

THE APPROPRIATENESS OF MEASUREMENT UNDER THE APPLICATION OF TEST GUIDANCE BY CONTROLLING STUDENTS' TEST ANXIETY

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ABSTRACT: *This factorial experimental study aims to explore the effectiveness of test guidance method to improve the appropriateness of measurement (person-fit) by controlling students' test anxiety. Research sample consisting of 80 students taken from those participating in Learning Evaluation Course (LAC) at Economic Education, Accounting Education, and Tourism Education majors. Confirmatory factorial analysis was used to find out valid items of test anxiety scale, and the reliability coefficient was 0.87. The validity of multiple-choice test items in LAC was determined using ITEMAN program, and the reliability coefficient was 0.91. The hypothesis was tested using two-ways ANOVA. The results showed that: (1) the appropriateness measurement on students using psychological test guidance is higher than those using cognitive test guidance; (2) the appropriateness measurement on students with low test anxiety is higher than those with high test anxiety; (3) there is a significant interaction effect between test guidance and test anxiety on the students' appropriateness measurement. Finally, the major implication of these findings is that for the successfulness in examination it needs not only the mastery of the measurement target of the test itself, but also the mastery on stabilization techniques of test anxiety and test-taking skills.*

KEYWORDS: Appropriateness Measurement, Psychological Test Guidance, Cognitive Test Guidance, and Test anxiety

INTRODUCTION

Throughout their academic experience, students are faced with various tests and assessment situations. However, the use of test as an assessment tool of academic performance has a number of disadvantages. Gronlund (1985) notes the disadvantages of using tests in educational measurement, namely: 1) the tests can create anxiety; 2) test classifies and names test-takers; 3) test may threaten the self-concept of test-takers; and 4) test creates participants' self-fulfilling prophecy.

Test anxiety is one of the negative impacts of the implementation of the test, which is associated with psychological and behavioral responses that may cause failure in testing (Hopkins and Antes, 1990). It is characterized by a tendency to become anxious and showed psychological symptoms of anxiety in testing situations (Brown, 1983). People who feel anxious in testing are usually busier to take care their anxiety rather than to analyze the test

items at hand (Lindgren, 1980). Almost everyone experiences test anxiety, and high test anxiety is experienced by those who have less preparation to response the test (Lindgren, 1980).

In fact, it is difficult to identify examinee anxiety because triggering factors, experiences, and reactions to the test are varied widely from person to person (Hopkins and Antes, 1990). In facing the test, everyone will feel certain level of anxiety— low or high. As a result of this anxiety, the test-takers may obtain low test scores which might not be appropriate to their ability. Test-takers may obtain higher scores than they should or conversely they may also obtain lower scores than they should. In this case the inappropriateness of measurement has occurred, and it occurs when the test failed to measure accurately the characteristics of test-takers that should be measured.

As described by Hulin, *et al.* (1983) that the discussion on appropriateness or inappropriateness measurement is limited to the vagaries of the students' answers in the test pattern. The test scores of test-takers on a multiple choice item may not provide satisfactory measurement of their abilities (Drasgow, Levine, & Williams, 1985). There will be some test-takers' correct response for the difficult test items, and there will be some test-takers' wrong answers to the easy test items. The cause of inappropriateness of measurement is cheating (Hulin, *et al.*, 1983), inappropriate learning method with students' learning styles (Ahiri, *et al.*, 2015), not conducive atmosphere and conditions of examination (Nitko, 1996), and mental distress, such as anxiety, worry, fear of failure, incapability in writing, and feeling unwelcome (Wiersma and Jurs, 1990). Other factors that can also affect appropriateness response in achievement test are dependence, fearfulness, forgiveness, greed avoidance, and extraversion (Emmen, 2011). Meanwhile, according to Shermis & Vesta (2011) that the inappropriateness test scores derived from the interaction of three factors, namely: the test itself, the characteristics of the participants, and the situation of the implementation of the test. These things can have different effects toward the performance of the test-takers.

