



# Socio-cognitive Determinants of Plagiarism Intention Among Kermanshah University of Medical Sciences Students: A Cross-sectional Study in 2018

Mehdi Mirzaei-Alavijeh <sup>1</sup>, Cyrus Jalili  <sup>2</sup>, Pedram Rezaei-Zadeh <sup>2</sup> and Farzad Jalilian  <sup>1,\*</sup>

<sup>1</sup>Social Development and Health Promotion Research Center, Health Institute, Kermanshah University of Medical Sciences, Kermanshah, Iran

<sup>2</sup>Fertility and Infertility Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

\*Corresponding author: Social Development and Health Promotion Research Center, Health Institute, Kermanshah University of Medical Sciences, Kermanshah, Iran. Email: f\_jalilian@yahoo.com

Received 2018 September 04; Revised 2020 June 06; Accepted 2020 December 01.

## Abstract

**Background:** Plagiarism is one of the most common and important misconducts in the educational and research environment. Plagiarism means transcribing the works or ideas of others without authenticating the source and the original author and assigning them to self.

**Objectives:** The current research aimed to investigate the socio-cognitive constructs associated with plagiarism among Kermanshah University of Medical Sciences (KUMS) students using the theory of planned behavior (TPB).

**Methods:** This cross-sectional study was done at KUMS, the west of Iran, among 231 medical university students in 2018, which were selected randomly to participate voluntarily. Students filled out a self-report questionnaire that included the demographics and TPB variables. Data gathered were analyzed by the Statistical Package for Social Sciences (version 16) using a t-test, Pearson correlation, and linear regression.

**Results:** The determinants of attitude, subjective norms (SN), and perceived behavioral control (PBC) accounted for 15% of behavioral intention (BI) to plagiarism. Linear regression showed that SN ( $\beta = 0.229$ ;  $P = 0.001$ ) and PBC ( $\beta = -0.217$ ;  $P = 0.001$ ) were the most influential predictors of plagiarism intention.

**Conclusions:** According to the result, it seems that planning programs to increase perceived behavioral control against doing plagiarism and reduce subjective norms encouraging plagiarism may be useful for the prevention and reduction of plagiarism among university students.

**Keywords:** Medical Education, Plagiarism, Students

## 1. Background

Plagiarism is one of the most common and important misconducts in the educational and research environments (1-3). Plagiarism means transcribing the works or ideas of others without authenticating the source and the original author and assigning them to self (4). Also, purposeful falsification of data, research methods, or data analysis and deliberate misinterpretation in suggestions are defined as plagiarism (5). Plagiarism is a serious issue in academic environments and can diminish the advancement of science and cause the loss of organizational resources (6). Plagiarism has a high prevalence, as it was reported up to 91% among medical students (7). Lack of effort and integrity, procrastination, the stress of homework, in-

dolence, and irresponsibility have been mentioned as the reasons for plagiarism (8, 9). Besides, material and social interests and irreverence to intellectual property in some cultures are known as the other causes of plagiarism (10, 11).

Many researchers also do not have the required time to use the correct resources or do not know the right ways, which can partially imply that this issue comes from the pressure on scientists to produce more knowledge and the pressure on students to earn a high score or finish their studies in the appointed date. The weaknesses in reading skills, time management, research, and citation skills, or lack of awareness and not having proper conception about the abduction in a scientific way have been expressed as the other reasons for this behavior (12).

According to this problem, the necessity of developing and implementing interventions in academic environments is felt to prevent plagiarism. In this regard, it should be added that conducting need assessment studies is the first step in designing behavioral interventions (13). Human behavior is a reflection of various determinants, and recognizing this causality network is very necessary to influence the determinants affecting behavior, which can be achieved by using theories and psychological constructs (14). The theory of planned behavior (TPB) is one of the theories used in numerous studies for predicting and explaining behavior, which has been used in studies as a predictor framework of plagiarism (15, 16).

## 2. Objectives

According to the importance of plagiarism prevention in academic environments and the lack of information about cognitive determinants of predicting plagiarism among Kermanshah University of Medical Sciences (KUMS) students, this study aimed at determining the socio-cognitive determinants associated with plagiarism among the students of KUMS using TPB as a theoretical framework.

