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The Role of Self-Efficacy, Professional, and Educational Characteristics in Predicting Karate Coaches' Professional Attitudes

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Abstract

Background/purpose. The purpose of this study is to examine the extent to which karate coaches' professional attitudes are predicted by sociodemographic, professional, and educational characteristics, as well as by their coaching self-efficacy.

Materials/methods. The study, conducted using a cross-sectional correlational research design, included 99 karate coaches affiliated with the Turkish Karate Federation. Data were collected using the Attitudes Toward Coaching Scale, the Coach Self-Efficacy Scale, and a personal information form. A three-stage hierarchical multiple linear regression analysis was used to analyze the data. In the first stage, sociodemographic characteristics were included in the model; in the second stage, occupational and educational characteristics; and in the third stage, coaching self-efficacy.

Results. The findings showed that sociodemographic characteristics did not significantly predict professional attitude (R^2 = .015, p = .691). The increase in explained variance resulting from the addition of professional and educational characteristics to the model was also not significant (ΔR^2 = .035, p = .512). In contrast, the inclusion of coaching self-efficacy resulted in a significant increase in explained variance (ΔR^2 = .498, p < .001), and the final model explained 54.7% of the variance in professional attitude (R^2 = .547). In the final model, coaching self-efficacy (B = 0.711, p < .001) and the number of weekly training days (B = 0.048, p = .005) significantly predicted professional attitude in a positive direction, while professional experience (B = −0.008, p = .022) predicted it in a negative direction.

Conclusion. In conclusion, it was determined that coaching self-efficacy plays an important role in explaining the professional attitudes of karate coaches. The findings highlight the importance of incorporating practices aimed at developing perceptions of self-efficacy into coach education programs.

1. Introduction

Coaching is a multifaceted profession that supports athletes' physical, technical, and tactical development, as well as their psychological, social, and educational growth. In addition to their professional knowledge and skills, coaches' self-efficacy beliefs and attitudes toward their profession play a significant role in their ability to effectively fulfill these responsibilities. For this reason, examining coaches' perceptions of self-efficacy and their professional attitudes is important for understanding coaching processes and planning professional development programs.

Karate coaching is a multidimensional professional process that involves not only developing athletes' technical and tactical skills but also fostering their discipline, self-control, and psychosocial development. In this process, coaches are responsible for monitoring athletes' progress in various areas of practice—such as kata and kumite—using appropriate teaching methods, and effectively managing training sessions.

Müjdeci and colleagues (2026) emphasized that athletes' competence, self-confidence, social relationships, and character development are important factors in evaluating coaching effectiveness in various combat sports, including karate. Similarly, Pinto-Escalona et al. (2024) highlight the importance of appropriate teaching methods and educational psychology in karate training, while Hammad et al. (2024) note the need to enhance karate coaches' professional knowledge and support their continuing education. These studies demonstrate that karate coaching is not limited to technical proficiency alone, but also requires pedagogical knowledge and psychological skills.

The concept of self-efficacy provides an important theoretical foundation for explaining coaches' beliefs regarding their professional competence. According to Bandura (1997), self-efficacy refers to an individual's belief in their ability to successfully perform specific tasks; it can influence their motivation, the effort they exert in the face of difficulties, and their tendency to persist in their behavior. In the context of coaching, self-efficacy is defined as coaches' beliefs regarding their ability to influence their athletes' learning and performance (Feltz et al., 1999). The same study examined coaching self-efficacy across four dimensions: game strategy, motivation, teaching technique, and character development. The Coach Self-Efficacy Scale, developed by Koçak (2020b) in Turkey, consists of five dimensions: performance, psychological efficacy, instruction, character development, and managerial efficacy. These approaches demonstrate that coaching self-efficacy is not limited to athletic performance alone but also encompasses instructional and managerial processes.

Another important variable that may be related to coaching self-efficacy is professional attitude. Professional attitude toward coaching encompasses an individual's feelings, thoughts, and behavioral tendencies regarding the coaching profession. Koçak (2020a) assessed attitude toward coaching across three dimensions: affective, cognitive, and behavioral. Coaches' positive attitudes toward their profession may be important in terms of their acceptance of professional responsibilities and their participation in professional development processes. In this regard, it is expected that there will be a relationship between coaches' perception of themselves as competent in their professional duties and their development of positive attitudes toward their profession.

