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Structural Model of Students' Academic Motivation based on the Teacher-Student Relationship, School Attachment, and Metacognitive Awareness through Self-Mediation

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Abstract

Background: The aim of the present study was to investigate the structural model of student motivation based on the teacher-student relationship, school attachment, and metacognitive awareness through self-mediated disabling.

Materials and Methods: The approach used in this analysis was the structural equation modeling correlation. The statistical population of this study included all male and female high school students in the 22.0 Tehran districts in the academic year of 2017-18 in the second year of high school. Based on the table by Jesse and Morgan, stratified random sampling was used to select 480 individuals. They were selected and answered the Motivation Questionnaire (AMS), Teacher-Student Relationship (IT-SR), School Attachment (SAQ), Metacognitive Awareness (MAI), and Self-Handicapping Scale (SHS). Pearson correlation with SPSS software version 20 and path analysis with Amos software was used to analyze the data.

Results: Demographic findings show that most of the sample cases are boys and 17-year-olds. It can be concluded that Teacher-student relationships has an indirect effect on Academic motivation by mediating role of Self-handicapping ($p<0.05$). But the indirect relationship between attachment to school with Academic motivation was not confirmed ($p>0.05$).

Conclusion: The results showed that the teacher-student relationship with academic motivation was significant and school attachment has a direct and significant relationship with academic motivation, while the indirect effect was not significant. Also, the relationship between metacognitive awareness and academic motivation with the presence of self-medicated mediation was directly and indirectly significant. Given the importance of the role of the mentioned variables on students' academic motivation, efforts should be made to create conditions for promoting students' academic motivation by creating a supportive and positive, active, and vibrant environment.

Key Words: Handicapped, Motivation, Metacognitive Awareness, Self-Mediation, Students.

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1- INTRODUCTION

As a fundamental variable of education and training, academic motivation has been at the center of attention of educational psychologists and researchers because efforts and activities done by every student in their journey to success depend on their motivation quality and extent (1). Teachers and educators pay attention to the motivation and engagement of students in progress-based behaviors (2). It is vital to identify factors that create motivation in students within the education and learning process. Relevant studies have supported the positive relationship between academic motivation and academic achievement (3). Taylor et al. (2014) found a mutual and interactional association between academic motivation and academic achievement (4).

In general, academic motivation is classified into two types of intrinsic motivation and extrinsic motivation. Intrinsic motivation defines an activity done for its own sake (5), while extrinsic motivation originates from external motives and consequences (6). There are various theories and principles in the field of academic motivation that point to the role and formation of motivation. Nowadays, new approaches combine theories to obtain a comprehensive viewpoint. The academic motivation and engagement model proposed by Martin includes 11 motivational dimensions. In his theory, Martin divides the academic motivation cycle into four dimensions including adaptive cognition, maladaptive cognitions, adaptive behavior, and maladaptive behavior (2). School Attachment and Teacher-Student Relationships are behavioral components (adaptive or maladaptive) and metacognitive awareness and self-regulation are cognitive components (adaptive or maladaptive) (7). According to Martin's Theory and self-regulation approach and metacognitive awareness, adaptive behavioral factors can affect the academic motivation and achievement of students (2). On the other hand, school attachment has received considerable attention from educators and school counselors. School attachment leads to educational attraction, educational eagerness, and intrinsic motivation of students, which creates substantial implications for academic, social, and occupational achievements (8). Studies have proved that school attachment increases the academic motivation of students and these factors are highly correlated in a way that a decline in one of them leads to a reduction in another one (8-10). Therefore, learning strategies affect academic motivation and school attachment as individual factors and application of cognitive strategies especially metacognitive ones account for the main framework of learning understanding and motivation of students (11). This is a key factor for admission to the university and the continuation of academic educations (12). Many studies have shown that metacognitive awareness positively affects the learning extent (13), motivation, school attachment, and academic achievement of students (14).