## 3. Methods

### 3.1. Participants and Procedure

This cross-sectional study was done among the students of KUMS during the autumn and winter of 2018. The study participants were the medical university students at KUMS, in the west of Iran. The KUMS has about 4,742 students with seven schools (medical sciences, dentistry, pharmacy, health, nutrition sciences, allied medical sciences, nursing, and midwifery), which educates students in almost all medical fields. The sample size was calculated at the 95% significance level. The standard deviation (SD) of plagiarism according to the result of a pilot study was 1.2, and considering the error rate (d) of 0.025, a sample of 231 students was estimated. The students from the schools of medical sciences, dentistry, pharmacy, health, nutrition sciences, allied medical sciences, and nursing and midwifery were included in the study. Of 231 students invited to participate in our study, 224 students signed the consent form and voluntarily agreed to participate in the study. The study was approved by the institutional review board of KUMS (response rate was 96.9%). The Research

Ethics Committee at the Deputy of Research of KUMS approved the study protocol and monitored the research process in 2018 (code: IR.KUMS.REC.1397.432). Further, the participants were given a participant information statement and signed the consent form. The personal information was kept confidential.

To select the participants and collect data, a three-step sampling technique was used, including cluster sampling, proportionating, and randomization. First, each school was considered as a cluster (all seven schools (clusters) of KUMS were considered as participants and included in the study). Then, the sample size for each school (cluster) was determined based on its population (the number of students studying there). Finally, due to the high number of students in each school, the students in each cluster were selected randomly using Excel randomization. Volunteers were given the self-report questionnaire. Only the final-year medical doctor and master students were eligible to participate in this study, while lack of interest to participate and incomplete questionnaires were introduced as exclusion criteria.

### 3.2. Measures

Before conducting the main research, a pilot study was carried out among 30 students. The pilot study was done to determine the sample size and estimate the internal consistency of the scale.

### 3.3. Demographics

The characteristics assessed were age (years), sex (male, female), faculty (medicine, dentistry, pharmacy, health and nutrition, nursing and midwifery, paramedics), degree of education (master, medical doctor), marital status (single, married), and residence in a dormitory (yes, no).

### 3.4. Theory of Planned Behavior Constructs

The TPB questionnaire was designed according to questionnaires in the field of plagiarism among students (15-19). There were 21 items that measured the four constructs of (1) attitude, (2) subjective norms (SN), (3) perceived behavioral control (PBC), and (4) behavioral intention (BI). Specifically, seven items measured the attitude toward plagiarism, with a score range of 7 - 49, in which a lower score indicated a more negative attitude toward plagiarism. There were five items that measured SN encouraging plagiarism, with a score range of 5 - 25, in which a higher score reflected more SN encouraging plagiarism. Two items measured PBC over plagiarism, with a score

range of 2 - 10, in which a higher score reflected more control over plagiarism. The BI to plagiarism was measured by seven items (score range of 7 - 35, in which a lower score indicated less intention to plagiarism). A five-point Likert scale, ranging from one (strongly disagree) to five (strongly agree), was used for SN, PBC, and BI. Furthermore, the attitude items were designed based on a seven-point Likert scale, ranging from one to seven.

### 3.5. Validity and Reliability Evaluation

The face validity of the plagiarism intention questionnaire was evaluated qualitatively. For this purpose, face-to-face individual interviews were held up with 12 experts (including medical education experts, psychologists, and health educators and promoters), and the items were modified based on their comments. In addition, the reliability of the questionnaire was assessed by examining its internal consistency via Cronbach's alpha. Considering Cronbach's alpha, a threshold of 0.70 was acceptable. [Table 1](#) shows some examples of the TPB scale items.

### 3.6. Data Analysis

Data were analyzed by SPSS version 16 software using statistical tests including Pearson correlation, t-test, and linear regression at a 95% significance level.

## 4. Results

The mean age of the participants was 24.7 years [95% CI: 24.5, 25.0], ranging from 21 to 31 years. Almost 44.6% (100/224) were females, and 55.4% (124/224) were males. Besides, 13.4% (30/224) of the participants were married, and 86.6% (194/224) were single. In addition, 30.4% (68/224) of the participants reported residence in the dormitory. Furthermore, 16.1% (36/224) of the participants were studying in master's degree programs and 83.9% (188/224) in medical doctor degree programs.

The results indicated that the mean plagiarism intention of respondents was 15.29 (ranging from 7 to 35), so the participants obtained 43.68% of the maximum attainable score. As can be seen in [Table 2](#), there was no significant relationship between background variables and plagiarism intention. Furthermore, bivariate correlations were computed for the correlations between age and plagiarism intention, and the results indicated no significant correlation between age and plagiarism intention ( $r = 0.035$ ,  $P = 0.603$ ).