Another factor that may be related to coaches' professional attitudes and self-efficacy is the process of professional learning and development. Cushion et al. (2003) highlighted the importance of experiential learning and observing the practices of other coaches in professional development. Nelson et al. (2006), on the other hand, noted that coaches develop their professional knowledge and skills through formal, non-formal, and informal learning processes. In this context, it is believed that factors such as professional experience, whether or not one has received pedagogical training, coaching level, and weekly training frequency may be related to coaches' professional attitudes.

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In a study conducted in Turkey by Sağlam and Çeviker (2022) on coaches working in various sports disciplines, a significant relationship was found between coaching self-efficacy and professional attitudes. This finding supports the idea that coaches' perceptions of self-efficacy may be related to their attitudes toward their profession. However, previous studies have primarily examined the relationships between variables and group differences. Assessing the additional explanatory contribution of self-efficacy to occupational attitude after controlling for sociodemographic, occupational, and educational characteristics is important for a more comprehensive understanding of this relationship.

1.1. Significance and Purpose of the Study

This study examines the role of self-efficacy in predicting the professional attitudes of karate coaches, in conjunction with sociodemographic, professional, and educational characteristics. The unique aspect of this study is to determine the additional contribution that self-efficacy makes to explaining professional attitudes after controlling for these characteristics through hierarchical multiple regression analysis. Furthermore, the study's focus on karate allows for an evaluation of the relationship between self-efficacy and professional attitudes within a discipline-specific context. The findings are expected to contribute to a better understanding of the professional development of karate coaches and to the development of coach education programs. In this context, the primary objective of this study is to determine the extent to which karate coaches' professional attitudes are predicted by their sociodemographic, professional, and educational characteristics, as well as their coaching self-efficacy. To this end, the study sought to answer the following research questions:

1. To what extent do karate coaches' sociodemographic characteristics (age, gender, and educational level) predict their professional attitudes?

2. Do professional and educational characteristics (professional experience, whether the individual has received pedagogical training, coaching level, and number of weekly training days) provide a significant additional contribution to explaining professional attitudes when sociodemographic characteristics are controlled for?

3. Does coaching self-efficacy provide a significant additional contribution to explaining

professional attitudes after controlling for sociodemographic, professional, and educational characteristics?

4. When all variables are considered together, what are the significant predictors of karate coaches' professional attitudes?

2. Method

2.1. Research Design

This study was conducted using a cross-sectional correlational research design within the framework of a quantitative research approach. A cross-sectional correlational research design is a research approach in which data on variables are collected at a specific point in time, and the relationships among the variables are examined without any experimental intervention (Creswell & Creswell, 2018). Accordingly, this study examined the extent to which karate coaches' attitudes toward the coaching profession are predicted by their levels of self-efficacy and their sociodemographic, professional, and educational characteristics. Additionally, the study aimed to determine the additional contribution that coaching self-efficacy makes to explaining professional attitudes after controlling for sociodemographic, professional, and educational characteristics.

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2.2. Study Group

The study sample consisted of a total of 99 karate coaches who are active within the Turkish Karate Federation and who enrolled in a pedagogical training program organized by a university. In selecting the participants, the criterion sampling approach was used within the framework of non-probability sampling methods. Criteria-based sampling is based on including individuals in the study who meet predefined characteristics in line with the study's objectives (Palinkas et al., 2015). Accordingly, the participant criteria for this study were defined as being engaged in coaching activities within the Turkish Karate Federation and being enrolled in the relevant university's teacher education program.

The sociodemographic, occupational, and educational characteristics of the participants are presented in Table 1.