Educational psychologists believe that many learners can adjust and control motivational metacognitive and behavioral aspects of their academic achievement so they can attain the considered higher education cognitive goals as successful learners. Learning motivation plays a mediating role based on metacognitive awareness when predicting academic achievement (15). Research results imply that there is a relationship between metacognitive strategies and awareness and academic motivation and achievement (16). Moreover, relevant studies found a positive and significant association between metacognitive awareness and academic motivation (17). Pantiwati and Husamah (2017) concluded that self and

peer assessments of students led to more metacognitive awareness (18). Due to the wide range and high effectiveness of motivation in various scopes, some constructs related to students' motivations can be considered based on the teacher-student relationship, school attachment, and metacognitive awareness as mediators such as self-handicapping. Studies have shown that there is a relationship between academic self-handicapping and academic motivation so that the major part of the academic failure of learners and decreased motivation in them stems from this construct, which is usually ignored (19). Academic self-handicapping is a set of behaviors enabling an individual to attribute failure and success to external and internal factors, respectively (20). Self-handicapping is, indeed, a defensive strategy used by individuals before doing a task to create some obstacles to attribute their undesired performance to. (21). Gavric and colleagues (2017) found a negative and significant relationship between academic self-handicapping and anxiety and metacognitive beliefs. They also found that metacognitive awareness (positive and negative) is the most robust anticipator of academic self-handicapping (22). Carciofo and colleagues (2017) concluded that there is a positive and significant relationship between negative metacognitive awareness and self-handicapping. Furthermore, results showed a negative and significant association between positive metacognitive awareness and academic self-handicapping. Besides, metacognitive awareness was the main string predictor of self-handicapping (23). As all previous studies have examined the relationship between the above-mentioned variables and academic motivation separately, there is a research gap in the simultaneous study of all relationships in one model. Therefore, this study aims to examine fundamental psychological factors predicting motivation considering metacognitive awareness, school attachment, teacher-student relationship, and mediating role of academic self-handicapping in students (**Figure.1**). Accordingly, the main hypothesis of this study assumes that the structural model of students' motivation has a good fit based on the teacher-student relationship, school attachment, and metacognitive awareness with the mediation role of self-handicapping.

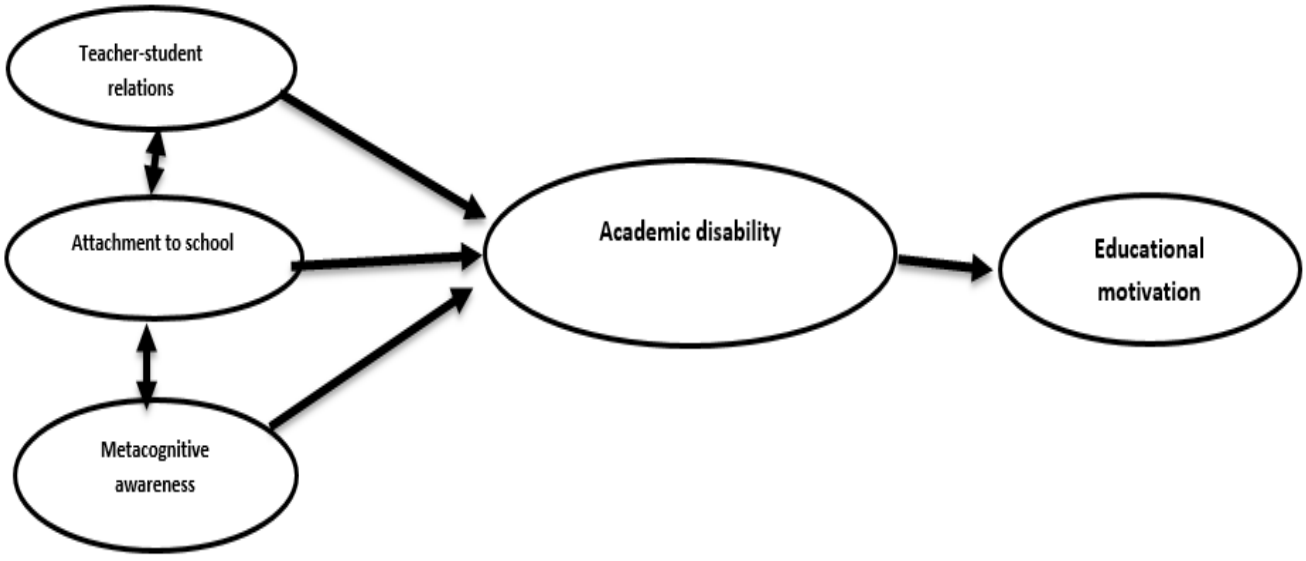

Fig1: Conceptual model of research.