[Table 3](#) shows bivariate associations among the predictor determinants. Our findings indicated that BI to plagiarism was associated with the positive attitude towards

plagiarism ( $r = 0.177$ ) and SN encouraging plagiarism ( $r = 0.309$ ), while it was inversely correlated with PBC over plagiarism ( $r = -0.319$ ). Additionally, PBC over plagiarism was significantly and inversely related to the attitude towards plagiarism ( $r = -0.243$ ) and SN encouraging plagiarism ( $r = -0.326$ ). Furthermore, SN encouraging plagiarism was not significantly related to the attitude towards plagiarism ( $r = 0.053$ ).

The variations of intention to plagiarism can be seen in [Table 4](#). Collectively, they were accounted for 15% of the variation in intention to plagiarism ( $F = 13.883$ ,  $P < 0.001$ ).

## 5. Discussion

The current research aimed to investigate the socio-cognitive determinants of plagiarism intention among medical university students based on the theory of planned behavior. Our results indicated that SN encouraging plagiarism and PBC over plagiarism were the main variables associated with the college students' intention to plagiarize. In the field of academic dishonesty-related factors, many studies have underlined the predictive role of intention, for instance in academic dishonesty ([15-19](#)). For example, Passow et al. ([20](#)) studied 643 engineering students in the United States and indicated that PBC was related to pressures to cheating on exams. In addition, McCabe et al. ([21](#)) reported the influence of perceived behavioral control on academic misconduct. Consequently, the results confirmed suggestions that TPB is a good theoretical model for planning programs for the prevention of plagiarism intention among college students.

Our findings indicated that subjects obtained 43.68% of the maximum attainable score for plagiarism intention. In this regard, Braumoeller and Gaines ([22](#)) showed 12% of the students' manuscripts under suspicion of plagiarism. Another study in the USA and Canadian universities indicated about 23% - 25% plagiarism among the students ([23](#)). Rennie and Crosby ([24](#)) researched among Dundee medical school students in the United Kingdom and indicated that 56% of the students reported having plagiarism. The high prevalence of plagiarism can be alarming to academic policymakers and should be focused on.

It seems better to prevent and conduct interventional studies in addition to increasing the knowledge of the students about research. Besides, students should prepare environmental programs related to individuals involved in the student plagiarism decisions, including professors and university vice-chancellors, to clarify the cause of this behavioral deviation and address the scientific role of various

**Table 1.** Examples of Theory of Planned Behavior Variables and Reliability of the Questionnaire Using Cronbach's Alpha

Variable	Number of Items	Cronbach's Alpha	Sample Item
Attitude toward plagiarism	7	0.88	In my opinion, plagiarism is wrong/correct.
SN encouraging plagiarism	5	0.73	If I do plagiarism, my friends will confirm it.
PBC over plagiarism	2	0.79	I believe that I cannot run a research project without plagiarism.
BI to plagiarism	7	0.89	I intend to use the scientific work of other researchers in my research project without correct citation.

**Table 2.** The Relationship Between Educational Background Variables and Plagiarism Intention

Variable	Mean $\pm$ SD	Statistic	P
Sex		0.584	0.560
Female	15.49 $\pm$ 4.43		
Male	15.13 $\pm$ 4.54		
Marital status		1.541	0.125
Married	16.46 $\pm$ 4.59		
Single	15.11 $\pm$ 4.45		
Education level		-1.079	0.282
Masters	14.55 $\pm$ 4.25		
Medical doctor	15.43 $\pm$ 4.52		
Residence in dormitory		0.807	0.420
Yes	15.66 $\pm$ 4.29		
No	15.13 $\pm$ 4.57		

factors in encouraging students.

Other findings of this study showed no significant relationship between background variables and plagiarism intention. In this regard, several studies indicated that academic dishonesty was much higher among male students than in female students (25-27). This difference in the results could be due to differences in the populations studied.

The current study has several strengths, such as collecting data among medical students with theory-driven research. Also, it had a few limitations, including low sample size, self-reporting (which is usually prone to recall bias), and collecting data only among a sample of Iranian medical college students due to the non-probability nature of sampling. Besides, the rejection rate is another limitation of the study.

### 5.1. Conclusions

Several determinants explain academic dishonesty among college students. Our study indicated the TPB role in predicting plagiarism intention among medical stu-

dents in Iran. The present findings showed the SN encouraging plagiarism and PBC over plagiarism, as the main determinants, were associated with the college student's intention to plagiarism. In summary, our findings could be useful for guiding the medical education planning programmers to design effective prevention programs for academic dishonesty prevention among students.

### Acknowledgments

This research project was supported by the Education Development Centre (EDC) of KUMS. We would like to thank the Deputy of Research of KUMS for financial support. Also, special thanks are given to all of the students who participated in this study.

