Measuring Teachers' Adherence to Ethical Principles in Educational Assessment

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Abstract

Although educational assessment is one of the main responsibilities of the teachers, there has been little research designed to examine ethical principles in the daily classroom assessment practices of the teachers. Using a descriptive survey research design, the purposes of the current study were to develop a measure of the teachers' adherence to the ethical principles in educational assessment and identify teachers' characteristics associated with it. Participants were 3557 teachers teaching grades 5 to 12 in public schools across all educational governorates in Oman. Principal components analysis of the teachers' responses to an 11-items survey revealed three dimensions of the ethical principles in educational assessment: confidentiality, test integrity, and transparency. Internal consistency reliability ranged from .64 to .78. The correlations among the dimensions ranged from .19 to .32. Construct validity was evidenced by the statistically significant positive low correlation of .10 between the dimensions and knowledge of educational assessment ethics. Multivariate analyses of variance revealed statistically significant differences in levels of adherence to the ethical principles in educational assessment among teachers with respect to gender, educational qualification, teaching subject, teaching experience, and training in educational assessment. It was concluded that the measure developed in this study has the potential to provide educators and researchers with valuable information to understand teachers' adherence to the ethical principles in educational assessment.

Keywords: ethics, professional ethics, teachers' ethics, validity, educational assessment, measurement

1. Introduction

1.1 Conceptual Foundation and Literature Review

Educational assessment is a vital component of the teaching profession. Teachers are required to practice educational assessment in an ethically and legally sound professional manner (Brookhart, 2011). Although general professional ethics in teaching has been the interest of educational researchers for a long time (e.g., Bullough, 2011; Colnerud, 1997; Fisher, 2013; Shapira-Lishchinsky, 2011; Stephen, 2014), ethical issues associated with educational assessment has gained little attention in the empirical research. The purposes of this study were to measure teachers' adherence to ethical principles in educational assessment and explore factors associated with it. The conceptual foundation for this study is a synthesis of literature on professional ethics related to teaching in general and educational assessment in particular.

Ethics refers to the moral values regulating the suitable behavior of individuals (Kasher, 1993 as cited in Fisher, 2013). Professional ethics demonstrate general regulations concerning the duties performed by the members of the profession in an ethical manner (Tichenor & Tichenor, 2005). They involve fundamental values and beliefs planned to provide guidance to the behavior of the members of the profession in relation to their interactions with others (Wesley & Buyesse, 2006). They are usually described in codes of ethics documenting responsibilities of the profession that should be followed to strengthen public trust in the integrity of the profession (Fisher, 2013). Numerous studies have examined ethics in teaching.

For example, Colnerud (1997) recognized five types of norms promoting ethical dilemmas for teachers: interpersonal, professional, institutional, social conformity, and self-protection. Further, Colnerud divided ethical interpersonal norms into five subnorms: protection from harm, respect for integrity, respect for autonomy, justice,

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and veracity. Bullough (2011) reviewed studies dealing with ethical and moral matters in teaching and teacher education. As a result of this review, Bullough concluded that teaching is an ethical and moral firm; ethical and moral conflicts facing teachers originate from interpersonal and intrapersonal values, norms, and beliefs; teachers respond differently to the ethical conflicts reflecting differences in ethical and moral sensitivity and understanding; and teacher educators should further the development of ethical and moral sensitivity and understanding among teachers. Moreover, Shapira-Lishchinsky (2011) identified five categories describing ethical dilemmas in critical incidents experienced by teachers: caring climate versus formal climate, distributive justice versus school standards, confidentiality versus school rules, loyalty to colleagues versus school norms, and family agenda versus educational standards. Shapira-Lishchinsky argued for developing ethical educational programs based on teachers' critical incidents. Overall, these studies focused on ethical issues concerning teaching in general, not exactly on ethical issues related to educational assessment. When considering educational assessment, numerous ethical dilemmas arise in the classroom on a routine basis. As such, it is imperative that teachers apply relevant ethical principles in educational assessment.