2- MATERIALS AND METHODS

2-1. Study design and population

This is an applied study in terms of objective, a quantitative study in terms of data collecting method, and a descriptive-correlational study in terms of data analysis through Structural Equation Modeling (SEM). The statistical population of the extant paper comprised all second-grade high school students (boys and girls) who were studying at the tenth, eleventh and twelfth grades in Tehran, Iran during the academic year of 2017-2018. According to statistics reported by the Education and Training Organization of Tehran, there were about 310,000 second-grade high school students (girls and boys) who were studying during 2017-2018. To calculate the sample size, the Cochrane formula was used then the sample size was measured at a confidence level of 95% (α=0.05). Z or t-value equaled 1.96 with a confidence level of 95% in the Cochrane formula. The d value (allowable error) is considered as 0.2 or 0.20 and/or less to have test power greater than 80%; d-value equaled 0.50 in this study. To calculate the maximum sample size, p and q values were considered 0.5. Accordingly, the sample size equaled 385 (n=385), which reached 500 subjects to expand the generalization potential of findings and to reduce error considering the high number of variables and possible incomplete questionnaires.

2-2. Method

Subjects were chosen using a multistage cluster random sampling method. In this case, Tehran was divided into five geographical districts (north, south, east, west, and central) then five districts of 1, 5, 6, 14, and 19 from each geographical region of Tehran (19=south, 14=east, 6=central, 5=west, and 1=north) were randomly selected. In the next step, 5-7 high schools (girls and boys) were chosen from each district, then principals were asked to participate in this research. In the last step, 4-5 students (girls and boys) were randomly selected from each tenth and eleventh and twelfth-grade classes in experimental sciences, mathematics, and humanities. In total, 35 high schools were studied. The required data were collected from five questionnaires. Six psychology graduates who had received the required training in the field of test implementation cooperated with the researcher to collect questionnaires. The researchers went to selected high schools after obtaining permission from the Education Organization of Tehran and districts 1, 5, 6, 14, and 15. Under the supervision of principals, students were asked to fill out the questionnaires. It should be noted that students completed the questionnaires in their homes as it was a time-consuming action. It took a long time to fill out five questionnaires. It took four months to collect demographic data including age, education level, gender, school grade, study discipline, and school area, besides the answers given to the questions.

Ethical considerations were followed during the research process and implementation of questionnaires. Subjects were free to participate in the study, and questionnaires remained anonymous. The extant paper was extracted from a Ph.D. dissertation in educational sciences presented by the first author with an approval number of 98/10120702971001 issued by Psychology and Educational Sciences University, Islamic Azad University Central Tehran Branch.

2-3. Measuring tools

In this research, some questionnaires were used besides the personal information form. The mentioned instruments included Harter's Academic Motivation Scale (24), Inventory of Teacher-Student Relationships (ITSR) of Murray and Zvoch (25), School Attachment Questionnaire of Mouton, DeWitt, and Glazier (26), Metacognitive Awareness

Inventory of Mokhtari and Richard (27), and Jones and Rhodewalt's Self-Handicapping Scale (28).

2-3-1. Personal Information Form: The researcher collected demographic data of subjects (including number, gender, school area, age, education grade, and study field).

2-3-2. Academic Motivation Scale (AMS): This questionnaire was designed by Harter (24) to clarify motivation developmental trends. AMS encompasses 33 items (17 items associated with intrinsic motivation and 16 items related to extrinsic motivation) that are scored at a five-point Likert Scale (never=1, rarely=2, sometimes=3, mostly/often=4, and almost always=5). Items 27, 21, 19, 16, 15, 10, 9, 5, 4, 3, 31 were scored reversely. The reliability coefficient of the total scale of intrinsic and extrinsic motivations equaled 0.81 and 0.52, respectively; this value was reported between 0.58 and 0.78 for subscales. Alpha coefficient of the total scale of intrinsic and extrinsic motivations equaled 0.87 and 0.67, respectively; this value was reported between 0.60 and 0.82 for subscales (24). Samavi and Najarpourian (29) carried out a study on 390 high-school students and measured the reliability coefficient of intrinsic (0.81), and extrinsic (0.86) motivation scales using Cronbach's alpha (29).