### Footnotes

**Authors' Contribution:** Study concept and design: FJ and MM-A. Analysis and interpretation of data: FJ. Drafting of the manuscript: CJ and PR. Critical revision of the manuscript for important intellectual content: FJ and MM-A. All authors provided comments and approved the final manuscript.

**Conflict of Interests:** The authors declared no conflict of interest.

**Ethical Approval:** The Research Ethics Committee at the Deputy of Research of KUMS approved the study protocol and monitored the research process in 2018 (code: IR.KUMS.REC.1397.432).

**Funding/Support:** Kermanshah University of Medical Sciences funded the study.

**Informed Consent:** The participants were given the participant information statement and signed the consent form. Individual personal information was kept confidential.

**Table 3.** Mean, Standard Deviation, and Correlation Between Theory of Planned Behavior Constructs

	At	SN	PBC	Mean (SD)
<b>Attitude</b>	1			17.33 (9.19)
<b>SN</b>	0.053	1		15.37 (3.33)
<b>PBC</b>	-0.243 <sup>a</sup>	-0.326 <sup>a</sup>	1	6.76 (1.63)
<b>BI</b>	0.177 <sup>a</sup>	0.309 <sup>a</sup>	-3.190 <sup>a</sup>	15.29 (4.48)

<sup>a</sup>Correlation is significant at 0.01%.

**Table 4.** Predictors of Intention to Plagiarism by Using Linear Regression Analysis<sup>a</sup>

Variables	Unstandardized, B	Coefficients. SE	Standardized Coefficients, Beta	t	Sig.
<b>Attitude</b>	0.055	0.031	0.112	1.752	0.081
<b>SN</b>	0.308	0.088	0.229	3.502	0.001
<b>PBC</b>	-0.596	0.185	-0.217	-3.228	0.001

<sup>a</sup>Adjusted R-square = 0.15, F = 13.883, P < 0.001.