In educational measurement, the inappropriateness test scores need to be prevented. One of the techniques which is regarded can neutralize differences ability of test-takers to answer the test is by providing test guidance. Wigfield and Eccles (2002) proposed some guidance techniques like relaxing to reduce examinee anxiety. This techniques focus on the worrying nature of anxiety and emphasize on replacing the harmful negative thoughts by positive task-centered thoughts (Mojarad, Shabani, Gatabb, 2013). Such training is effective in neutralizing the influence of psychological distress and to improve students' ability (Niusha, Farghadani, and Safari, 2012).

Test guidance is learning about knowledge and skills needed to response test (Linn, 1989). According to Oosterhof (1999), test counseling program has two objectives, namely: (1) learning the subject matter of the test, and (2) the simulation of the implementation and administration of technique to response test. According to Hopkins and Antes (1990), the objectives of the test guidance preparation, in general, are: (1) general instruction on specific objectives that are not measured by the tests; (2) teaching skills in completing the test; (3) teaching and practice on stabilization test anxiety or introduced with realization technique. Thus, students who have an expertise to response the test enable them to achieve high score in the testing, although they have insufficient mastery on the subject matter of the test, especially in the objective test. As explained by Ebel (1979) that objective test is usually more effective to measure student's skill in response to the test instead of measuring the actual test measures.

To test the effectiveness of the test guidance in improving the appropriateness measurement, an experimental research was conducted. The objectives of this study were to explore: (1) comparison of the students' appropriateness measurements given psychological test guidance with students who were given cognitive guidance; (2) comparison of the students' appropriateness measurement who have low test anxiety with students who have high test anxiety; and (3) the interaction effect between test guidance method and test anxiety toward the appropriateness measurement.

METHOD

In this study, a 2 x 2 factorial quasi-experimental design was used. It involved one dependent variable– the appropriateness of measurement, two independent variables: test guidances as treatment variables and test anxiety as control variables. The treatment variable consists of two levels: psychological test guidance and cognitive test guidance. The control variables also consist of two levels: low test anxiety and high test anxiety.

The target population of the study were 476 students of Social Science Departmen, Faculty of Education of Halu Oleo University. The sample consisted of 148 students taking Learning Evaluation Course (LEC) on Economics Education, Accounting Education, and Tourism Education majors. The research sample was determined by dividing the student test anxiety scores with high test anxiety 27%, medium test anxiety 46% and low test anxiety 27%. Furthermore, it was found out that 40 students have high test anxiety and 40 students had low test anxiety. The instrument of test anxiety with Likert scale consisted of 40 items; it had been validated using confirmatory factor analysis on a sample of 250 students of Faculty of Education of Halu Oleo University. The reliability coefficient of the test anxiety was 0.87. The measurement on students' test anxiety was conducted before the experiment stage.

The treatment given to the students was learning and technical training on test completion by applying psychological test guidance and cognitive test guidance. The experiment was carried out for 8 meetings integrated to LEC. Psychology test guidance is a study and practice about students' preparation technique to complete tests that include activity guidance with respect to: (1) the impetus for success: develop good study habits, techniques to understand material, and to understand the forms of tests and procedures to give response; (2) the preparation techniques and self-control: exercise self-control strategy in order to feel calm, relaxed, concentration, and not look down upon the test; (3) developing positive attitude toward test: helping students realize their capabilities, not to look test results excessively, procedures for avoiding cause of stress in testing, to see himself/herself in a positive way, and to look at test as what it is; (4) relaxation technique: stabilization exercises of the mind, breath control exercises, and stabilization physical exercises, so they avoid excessive inappropriateness test scores. While test-taking skills guidance seeks to improve the skills of students in completing the test through learning and technical training in responding the test in order to assist the students in connection with: (1) avoidance of errors: the exercise of the procedures to understand the test instructions, to understand the target measuring test items, to answer the test item by giving priority to simple question, and to answer all the test items; (2) the strategy in using time effectively: namely to make sure how much time is required, start working as soon as possible, to work quickly and carefully; (3) deductive reasoning: objectives, and the use of gestures, that is the practice to answer test items by using gestures

or specific instructions in the subject matter and the answer choices; (4) guessing: namely practice to guess answer correctly so it can give higher possible true answer.