Table 1. Demographic characteristics of the participants

Descriptive statistics for categorical variables			
Variables	**Categories**	**n**	**%**
Gender	Male	64	64.6
	Female	35	35.4
Education level	High School	39	39.4
	College	53	53.5
	Graduate School	7	7.1
Coaching levels	Level 1	26	26.3
	Level 2	37	37.4
	Level 3	19	19.2
	Level 4	13	13.1
	Level 5	4	4.0
Receiving pedagogical training	Yes	16	16.2
	No	83	83.8
Descriptive statistics for continuous variables			
Variable	**Mean**	**SD**	**Min.–Max.**
Age (years)	43.11	12.95	18–66
Coaching experience (years)	14.15	11.8	0–45
Number of training days per week	4.65	1.67	0–7
Coaching self-efficacy	4.64	0.34	3.43 - 5.00
Attitude toward coaching	4.45	0.34	3.00 – 5.00

Of the 99 coaches in the study group, 64 (64.6%) were men and 35 (35.4%) were women. The participants' ages ranged from 18 to 66, and the mean age was 43.11 (SD = 12.95). In terms of educational background, 39 participants (39.4%) had a high school diploma, 53 (50.5%) held a bachelor's degree, and 7 (7.1%) held a graduate degree. Based on coaching levels, 26 participants (26.3%) were Level 1 coaches, 37 (37.4%) were Level 2 coaches, 19 (19.2%) were Level 3 coaches, 13 (13.1%) were Level 4 coaches, and 4 (4.0%) were Level 5 coaches. The participants' coaching experience ranged from 0 to 45 years, with an average of 14.15 years (SD = 11.80). The average number of training days per week was calculated as 4.65 (SD = 1.67). When their status regarding pedagogical training was examined, it was determined that 16 of the coaches (16.2%) had previously received pedagogical training, while 83 (83.8%) had not.

Upon examining the descriptive statistics for the participants' continuous variables, it was determined that the average age was 43.11 (SD = 12.95) and the average coaching experience was 14.15 years (SD = 11.80). The average number of weekly training days for coaches was calculated as

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4.65 (SD = 1.67). Additionally, the average coaching self-efficacy score was found to be 4.64 (SD = 0.34), while the average attitude toward coaching score was 4.45 (SD = 0.34).

2.3. Data Collection Instruments

The study used the Personal Information Form, the Coach Self-Efficacy Scale, and the Attitudes Toward Coaching Scale as data collection instruments.

- *Personal Information Form:* The Personal Information Form was used in the study to determine the participants' sociodemographic, professional, and educational characteristics. The form includes questions regarding the participants' age, gender, educational level, coaching experience, coaching level, number of training days per week, and whether they have received pedagogical training.

- *Coach Attitude Scale:* The Coach Attitude Scale, developed by Koçak (2020a) to determine coaches' professional attitudes, was used. The scale development study was conducted with 336 participants with an average age of 31.90 (SD = 7.40). The scale, developed as a five-point Likert scale, consists of a total of 18 items and three subdimensions: affective attitude, cognitive attitude, and behavioral attitude. The statements on the scale are rated on a scale from 1 (Disagree) to 5 (Strongly agree). In the original scale development study, exploratory factor analysis revealed that a three-factor structure accounted for 61.18% of the total variance. The results of confirmatory factor analysis also supported the scale's three-factor structure. While reliability in the original scale development study was assessed solely using Cronbach's alpha (Koçak, 2020a), in the present study, McDonald's omega (ω) was also calculated to provide more comprehensive evidence of internal consistency. McDonald's omega is recommended as a complementary reliability measure to Cronbach's alpha because it allows for variation in the factor loadings of the items (Dunn et al., 2014). In the present study, based on data from 99 karate coaches, the Cronbach's alpha coefficient was calculated as .745 and the McDonald's omega coefficient as .814. In the literature, reliability coefficients of .70 and above are generally considered acceptable, while values of .80 and above are regarded as good (Boateng et al., 2018; Taber, 2018). Accordingly, the findings provide evidence of acceptable internal consistency for the scale's total score.

