Construct Validation of an Arabic Version of the College Students’ Self-Efficacy Scale for Use in Jordan

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Abstract

The purpose of this study was to determine whether exploratory factor analysis of the Arabic version of college students’ self-efficacy scale results in an interpretable factor structure consistent with the original English version of college students’ self-efficacy scale (CSSES). The design of this study was an ex-post facto, with data collected using the survey method. The sample for this study consisted of a random sample of 305 students chosen from the Hashemite University. The CSSES consists of 32 items that measure different dimensions of self-efficacy among college students. Principle axis factoring was performed utilizing the oblique rotation method to uncover the underlying structure of the CSSES in Jordan (an Arabic culture). The finding realized four factor solution explained 34.88% of the common variance and produced a more meaningful structure. The four factors were named learning efficacy, planning efficacy, funding strategy, and organization efficacy.

Keywords: Construct Validation, Self-Efficacy, College Students, Factor Analysis, and Jordan.
Introduction and Theoretical Framework

Changes in the academic environment represented by globalization, organizational restructuring, and reform initiatives have prompted higher education institutions to graduate confident students with independent learning capabilities to better succeed in their future employment (Long, 2001; Zeegers, Martin & Martin, 1999). Previous research has emphasized the importance of initiating and processing learning on part of the learner (Taylor, 1999). For example, Hammond and Collins (1991) mentioned that learners need to develop the capability of directing their own learning and acting on the world around them, otherwise, they will be partially educated, and limited in what they can do. Moreover, learners need to be more independent and responsible for their own learning (Codde, 1996). This notion of independent learning is referred to as self-efficacy.

Self-efficacy is a term coined by Bandura (1977) which refers to one’s beliefs in his/her own capability to perform a specific task or behavior. It has been shown through research that self-efficacy consistently impacts courses of action pursued, predicts performance, and enhances learning (Alderman, 1999; Cole & Latham, 1997; Maltby, 1995; Pajares, 1996; Phillips & Gully, 1997; Stevens & Gist, 1997; Woolfolk, 2001). Furthermore, the research indicates that individual's logic of self-efficacy is also related to achievement goals (Braten & Olaussen, 1998; Pajares, Britner & Valiante, 2000), attributions (Chase, 2001; Sherman, 2002), self-regulation (Joo, Bong & Choi, 2000; Malpass, O'Neil & Hocevar, 1999), and volition (Garcia, McCann, Turner & Roska, 1998). Based on that self-efficacy is regarded as a motivating factor that influence the courses of action individuals choose to pursue, the effort they put forth to achieve a task, the commitment level they put forth to successfully accomplish desired outcomes, and how long they will persevere in the face of obstacles (Bandura, 1977). According to Bandura (1982), perceptions of self-efficacy is what guides human’s life decisions to undertake activities and choose situations deemed to be within capabilities for success. He further mentioned that once efficacy beliefs have been established, it is unlikely to be changed.

Bandura (1997) conceptualized self-efficacy as consisting of three areas: level, strength, and generality. Level refers to the degree of difficulty of the tasks that an individual feels able to perform. Strength refers to the confidence an individual has in his or her performance. Generality of self-efficacy concerns the range of situations in which an individual considers himself or herself to be efficacious (Lent & Hackett, 1987). The level and strength of self-efficacy will determine the initiation of a behavior, exerting and sustainability of an effort. Therefore, self efficacy provides individuals with the ability to influence their own courses of action and alter their environments (Bandura, 1977).

Self-efficacy for college student is comprised of four parts: (a) self-efficacy for self-regulated learning, which taps students’ confidence in utilizing a variety of self-regulatory strategies in the academic environment without the constraint of particular subject matters (Bong, 1999), (b) self efficacy for academic achievement, defined as “personal judgments of one’s capabilities to organize and execute courses of action to attain designated types of educational performances” (Zimmerman, 1995), (c) self-
efficacy for financial attitudes and difficulties. Financial capabilities not only impact students withdrawal decision directly, but also impact other variables including academic factors, socialization process, and psychological outcomes such as perceptions of fitting in at an institution, satisfaction with the institution, perceived utility of the education obtained at that institution, commitment to the goal of completing college, and intent to persist (Cabrera, Nora, & Castaneda, 1992), and (d) self-efficacy for career decision-making. Career decision-making self-efficacy identifies the extent to which students has self-efficacy about their abilities to engage in educational and occupational information gathering, goal planning, and decision-making (Taylor & Betz, 1983). Research on these four dimensions is well-documented in the literature. For example, previous research has emphasized that when students actively engage in the academic process, an increase in academic performance was obtained (Dweck, 1986; Zimmerman, 1989). Therefore, learners who utilize self-regulated learning strategy are regarded as high achievers (Zimmerman & Martinez-Pons, 1990).