Educational assessment is one of the main responsibilities of the classroom teachers. A large portion of teachers' professional time is devoted to activities related to the educational assessment (Stiggins & Conklin, 1992). As might be expected, teachers encounter daily situations of making ethical decisions while practicing educational assessment in the classroom. They make moral judgments and express moral values as they perform their core duties in educational assessment such as developing, administering, scoring, and interpreting assessment. Further, the various kinds, purposes, and uses of assessment in the classroom trigger tensions for teachers as they make decisions related to the educational assessment (McMillan, 2000). Knauss (2001) noted that ethical conflicts in academic assessment settings could stem from the varying needs of students, parents, teachers, and administrators. Hence, teachers need to be guided by professional ethical principles in educational assessment. The Joint Committee on Standards for Educational Evaluation (JCSEE) (2000) argued that these principles are needed to help teachers get out of undesirable assessment practices that can be detrimental to students. However, studies focusing on teachers' ethics in educational assessment are still scarce. This study is intended to fill this gap.

Principles in educational assessment include those offered in the *Standards for Teacher Competence in the Educational Assessment of Students* developed by the American Federation of Teachers (AFT), National Council on Measurement in Education (NCME), and National Education Association (NEA) (1990). These standards stressed that teachers need to understand the ethical and legal responsibilities associated with the educational assessment practices to avoid undesirable consequences on students. In addition, the NCME has adopted *Code of Professional Responsibilities in Educational Measurement* to help teachers conduct educational assessment activities related to the development, administration and scoring of assessment as well as interpretation, use, and communication of assessment results in a professionally responsible way (Schmeiser, Geisinger, Johnson-Lewis, Roeber, & Schafer, 1995). Furthermore, The JCSEE (2003) developed *The Student Evaluation Standards*. These were 28 standards designed to help teachers plan and conduct ethical, fair, useful, feasible, and accurate assessment of student learning.

Green, Johnson, Kim, and Pope (2007) examined the degree of agreement among 169 pre-service and in-service teachers in the United States regarding ethical issues related to the educational assessment in the classroom. The issues were about standardized test preparation and administration, multiple assessment opportunities, communication about grading, grading practices, bias, and confidentiality. They found that the participants had strong agreement on less than half of the issues presented. They concluded that "assessment is a realm without professional consensus" (p. 1009). Thus, they recommended designing courses for teachers addressing ethical concepts in educational assessment.

Expanding upon the work by Green et al. (2007), Pope, Green, Johnson, and Mitchell (2009) used a critical incidents technique to examine ethical dilemmas in educational assessment faced by 103 in-service teachers and administrators in the United States. Results showed that issues relating to grading, standardized testing, special populations, and institutional demands were the most frequently documented ethical conflicts faced by educators. Pope et al. emphasized the need for addressing educational assessment ethics in teacher education programs and called for more research in ethical issues regarding assessment of students.

Estaji (2011) interviewed 15 Iranian English language teachers regarding their beliefs about ethicality of the assessment and reporting principles. Results revealed that teachers questioned the ethicality of the achievement tests as a single indicator for assessing students' learning in English language. Agreeing with Pope et al. (2009), results also showed that institutional requirements in assessment account for the ethical dilemmas experienced by the teachers. Estaji argued for developing assessment and reporting principles that could increase the

ethicality and validity of the assessment inferences. As it can be seen from the aforementioned studies, teachers are supposed to be committed to the ethical principles in educational assessment. Yet, research on teachers' adherence to the ethical principles in educational assessment is extremely limited. The current study aimed at filling this gap.

1.2 Purposes of the Study

The main purpose of this study was to develop a measure of teachers' adherence to ethical principles in educational assessment. The study also aimed at determining the level of teachers' adherence to the ethical principles in educational assessment. Further, the study sought to explore the influence of selected demographic characteristics of the teachers on adherence to the ethical principles in educational assessment. The variables considered in the study were gender, qualification, teaching subject area, teaching load, experience, and training in educational assessment.

