



Role of Female Students' Self-Regulation in Predicting Moral Identity: A Structural Equation Modeling Study

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Abstract

Background: Considering the significance of morality and the need to understand its determinants, as well as the growing tendency toward dealing with psychological variables as latent variables as they are in the real world, it is not surprising that in the moral psychology area, classical statistical methods are being replaced by new psychological methods to take an effective step to raise the knowledge in this area.

Objectives: The aim of this study was to propose a structural equation model to investigate the predicting role of female students' self-regulation in moral identity as latent variables.

Methods: The sample of this study included 361 female students of the University of Mazandaran in the 2017 - 2018 academic year selected through stratified random sampling. The participants completed the short version of the Self-Regulation Inventory and the Moral Identity Questionnaire. The obtained data were analyzed by SPSS (v.24) and AMOS (v. 24) using structural equation modeling.

Results: After confirming the validity of the scales used to explain the latent variables, i.e. self-regulation and moral identity, it was observed that female students' self-regulation was a significant predictor of moral identity ($\beta = 0.69, P < 0.001$).

Conclusions: According to the study, increasing self-regulation in female students is accompanied by increasing their moral identity.

Keywords: Self-regulation, Moral Identity, Structural Equation Modeling, Female Students

1. Background

The cognitive-developmental stages of morality, introduced by Piaget in 1932 and extended by Kohlberg in the late 1950s, dominated research on morality for two decades (1). The key principle of the proposed cognitive-developmental theory was that the complexity of moral reasoning in individuals predicts their moral behaviors (2). In the 1980s, the ability of this theory to explain moral behaviors was criticized by some theorists. They believed that moral behaviors are the result of a complicated interplay between different components of morality within a given context, not just the result of moral reasoning. This disagreement encouraged Rest, a student of Kohlberg, to develop a model for describing moral behavior (1). According to his model, moral behaviors are formed by at least four components, including moral sensitivity, moral judgment, moral motivation, and implementation. In the first component, a person must identify a need or an opportunity for moral action. In the second component, the person

must be able to make a judgment about which course of action is morally right or wrong by employing a set of principles, rules, etc. The third component involves that the person must focus on moral values above other personal values. Finally, in the fourth component, the person must implement the goal by taking the necessary steps toward its completion (3).

In recent decades, most studies on moral behavior addressed moral identity as the source of moral motivation in a person (the third component) (4-8). Many of these studies have been based on Blasi's model of moral self. Blasi was a pioneer in highlighting the inability of the cognitive-developmental theory to account for the discrepancy between moral reasoning and moral action. He agreed that moral judgment predicts moral action but he also believed moral judgment is not the only determinant. He stated that moral identity plays a major role in motivating an individual's moral action and can function as a bridge between moral judgment and moral action (9). In his self-model, Blasi tries to explain how the

identity motivates moral actions; indeed, his ideas about the structure of moral identity could be found in his self-model (6, 7). His self-model assumes a conscious deliberator that first tries to define what is the right thing to do and then decides whether doing so is mandatory, and the decision a person makes depends on the derived motivation from his/her self-definition (9). Therefore, when a person's self is focused on moral values or, in other words, his/her identity is focused on morality, the desire to live in a way compatible with one's sense of self can serve a key moral motivation. In summary, Blasi acknowledged that moral reasoning might more reliably predict moral action if filtered through responsibility to judgment based on moral identity and driven into action via the tendency toward self-consistency (6, 7). Since the development of Blasi's identification of moral self, many other researchers in the field of moral psychology have tried to define the structure of moral identity. Referring to the Blasi's model-self, some researchers sought to determine moral identity as the unity of morality and self, while others tried to look via the social-cognitive theory to better understand moral identity (10). These theorists argue that schemas possibly are the heart of moral identity (11, 12). Actually, the social-cognitive theory views personality as a dynamic system that interacts with situational influences and in this theory, schemas are mental knowledge structures that represent various aspects of us. Therefore, from their perspective, moral identity may have relevant schemas for social information processing (9).