According to Pajares (1996), self-efficacy research in academic settings has focused primarily on the link between efficacy beliefs and college major and career choice, particularly in the areas of science and mathematics (e.g. Brown, Lent, & Larkin, 1989; Farmer, Wardrop, Anderson, & Risinger, 1995). Moreover, mathematics self-efficacy of college students was a good predictor of their mathematics interest. Also, male students indicated higher mathematics self-efficacy than female students (Hackett, 1985; Hackett & Betz, 1989). Relationships among self-efficacy for self-regulation, academic self-regulatory processes, and academic achievement have also been reported in the literature (Risemberg & Zimmerman, 1992; Zimmerman & Ringle, 1981; Zimmerman & Bandura, 1994). Therefore, the research base to support the important role played by self-efficacy in predicting and explaining human behavior has been well documented.

**Statement of the Problem**

Self-efficacy research is well-documented in the literature in western societies. Many instruments have been developed abroad to measure college students’ self-efficacy, especially the academic ones. However, to the researchers’ best knowledge, no research instrument was found in Jordan to measure students’ level of self-efficacy. Therefore, the primary purpose of the current study was to cross-culturally validate the constructs of a well-established instrument in the Jordanian context.

**Research question**

To achieve the purpose of the study, the following research question was addressed:

1. Will exploratory factor analysis of the ACSSES (an Arabic version of college students’ self-efficacy scale) results in an interpretable factor structure consistent with the original CSSES (the English version of the college students’ self-efficacy scale)?
Importance of the Study

The present study yields especial importance to a variety of stakeholders. When validated, the present instrument can be used by university administrators to measure the level of students’ self-efficacy and to take proactive steps toward low levels of self-efficacy. Seminars, workshops, cultural events can be used to enhance students’ self-efficacy. Faculties can also emphasize the importance of students’ self-efficacy by incorporating teaching strategies and curriculum designs that emphasizes self-efficacy as an important factor. Finally, students can learn about themselves facts that can help them in their future employment.

Research Methodology

Study Design

The design of this study was an ex-post facto, with data collected using the survey method. First, an equivalent Arabic version of the CSSES was developed using cross-cultural translation techniques developed by the researchers. The Arabic version of the CSSES was named “ACSSES” throughout the study. The ACSSES was administered to college student during the summer semester of the academic years 2007/2008. The latent factor structure of the ACSSES was investigated using exploratory common factor analysis with oblique rotation.

Population and Sample

The target population for this study was all the Hashemite University students enrolled for the summer semester of the academic years 2007/2008. The sample for this study consisted of a random sample of 305 students chosen from the Social and Humanities Faculties. Benson and Nasser (1998), Floyd and Widaman (1995), and Hair, Anderson, Tatham, and Black (1998) suggested factor analysis requires a minimum of five subjects per independent variable to assure adequate statistical power and generalizability of results. Taking into account that the instrument contained 32 items, the minimum sample size needed was 160 subjects. Furthermore, allowing for 10% missing or unusable data, the total sample size appropriate for use in this study was a minimum of 176 usable observations.

Instrumentation

The CSSES developed by Landry (2003) were used in this study. It is 32-item instrument that measure self-efficacy among college students. The constructs for this instrument are self-efficacy for self regulated learning, self-efficacy for academic achievement, financial attitudes / difficulties, and career decision–making. Respondents were asked to rate items using a Likert-type scale with 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Disagree nor Agree; 4 = Agree; and 5 = Strongly Agree as anchors.
Instrument Translation Process