2. Method

2.1 Participants

A random sample of 3557 teachers were selected from all governorates in the Sultanate of Oman to participate in the study. They were teaching grades 5 to 12 in public schools. There were 1797 males and 1760 females. The majority of the participants (92.2%) were Omani. Of the 3557 teachers, 3146 teachers had a bachelor degree and 411 had a postgraduate degree. The following teaching areas were represented in the sample: Arabic language (16.9%), science (16.9%), mathematics (16.7%), practical-based subjects (13.3%), English language (12.4%), islamic education (12.2%), and social studies (11.7%). The teachers ranged in their teaching experience from 1 to 29 years with a mean of 9.69 and a standard deviation of 5.39. The teaching load of the teachers ranged from 4 to 22 weekly classes with a mean of 15.05 and a standard deviation of 3.85. About 88.3% of the teachers reported having at least one pre-service course in educational assessment. Also, about 73.8% of the teachers reported that they did not have any in-service course in educational assessment.

2.2 Procedures

Permission was requested from Ministry of Education and school principals to collect data from the teachers. The participants were informed that a study is being conducted to investigate teachers' adherence to the ethical principles in educational assessment. The teachers were also informed that they were not obligated to participate in the study, and that if they wished, their responses would remain anonymous and confidential. Those who wished to participate in the study were provided a cover letter and the survey along with brief instructions about the information that was requested in the survey, how to respond to the items, and where to find directions that were also included both on the cover letter and the survey. The participants took on average five minutes to complete the survey.

2.3 Development of the Survey

The classroom assessment literature (Airasian, 2005; Schmeiser et al., 1995; Taylor & Nolen, 2005) was reviewed to construct 11 items reflecting various areas of ethical issues related to the educational assessment. The teachers were asked to indicate the extent to which they adhere to the ethical issue addressed in the item on a 5-point Likert scale ranging from 1 (*no adherence*) to 5 (*full adherence*).

The items of the survey were translated into Arabic because the language of the teachers is Arabic. Three faculty members in the field of educational psychology and measurement from Sultan Qaboos University in Oman verified the accuracy of the translation in both versions, Arabic and English. A discussion was held with the faculty to verify discrepancies between the original and the translated versions. Few editing modifications were made as a result of the translation.

Content validity of the Arabic version of the items was verified by five faculty members in the field of educational psychology and measurement from Sultan Qaboos University in Oman. They judged the clarity of wording and appropriateness of each item for the use with the intended participants and its relevance to the construct being investigated. Their feedback was used for refinement of the items. The consulted judges agreed that the items were clearly worded, appropriate for the participants, and relevant to the construct being measured.

2.4 Data Analysis

In light of the aforementioned purposes of the study, the following statistical procedures were followed:

1. The data were screened for accuracy of data entry, missing values, normality, linearity, outliers, multicollinearity and singularity, and factorability.

- 2. The factor structure of the survey items was examined by principal components analysis.
- 3. The reliability was assessed by computing Cronbach's alpha internal consistency reliability estimates.
- 4. Multivariate analyses of variance were conducted to examine differences in the levels of adherence to the ethical principles in educational assessment among the teachers with respect to gender, qualification, teaching subject area, teaching load, teaching experience, and training in educational assessment.
- 5. Pearson product-moment correlation coefficients were calculated between the scores of the survey and the total score received in the subscale of "knowledge of educational assessment ethics" from the Arabic version of the Teacher Assessment Literacy Questionnaire (TALQ) Alkharusi (2012) developed by Plake and Impara (1992).

3. Results

3.1 Data Screening

The screening process of the data showed no missing values and no concern about normality, linearity, multicollinearity, and singularity. Inspection of the correlation matrix of the 11 items revealed that the correlations when taken overall were statistically significant as indicated by the Bartlett's test of sphericity. Kaiser's measure of sampling adequacy (MSA) fell within acceptable range with a value of .75. Each item also exceeded the threshold value (.60) of MSA. Finally, most of the partial correlations were small as indicated by the anti-image correlation matrix. These measures all led to the conclusion that the set of 11 items of the teachers' adherence to the ethical principles in educational assessment was appropriate for principal components.