2-3-3. Inventory of Teacher-student Relationship (IT-SR): This questionnaire was developed by Murray and Zvoch (25) to evaluate the teacher-student relationship. This 17-item questionnaire included three factors including communication, trust, and alienation. Communication included items 4, 9, 8, 11, 12, 10; Trust included items 3, 1, 2, 13, 7; Alienation included items 6, 16, 5, 14 that were scored on a 4-point Likert Scale (never=1, sometimes=2, often=3, and always=4). The higher the scores, the better the communicational quality. Murray and Zvoch (25) calculated Cronbach's alpha coefficients of subscales including communication (0.89), trust (0.84), and alienation (0.72); they also reported significant convergent and divergent validity coefficients of these three subscales compared with Child and Adolescent Social Support Scale. Daliri and Pirayeh (30), examined content validity and this questionnaire and obtained its reliability coefficient greater than 0.72 by using Cronbach's alpha method (30).

2-3-4. School Attachment Questionnaire (SAQ): This questionnaire was designed by Mouton and colleagues (26). This questionnaire comprised 20 items that specify students with high and low attachments. This instrument includes three dimensions of general relationships, a sense of belonging, and specific attachments. General relationships included items 3, 8, 9, 15, 10, 17, 20; sense of belonging included items 1, 2, 12, 13, 14, 18; specific attachments included items 4, 5, 6, 7, 11, 16, 19. Responses are scored on the 5-point Likert scale from 1 (never) to always (5). The reliability of this questionnaire equaled 0.86 using the alpha coefficient by Mouton and colleagues (26). In Iran, Khanjani and colleagues evaluated psychometric features of the scale for the first time and reported reliability coefficients of 0.83, 0.80, and 0.82 for girls, boys, and whole scale, respectively (31).

2-3-5. Metacognitive Awareness' Inventory (MAI): This inventory was designed by Mokhtari and Richard to assess students' cognition based on their study methods (27). This 30-item questionnaire included three subscales of global study strategies, problem-solving study strategies, and support study strategies. Global or generalized strategies comprised items 1, 3, 4, 7, 10, 14, 17, 19, 22, 23, 25, 26, 29; problem-solving strategies comprised items 8, 11, 13, 16,

18, 21, 27, 30; support strategies comprised items 2, 5, 6, 9, 12, 15, 20, 24. Answers given to each option were scored on a 5-point Likert Scale (1=never, 2=occasionally, 3=sometimes, 4=usually, and 5=always). Mean scores of 3.5 and greater indicate a desirable situation, and mean scores between 2.5 and 3.4 mean the average situation, and mean scores lower than 2.4 indicate the weak situation. Hemmati and colleagues used Cronbach's alpha coefficient to test the reliability of the instrument and obtained a 0.90 value (32).

2-3-6. Self-Handicapping Scale (SHS):

Self-Handicapping Scale was designed by Jones and Rhodewalt (1994) (28). This questionnaire comprises 25 items and three subscales of negative mood (items 4, 7, 8, 9, 13, 15, 19, 20, 23), effort (items 3, 5, 6, 10, 17, 21, 22), and excuse-making (items 1, 2, 11, 12, 14, 16, 18). Respondents showed their agreement or disagreement using a 5-point Likert scale from strongly disagree (1) to strongly agree (5). Items 3, 5, 6, 10, 13, 20, 22, and 23 of this scale were scored reversely. The overall score of the scale indicates the self-handicapping level of respondents. The higher the scores, the higher the self-handicapping rate and vice versa. Maximum and minimum scores equaled 125 and 25, respectively. Jones and Rhodewalt (1994) obtained Cronbach's alpha of 0.78 in determining the reliability of this scale (28). Moreover, Nikdel and Kuhestani distributed this questionnaire among 384 students and obtained Cronbach's alpha coefficient of 0.65 (34).

2-4. Data Analyses

Descriptive statistics (frequency distribution table, mean, standard deviation, and kurtosis) were used for data analysis. It should be noted that a descriptive analysis of data was done using SPSS-20 software. In inferential statistics, the Kolmogorov-Smirnov test was used to examine data normality and confirmatory factor analysis was used to examine the validity of research instruments. To test the model and obtained results, SEM and Analysis of Moment Structure (AMOS)-24 were employed.