Data on the appropriateness of measurements were obtained using achievement test on LEC. The form of instruments was multiple-choice test with five choices consisting of 40 items, and it had been validated on a sample of 100 students. The results of the tryout were analyzed using ITEMAN program version 3:50 (Assessment Systems Corporation, 1996). The reliability coefficient of the test was 0.91. The index of measurement appropriateness were calculated using Point Biserial Correlation from Donlon and Fischer (Hulin, et al, 1983). The research hypotheses were tested using two ways of Variance Analysis. Kolmogorov-Smirnov test was used to test requirements of data analysis, and for data normality testing Levene's test was applied. The testing process requirements of data analysis and research hypothesis testing used SPSS version 21 (Santoso, 2014).

RESULTS

The data description of appropriateness measurements of students were presented in Table 1.

Table 1. The Summary of Data Description

Test anxiety (B)	Test Guidance (A)		Total (B)
	Psychological (Relaxation) (A1)	Cognitive (Test Taking Skills) (A2)	
Low (B1)	n = 20 M = 0.62 s = 0.05	n = 20 M = 0.71 s = 0.04	n = 40 M = 0.67 s = 0.07
High (B2)	n = 20 M = 0.59 s = 0,07	n = 20 M = 0.29 s = 0.05	n = 40 M = 0.44 s = 0.17
Total (A)	n = 40 M = 0.61 s = 0.06	n = 40 M = 0.50 s = 0.22	n = 80 M = 0.55 s = 0.17

(n = Sample; M = Mean; s = Standard Deviation)

The data presented in Table 1 show that the appropriateness test scores on students given psychological test guidance is higher than that of the students given cognitive test guidance ($M_{A1}=0.61 > M_{A2}=0.50$). Furthermore, appropriateness measurements on students who have low test anxiety is higher than those with high test anxiety ($M_{B1}=0.67 > M_{B2}=0.44$).

Table 2. The Result of Data Normality Test

Source	A1	A2	B1	B2
N	40	40	40	40
Mean	0.608	0.502	0.668	0.442
K.Smirnov Z	0.696	1.524	0.661	1.204
Sig (p)	0.719	0.089	0.775	0.110
Results	Normal	Normal	Mormal	Normal

Based on Table 2 that the data of this study come from a population with normal distribution.

Table 3. The Result of Levene's Test of Equality of Error Variances

F	df1	df2	Sig.	Result
2.305	3	76	0.083	Homogen

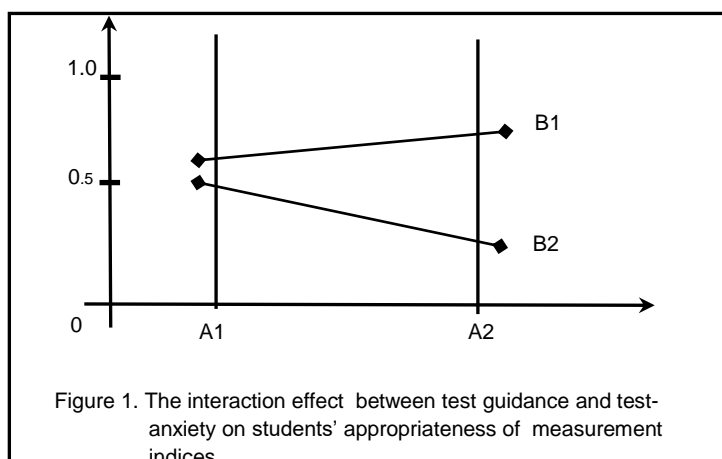
Based on Table 3 it can be concluded that the data of the study has homogeneous variance.