3.2 Factorial Structure

Teachers' responses to the 11 items of the survey were submitted to principal components analyses (PCA) to identify their underlying dimensions. No particular number of dimensions was hypothesized and the criterion was set to eigenvalues greater than one (Tabachnick & Fidell, 2001). The initial unrotated PCA resulted in a factor model of three dimensions as suggested by the scree plot and eigenvalues exceeding unity. However, based on its pattern of factor loadings, this unrotated factor model was theoretically less meaningful and difficult to interpret. Therefore, the analysis proceeded to rotate the factor matrix orthogonally with Varimax rotation to achieve a simple and theoretically more meaningful solution.

Table 1. Survey items of the teachers' adherence to the ethical principles in educational assessment and their factor loadings

Items		Factor loadings			
		2	3		
1. Preventing students from cheating on tests.	.78				
2. Avoiding teaching to the test when preparing students for tests.	.74				
3. Keeping test materials in a secure place.	.70				
4. Ensuring appropriate and consistent testing conditions for all students.	.68				
5. Protecting students' confidentiality with regard to assessment results.		.68			
6. Keeping assessment results of each student confidential.		.67			
7. Avoiding the disclosure of assessment results to others than the student's parents.					
8. Avoiding the use of assessment as a way to punish students for their behavior.		.56			
9. Informing students of the objectives before applying the assessment.			.74		
10. Communicating assessment criteria and standards to students in advance.			.73		
11. Informing students in advance how grades are to be assigned.			.69		

Note. Dimension 1 = test integrity. Dimension 2 = confidentiality. Dimension 3 = transparency.

The analyses yielded three dimensions as suggested by the eigenvalue rule and scree plot. Table 1 displays the factor loadings for the three-dimension model of teachers' adherence to the ethical principles in educational assessment. Together, the three dimensions accounted for 51.55% of the total variance. All items loaded $\geq .55$ on

their primary dimension. The first dimension accounted for 22.3% of the variance (eigenvalue = 2.11) and consisted of four items. According to the content of its items presented in Table 1, this dimension was named *test integrity*. The second dimension accounted for 14.65% of the variance (eigenvalue = 1.63) and consisted of four items. According to the content of its items shown in Table 1, this dimension was labeled *confidentiality*. The third dimension accounted for 14.6% of the variance (eigenvalue = 1.63) and consisted of three items. According to the content of its items presented in Table 1, this dimension was named *transparency*.

3.3 Reliability

Internal consistency coefficients for test integrity, confidentiality, and transparency subscales' scores were .78, 66, and .64 as indicated by Cronbach's alpha, respectively. Measures of test integrity, confidentiality, and transparency were constructed by averaging the items on each dimension. Table 2 presents means, standard deviations, and intercorrelations among the three dimensions and the total score of the scale. As shown in Table 2, the correlations among the dimensions ranged from .19 to .32. Also, the three dimensions correlated positively and highly with the total scale score. This suggests that the dimensions represent related, yet unique aspects of the ethical principles in educational assessment. Also, the means of the dimensions and total scale indicate that the participating teachers reported high levels of adherence to the ethical principles in educational assessment.

Table 2. Means, standard deviations, and intercorrelations among the three dimensions and the total score of the scale

Variable	M	SD	1	2	3
1. Test integrity	4.66	0.59	-		
2.Confidentiality	3.84	0.67	.21*	-	
3. Transparency	3.81	0.72	.19*	.32*	-
4. Total scale score	4.10	0.47	.62*	.73*	.75*

^{*}*p* < .001.