3- RESULTS

In this section, we first report demographic findings in the study sample. Demographic findings show that most of the sample cases are boys and 17-year-old. Other demographic characteristics can be seen in **Table.1**. Descriptive statistics of the research variables including mean, standard deviation, Minimum, Maximum, Kurtosis and skewness are summarized in **Table.2**.

Table-1: Frequency distribution of the studied sample by demographic variables.

Variables	Variable Levels	Frequency	Percent
Gender	Male	243	48.6
	Female	257	51.4
Age	16 years	186	37.2
	17 years	189	37.8
	18 years	125	25.0
District	1	95	19.0
	5	110	22.0
	6	125	25.0
	14	70	14.0
	19	100	20.00
Courses	Mathematics	183	36.6
	Humanities	175	35.4
	Experimental	140	28.0

Table-2: Descriptive statistics of the variables used in the study (n=500).

Variables	Mean	Standard deviation	Maximum	Minimum	Skewness	Kurtosis
Relationship	17.33	7.81	32.00	8.00	0.23	-1.59
Protection	11.79	4.93	20.00	5.00	0.13	-1.63
Self-alienation	8.89	3.68	16.00	4.00	0.37	-0.91
Teacher-Student relationships	38.01	11.70	68.00	17.00	0.28	-0.59
General relationships	23.64	7.16	35.00	8.00	-0.11	-1.20
Belonging	13.20	3.48	20.00	4.00	-0.46	-0.73
Special attachments	27.90	3.63	41.00	17.00	0.14	0.10
Attachment to school	64.75	9.83	90.00	39.00	-0.12	-0.36
General	48.71	10.23	60.00	12.00	-1.09	0.65
Problem Solving	27.17	8.31	40.00	8.00	-0.41	-0.74
Supportive	29.43	8.79	44.00	9.00	-0.37	-0.94
Metacognitive awareness	105.31	15.63	143.00	50.00	-0.01	0.36
Negative mood	23.46	8.66	54.00	9.00	0.01	-0.55
Effort	20.42	7.32	35.00	7.00	0.16	-1.38
Excuse	28.18	7.56	42.00	7.00	-0.25	-0.97
Self-handicapping	72.06	13.49	131.00	31.00	-0.15	1.16
Intrinsic motivation	47.95	7.45	75.00	22.00	0.46	1.00
External motivation	45.69	10.88	78.00	21.00	0.21	-0.76
Academic motivation	93.64	13.44	151.00	59.00	0.69	1.39

In the hypothesis testing process, the mediating role of self-handicapping between teacher-student relationships, school attachment, metacognitive awareness, and academic motivation is assessed. In the first stage, the goodness-of-fit of the model is examined. One of the assumptions of structural equations modeling is the univariate and multivariate normality. To verify univariate normality, the one-sample Kolmogorov-Smirnov test was used.

Table-3. One-sample Kolmogorov-Smirnov test.

Variables	Z	Sig.
Relationship	1.30	0.17
Protection	1.35	0.14
Self-alienation	0.95	0.32
Teacher-Student relationships	1.26	0.08
General relationships	1.27	0.09
Belonging	0.93	0.34
Special attachments	1.29	0.07
Attachment to school	0.97	0.30
General	0.41	0.68
Problem Solving	0.96	0.32
Supportive	0.17	0.84
Metacognitive awareness	0.65	0.51
Negative mood	0.92	0.34
Effort	1.08	0.19
Excuse	0.78	0.41
Self-handicapping	0.64	0.52
External motivation	0.73	0.44
Academic motivation	0.12	0.89

The results of the **Table.3** show that the distribution of all variables are normal ($p>0.05$). Since path analysis is based on linear correlation between variables, in this section the linear correlation matrix between research variables is reported.

Table-4: Correlation matrix between variables.

Variables	Teacher-Student relationships	Attachment to school	Metacognitive	Self-handicapping	Academic motivation
Teacher-Student relationships	1				
Attachment to school	0.493**	1			
Metacognitive awareness	0.211**	0.357**	1		
Self-handicapping	-0.944**	-0.13*	-0.419**	1	
Academic motivation	0.416*	0.269**	0.521**	-.508**	1

**p<0.01 and *p<0.05.

According to the correlation matrix, for example the variables of teacher-student relationships, attachment to school and metacognitive awareness have a positive and significant correlation with Academic motivation ($p \leq 0.05$).