Since the scale used in this study were developed in English, a rigorous English-to-Arabic translation process was used that included an iterative process of forward translation, backward translation, assessment for clarity and correctness, and subjective and objective evaluation. The goal of the translation and various evaluation procedures was to produce an Arabic version of the items that were equivalent in meaning to the original English versions. This last point is important because our objective was an equivalent translation not an identical word-by-word translation. Equivalent translations emphasize functional equivalence or the equivalence of meaning of the survey items between the original and translated instruments. Functional equivalence helps to ensure that the measures work in the new target culture as well as they did in the original culture because the translation is based on achieving equivalence in meaning rather than just the form of the sentence or word-by-word translation. Based on recommendations from the literature regarding the best practices of translating instruments, the following rigorous translation procedures used in this study are summarized below:

1. Forward translation. Two bilinguals from Jordan (including the researcher) who are faculties at the Hashemite University translated the CSSES from English into Arabic. Both bilinguals produced their own individual translations, compared results, discussed discrepancies, and then collaborated and reached agreement on one final Arabic version.

2. Back translation. Two different bilinguals, who are faculty members, who had never seen the original version of the CSSES, translated the ACSSES (Arabic version) back into English. The translators produced individual translations, compared results, discussed discrepancies, and then collaborated and reached agreement on one final English version.

3. Assessment for clarity and correctness (subjective evaluation). A panel of judges compared both English versions (original CSSES and the back-translated CSSES) to ensure that the items are equivalent in meaning.

4. Pilot testing. The CSSES Arabic version was reviewed by five faculties who come from different educational backgrounds (research design, measurement, human resources, and evaluation). The faculties were asked to complete the instrument, identify any items they thought were ambiguous, and make any other comments they wished about instrument improvement. The comments on the returned instruments were positive and encouraging. These comments were: “the items in the instrument are easy to understand and respond to”; “the items represent their thoughts and worry about the usefulness of training”; and “even though the instruments are too long, they are comprehensive and complete”. This feedback did not lead to any additional changes.
Data Collection Procedures

Participants were selected from intact classrooms only. The desired sample comprised slightly less than ten percent of the student population. Once consent forms were received from professors, arrangements were made by the researchers to either visit each classroom and administer the surveys or get the appropriate number of surveys to the faculty member so that they could administer the surveys at a time convenient to them. Surveys were sent to professors who chose to administer them along with a letter of instruction. A deadline was given to faculty members who chose to administer the surveys during a regularly scheduled class period. The sample was comprised of students in courses of faculty who granted permission to participate in the study. If a faculty member decided to cancel the study or for some reason changed his or her mind about participating, a comparable class was chosen from the list provided by the researcher. Fortunately, it was not necessary to do this. Students were solicited on a voluntary basis after a full explanation of informed consent and confidentiality. Students were also asked to sign a consent form, which further explained the study. All data were collected in a manner that insured anonymity of participants and was treated confidentiality. The packets containing consent forms, pencils, questionnaires, and instructions were hand delivered immediately following to each faculty member who chose to administer the survey themselves. These faculty members were able to administer the questionnaires during any class period held during the summer semester but before the deadline, which was May 1, 2008. Once students completed the questionnaires, the faculty members contacted the researchers, who then picked up the questionnaires within a 48-hour period. All completed surveys were delivered to the researcher to arrange, classification, creation of data files, and data analyses followed.

Data Analysis

The first research question asked, “Will exploratory factor analysis of the ACSSES result in an interpretable factor structure consistent with the original CSSES?” Factor analysis was used to answer the first research question. There are two types of factor analysis: exploratory factor analysis and confirmatory factor analysis. Exploratory factor analysis is primarily used in the early stages of instrument development when the researcher is trying to determine the underlying structure of the instrument. Confirmatory factor analysis is used to confirm the structure of the measuring instrument. Since this is the first time the CSSES was used with a population in Jordan, the exploratory data analysis was more appropriate to use.

Factor analysis is a multivariate statistical technique used to examine the intercorrelations among a large set of variables, and then attempt to find a smaller number of constructs that still capture those relationships (Ary, Jacob & Razaviely 1996; Benson & Nasser, 1998). The objective of exploratory factor analysis (EFA) is to “reduce the number of dimensions necessary to describe the relationships among the variables” (Gardner, 2001). In other words, EFA will uncover the underlying structure of the ACSSES, thereby allowing understanding of the simple structure of the measuring instrument. There are certain steps to follow when using factor analysis. These steps include: extracting factors,
deciding on how many factors to retain, and rotating factors to an interpretable and more meaningful solution.