Today, by the growth of theoretical attention to moral identity, it is not surprising that it has become one of the main variables in recent empirical research (13-16). However, one of the variables whose effect on moral identity is stressed in theoretical foundations, yet considered in a few empirical studies, is the self-regulation (14, 17, 18). The self-regulation construct, stated for the first time in the 1960s by Bandura, refers to a set of thoughts, feelings, and spontaneous actions considered reaching personal goals. This capacity also refers to behavior regulation in accordance with internal and external changes, and includes self-management skills like planning, implementation, and monitoring (19). From the social-cognitive perspective, the self-regulation is one of the main pillars in moral decision-making and a prerequisite for success on this path. Actually, self-regulation in the social-cognitive view has the same role as cognition for the followers of a cognitive perspective in solving moral problems (20). The followers of the social-cognitive theory consider moral identity as the main mechanism of self-regulation in solving moral problems; thus, according to them, those who have high self-regulation are expected to have a more effective moral identity in solving moral issues (21). However,

like any other field, there is a need for empirical data to prove the theories in this area and this need was the basis for the present study. At the same time, today, structural equation modeling (SEM) is a powerful tool in the hands of researchers so that using latent variables, they really deal with constructs that have errors in measurement. In this regard, besides trying to find an answer to the question whether the self-regulation of female students affects their moral identity, the present study tried to answer these constructs realistically by treating these variables as latent variables through SEM. In doing so, the short version of the Self-Regulation Inventory (22) with five subscales, including controllability, positive actions, assertiveness, expression of feelings and needs, and well-being seeking, was used to evaluate self-regulation. For measuring the moral identity construct, Moral Identity Questionnaire (9) with two subscales, including moral self and moral integrity, was used. Thus, the initial research model was shaped as follows (Figure 1).

2. Methods

2.1. Participants

The population of the study consisted of all female students at the University of Mazandaran in the 2017-2018 academic year (N = 6623). The sample size was determined using Morgan's sample size table (n = 361 if N > 6000). The sample was selected based on stratified random sampling. This means that after randomly selecting four departments from four colleges, three classes were selected in each department, and all the female students of these classes were enrolled in the study. Since the final clusters were classrooms, the criterion for the inclusion of students in the sample was their presence on the sampling day; thus, those who were absent on the sampling day were excluded from the sampling process. The participants were assured that their information in this study would remain confidential and it will be used only for research purposes. It was also noted that participation in the study was voluntary. On the day of the sampling, some students were absent; therefore, the number of participants dropped. Finally, 269 students answered the questionnaires; however, 32 questionnaires were incomplete; thus, 237 questionnaires entered the data analysis step.

2.2. Research Instruments

2.2.1. The Short Version of the Self-Regulation Inventory (SRI-S)

This inventory is a short version of the Grossarth-Maticek and Eysenck Self-Regulation Scale (1995). The number of items is 105 in the original version. After the expansion of attention to short questionnaires, this scale was re-evaluated by Ibanez et al. and the number of items was