Main hypothesis: Absolute and comparative fit indices were used to determine the hypothetical model fit. Although in the present study, the Chi-square index was used to evaluate the overall fit of the model, but this index is strongly influenced by the sample size and in large samples generally shows a good fit of the model. Due to this limitation, the Chi-square-to-freedom ratio index is usually reported, which minimizes the effect of the sample value on the Chi-square index. Although there is no consensus on the acceptable value of this index, values below 3 usually indicate a good fit of the model. RMSEA is also among the main indicators of model fit. For optimal fit of the model, the RMSEA value should be less than 0.1 and preferably less than 0.08 .For CFI, NFI, GFI and AGFI indices, values above 0.9 indicate model acceptance and values above 0.95 indicate good model. A structural model of students' motivation has a suitable fit based on the teacher-student relationship, school attachment, and metacognitive awareness with the mediating role of self-handicapping. In this section, the model fit indicators are reported, and the model is presented in standardized coefficients mode. Results of fit indicators indicated acceptable fit of SEM between teacher-student relationship, school attachment, metacognitive awareness, and academic motivation with the mediating role of self-handicapping. **Figure.2** depicts this model.

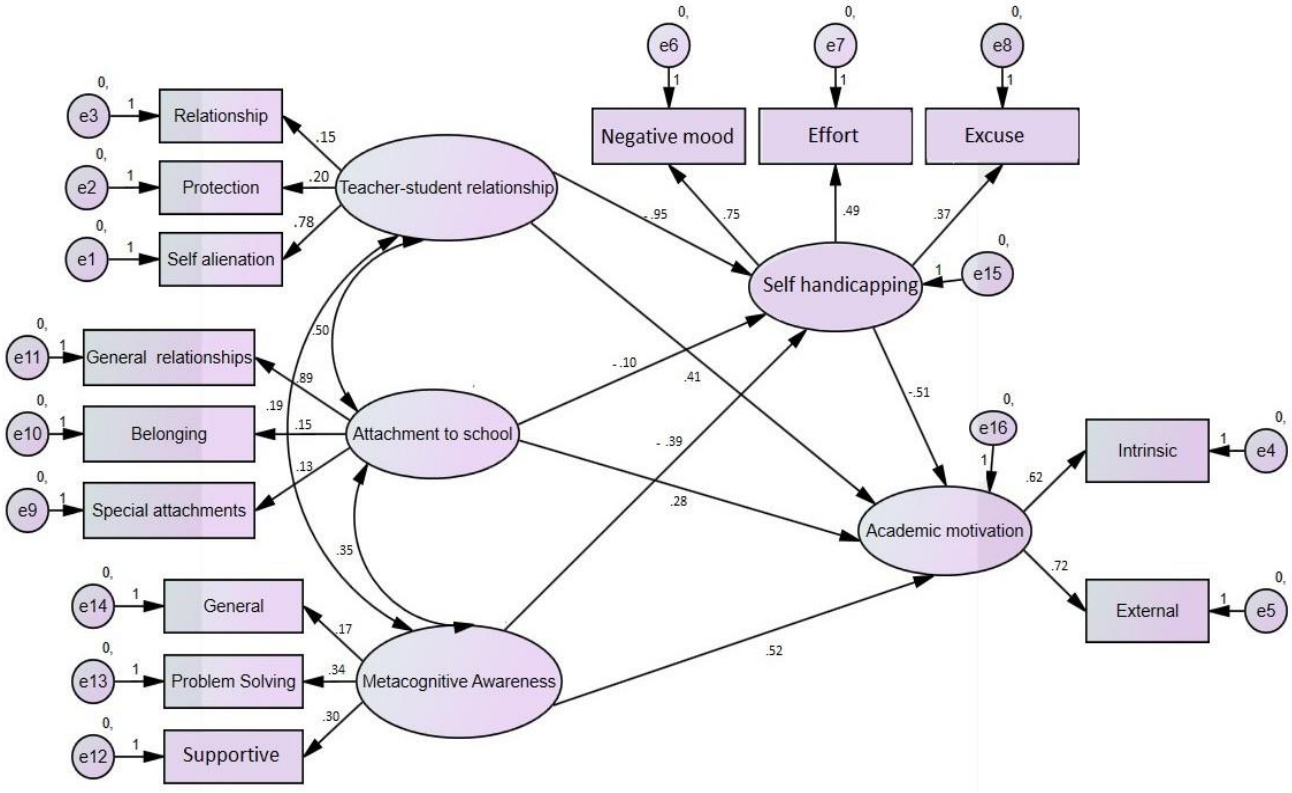

Fig.2: Proposed structural equation model of T-SR, SA, MA, and AM with the mediating role of self-handicapping.