In exploratory factor analysis, there are two methods of extraction: common factor analysis and principal component analysis. Principal component analysis is used for prediction (Hair & et al, 1998; Nunnally & Bernstein, 1994) and for data reduction (Floyd & Widaman, 1995). It is less appropriate for exploratory use because a) it does not account for error variance and attempts to explain everything by placing ones on the diagonal of the correlation matrix as an estimate of communalities (meaning that all variance, even error, is appropriate to explain); and b) it attempts to “represent all of the variance of the observed variables” (Floyd & Widaman, 1995). On the other hand, principal axis factoring (or common factor analysis) was more appropriate to use in this study because the purpose of the analysis is to uncover the underlying structure of the instrument. This method has the advantage of accounting for error variance when extractions are made, uses squared multiple correlations (SMC) of each variable with the remainder of the variables when calculating initial communalities, and places communalities on the diagonal of the input correlation matrix “to represent only the common variance of each variable” (Floyd & Widaman, 1995) and to remove the unique (error) variance.

Communalities are the percentage of variance in the variable accounted for by the common factors, which are then used to extract factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Floyd & Widaman, 1995; Hair & et al, 1998). When the communalities are between .40-.70 which is moderate in nature, it is advisable to use a sample size of 200 subjects or more for factor analysis, to produce an accurate estimate of the population parameters (Fabrigar & et al, 1999). Finally, using principal axis factoring produces more accurate estimates of cross-loadings, communalities, factor loadings, and factor correlations than does principal component analysis because it accounts for error variance and uses the shared variance as an estimate of communalities on the diagonal of the correlation matrix (Fabrigar & et al, 1999; Floyd & Widaman, 1995). The overall measure of sampling adequacy (MSA) for the whole data set and for individual items was used to determine the appropriateness of factor analysis. Hair & et al (1998) suggested values above .90 to be excellent while values below .60 should be deemed unacceptable.

When determining the number of factors to extract, the visual scree plot and an eigenvalue greater than or equal to one was used (Benson & Nasser, 1998). An eigenvalue represents the total variance explained by the factor (Benson & Nasser, 1998). However, in this study, it was appropriate to explore alternative factor structures other than that suggested by the eigenvalue greater than one criterion. This allowed for the exploration of factor structures that are more meaningful or conform more closely to established theory. Visual scree plots were consulted to determine the number of factors to extract. The visual scree plot separates the scree of trivial factors from the cliff of nontrivial factors (Benson & Nasser, 1998). As a general rule the scree plot usually results in at least one, and sometimes two or three more factors being considered significant than does the eigenvalue standard. Subjective evaluation and visual inspection were satisfactory determinants (Floyd & Widaman, 1995).
Once the factors have been extracted, the next step is to rotate them as an aid in the interpretation of those factors. The main goal behind factor rotation is to produce a simple structure (Gorsuch, 1997) where each variable has the highest loading on its major factor, and the lowest loading on the remaining factors. Because the latent constructs in this study are expected to be correlated, a restriction placed on factors by orthogonal rotation, oblique rotation with direct oblimin was performed. With oblique rotation, the factor pattern matrix was used because the values are “standardized regression weights (betas) reflecting the relationship between the variable and a factor, after partialling out the relationship between the variable and the remaining factors” (Benson & Nasser, 1998). The pattern matrix was more appropriate to examine than the structure matrix because “we are interested in the unique variance accounted for by each factor” (Morgan & Casper, 2000). Finally, items were considered for retention on factors when they have a loading value above .30. In conclusion, the following data were reported: 1. the overall MSA value for the data to ensure the appropriateness of the data for factor analysis. 2. The initial communalities for all items as well as the ending communalities (after iteration and rotation). 3. The overall percentage of variance accounted for by all factors and by each factor separately. 4. Rotated factor loadings for each factor. 5. Factor correlation matrix. 6. Cronbach’s alpha was calculated on each of the factors (Cronbach, 1951). According to Benson & Nasser, (1998) coefficient alphas greater than .70 are acceptable for early stages of scale development. 7. Descriptive statistics including the mean and standard deviation on each of the factor subscales was calculated.

Results

Research Question

Research question asks “Will exploratory factor analysis of the ACSSES result in an interpretable factor structure consistent with the original CSSES?” Principle axis factoring was performed utilizing the oblique rotation method to uncover the underlying structure of the ACSSES in Jordan (an Arabic culture). The CSSES consisted of 32 items measuring four construct domains: the self-efficacy for self-regulated learning domain, the self-efficacy for academic achievement domain, the financial attitudes/difficulties domain and career decision-making.