Table 4. The Result of ANOVA Test

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2.029 ^a	3	0.676	213.720	0.000
Intercept	24.653	1	24.653	7791.395	0.000
Test Guidance (A)	0.228	1	0.228	72.029	0.000
Test anxiety (B)	1.015	1	1.015	320.703	0.000
Interaction Effect (AxB)	0.786	1	0.786	248.428	0.000
Error	0.240	76	0.003		
Total	26.922	80			
Corrected Total	2.269	79			

As presented in Tabel 4, the ANOVA test results showed that: (1) the results of analysis between test guidance reach a value of $p < 0.01$. This means that, the appropriateness of measurement on students who receive test guidance psychological was higher than those who receive cognitive tests guidance. (2) The result of analysis between test anxiety level gives a $p < 0.01$, and this means that, the appropriateness of measurements on students who have low test anxiety was higher than those with high test anxiety. (3) Finally, there is any significant interaction effect between test guidance and test anxiety to the appropriateness of measurement ($p < 0.01$).

The interaction effect between test guidance and test anxiety on the appropriateness measurement can be clarified on Figure 1.



DISCUSSION

First, the test results prove that the appropriateness of measurement on students given psychological test guidance is higher than those of given cognitive test guidance. This happens because basically one of the factors contributing to the appropriateness and/or inappropriateness measurement is students' psychological conditions in responding to the test. A psychological disorder experienced by students led them to answer wrongly a numbers of easy test items, or by doing speculation in giving answer so they can answer correctly a number of difficult items that should not be answered correctly based on their capabilities.

Despite the mastery of the technique to answer to the tests is a capability directly related to the technique of test completion, however, due to the appropriateness measurements, it is caused by the psychological condition of the students, the provision of psychological test guidance proved to be more effective in improving the appropriateness measurement compared to the provision of cognitive test guidance. A series of studies have been done to support the findings of this study. Ahmadi & Rezvani (1998) found that psychotherapy and cognitive methods have significance difference on increase of students' performance. Douglas & Henson (2009) found that test-taking behavior of some test-takers sometimes idiosyncratic so that their test scores do not reflect their true cognitive abilities. Akinsola and Awaji (2013) found that treatment with relaxation techniques and cognitive restructuring can reduce test anxiety and improve students' performance on test.

The results of the study conducted by Gregory (2000) involving 10,000 students of primary schools and secondary schools in the United States showed that most of the students (testee) failed to show their true ability, and the case has been for the situation and atmosphere that make them anxious. Conversely, students gain higher test scores if they were at low anxiety condition; in such a case, anxiety make the student to be under pressure, to be reduced or eliminated. This shows that students may have good mastery on material tested but fail to reveal the true capabilities because of the anxiety they experienced in responding the test.

Second, the results of analysis on the comparison of the appropriateness of measurements on students who had low test anxiety and high test anxiety obtained $p < 0.01$. This suggests that the appropriateness of measurement on group of student with low test anxiety is higher than those with high test anxiety. The results of the second hypothesis testing proved that the appropriateness or not appropriateness of the test score achieved by the student depends on the level of test anxiety they have. Students who have low test anxiety tend to be more motivated to work, able to control his/her emotions, more careful, and able to devote his attention to the demands of the task that he/she was doing. Thus, the patterns of their answers to the achievement tests really describe their actual capabilities. Mistakes made by students with low test anxiety were caused by the lack of mastery on target of test, and it is not because of speculation as made by students who have high test anxiety. The results of this research are parallel to the findings of some researches, for example, Spielberger & Vagg (1995); Zeidner (1998); Stana & Opreab (2015), which indicated that students with high levels of test anxiety tend to perceive testing situations as personal threats, while students with low test anxiety perceive testing situations as challenges. Karadeniz (2011) found that students who have a low test anxiety were more successful in the test. This also consistent with the findings of Keogh et al, (2004) and Chapell *et al*, (2005) that anxiety has a negative effect on learning achievement. Another finding states that if there is an increase in test anxiety then the test results will decrease, as research conducted by Ohata (2005), as well as inappropriateness measurement achieved by students due to high test anxiety (Young, 1999).