Fixed parameters are not estimated from the data and are typically fixed at zero or one.
Free parameters are estimated from the observed data and are believed by the investigator to be non-zero.

Based on the results, it can be concluded that the model has a good fit. Given that in the model tested above, the paths between variables are the same as the research hypothesis, then the indirect effect is tested for the research hypothesis.

Table-5: Model fit indicators.

Indicator	Value	Allowable Limit
X2/ df	1.44	Less than 3
RMSEA	0.03	Less than 0.05
CFI	0.95	Above 0.9
NFI	0.93	Above 0.9
GFI	0.97	Above 0.9
AGFI	0.94	Above 0.9

RMSEA: Root Mean Square Error of Approximation, CFI: comparative fit index, NFI: Normed Fit Index, GFI: Goodness of fit index, AGFI: Adjusted Goodness of Fit Index.

The results of the **Table.5** also show that the direct effects of the teacher-student relationships, attachment to school and metacognitive awareness variables on academic motivation are significant ($p<0.05$). Thus, after dividing the result by multiplying the two non-standard coefficients that constitute the intermediate variable paths by the standard error of the product, the ratio obtained is compared with the normal distribution table, if the ratio is greater than 1.96. The mediating

variable effect is significant. To apply the Sobel method to determine this relationship, the following equation must be calculated:

$$z\text{-value} = a*b/\text{SQRT}(b^2*s_a^2 + a^2*s_b^2 + s_a^2*s_b^2)$$

Table-6: The Sobel test results for the effect of teacher-student relationships, attachment to school and metacognitive awareness variables on academic motivation.

Hypothesis	Non-standardized coefficient	β coefficient	Sobel test	Sig.
Teacher-student relationships → Academic motivation	0.47	0.41	6.64	0.001
Attachment to school → Academic motivation	0.35	0.28	3.03	0.003
Metacognitive awareness → Academic motivation	0.55	0.52	8.33	0.001
Teacher-student relationships → Self-handicapping → Academic motivation	0.53	0.48	7.20	0.001
Attachment to school → Self-handicapping → Academic motivation	0.09	0.05	1.08	0.17
Metacognitive awareness → Self-handicapping → Academic motivation	0.24	0.20	2.53	0.006

It can be concluded from the **Table.6** that teacher-student relationships has an indirect effect on Academic motivation by mediating role of self-handicapping, so the hypothesis regarding the indirect relationship between teacher-student relationships, attachment to school with academic motivation is confirmed ($p<0.05$). But the indirect relationship between attachment to school with academic motivation is not confirmed ($p>0.05$).

4- DISCUSSION

This study was conducted to examine the association between teacher-student relationships, school attachment, metacognitive awareness, and academic motivation with the mediating role of self-handicapping in students. Results showed a perfectly direct and direct significant association between teacher-student relationship and academic motivation; in fact, self-handicapping mediates the association between teacher-student relationship and academic motivation. This finding is in line with the results obtained by Waterschoot et al. (33), Yilmaz (34), and Quinn (35). Quinn (35) reviewed the factor affecting the association between students' academic motivation and the teacher-student relationship. Results showed that the quality of teacher-student relationships has a considerable effect on academic achievement and motivation of students. Studies have shown that if students' perception pursues a level of support, admiration, and happiness, students will have a positive tendency toward school and teachers. If their perception follows criticism, reproaching, and conflict, they create a feeling toward the teacher, school, and homework that leads to more effort and adaptation to achieve success in the future. If this positive perception occurs at lower academic levels, there will be higher motivation and interest at higher academic levels so that there will be a lower conflict between students and their teachers (36). In other words, students who have a more intimate and close relationship with their teachers benefit from higher self-confidence, love their teachers, are more

interested in learning, have a more positive attitude toward school, and enjoy being accepted by peers and classmates (37). Hence, students experience higher mathematical skills, proper behaviors, and positive perception of their scientific abilities if their teacher pays attention to some cases such as students' interests and initiatives, provide appropriate opportunities to challenge their learnings and create positive social relationships, monitor the class, emphasize on key points, explain about guiding students through errors, and focus attention on students' needs with kindness and feedback. Such behaviors have a higher impact on academic motivation and achievement of students leading to more learning consequences compared to structural features (size of the classroom) (33-35). Besides, results showed that there is a significant perfect and direct relationship as well as insignificant and indirect relationship between school attachment and academic motivation. Results indicate that there is only one direct effect among these variables. These results are in line with the study conducted by Kiefer et al. (38).