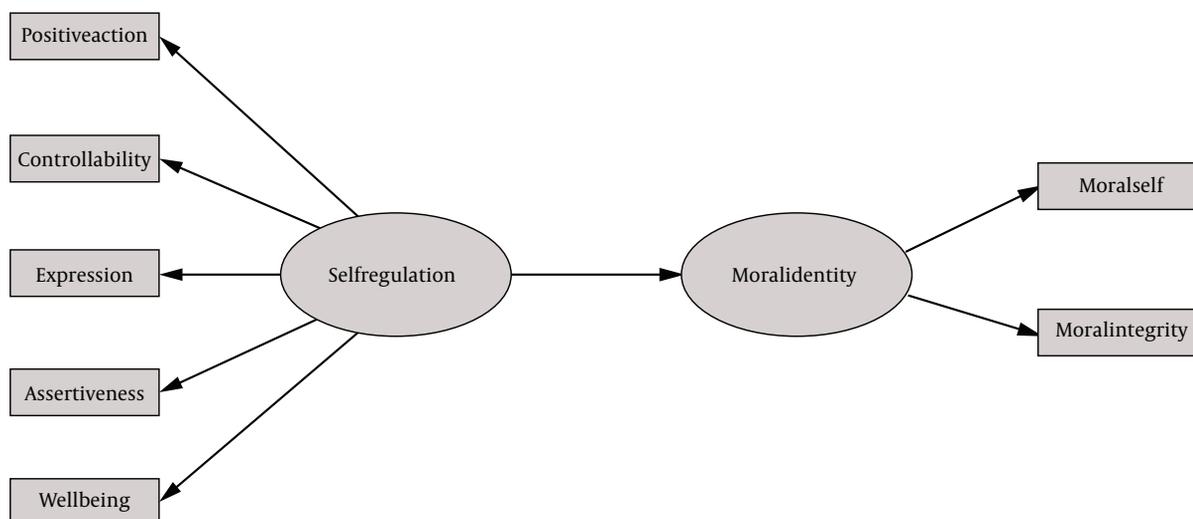


Figure 1. The proposed model

reduced to 25. A sample item of this scale is “I manage to feel good through the way I act.” All the items of this scale are scored on a 6-point Likert scale from one to six. Ibanez et al. examined the validity of this scale through correlation with the original version and found the correlation coefficients for the total scale and subscales in the range of 0.57 to 0.94. Also, the results of EFA in their study confirmed the existence of five primary factors and the reliability of the scale and sub-scales has been reported from 0.68 to 0.84 (22). In Iran, the validity and reliability of this scale were investigated by Ashkezari et al. (23). The results of EFA in their study, confirmed the five primary factors, and the internal consistency of the scale and factors has been reported from 0.90 to 0.97. In the present study, the EFA and CFA results confirmed the five-factor structure of the scale with 20 items and the instrument reliability assessment showed that Cronbach’s alpha coefficient for the scale and subscales varied between 0.62 and 0.84.

2.2.2. Moral Identity Questionnaire (MIQ)

This questionnaire was developed by Black and Reynolds (9) to assess the two-factor structure of moral identity including Moral Self (eight items) and Moral Integrity (12 items). The sample item of the questionnaire is “It is important for me to treat other people fairly.” All the items are scored based on a 6-point Likert scale from one to six. The result of EFA and CFA in Black and Reynolds’s study supported the assumed two-factor structure of the MIQ. In addition, the result of Cronbach’s alpha showed the high internal consistency of the MIQ ($r\alpha = 0.90$), MI ($r\alpha = 0.87$), and MS ($r\alpha = 0.84$). Similarly, in the present study,

by EFA and CFA, it was found that the questionnaire had a two-factor structure consisting of 15 items (MS = seven items, MI = eight items). In addition, the internal consistency of the Persian version of the MIQ was examined by Cronbach’s alpha that showed $r\alpha = 0.77$ for the MIQ, $r\alpha = 0.70$ for the subscale MS, and $r\alpha = 0.74$ for the subscale MI.

2.3. Statistical Analysis

After reviewing the descriptive data, Pearson’s correlation coefficient was used to assess the correlation between the variables. Then, the fit of the proposed model was investigated using the SEM. All data were analyzed by SPSS (v.24) and AMOS (v. 24).

3. Results

The collected data from 237 female students from the University of Mazandaran were analyzed. Of these, 183 (77.2%) were undergraduate students, 37 (15.6%) were Master of Science students, and the remaining participants (7.2%) were Ph.D. or postdoctoral students. The mean age of the students was 21.77 years ($SD = 3.61$).

In the data analysis step, to better understand the relationship between the variables, first, Pearson’s correlation coefficient was used to investigate the correlation between self-regulation, moral identity, and their components. The results are shown in Table 1.