Before conducting exploratory factor analysis, the data were screened in several ways to ensure their normality and appropriateness for factor analysis. With respect to normality, visual inspection of the histogram, mean, median, mode, skewness, and kurtosis for each item and for the whole data shows that the data were normally distributed. With regard to the appropriateness of the data for factor analysis, two statistical tests (overall Measure of Sampling Adequacy (MSA) and the Bartlett Test of Sphericity) were conducted. MSA is an index used to determine the appropriateness of the data for factor analysis (Hair & et al, 1998). The MSA assesses the degree of inter correlations among variables and provides information about the appropriateness of the data for factor analysis. An (MSA)
value above .70 shows that there is meaningful variance to explain and that the data are suitable for factor analysis. According to Hair & et al (1998), an MSA value below .60 is considered poor and potentially unacceptable, whereas values above .80 are considered meritorious. On the other hand, the Bartlett Test of Sphericity measures the “overall significance of all correlations within a correlation matrix” (Hair & et al, 1998). The null hypothesis states that there is no factor structure for the data at hand, and then the goal is to reject the null hypothesis. A p-value below .05 indicates that there is a factor structure for the data and it is appropriate to run factor analysis. The results of the MSA (.82) and the Bartlett Test of Sphericity (p < .05) indicated that the data were suitable for factor analysis. Another indication of the factorability of the data set was the item-to-respondent ratios was 9.5:1 (Hair & et al, 1998).

To justify the application of factor analysis, it is important to ensure that the correlations of the data matrix for the variables have a substantial number of correlations above .30 (Hair & et al, 1998). Visual inspection of the data matrix revealed a substantial number of correlations greater than .30. Moreover, the anti-image correlation matrix (with negative partial correlations) indicated a low partial correlation between the variables. The anti-image correlation matrix is important to consider because it includes information about partial correlations. Low partial correlations suggest “true” underlying factors exist because the variables can be explained by the factor that loads on each variable. Finally, there are certain assumptions associated with factor analysis. These assumptions are multivariate normality, homoscedasticity, and linearity. According to Hair & et al (1998), these assumptions are more conceptual than statistical. Only multivariate normality is necessary if a statistical test is applied to the significance of the factors. The Bartlett Test of Sphericity with p < .05 confirmed this assumption.

The college student's self-efficacy scale asked respondents to reference their responses to a self-efficacy scale. This instrument contained 32 items. The overall MSA for this section was .82 indicating the data was appropriate for factor analysis. Before conducting factor analysis, the MSA value for each item was investigated. Exploratory factor analysis procedures were completed for the purpose of identifying the latent constructs underlying the data. The criteria for determining how many factors to extract included the eigenvalue greater than one rule, and a visual inspection of both the scree plot (Ary & et al, 1996) and several trial solutions. The initial analysis was run without specifying how many factors to retain. This procedure resulted in six factors explaining 38.05% of the common variance. However, this factor structure included two factors containing only one or two items that cross-loaded across multiple factors. Based on the previous analysis and after consulting the scree plot, the next analysis was run by specifying four factors to extract. A four-factor solution appeared to provide a conceptual and theoretical representation of self-efficacy scale factors in Jordan. The 4-factor solution explained 34.88% of the common variance and produced a more meaningful structure (see Table 1). Moreover, the residual correlation matrix was examined and no meaningful residuals were found, suggesting that the 4-factor structure was appropriate and that no more factors could be extracted. The 4 factors were named similar to the factors found in the original CSSES. These factors were described as follow:
1. Learning efficacy. The first factor included 12 items with a reliability estimate of .91 and accounted for approximately 20.56% of the total variance in all items. Learning dimension measures the confidence of students in learning various aspects of their course and the items represent student's beliefs in their ability to learn information need for courses. This factor included items such as “Learn foreign languages, Learn to use computers, Learn science”.

2. Planning efficacy. This factor included six items with a reliability estimate of .72 and accounted for 5.59% of the total variance. This factor measures the degree to which Students make plan for your goals, schoolwork's, abilities, and occupations and the items assessing student beliefs in their abilities to execute the required actions to accomplish goals, determine the steps to complete their major, and persist with the chosen major until they graduate. This factor included items such as “make a plan for your goals for the next five year, determine the steps you need to take to successfully complete your chosen major, accurately assess your abilities”.