Results obtained from a study indicated that the academic and social support of teachers and peers had a considerable impact on motivation, commitment, and school attachment in secondary-school adolescents. The findings of this study present a comprehensive understanding of the supportive role of teacher and peer on students' school attachment. The above-mentioned results can be used by instructors and teachers to choose some methods and strategies that can meet the needs of younger students. In this regard, the perception of teacher's support will improve the academic motivation, commitment to class, and school attachment in students (38). It can be explained that the supportive structure of school and friendly relationships in school can create a sense of attachment and belonging to school preventing depression, bad mood, and event school leaving. According to findings obtained from the present study, there was a significant perfect direct and indirect relationship between metacognitive awareness and academic motivation with the mediating role of self-handicapping. It means that self-handicapping partially mediates the relationship between metacognitive awareness and academic motivation. The majority of studies on academic self-handicapping found a positive and significant relationship between negative metacognitive awareness and academic self-handicapping. There was also a negative and significant relationship between positive metacognitive awareness and academic self-handicapping. The mentioned results are matched with the results of the extant study (39, 40).

Researchers concluded that there is a positive and significant relationship between negative metacognitive awareness and self-handicapping. Moreover, results showed a negative and significant relationship between positive metacognitive awareness and academic self-handicapping. Besides, it was found that metacognitive awareness is the strongest predictor of self-handicapping (23). Gavric, Muskovich, and colleagues (22) found a negative and significant relationship between academic self-handicapping and variables of anxiety and metacognitive beliefs. They also concluded that positive and negative metacognitive awareness are the strongest predictors of academic self-handicapping (22). Liu and colleagues proved that individuals with high self-handicapping levels have lower cognitive emotion regulation (CER); in other words, there is a negative association between CER and self-handicapping (41). This study faced some constraints because of the cross-sectional research method and selected

subjects (second-grade high-school students in Tehran, Iran). Hence, the results should be generalized to other cities cautiously. On the other hand, a questionnaire that is a self-report instrument was used as the only measure for data collecting. Accordingly, responses may be biased. It is suggested to employ other predicting variables such as personality-emotional variables and documentary styles. The results of the extant study indicate that self-handicapping may cause reduced self-esteem. It seems that several variables can better explain the mediating role of self-handicapping, such as personality features, emotion regulation, and anxiety level. Further studies can be done to examine these variables more accurately in relation to self-handicapping and its role in reducing academic motivation among students. Accordingly, such studies can take a substantial role in promoting the academic achievement of students. Results recommend that teachers can improve school attachment by making a more intimate relationship with students that, in turn, leads to improved academic motivation. Hence, schools' principals should provide students with higher academic motivation by creating optimistic beliefs in themselves and by expanding the positive, active, and happy school atmosphere. Furthermore, further studies can examine the role of mediating factors such as mental attitudes and emotions based on a structural model.

5- CONCLUSION

Results showed a significant association between teacher-student relationship and academic motivation as well as a direct and significant relationship between school attachment and academic motivation while the indirect relationship was not significant. Furthermore, there was a significant direct and indirect relationship between metacognitive awareness and academic motivation with the mediation role of self-handicapping. Considering the important effect of the mentioned variables on the academic motivation of students, teachers should prepare the field for the improved academic motivation of students by creating a supportive, positive, active, and happy atmosphere in the school. This study aimed at examining the most important variables associated with academic self-handicapping as the mediator of academic motivation. Among numerous variables, metacognitive awareness, academic motivation, and achievement were the most robust predictors of academic self-handicapping. Self-handicapping indeed negatively affects self-esteem that, in turn, reduces academic motivation.

6- CONFLICT OF INTEREST: None.

7- REFERENCES

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