment and ambivalent attachment style. Regarding, it can be said that Bowlby provided evidence that events that occurred during childhood could have profound effects on the quality of students' relationships with their attachment image. Each stage of transformation accompanies the possibility of reorganization of attachment. Therefore, students with insecure attachment styles may develop a secure attachment if they find a supportive and sensitive environment with parents or teachers (22). However, some students who have a secure attachment pattern may also become unsafe. This is especially true about students who have less influence in helping them cope with the needs and necessities of transformation stages, or have parents who are well able to receive and meet their needs; however, they are unable to accompany and respond to their needs while individuality" and "maturity", which is the subsequent periods of transformation.

The study population was limited to secondary school students in Zahedan. It is suggested that similar research be conducted in other cities to be able to compare the results of this study with the existing ones. It is also recommended that combined research methods be used for data collection, such as interviews and observations, along with questionnaires. Using other similar structures in this regard, somewhere in this method and comparing its results with the present study. Considering the importance of confirming the efficiency of interventional approaches to expand their application, it is suggested that this research be conducted in a different society and in a form of other research projects. Since students' sense of school belonging is important, it is suggested that authorities and planners pay more attention to attachment styles and the metacognitive states of students.

## Conclusion

It can be concluded that metacognitive strategies have a positive and direct relationship with school belonging and attachment. Therefore, metacognitive strategies and attachment styles have many practical implications in the



research and etiology fields of school belonging. These findings allow us to derive direct implications for teaching metacognitive strategies. These implications enabled us to provide specific practical hints useful to improve metacognitive strategies, enhancing both teachers' metacognitive behavior while teaching and students' metacognitive awareness during their learning.

## Acknowledgement

## Conflicts of interest

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