3.4 Group Differences

3.4.1 Gender

Table 3 present means and standard deviations of the survey dimensions with respect to gender. A multivariate analysis of variance revealed statistically significant gender differences on the teachers' adherence to the ethical principles in educational assessment, F(3, 3553) = 110.96, p = .000, partial $\eta^2 = .09$. Univariate analyses showed statistically significant gender differences on test integrity favouring males, F(1, 3555) = 66.35, p = .000, partial $\eta^2 = .02$; confidentiality favouring females, F(1, 3555) = 251.98, p = .000, partial $\eta^2 = .07$; and transparency favouring females, F(1, 3555) = 145.50, p = .000, partial $\eta^2 = .04$.

Table 3. Means and standard deviations of the survey dimensions with respect to gender

Variable	Males (n	Males $(n = 1797)$		= 1760)
variable	M	SD	M	SD
1.Test integrity	4.58	.66	4.74	.49
2. Confidentiality	3.67	.68	4.01	.61
3. Transparency	3.67	.72	3.95	.69

3.4.2 Teaching Subject Area

Table 4 present means and standard deviations of the survey dimensions with respect to subject taught by the teacher. A multivariate analysis of variance revealed statistically significant differences on the teachers' adherence to the ethical principles in educational assessment with respect to the subject taught by the teacher, F(18, 10035.75) = 2.47, p = .001, partial $\eta^2 = .004$. Univariate analyses showed statistically significant subject area differences on confidentiality, F(6, 3550) = 4.99, p = .000, partial $\eta^2 = .008$. Post hoc analyses using Scheffe's test showed that teachers teaching English language tended to hold higher levels of confidentiality in

educational assessment than teachers teaching all other subjects. Also, post hoc analyses using Scheffe's test showed no statistically significant differences on levels of adherence to confidentiality in educational assessment among teachers teaching subjects other than English language. The univariate analyses also showed no statistically significant differences on test integrity and transparency with respect to subject area.

Table 4. Means and standard deviations of the survey dimensions with respect to teaching subject area

Subject	n -	Test Int	egrity	Confide	ntiality	Transpa	arency
Subject	п -	M	SD	M	SD	M	SD
Islamic Education	433	4.68	.60	3.81	.66	3.84	.74
Arabic language	600	4.65	.63	3.82	.68	3.80	.76
English language	440	4.61	.59	4.00	.66	3.84	.68
Mathematics	595	4.67	.55	3.83	.67	3.79	.64
Science	601	4.67	.59	3.80	.69	3.78	.74
Social Studies	415	4.67	.55	3.79	.68	3.80	.71
Others	473	4.63	.62	3.83	.68	3.83	.75

3.4.3 Teaching Load

Table 5 present means and standard deviations of the survey dimensions with respect to teaching load. A multivariate analysis of variance revealed no statistically significant differences on the teachers' adherence to the ethical principles in educational assessment with respect to the teaching load, F(3, 3553) = .180, p = .910, partial $\eta^2 = .09$. The univariate analyses also showed no statistically significant differences on confidentiality, test integrity, and transparency with respect to the teaching load.

Table 5. Means and standard deviations of the survey dimensions with respect to teaching load

Variable -	15 classes or less $(n = 2155)$		More than 15 classes $(n = 1402)$	
variable -	M	SD	M	SD
1.Test integrity	4.65	.59	4.66	.59
2. Confidentiality	3.83	.68	3.84	.66
3. Transparency	3.81	.73	3.80	.70

3.4.4 Teaching Experience

Table 6 present means and standard deviations of the survey dimensions with respect to teaching experience. A multivariate analysis of variance revealed statistically significant differences on the teachers' adherence to the ethical principles in educational assessment with respect to the teaching experience, F(3, 3553) = 2.67, p = .046, partial $\eta^2 = .002$. Univariate analyses showed statistically significant differences on confidentiality favouring teachers with more than 10 years of experience, F(1, 3555) = 6.62, p = .010, partial $\eta^2 = .002$. The univariate analyses also showed no statistically significant differences on test integrity and transparency with respect to the teaching experience.