3. Funding strategy. This factor included four items with a reliability estimate of .85 and accounted for approximately 5.34% of the total variance. This factor measures the how to make the strategy for funding with many field for the students in their complete study and in find the major which appropriate for their abilities and how can they used the external strategies to fixed and support internal strategies. This factor included items such as “Secure necessary funds to complete college, Choose a major or career that suits your Abilities, Come up with a strategy to deal with Flunking out of college”.

4. Organization efficacy. The fourth factor included three items with a reliability estimate of .85 and accounted for approximately 3.39% of the total variance. This domain related to the extent of organizing for teaching process which makes it proceed smoothly without any problem and make teaching process efficient for students and instructor by arrange the place, organizing schoolwork's. This factor included items such as “organize your schoolwork, remember information presented in class and textbooks, and arrange a place to study without distractions”.

Table 1: Factor Loadings for the college student's self-efficacy scale.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Learn foreign languages</td>
<td>.821</td>
<td>-.189</td>
<td>.091</td>
<td>-.098</td>
</tr>
<tr>
<td>18</td>
<td>Learn to use computers</td>
<td>.688</td>
<td>-.003</td>
<td>.229</td>
<td>.006</td>
</tr>
<tr>
<td>15</td>
<td>Learn science</td>
<td>.628</td>
<td>-.186</td>
<td>-.189</td>
<td>.092</td>
</tr>
<tr>
<td>17</td>
<td>Learn reading and writing language skills</td>
<td>.583</td>
<td>-.013</td>
<td>-.041</td>
<td>-.015</td>
</tr>
<tr>
<td>20</td>
<td>Learn social studies</td>
<td>.486</td>
<td>-.003</td>
<td>.229</td>
<td>.006</td>
</tr>
<tr>
<td>3</td>
<td>Concentrate on school subjects</td>
<td>.471</td>
<td>-.008</td>
<td>-.100</td>
<td>.072</td>
</tr>
<tr>
<td>14</td>
<td>Learn algebra</td>
<td>.455</td>
<td>.101</td>
<td>-.107</td>
<td>.162</td>
</tr>
<tr>
<td>2</td>
<td>Study when there are other interesting things to do?</td>
<td>.441</td>
<td>-.064</td>
<td>-.018</td>
<td>.198</td>
</tr>
<tr>
<td>5</td>
<td>Use the library to get information for class assignments?</td>
<td>.433</td>
<td>.230</td>
<td>.145</td>
<td>-.071</td>
</tr>
<tr>
<td>Items</td>
<td>Factor</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------</td>
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<td>-------</td>
</tr>
<tr>
<td>12 Do an excellent job on the problems and tasks assigned for the courses you are taking this semester?</td>
<td>.377</td>
<td>.298</td>
<td>-.050</td>
<td>-.040</td>
<td></td>
</tr>
<tr>
<td>21 Learn English grammar?</td>
<td>.367</td>
<td>-.056</td>
<td>.245</td>
<td>.168</td>
<td></td>
</tr>
<tr>
<td>4 Take notes in class</td>
<td>.314</td>
<td>.287</td>
<td>-.040</td>
<td>.223</td>
<td></td>
</tr>
<tr>
<td>25 Make a plan of your goals for the next five years?</td>
<td>-.010</td>
<td>.792</td>
<td>-.115</td>
<td>-.086</td>
<td></td>
</tr>
<tr>
<td>27 Determine the steps you need to take to successfully complete your chosen major?</td>
<td>-.123</td>
<td>.776</td>
<td>-.039</td>
<td>.166</td>
<td></td>
</tr>
<tr>
<td>26 Accurately assess your abilities</td>
<td>-.280</td>
<td>.724</td>
<td>.145</td>
<td>-.104</td>
<td></td>
</tr>
<tr>
<td>6 Plan your schoolwork</td>
<td>.091</td>
<td>.520</td>
<td>.020</td>
<td>-.052</td>
<td></td>
</tr>
<tr>
<td>23 List several majors that you are interested in?</td>
<td>1.098</td>
<td>.434</td>
<td>.089</td>
<td>.113</td>
<td></td>
</tr>
<tr>
<td>28 Decide what you value most in an occupation?</td>
<td>-.049</td>
<td>.411</td>
<td>-.077</td>
<td>.163</td>
<td></td>
</tr>
<tr>
<td>22 Secure necessary funds to complete college?</td>
<td>.164</td>
<td>.093</td>
<td>.644</td>
<td>-.130</td>
<td></td>
</tr>
<tr>
<td>30 Choose a major or career that suits your Abilities?</td>
<td>-.028</td>
<td>-.226</td>
<td>.583</td>
<td>.221</td>
<td></td>
</tr>
<tr>
<td>32 Come up with a strategy to deal with Flunking out of college?</td>
<td>-.091</td>
<td>-.006</td>
<td>.322</td>
<td>.077</td>
<td></td>
</tr>
<tr>
<td>29 Resist attempts of parents or friends to push you into a career or major you believe is beyond your abilities?</td>
<td>.227</td>
<td>.142</td>
<td>.344</td>
<td>-.175</td>
<td></td>
</tr>
<tr>
<td>7 Organize your schoolwork</td>
<td>.213</td>
<td>.012</td>
<td>-.128</td>
<td>.532</td>
<td></td>
</tr>
<tr>
<td>8 Remember information presented in class and textbooks?</td>
<td>.022</td>
<td>.150</td>
<td>.036</td>
<td>.522</td>
<td></td>
</tr>
<tr>
<td>9 Arrange a place to study without distractions?</td>
<td>.087</td>
<td>.267</td>
<td>.031</td>
<td>.335</td>
<td></td>
</tr>
</tbody>
</table>