Third, the results of testing on the interaction effect between test guidance and test anxiety toward measurement gives a value of $p < 0.01$. This means that there is a significant interaction effect between test anxiety and test guidance toward the students' appropriateness of measurement. The interaction effects between variables due to differences in the effect of the test guidances on test anxiety level of students. Cognitive test guidance is more effective to overcome the inappropriateness measurement on students who have low test anxiety level.

This finding validates the results of some earlier studies (DiGuiseppe & Tafrate, 2003; Sukhodolsky, Kassinove, & Gorman, 2001; Tafrate, 1995) which indicated that the cognitive behavioral treatments were effective in increasing academic performance. The present study also shows the psychological test training is more effective to overcome the inappropriateness measurement on students with high level of test anxiety. This finding is also consistent with results of studies conducted by Krupa, *et al.* (1999), Mehrabizadeh *et al.* (2009), Deluty (1981), and Paeizi *et al.* (2007) that psychological test training can help students to change their attitude toward testing situations, to improve their assertiveness, to express their thoughts and emotions easily, to create self-confidence in themselves, to reduce test anxiety, and to increase test performance.

The interaction effect between test guidance and test anxiety on the appropriateness measurement can be clarified by Figure 1. Figure 1 shows that the lines B1 and B2 are not equal; this indicates the presence of interactions between test guidance and tests-anxiety toward the appropriateness measurement. This means that the effectiveness of the test guidance given is highly dependent on test anxiety condition experienced by students. Cognitive test guidance is an effective technique to improve the appropriateness of measurement on students who have low test anxiety. This happens because of the cognitive test guidance aiming to improve the skills of students in response to the test, while students with low anxiety tend to not experience problems in responding to a test. Psychological test guidance is more effective to improve the appropriateness measurement for students who have high test anxiety. This happens because the psychological test guidance is basically directed to mentally prepare of students to response to the test.

The interaction effect between variables in this study can be described by comparing the characteristics of the test guidance given. Cognitive test guidance seeks to improve the skills of students in completing test through learning and technical training to response to the test in order to assist students in understanding instructions of test, to understand the target measuring point test, to answer the test items by putting an easy question, to make sure how much time is necessary, to start working as soon as possible, to work quickly and carefully, to answer practice test items by using gestures or specific instructions in the subject matter and the answer choices, to exercise how to guess correctly in order to give opportunity to have high score.

Psychological test guidance consists of learning and practicing techniques mentally and emotionally to complete the test, providing the impetus for success, exercising self-control, developing a positive attitude to the test, and relaxing techniques to stabilize the mind, breathing control, and stabilizing exercises physical strain. As a result, students taught and trained through this method were becoming more serious in work, more confident, more enthusiastic, and able to manage time and work carefully, so that they can avoid inappropriateness of measurement.

CONCLUSION

The appropriateness test response patterns on students given psychological test guidance is higher than those given cognitive test guidance; (2) the reasonableness of the measurement of students who have low test anxiety is higher than those who have high test anxiety; (3) there is a significant interaction effect between test guidance and test anxiety toward the appropriateness measurement. Based on the findings of this study, it can be concluded that to be successful in examination it needs not only mastering of the subject matter measuring by the test itself, but also it needs mastering of the techniques stabilization test anxiety and test-taking skills. This means that the effect of giving test guidance to the appropriateness measurements higher or lower depending on students' test anxiety. Thus, to improve the appropriateness measurement of students who have low test anxiety is more effective if they given cognitive test guidance. Meanwhile, to improve the appropriateness measurement of students who have high test anxiety, it is more effective if they are given psychological test guidance.

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