Table 6. Means and standard deviations of the survey dimensions with respect to teaching experience

Variable	10 years or les	10 years or less $(n = 2225)$		ears $(n = 1332)$
variable	M	SD	M	SD
1.Test integrity	4.64	.60	4.67	.58
2. Confidentiality	3.81	.68	3.87	.66
3.Transparency	3.80	.73	3.81	.70

3.4.5 Preservice Training in Assessment

In this study, there were 417 teachers without preservice training in educational assessment. This group was compared to a group of 400 teachers selected randomly from 3140 teachers with preservice training in educational assessment. Table 7 present means and standard deviations of the survey dimensions with respect to preservice training in educational assessment. A multivariate analysis of variance revealed statistically significant differences on the teachers' adherence to the ethical principles in educational assessment with respect to the preservice training in the educational assessment, F(3, 813) = 2.58, p = .05, partial $\eta^2 = .009$. Univariate analyses showed statistically significant differences on transparency favouring teachers who had preservice training in the educational assessment, F(1, 815) = 5.99, p = .015, partial $\eta^2 = .007$. The univariate analyses also showed no statistically significant differences on confidentiality and test integrity with respect to the preservice training in the educational assessment.

Table 7. Means and standard deviations of the survey dimensions with respect to preservice training in educational assessment

Variable _	Without preservice training $(n = 417)$		With preservice training $(n = 400)$		
variable —	M	SD	M	SD	
1.Test integrity	4.61	.63	4.64	.61	
2. Confidentiality	3.79	.67	3.78	.65	
3. Transparency	3.72	.72	3.84	.69	

3.4.6 Inservice Training in Assessment

In this study, there were 933 teachers with inservice training in educational assessment. This group was compared to a group of 935 teachers selected randomly from 2624 teachers with inservice training in educational assessment. Table 8 present means and standard deviations of the survey dimensions with respect to inservice training in educational assessment. A multivariate analysis of variance revealed statistically significant differences on the teachers' adherence to the ethical principles in educational assessment with respect to the inservice training in the educational assessment, F(3, 1864) = 7.66, p = .000, partial $\eta^2 = .012$. Univariate analyses showed statistically significant differences on confidentiality favouring teachers who had inservice training in the educational assessment, F(1, 1866) = 9.532, p = .002, partial $\eta^2 = .005$; and transparency favouring teachers who had inservice training in the educational assessment, F(1, 1866) = 18.069, p = .000, partial $\eta^2 = .010$. The univariate analyses also showed no statistically significant differences on test integrity with respect to the inservice training in the educational assessment.

Table 8. Means and standard deviations of the survey dimensions with respect to inservice training in educational assessment

Variable _	Without inservice training ($n = 935$)		With inservice training $(n = 933)$		
v arrable —	M	SD	M	SD	
1.Test integrity	4.66	.60	4.65	.58	
2. Confidentiality	3.80	.68	3.90	.66	
3.Transparency	3.76	.71	3.90	.70	

3.4.7 Educational Level

In this study, there were 411 teachers having a postgraduate degree. This group was compared to a group of 423 teachers selected randomly from 3146 teachers having an undergraduate degree. Table 9 present means and standard deviations of the survey dimensions with respect to the educational level of the teachers. A multivariate analysis of variance revealed no statistically significant differences on the teachers' adherence to the ethical principles in educational assessment with respect to the educational level, F(3, 830) = 2.145, p = .093. However, univariate analyses showed statistically significant differences on transparency favouring teachers who had a postgraduate degree, F(1, 832) = 5.655, p = .018, partial $\eta^2 = .007$. The univariate analyses also showed no

statistically significant differences on test integrity and confidentiality with respect to the educational level.