Items were retained on factors if they had a minimum factor loading of .30. Items with a multiple cross-loading of .20 and above on at least three factors were deleted from the factor. The .30 level is a generally accepted minimum factor loading because it indicates that approximately 10% of the variance for a corresponding variable has been explained by a factor (Tinsley & Tinsley, 1987). The pattern matrix was chosen to examine the data instead of the structure matrix because in using the oblique rotation method we were interested in the unique variance accounted for by each factor. Also, because the pattern matrix yields partial weights, the values in this matrix are more appropriate to interpret (Hair & et al, 1998). Using these criteria, 25 items of the original 32 items were retained on the CSSES and accounted for 34.34% of the total variance. Seven items were dropped because of low factor loadings and cross-loadings. To a large extent the original factor structure of the CSSES was replicated. Three of five factors matched those of the original CSSES. The other two factors (funding strategy and organization efficiency) emerged in this analysis from a combination of factors. All factors had acceptable reliabilities as estimated by Cronbach’s Alpha. Scale reliabilities ranged from .70-.87, with an average alpha of .74. Which exceeded Nunnally and Bernstein’s (1994) suggested minimum reliability of at least .70 for instruments in early stages of development.
Table 2: Factor Correlation Matrix for the Self-efficacy scale.

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<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.497</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.236</td>
<td>.273</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.354</td>
<td>.254</td>
<td>.176</td>
<td>1.00</td>
</tr>
</tbody>
</table>

For the college student's self-efficacy scale (a) factor loadings reflected interpretable simple structures; (b) only items with loadings .30 or higher were included in the scales; and (c) average item loading values were greater than .50 on major factors and less than .15. Table 3 provides a comparison between the factors, their respective items found in the ACSSES, and those of the original CSSES. Most of the factors were significantly correlated (see Table 2).

Table 3: Factor and Item Comparisons between the ACSSES and the CSSES

<table>
<thead>
<tr>
<th>Factors</th>
<th>ACSSES</th>
<th>CSSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor labels</td>
<td>Five</td>
<td>Four</td>
</tr>
<tr>
<td>1) organizing and planning</td>
<td>(22, 24, 25, 26, 27, 28, 29, 30, 31)</td>
<td>1) learning efficacy (19, 18, 15, 17, 20, 3, 14, 2, 5, 12, 21, 4)</td>
</tr>
<tr>
<td>2) academic efficacy</td>
<td>(12, 9, 1, 2, 3, 4, 6, 7)</td>
<td>2) Planning efficacy (25, 27, 26, 23, 28, 6)</td>
</tr>
<tr>
<td>3) learning efficacy</td>
<td>(16, 15, 10, 8)</td>
<td>3) Funding strategy (22, 30, 32, 29)</td>
</tr>
<tr>
<td>4) verbal efficacy</td>
<td>(32, 23, 21, 20, 17)</td>
<td>4) Organization efficacy (7, 8, 9)</td>
</tr>
<tr>
<td>5) quantitative &amp; scientific efficacy</td>
<td>(18, 19, 14, 13)</td>
<td></td>
</tr>
</tbody>
</table>