- *Coach Self-Efficacy Scale:* The Coach Self-Efficacy Scale, developed by Koçak (2020b) to determine coaches' levels of self-efficacy, was used. The scale development study was conducted on 320 coaches with an average age of 32.43 (SD = 8.06). The five-point Likert-type scale consists of a total of 21 items and five subdimensions: performance competence, psychological competence, instructional competence, character-building competence, and managerial competence. The statements on the scale are rated on a scale from 1 (Disagree) to 5 (Strongly agree). In the original scale development study, exploratory factor analysis revealed that the five-factor structure explained 61.49% of the total variance. While reliability was assessed solely using Cronbach's alpha coefficient in the original development study of the scale (Koçak, 2020b), McDonald's omega (ω) coefficient was also calculated in the present study to provide more comprehensive evidence of internal consistency. In the present study, based on data from 99 karate coaches, the Cronbach's alpha coefficient was calculated as .879, and the McDonald's omega coefficient as .895. The findings obtained in this regard provide evidence of a good level of internal consistency regarding the scale's total score.

2.4. Data Analysis

Jamovi statistical software was used to analyze the research data. A three-stage hierarchical multiple linear regression analysis was conducted to identify the variables that predict the professional attitudes of karate coaches. Hierarchical regression allows variables to be included in the model in blocks determined based on theoretical rationale and enables the evaluation of the additional contribution each block makes to the explained variance (Tabachnick & Fidell, 2019).

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The order in which variables were entered into the model was as follows: in the first stage, age, gender, and educational level; in the second stage, professional experience, whether the individual had received pedagogical training, coaching level, and the number of weekly training days were included in the model. In the third stage, coaching self-efficacy was added, and the additional explanatory power it provided for professional attitude when the other variables were controlled for was examined.

In the evaluation of the models, R^2, adjusted R^2, ΔR^2, and the F-test were used; in the evaluation of the contributions of the independent variables, regression coefficients (B), standard errors, t-values, and 95% confidence intervals were used.

Various statistical measures were used to test the assumptions of regression analysis. To determine whether there was multicollinearity among the variables, it was assumed that the VIF value should be less than 5 and the tolerance value greater than 0.20 (Marcoulides & Raykov, 2019). The normality of the residuals was assessed based on the skewness value falling within the range of ±3 and the kurtosis value within the range of ±10 (Kline, 2016). The presence of autocorrelation among the residuals was examined using the Durbin–Watson statistic (values close to 2; Durbin & Watson, 1950). In addition, multivariate outliers were assessed using the Mahalanobis distance ($p < .001$), while outliers were identified based on the criterion that the Cook distance be less than 1 (Cook & Weisberg, 1982). A significance level of $p < .05$ was used in all analyses.

3. Results

3.1. Examination of Regression Assumptions

Upon examining the assumptions of the hierarchical multiple linear regression analysis, it was determined that the VIF values ranged from 1.05 to 2.63 and the tolerance values ranged from 0.381 to 0.951. These values indicate that there is no multicollinearity issue. Since the residuals' skewness (−0.749) and kurtosis (1.74) values fall within the accepted limits of ±3 and ±10, respectively, it was concluded that there is no significant deviation from a normal distribution. The Durbin–Watson statistic of 2.01 ($p = .986$) indicated that there was no significant autocorrelation among the residuals. The fact that the Cook's distance values ranged from 0.000004 to 0.378 and were all below 1 indicates that there were no highly influential observations. Furthermore, it was observed that the Mahalanobis distance values ranged from 2.27 to 21.00, and no multivariate outliers were identified based on the $p < .001$ criterion. Overall, the findings indicate that the regression assumptions examined are acceptable.

3.2. Hierarchical Multiple Regression Analysis

In the first stage, the predictive power of age, gender, and educational level on professional attitudes toward coaching was examined (Table 2).

Table 2. Results of the regression analysis on sociodemographic variables (Model 1)

Variable	B	SE	t	p
Constant	4.644	0.233	19.97	< .001
Age	−0.002	0.003	−0.54	.588
Gender	−0.014	0.082	−0.16	.870
Education level	−0.065	0.058	−1.12	.265

The results of the regression analysis conducted to address the first research question indicated that the model comprising age, gender, and educational level was not statistically significant: $F(3, 95) = 0.49$, $p = .691$. The model explained only 1.5% of the total variance in vocational attitude ($R^2 = .015$).

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Furthermore, it was found that age (p = .588), gender (p = .870), and educational level (p = .265) did not significantly predict professional attitudes.

In the second stage, professional experience, completion of pedagogical training, coaching level, and the number of weekly training days were added to the initial model (Table 3).