Table 9. Means and standard deviations of the survey dimensions with respect to educational level

Variable	Undergraduate l	Undergraduate level ($n = 423$)		evel (n = 411)
variable	M	SD	M	SD
1.Test integrity	4.63	.66	4.67	.57
2. Confidentiality	3.86	.66	3.87	.73
3. Transparency	3.80	.69	3.92	.74

3.5 Construct Validity

Construct validity was examined by correlating the scores of each dimension of the survey with the total scores received in subscale of "knowledge of educational assessment ethics" as measured by the Arabic version of the TALQ Alkharusi (2012) developed by Plake and Impara (1992). This subscale consisted of four multiple-choice items with four alternatives. One of the alternatives is considered to be the correct answer. Table 10 presents Pearson product-moment correlation coefficients between the scores of the survey and the total score received in the subscale of "knowledge of educational assessment ethics" from the Arabic version of the TALQ Alkharusi (2012) developed by Plake and Impara (1992). Results revealed statistically significant positive low relationships of knowledge of educational assessment ethics with confidentiality, test integrity, and total adherence to the ethical principles in educational assessment. There was no statistically significant relationship between knowledge of educational assessment ethics and transparency. This pattern of correlations suggest that these scales are measuring two different types constructs.

Table 10. Pearson product-moment correlation coefficients between the scores of the survey and the total score on knowledge of educational assessment ethics

Variable	Correlation coefficient with knowledge of educational assessment
1. Test integrity	.07*
2. Confidentiality	.10*
3. Transparency	.03
4. Total scale score	.10*

^{*}*p* < .05.

4. Discussion and Conclusion

A considerable part of the classroom time is devoted towards educational assessment. As might be expected, malpractices of educational assessment can be detrimental. An effective way to address the malpractices is through professional ethics which regulate teachers' behaviors (Tichenor & Tichenor, 2005). Unfortunately, there has been little research designed to examine the ethical principles related to educational assessment in the day-to-day conduct of teachers. This study was undertaken in the hope that a clearer idea of teachers' professional status could be gained by identifying the relationships between the ethical principles in educational assessment which teachers, in varying degrees, subscribe to, and their personal characteristics. This study developed a survey to measure teachers' adherence to the ethical principles in educational assessment. Also, the study analyzed teachers' adherence to the ethical principles in educational assessment in relation to gender, qualification, teaching subject area, teaching load, experience, and training in educational assessment.

Based on teachers' responses, the findings showed three aspects of ethical principles in educational assessment: confidentiality, test integrity, and transparency. Confidentiality refers to the extent to which teachers keep assessment results of the students confidential and avoid disclosing them to unauthorized individuals. Test integrity refers to the extent to which teachers prevent irregularities in testing (U.S. Department of Education, Institute of Education Sciences, & National Center for Education Statistics, 2013). Transparency refers to the extent to which teachers communicate with the students about the assessment objectives, tasks, and criteria in advance. The moderate levels of internal consistency reliabilities and interscale correlations suggest that the

survey measures three distinct, yet related, aspects of the educational assessment ethics. As reported by the participating teachers, there was a high degree of adherence to the ethical principles in educational assessment. These results highlighted the importance and relevance of confidentiality, test integrity, and transparency in the daily classroom assessment practices. The survey developed in the current study has the potential to be used to understand and enhance ethical behaviors of teachers in educational assessment practice. Yet, further research is needed to gain insight into whether there are additional ethical issues to consider in the educational assessment.

The findings also revealed that teachers adherence to the ethical principles in educational assessment vary as a function of gender, teaching experience, level of education, and preservice and inservice assessment training. These findings are in agreement with previous related studies concerning professional ethics of teachers (e.g., Espinosa-Pike, Aldazabal, & Martin-Arroyuelos, 2012; Pope et al., 2009; Stephen, 2014). The findings lend support to the value of training in educational assessment ethics. Specifically, the findings call for professional development for teachers and an emphasis on educational assessment ethics in teacher education programs to strengthen the level of teachers' adherence to the ethical principles in the educational assessment.

Overall, the data in this study point to a conclusion that teachers' adherence to the ethical principles in educational assessment is a measurable construct. The survey may prove to be a useful tool for educators and researchers to understand and enhance teachers' ethical practices in educational assessment. Further validation studies might need to be conducted.

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