Discussion

The purpose of this study was to establish a valid and reliable Arabic version of the college student's self-efficacy scale (ACSSES) for use in Jordan. The original CSSES is well grounded in previous research and theory and has exhibited fairly robust psychometric qualities. The College Student Self-Efficacy Scale (CSSES) was developed by Landry (2003) and was used to measure strengths of students’ self-efficacy beliefs. The College Student Self-Efficacy was considered to be multifaceted and comprised of the following facets: self-efficacy for self-regulated learning, self-efficacy for academic achievement, financial attitudes/difficulties, and career decision-making. The results of the factor analysis indicated that four latent factors with 30 items emerged from the Jordanian data collected with the ACSSES. Factor analysis procedures on the CSSES completed in Landry (2003) study identified a five-factor solution as the most acceptable multiple dimension representation of the data. The five factors identified were organizing...
and planning major, academic efficacy, learning efficacy, verbal efficacy, and quantitative and scientific efficacy. In this study factor analysis proceed four factors identified as follow: learning efficacy, planning efficacy, funding strategies, and organizing efficacy. The factor analysis results for the self-efficacy beliefs measure clearly support that students in their study differentiated their self-efficacy strengths across different domains. Bandura (1997) acknowledges that a failure to recognize the transfer of efficacy beliefs across activities or settings would constrict people to having to reestablish their sense of self-efficacy with each activity attempted.

Results suggest that the Arabic version of the CSSES can provide reliable and internally consistent measurement for self efficacy in Jordan. These results are consistent with other cross-cultural instrument validation research done with the CSSES. For example, Landry (2003) validated the CSSES with the same factor analysis procedures and resulted in validation of 5 factors; the factors conducted similarly the factor in this study. The agreements in two factors the learning factor, the organizing and planning factor while in current study separated the planning as factor and organizing as a factor. Factor two does not appear in this study that the verbal factor and quantitative and scientific factor while the funding strategy appear in this study but dose not in his study. And this refers to geographic and cultural boundaries. Moreover, that exists in the Arabic cultures, develop interventional to enhance learning, and ultimately improve learning and performance. On the other hand, in the U. S. will have further proofs to the validity and reliability of the CSSES psychometric properties. The CSSES can be used to guide the efforts of the HRD function in enhancing learning effectiveness and diagnose early problems with learning efficacy.

**Recommendations for Future Research**

The present research directed at improving the psychometric qualities of certain ACSSES scales is warranted. There is a need to increase the number of items on a few factors and avoid writing items that have negative connotations. Moreover, there is a need to validate the definition of each construct in Jordan by students various methods such as interviews, focus groups, and surveys. The second recommendation would be to add more factors to the ACSSES that may specifically pertain to the Jordanian culture and thereby impact learning efficacy within that culture. The cultural differences alone suggest that there may be other learning efficacy factors. A qualitative effort that includes interviews and focus groups may be helpful in uncovering those factors. After the structure of the ACSSES has been enhanced, a confirmatory factor analysis (CFA) would be needed to fully confirm the latent structure of the ACSSES. CFA methodology is necessary to confirm that those items found to belong to a certain factor in the initial exploratory factor analysis actually exist. Once confirmed, the ACSSES can be explored with a different sample to ensure that the factor structure exists in the Jordanian culture.

The fourth recommendation would be to establish the criterion validity of the ACSSES in Jordan by establishing its relationship with other important outcomes in learning. Such procedures will add credibility to the measuring instrument by establishing its criterion validity. Furthermore, the convergent and divergent validity of the ACSSES can be
established by establishing the relationship between the ACSSES constructs and similar other constructs. The final recommendation would involve comparing the responses from the Jordanian culture with those from the American culture or other cultures, after employing invariance testing techniques. Invariance testing allows comparison of results across different sampling parameters to determine how similar or different the results are. This is an important technique in establishing the reliability of results for future research.

References