## References

1. Benos DJ, Fabres J, Farmer J, Gutierrez JP, Hennessy K, Kosek D, et al. Ethics and scientific publication. *Adv Physiol Educ.* 2005;29(2):59-74. doi: 10.1152/advan.00056.2004. [PubMed: 15905149].
2. Titus SL, Wells JA, Rhoades LJ. Repairing research integrity. *Nature.* 2008;453(7198):980-2. doi: 10.1038/453980a. [PubMed: 18563131].
3. Smith ER. Plagiarism, self-plagiarism and duplicate publication. *Can J Cardiol.* 2007;23(2):146-7. doi: 10.1016/s0828-282x(07)70736-5. [PubMed Central: PMC2650652].
4. Smith NJ, Wren KR. Ethical and legal aspects part 2: plagiarism—"what is it and how do I avoid it?". *J Perianesth Nurs.* 2010;25(5):327-30. doi: 10.1016/j.jopan.2010.08.002. [PubMed: 20875892].
5. Gordon AM. Rational Choice and Moral Decision Making in Research. *Ethics & Behavior.* 2014;24(3):175-94. doi: 10.1080/10508422.2013.830573.
6. Sutton A, Taylor D, Johnston C. A model for exploring student understandings of plagiarism. *J Further High Educ.* 2012;38(1):129-46. doi: 10.1080/0309877x.2012.706807.
7. Bilic-Zulje L, Frkovic V, Turk T, Azman J, Petrovecki M. Prevalence of plagiarism among medical students. *Croat Med J.* 2005;46(1):126-31. [PubMed: 15726686].
8. Klein HA, Levenburg NM, McKendall M, Mothersell W. Cheating During the College Years: How do Business School Students Compare? *J Bus Ethics.* 2006;72(2):197-206. doi: 10.1007/s10551-006-9165-7.
9. Harper MG. High tech cheating. *Nurse Educ Pract.* 2006;6(6):364-71. doi: 10.1016/j.nep.2006.07.008. [PubMed: 19040903].
10. McCabe DL, Feghali T, Abdallah H. Academic Dishonesty in the Middle East: Individual and Contextual Factors. *Res High Educ.* 2008;49(5):451-67. doi: 10.1007/s11162-008-9092-9.
11. Dellavalle RP, Banks MA, Ellis JI. Frequently asked questions regarding self-plagiarism: How to avoid recycling fraud. *J Am Acad Dermatol.* 2007;57(3):527. doi: 10.1016/j.jaad.2007.05.018. [PubMed: 17707155]. [PubMed Central: PMC2679117].
12. Snell W. A mountain or mole hill? Recent attitudes and remedial responses toward plagiarism at higher education institutions in the west and Japan. *J Foreign Lang Educ.* 2006;3:105-20.
13. Hosseini SN, Mirzaei Alavijeh M, Karami Matin B, Hamzeh B, Ashtarian H, Jalilian F. Locus of Control or Self-Esteem; Which One is the Best Predictor of Academic Achievement in Iranian College Students. *Iran J Psychiatry Behav Sci.* 2016;10(1). e2602. doi: 10.17795/ijpbs-2602. [PubMed: 27284277]. [PubMed Central: PMC4898745].
14. Mirzaei-Alavijeh M, Kok G, Niknami S, Motlagh ME. Family-based cognitive factors effective on preventing the onset of substance use in Iranian society's children: applying the intervention mapping protocol. *Acta Med Mediter.* 2016;32:1015-20.
15. Alleyne P, Phillips K. Exploring Academic Dishonesty among University Students in Barbados: An Extension to the Theory of Planned Behaviour. *J Acad Ethics.* 2011;9(4):323-38. doi: 10.1007/s10805-011-9144-1.
16. Fealy S, Bighlari N, Pezeshki Rad G. Agricultural Students' Attitude and Behavior on Plagiarism in Tarbiat Modares University. *Q J Res Plan High Educ.* 2012;18(3):133-15.
17. Salleh MIM, Ghazali SAM, Awang Z, Sapiai NS. The Effect of Plagiarism on the Corporate Image in the Higher Education: An Extended TPB Model. *Int J Soc Sci Hum.* 2013:340-3. doi: 10.7763/ijssh.2012.v2.i22.
18. Mavrinac M, Brumini G, Bilic-Zulje L, Petrovecki M. Construction and validation of attitudes toward plagiarism questionnaire. *Croat Med J.* 2010;51(3):195-201. doi: 10.3325/cmj.2010.51.195. [PubMed: 20564761]. [PubMed Central: PMC2897081].
19. Jalilian F, Moazami P, Mirzaei-Alavijeh M, Moazami AM, Jalili C. Sensation Seeking and the Intention to Cheating among College Students: An Application of the Theory of Planned Behavior. *J Appl Sci.* 2016;11(8):645-9.
20. Passow HJ, Mayhew MJ, Finelli CJ, Harding TS, Carpenter DD. Factors Influencing Engineering Students' Decisions to Cheat by Type of Assessment. *Res High Educ.* 2006;47(6):643-84. doi: 10.1007/s11162-006-9010-y.
21. McCabe DL, Treviño LK, Butterfield KD. Honor codes and other contextual influences on academic integrity: A replication and extension to modified honor code settings. *Res High Educ.* 2002;43(3):357-78. doi: 10.1023/a:1014893102151.
22. Braumoeller BF, Gaines BJ. Actions Do Speak Louder than Words: Deterring Plagiarism with the Use of Plagiarism-Detection Software. *Political Sci Politics.* 2002;34(4):835-9. doi: 10.1017/s1049096501000786.
23. Das SK. Plagiarism in higher education: is there a remedy? Lots of instruction and some careful vigilance could work wonders. *Sci. 2003;17(10):8-9.*
24. Rennie SC, Crosby JR. Are "tomorrow's doctors" honest? Questionnaire study exploring medical students' attitudes and reported behaviour on academic misconduct. *BMJ.* 2001;322(7281):274-5.

doi: [10.1136/bmj.322.7281.274](https://doi.org/10.1136/bmj.322.7281.274). [PubMed: [11157528](https://pubmed.ncbi.nlm.nih.gov/11157528/)]. [PubMed Central: [PMC26580](https://pubmed.ncbi.nlm.nih.gov/PMC26580/)].

- 25. Jensen LA, Arnett JJ, Feldman S, Cauffman E. It's Wrong, But Everybody Does It: Academic Dishonesty among High School and College Students. *Contemp Educ Psychol*. 2002;27(2):209–28. doi: [10.1006/ceps.2001.1088](https://doi.org/10.1006/ceps.2001.1088).
- 26. Jurdi R, Hage H, Chow HP. Academic Dishonesty in the Canadian Classroom: Behaviours of a Sample of University Students. *Can J High Educ*. 2011;41(3). doi: [10.47678/cjhe.v4i1i3.2488](https://doi.org/10.47678/cjhe.v4i1i3.2488).
- 27. Kisamore JL, Stone TH, Jawahar IM. Academic Integrity: The Relationship between Individual and Situational Factors on Misconduct Contemplations. *J Bus Ethics*. 2007;75(4):381–94. doi: [10.1007/s10551-006-9260-9](https://doi.org/10.1007/s10551-006-9260-9).