According to Table 1, there were positive significant relationships between all the variables, except for the relationship of controllability with moral self ($r = 0.08$, $P =$

Table 1. Correlation Matrix Between Self-regulation, Moral Identity, and Their Components

Variables	1	2	3	4	5	6	7	8	9
1. Positive actions	1								
2. Controllability	0.26 ^a	1							
3. Expression	0.43 ^a	0.23 ^a	1						
4. Assertiveness	0.46 ^a	0.31 ^a	0.28 ^a	1					
5. Well-being seeking	0.52 ^a	0.23 ^a	0.34 ^a	0.39 ^a	1				
6. Self-regulation	0.81 ^a	0.56 ^a	0.65 ^a	0.69 ^a	0.74 ^a	1			
7. Moral self	0.35 ^a	0.08	0.18 ^a	0.26 ^a	0.50 ^a	0.41 ^a	1		
8. Moral integrity	0.16 ^b	0.22 ^a	0.07	0.21 ^a	0.34 ^a	0.29 ^a	0.49 ^a	1	
9. Moral identity	0.28 ^a	0.19 ^a	0.14 ^b	0.27 ^a	0.48 ^a	0.40 ^a	0.80 ^a	0.89 ^a	1

^a Significant at the 0.001 level.

^b Significant at the 0.005 level.

0.189) and expression of feeling and needs with moral integrity ($r = 0.07, P = 0.223$).

Then, in the main step of the study, by entering the obtained data into the program AMOS-24, the fitness of the model was assessed. The results are shown in Table 2.

Table 2. Obtained Values for Model Fit Indices and Accepted Domain for Each Index

Acronyms	Indices	
	Accepted Domain	Obtained Values
Absolute fit indices		
GFI	> 0.90	0.97
AGFI	> 0.90	0.92
Comparative fit indices		
NNFI	> 0.90	0.91
NFI	> 0.90	0.93
CFI	> 0.90	0.96
IFI	> 0.90	0.96
Parsimonious fit indices		
REMSEA	< 0.08	0.078
χ^2/df	< 3	20.485
PRATIO	0.40 - 0.60	0.48
PNFI	0.40 - 0.60	0.45
PGFI	0.40 - 0.60	0.46

Due to the acceptable range of each index and values obtained for the indices in Table 2, it can be said that the final model was fitted with the proposed model of research and had a good fitness in the female students' population from the University of Mazandaran. Table 3 and Figure 2 present the data regarding the question of the study.

As seen in Table 3, all the independent variables had significant positive effects on the dependent variables. This means that the five-factor structure of self-regulation and the two-factor structure of moral identity provided an ac-

ceptable picture of these latent variables. In addition, according to Table 3, self-regulation was a significant positive predictor of moral identity ($\beta = 0.69, P < 0.001$), and explained 47% of the variance of moral identity. Therefore, female students' self-regulation could predict their moral identity.

4. Discussion

The purpose of the present study was to investigate the predictive role of self-regulation in female student's moral identity according to SEM. Confirming the validity of the scale used to explain the latent variables of self-regulation and moral identity, the results stressed the role of self-regulation in predicting moral identity. Based on the results of the research model test (the relationships between variables in Table 3), there was a significant relationship between the five components of self-regulation and the main construct, showing that these five components significantly evaluate the main construct. This result is in line with those of studies by Ibanez et al. (22) and Ashkezari et al. (23) stressing the validity of the SRI-S. Additionally, based on the results of the model test (the relationships between variables in Table 3), there was a significant relationship between the two components of moral identity and the main construct, indicating the adequacy of these two components for the evaluation of moral identity, in line with the findings of Black and Reynolds (9), emphasizing the validity of MIQ. Finally, given to the fit indices presented in Table 2 and the relationships between the variables in Table 3, the results emphasized the positive role of self-regulation in predicting moral identity. This finding is consistent with the results of Hofmann et al. (17), Vitell et al. (18), and Hardy et al. (14), somehow stating the role of self-regulation components (self-control and self-efficacy) in predicting moral identity. In fact, self-regulation processes root in the sense of control and ability to change consequences, as an important internal force, enabling the

Table 3. Standardized Direct Effects, Indirect Effects, and Total Effects Between the Variables

