Validity and reliability of physical education teachers’ beliefs and intentions toward teaching students with disabilities (TBITSD) questionnaire

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ABSTRACT
The purpose of this study was to evaluate Validity and reliability of TBITSD questionnaire which developed based on TpB guidance by Jeong & Block (2008). The participants consisted of a number of 227 full-time PE teachers in public schools in Tehran. Cronbach’s alpha test was used to measure the internal consistency, and stability over time was examined by test-retest for each components. Reliabilities were adequate and reported respectively, from 0.75 to 0.92 and 0.74 to 0.90. Construct validity for the TBITSD was examined by performing confirmatory factor analysis and acceptable model fit was indicated by a CFI, NFI and GFI value from 0.84 to 0.95. Also, RMSEA values of direct measures 0.074 and indirect measures 0.048 indicated acceptable construct validity. Therefore, the TBITSD questionnaire had acceptable to good Validity and reliability.

INTRODUCTION
Inclusion is the philosophy that students should be educated together in one classroom instead of separate classrooms designated to meet special needs. Inclusion is defined as the education of all children with disabilities (mild to severe) in regular education even if special resources are needed to make it effective [5]. “Inclusion is the practice of placing many different kinds of students in general physical education and in this environment GPE teachers will make the necessary changes in didactics, pedagogy, and curriculum to assure that all students will achieve their physical education goals and feel safe, happy, comfortable, and successful in the physical education setting” [10]. In accordance with Sherrill [12], it is important to prepare PE teachers for inclusion of students with disabilities in GPE settings and, in order to work effectively with prospective teachers; we must understand their intentions towards the inclusion of children with disabilities into mainstream general education.

According to planned behavior theory [4], behavior (e.g., including students with disabilities) is predicted by intention. Intention is influenced by three kinds of considerations: (a) beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (behavioral beliefs), (b) beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs), and (c) beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (control beliefs). In their respective aggregations, behavioral beliefs produce a favorable or unfavorable attitude toward the behavior; normative beliefs result in perceived social pressure or subjective norm; and control beliefs give rise to perceived behavioral control [3].

Ajzen (2004) provided specific instructions for conducting a pilot study to assure content validity of instruments designed to measure components of the TpB. Jeong & Block [9] followed these instructions in conducting a pilot study and then content validity. The pilot questionnaire contained nine open-ended questions about beliefs and was a modification of Ajzen’s guideline to target the behavior of teaching students with disabilities. The data collection procedure generated 69 behavioral belief responses, 71 normative belief responses, and 108 control belief responses from 21 physical educators. According to Ajzen [3], responses from the pilot study inquiry are used as personal accessible beliefs. So, Jeong & Block [9] converted the beliefs into statements to be used in the questionnaire that was constructed for the main study and called it the Teachers’ Beliefs and Intentions toward Teaching Students with Disabilities (TBITSD).

The questionnaire contained detailed instructions, definitions of terms, a description of a student with disability (called Jiho), direct measures (attitude, subjective norm, and perceived behavioral control), indirect...
measures (behavioral beliefs, normative beliefs, and control beliefs), intention statements and teaching behavior statements as well as demographic questions. A 7-point Likert-type rating scale was used with each belief statement, because all examples in Ajzen [3] used a 7-point scale. In this questionnaire, teachers who had not taught students like Jiho were not asked about their teaching behavior toward students like Jiho. The teachers who had taught students like Jiho were asked to answer the teaching behavior questions. This aspect of the TBITSD questionnaire differs from others; others that used the TpB only measured behavior while not considering the quality of the physical education teachers’ behavior. Demographic variables, teaching experience, and pre-conceived notions were typical of the ones used in previous TpB studies of adapted physical education. In addition, content validity of the TBITSD was established by Korean and American experts in the field of adapted physical education and kinesiology.

To create and find accurate and reliable instruments for the measurement [11], it is important to establish the reliability and validity of each measure [8]. Ajzen [2] suggested that the reliability and validity of an instrument developed using TpB should be examined. First, Cronbach's [6] alpha test was used to measure the internal consistency on each of the components. Second, Test-retest was applied to evaluate the test for stability over time. Third, content validity was established by experts. Lastly, construct validity for the TBITSD was examined by performing confirmatory factor analysis to identify groups of items that had variance in common.

According to the theory of planned behavior, the summative indices of behavioral beliefs, normative beliefs, and control beliefs (indirect measures) capture, respectively, the underlying determinants of attitude, subjective norm, and perceived behavioral control (direct measures). Therefore, the researcher decided to establish reliability and construct validity for both direct measures and indirect measures (belief-based) to predict intentions. Also, reliability and validity of intention were established as well.

Validity and reliability of TBITSD seems essential to measure truly Iranian physical educators’ beliefs and intentions about inclusive physical education. Therefore, the purpose of this study was to measure validity and reliability of TBITSD questionnaire.

Method:
Participants and Data Collection:
The target population for this study was physical education teachers in Tehran. Participants had to meet the following specific criteria: full-time teaching duties in physical education at public schools in Tehran. A number of 310 PE teachers were selected as the participants by stratified random sample. The PI asked all participants to participate in the survey and only when they agreed, they were included. Among 310 teachers on the selected list, only 249 teachers completed the questionnaire and due to missing data points the final sample consisted of 227 PE teachers. In applying a test-retest design, 40 PE teachers were recruited.

The associates of the investigator visited schools for physical education teachers and asked the participants if they would participate in this study. The associates’ investigator was able to have 20 to 30 minutes to introduce the study and hand out the questionnaire to physical education teachers. Once physical education teachers agreed to participate in the survey, they completed at TBITSD questionnaire.