Table 3. Regression model for predicting occupational attitudes (Model 2)

Variable	B	SE	t	p
Constant	451.366	0.304	1484.444	<.001
Age	0.001	0.004	0.317	.752
Gender	-0.001	0.087	-0.002	.998
Level of education	-0.066	0.064	-103.259	.305
Coaching level	0.014	0.041	0.353	.725
Number of training days per week	0.026	0.024	112.215	.265
Completion of pedagogical training	-0.084	0.101	-0.828	.410
Coaching experience (years)	-0.005	0.005	-107.493	.285

Under the second research question, it was determined that the variance explained increased from 1.5% to 5.0% when professional and educational characteristics were added to the model. However, the 3.4 percentage point increase in the variance explained was not found to be statistically significant: $\Delta F(4, 91) = 0.83$, $p = .512$. This result indicates that professional experience, pedagogical training, coaching level, and the number of weekly training days do not provide a significant additional contribution to explaining professional attitudes beyond sociodemographic characteristics.

The analysis of the third research question revealed that adding coaching self-efficacy to the model increased the explained variance from 5.0% to 54.7%. Including self-efficacy in the model resulted in a significant increase of 49.8 percentage points in the explained variance: $\Delta R^2 = .498$, $\Delta F(1, 90) = 98.92$, $p < .001$. The final model was also found to be statistically significant overall, $F(8, 90) = 13.60$, $p < .001$.

This finding indicates that, when controlling for sociodemographic, professional, and educational characteristics, coaching self-efficacy is strongly and positively associated with professional attitude and contributes significantly to explaining individual differences in professional attitude.

In the final stage, the self-efficacy variable was added to the second model (Table 4).

Table 4. Final regression model for predicting occupational attitudes (Model 3)

Variable	B	SH	t	p
Constant	0.792	0.430	1.843	.069
Gender	0.080	0.061	1.311	.193
Level of education	-0.037	0.044	-0.828	.410
Age	0.005	0.003	1.667	.099
Coaching level	0.028	0.028	1.006	.317
Number of training days per week	0.048	0.017	2.904	.005
Pedagogical training	-0.061	0.070	-0.861	.391
Coaching experience (years)	-0.008	0.003	-2.339	.022
Self-efficacy	0.711	0.071	9.946	<.001

Upon examining the findings related to the fourth research question, it was determined that coaching self-efficacy (B = 0.711, p < .001) and the number of weekly training days (B = 0.048, p < .001) positively and significantly predicted professional attitude. Accordingly, when other variables

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are held constant, a one-unit increase in self-efficacy scores is associated with an approximate 0.71-unit increase in professional attitude scores. Similarly, a one-day increase in the number of weekly training days is associated with an increase of approximately 0.05 units in the professional attitude score.

In contrast, age, gender, educational level, professional experience, whether or not the individual had received pedagogical training, and coaching rank were found not to be statistically significant predictors in the final model ($p > .05$). These findings indicate that perceived self-efficacy plays a particularly prominent role in explaining professional attitude.

4. Discussion and Conclusion

This study examined the extent to which karate coaches' professional attitudes are predicted by sociodemographic, professional, and educational characteristics, as well as by their coaching self-efficacy. The results of the hierarchical multiple regression analysis indicated that sociodemographic characteristics did not significantly predict professional attitudes, and that professional and educational characteristics did not make a significant additional contribution to the explained variance. Conversely, it was found that the variance explained by the model increased from 5.0% to 54.7% with the inclusion of coaching self-efficacy, and that this increase was statistically significant ($\Delta R^2 = .498$, $p < .001$). This finding indicates that perceived self-efficacy is an important variable in explaining the professional attitudes of karate coaches.

The most striking finding of the study is that coaching self-efficacy positively and significantly predicts professional attitude ($B = 0.711$, $p < .001$). This result can be interpreted within the framework of Bandura's (1997) Social Cognitive Theory. According to Bandura, individuals' beliefs that they can successfully perform specific tasks are related to their motivation and their tendency to persist in their behavior. Similarly, Feltz and colleagues (1999) found that coaching self-efficacy is associated with coaching behaviors and athlete development. In a study conducted in Turkey by Sağlam and Çeviker (2022) with coaches from various sports, significant and positive relationships were also identified between self-efficacy and attitudes toward coaching. The findings of the present study are consistent with these results and suggest that this relationship may also hold true for karate coaches. However, the key finding of this study—which distinguishes it from previous research—is that self-efficacy makes a significant additional contribution to explaining professional attitudes even after controlling for sociodemographic, professional, and educational characteristics.