Effects	Independent Variable	Dependent Variable	β	R ²	P
Direct	Self-regulation	Positive actions	0.63	0.40	< 0.001
		Controllability	0.30	0.09	< 0.001
		Expression	0.41	0.17	< 0.001
		Assertiveness	0.49	0.24	< 0.001
		Well-being seeking	0.84	0.71	< 0.001
		Moral identity	0.69	0.47	< 0.001
	Moral identity	Moral self	0.84	0.70	< 0.001
		Moral integrity	0.55	0.30	< 0.001
Indirect	Self-regulation	Moral self	0.57	0.70	< 0.001
		Moral integrity	0.38	0.30	< 0.001
Total	Self-regulation	Positive actions	0.63	0.40	< 0.001
		Controllability	0.30	0.09	< 0.001
		Expression	0.41	0.17	< 0.001
		Assertiveness	0.49	0.24	< 0.001
		Well-being seeking	0.84	0.71	< 0.001
		Moral self	0.57	0.70	< 0.001
	Moral identity	Moral integrity	0.38	0.30	< 0.001
		Moral identity	0.69	0.47	< 0.001
		Moral self	0.84	0.70	< 0.001
		Moral integrity	0.55	0.30	< 0.001

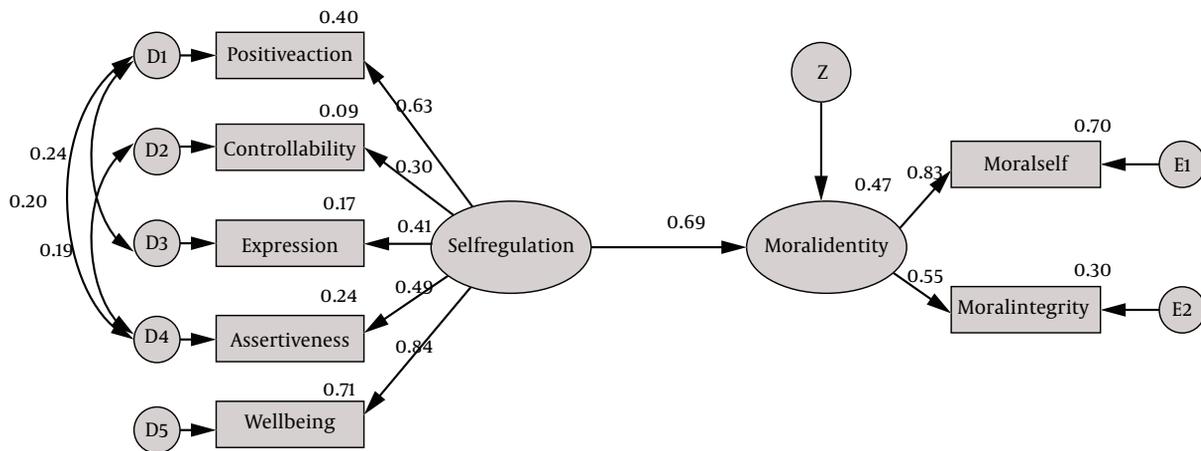


Figure 2. The final model of the study

individuals to resist temptation and behave in a moral way, which is one of the most important indices of moral identity. Thus, the individuals need a set of horizontal skills with a self-regulation component to have a moral identity.

As in all studies, the limitations of this study should be

taken into account. It is worthy of note that, in the current study, the data were collected only from female university students. Additionally, students were selected from a similar geographic area; it is possible that geographical location could produce cultural differences. Thus, it is better to

repeat this study on non-female, non-student populations and in different regions. Additionally, for the evaluation of the above constructs (self-regulation and moral identity), there are other scales available that the researchers can use in future research to present a better image of both constructs and gain a better understanding of the relationships between the two variables.

Footnotes

Conflict of Interests: The authors declare that they have no conflicts of interest.

Ethical Considerations: The university did not have an ethics committee but this paper was extracted from a Ph.D. thesis approved by the Iranian Research Institute for Information Science and Technology (Ref. No. 1373010).

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Informed Consent: In addition, the participants were assured about the confidentiality of the information obtained in this study and their use only for research purposes. Participation in this study was voluntary. A consent form was signed by each participant prior to the beginning of the experimentation.

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