Study design:
Cronbach [7] alpha was used to determine internal consistency for the items and subscales. Coefficient alpha was reported in most studies that involved the TpB [6,13] and is the most commonly used method for estimating reliability in standardized tests. Also Test-retest was used to examine the test for stability over time. So, the questionnaires were completed a first time and then the second time, 15 days later. In addition, confirmatory factor analysis shows that items measuring a given construct were indicators of the same latent variable [3]. Therefore, confirmatory factor analysis was the chosen analytic method.

Data Analysis:
To compute and analyze all statistics, SPSS PC 19.0 and Lisrel 8.80 was used. Inferential statistics were calculated for every item and subscale of the direct measures and indirect measures. Also, construct validity was established for items on the TBITSD by using confirmatory factor analysis.

RESULT AND DISCUSSION

Cronbach’s alpha internal consistency indicator was used to estimate the reliability of the 59-item scales of teachers' beliefs and intentions toward teaching students with disabilities. Reliabilities were adequate at the range of 0.75 to 0.92 for the internal consistency of TBITSD scale. Results are presented in Table 1.
Table 1: Coefficient alpha to estimate internal consistency of TBITSD.

<table>
<thead>
<tr>
<th>scales</th>
<th>Items</th>
<th>Coefficient alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3</td>
<td>0.92</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>3</td>
<td>0.87</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td>3</td>
<td>0.85</td>
</tr>
<tr>
<td>Behavioral belief</td>
<td>16</td>
<td>0.77</td>
</tr>
<tr>
<td>Normative belief</td>
<td>12</td>
<td>0.81</td>
</tr>
<tr>
<td>Control belief</td>
<td>18</td>
<td>0.75</td>
</tr>
<tr>
<td>Intention</td>
<td>4</td>
<td>0.86</td>
</tr>
</tbody>
</table>

As illustrated in Table 2, the test-retest reliability for each construct of TBITSD scale were estimated. Reliabilities were adequate at the range of 0.74 to 0.90 for the stability over time.

Table 2: Stability coefficient to estimate TBITSD stability over time.

<table>
<thead>
<tr>
<th>scales</th>
<th>Items</th>
<th>Consistency coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3</td>
<td>0.90</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>3</td>
<td>0.88</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td>3</td>
<td>0.84</td>
</tr>
<tr>
<td>Behavioral belief</td>
<td>16</td>
<td>0.74</td>
</tr>
<tr>
<td>Normative belief</td>
<td>12</td>
<td>0.81</td>
</tr>
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<tr>
<td>Intention</td>
<td>4</td>
<td>0.86</td>
</tr>
</tbody>
</table>

A low reliability score, below 0.70, suggested that the score derived from a test may not be very trustworthy [14]. Thus it can be stated that various parts of this questionnaire in terms of internal consistency and stability over time had sufficient reliability. It means the more reliable TBITSD scale will become.

Confirmatory factor analysis with principal component extraction method and varimax rotation was performed on the nine items of direct measures (Attitude, Subjective Norm, and Perceived Behavioral Control) and on belief strength items of each belief: behavioral belief (8 items), normative belief (6 items), and control belief (9 items). Results are presented in figures 1 and 2.

Fig. 1: Confirmatory factor analysis of Attitude, Subjective Norm and Perceived Behavioral Control.
Fig. 2: Confirmatory factor analysis of behavioral belief, normative belief and control belief.

Several statistical tests determined the adequacy of model fit to the data. The chi-square test indicated the amount of difference between expected and observed covariance matrices. In addition, acceptable model fit was indicated by a CFI, NFI and GFI value of 0.90 or greater. As statistics illustrated in table 3, CFI, NFI and GFI ranges were from 0.84 to 0.95. Also, RMSEA values of direct measures 0.074 and indirect measures 0.048 indicated acceptable model fit. Therefore, the TBITSD questionnaire had acceptable construct validity.

Table 3: Tests and measures of questionnaire confirm factory.

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>N^2 df</th>
<th>GFI</th>
<th>NFI</th>
<th>GFI</th>
<th>RMSEA</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct measures (Attitude, Subjective Norm, and Perceived Behavioral Control)</td>
<td>2.24</td>
<td>0.95</td>
<td>0.91</td>
<td>0.95</td>
<td>0.074</td>
<td>0.00046</td>
</tr>
<tr>
<td>Indirect measures (behavioral belief, normative belief and control belief)</td>
<td>1.52</td>
<td>0.94</td>
<td>0.84</td>
<td>0.89</td>
<td>0.048</td>
<td>0.0000</td>
</tr>
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</table>

This study aimed to examine the validity and reliability of physical education teachers' beliefs and intentions toward teaching students with disabilities questionnaire [9] through sample of Iranian PE teachers.

The findings of this study suggest that the TBITSD had acceptable to good reliability and it has acceptable validity. This instrument identifies and quantifies most aspects of PE teachers' behavior, meeting the data needs of inclusive behavior other than only measured behavior (e.g., how often did you include students with disabilities in your swimming classes?) while considering the quality of the physical education teachers' behavior (e.g., repeating directions, assigning a peer tutor, changing rules of the game, adapting for safety). Although further validation using other cultures and in other population groups is required, the TBITSD shows promise as a useful research and evaluation tool.
Conclusions:
Therefore, the TBITSD questionnaire had acceptable to good Validity and reliability to estimate Iranian PE teachers' beliefs and intentions toward teaching students with disabilities.

REFERENCES