The study found that age, gender, and educational level did not significantly predict professional attitude. Furthermore, adding professional experience, whether or not the participants had received pedagogical training, coaching level, and the number of weekly training days to the model did not result in a significant increase in the explained variance. These findings suggest that coaches' attitudes toward their profession may not be explained solely by demographic characteristics or professional background. In the meta-analysis by Myers et al. (2017), it was found that coaching self-efficacy is associated with various sources and that these associations may vary depending on coach characteristics. Therefore, when evaluating coaches' professional attitudes, it appears important to consider not only their experience and educational background but also the beliefs about their competence that they have developed as a result of these experiences.

In the final regression model, it was determined that the number of weekly training days significantly and positively predicted professional attitude ($B = 0.048$, $p = .005$). This result indicates that coaches who participate in training sessions more frequently tend to have more positive attitudes toward their profession. Cushion and colleagues (2003) emphasized the importance of experiential learning and practical application in coaches' professional development. Nelson and colleagues (2006), on the other hand, noted that coaches develop their professional knowledge and skills not only through formal education but also through daily practice and informal learning

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processes. In this context, it is thought that the positive relationship between the frequency of weekly training and professional attitude may be linked to coaches' active participation in professional practices. However, due to the cross-sectional nature of the study, no causal inference can be drawn regarding the idea that training frequency fosters positive occupational attitudes.

The study found that professional experience significantly predicted professional attitude in the final model (B = −0.008, p = .022). This finding indicates that coaches with more professional experience tend to have lower professional attitude scores when other variables are held constant. However, it would be incorrect to conclude that professional experience alone is associated with negative attitudes. Indeed, Feltz and colleagues (1999) identified coaching experience as one of the factors that could explain self-efficacy. In the present study, the fact that experience has a negative coefficient may indicate a conditional relationship that emerges when self-efficacy and other professional variables are controlled for simultaneously. Therefore, this finding needs to be reexamined in different samples and through longitudinal studies.

Another finding of the study is that the level of pedagogical training does not significantly predict professional attitude. However, this result should not be interpreted to mean that pedagogical training has no effect on coaches' professional development. Nelson et al. (2006) emphasized that, in addition to formal education, informal and experiential learning are also important in coaches' professional development. Hammad and colleagues (2024), who conducted research on karate coaches, noted that coaches have gaps in their scientific knowledge regarding physical training and that continuous professional development programs should be supported. Therefore, the fact that the pedagogical training variable was not found to be significant in the current study indicates that the quality, duration, and content of training programs must be evaluated separately.

This study has some limitations. First, the study is based on cross-sectional data collected from 99 karate coaches participating in a pedagogical training program. Therefore, caution should be exercised when generalizing the findings to all karate coaches in Turkey. Additionally, the fact that the data were collected using self-report scales raises the possibility of common-method bias. It is recommended that future studies work with samples representing a broader range of coaching levels, examine the relationship between self-efficacy and professional attitudes using longitudinal methods, and evaluate the effects of pedagogical training programs using experimental designs.

In conclusion, it has been determined that coaching self-efficacy plays a significant role in explaining the professional attitudes of karate coaches. The fact that self-efficacy provides a high level of explanatory power beyond other individual and professional characteristics suggests that coaches' beliefs regarding their professional competence should be taken into account in coach education and professional development initiatives. In this regard, it is recommended that coach education programs include not only technical knowledge and skills but also practices that support teaching competence, athlete motivation, communication, and a sense of professional self-efficacy.

DECLARATIONS

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Ethical Approval. In this study, we observed all rules stipulated in the "Directive on Scientific Research and Publication Ethics for Higher Education Institutions." None of the actions listed under the

directive's second section, titled "Actions Contrary to Scientific Research and Publication Ethics," have been committed.

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