

A measure of college-going self-efficacy for middle school students.

By: L. DiAnne Borders and Melinda M. Gibbons

[Gibbons, M. M.](#), & [Borders, L. D.](#) (2010). A measure of college-going self-efficacy for middle school students. *Professional School Counseling*, 13, 234-243.

Made available courtesy of the American School Counselor Association:

<http://www.schoolcounselor.org/content.asp?contentid=235>

*****Reprinted with permission. No further reproduction is authorized without written permission from American School Counselor Association. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document. *****

Abstract:

Many career and educational plans are made well before high school graduation. School counselors' efforts to support these plans are limited by the lack of assessments of middle school students' college-going beliefs. Development of the College-Going Self-Efficacy Scale for middle school students is described in this article. Initial evidence of validity and reliability from three separate studies is reported, and suggestions for using this scale with students are provided.

Keywords: middle school students | adolescents | college plans | self-efficacy | career planning | school counselors | counseling

Article:

Middle school is a vital time in career and college planning, regardless of the type of post-secondary education that students intend to pursue. Career choices often are made long before high school and these selections tend to be stable over time (Hossler, Schmit, & Vesper, 1999). Similarly, most students make decisions regarding their educational future between 8th and 10th grade (Hossler et al.), and these academic decisions directly affect middle school students' college preparation and later attendance (Atanda, 1999). Hossler et al. recommended that college intervention programs be focused on middle school students in order to help them make informed decisions about their future. Indeed, evaluators of effective college preparation programs (e.g., Oesterreich, 2000; Tierney, Colyar, & Corwin, 2003) have found that successful programs start in middle school, include counseling, involve parents and peers, and provide concrete information about college. School counselors are at the center of this process, working with students both individually and in groups on academic and career planning.

Most early adolescents want and plan to attend college. Junior high students in one survey (Johnson, 2000) believed some college was necessary for success and most reported planning to

obtain at least a 4-year college degree. Johnson found that 85% of African American and Hispanic high school students in one school district said they planned to pursue postsecondary education; the average college-going rate for the district, however, was stable at 37%. Similarly, in a study of career and college needs of ninth graders (Gibbons, Borders, Wiles, Stephan, & Davis, 2006), 73% reported they planned to attend a 4-year college, but the current college-going rate for the districts surveyed was only 48%. The national average of students continuing directly to any type of college for 2000 was 56.7% (National Information Center for Higher Education Policymaking and Analysis, 2002), and, of those attending, only 57% actually persisted to complete a degree program (Horn, 2006). College-persistence rates for certain subgroups of the high school population are even lower, particularly first-generation students, students from low-income households, and certain ethnic minorities (Lohfink & Paulsen, 2005; Horn).

Thus, although most early adolescents plan to attend college, their aspirations do not always result in goal attainment. Clearly, something occurs sometime between middle school and high school graduation that affects their intentions to pursue college, but the influencing factors are unclear. Efforts to determine why some students persist with their college plans while others do not are limited by a lack of assessments specific to college-going beliefs of early adolescents. Assessments that identify middle school students most at risk for non-attendance would help school counselors address the barriers facing these students proactively. The purpose of this study was to create a valid and reliable measure of self-efficacy beliefs related to both college-going attendance and persistence for early adolescents.

SELF-EFFICACY AND MIDDLE SCHOOL STUDENTS

Self-efficacy refers to one's belief in the ability to complete the tasks required for achieving a particular goal (Bandura, 1997). In fact, Bandura believed that self-efficacy beliefs were the most powerful influence on a person's decision to initiate and persist in a behavior. Self-efficacy is domain specific, so that a student's beliefs about achieving a college degree must be assessed separately from other beliefs.

Support for the focus on self-efficacy as related to career development (e.g., Hackett, Betz, Casas, & Rocha-Singh, 1992; Lent, Lopez, & Bieschke, 1993; Pajares & Miller, 1995) is identified consistently in the literature. Researchers recently have begun to examine the relationship between self-efficacy beliefs and career development in young adolescents. Generally, these studies tied self-efficacy beliefs to career development and planning. Kerpelman

and Mosher (2004) surveyed middle and high school students, most of whom were from low-income and low-education households, and linked positive social self-efficacy to more positive beliefs about future education and a heightened future orientation. Keller and Whiston (2008) found that middle school students who perceived supportive parent behaviors regarding career and college planning had higher levels of career decision-making self-efficacy. Gushue (2006) connected higher levels of ethnic group identity to higher career decisionmaking self-efficacy in ninth graders from low-income households. Ali, McWhirter, and Chronister (2005) found that ninth graders from low-income families perceived that peer and sibling support led to higher vocational and educational self-efficacy beliefs. Finally, Turner, Steward, and Lapan (2004) associated higher levels of parent support to higher math and science career self-efficacy in diverse sixth graders. In all, support for focusing on the connection between self-efficacy beliefs and career planning in middle school students seems appropriate.

A review of the existing literature on career and educational planning suggested that beliefs about college-going consist of both getting to college and staying in college, or attendance and persistence (e.g., Horn & Nunez, 2000; Warburton, Bugarin, Nunez, & Carroll, 2001). In terms of college attendance beliefs, researchers report that socioeconomic status and financial considerations are directly related to postsecondary decisions (Bui, 2002; Jackson & Nutini, 2002; Nunez & Cuccaro-Alamin, 1998; Wahl & Blackhurst, 2000). Family support and encouragement also are considered important to career and college planning (Horn & Nunez; Kenny, Bluestein, Chaves, Grossman, & Gallagher, 2003; Tierney et al., 2003; York-Anderson & Bowman, 1991). In addition, beliefs about academic preparation and ability influence postsecondary choices (Horn & Nunez). Related to academics, only math and science ability and taking higher-level math and science courses have been specifically linked to college attendance and success (Horn & Nunez; Pascarella, Wolniak, Pierson, & Terenzini, 2003; Tierney et al.). Finally, decision-making skills and abilities have been found to be integral to future educational planning (Gianakos, 1999; Luzzo & Hutcherson, 1996). Thus, a measure of college-going beliefs would need to attend to each of these contributors to self-efficacy regarding being able to attend college.

For persistence in college, some similar and some unique issues were identified. First, financial issues continue to be a concern once students arrive at college (Bui, 2002). Second, ability was noted again related to success in college (Bui; Solberg, O'Brien, Villareal, Kennel, & Davis, 1993; Warburton et al., 2001). Third, students report that parent expectations about college and general support for completing college are considered important aspects of college persistence (York-Anderson & Bowman, 1991). Fourth, life skills such as self-care and social ability are related to persisting in college (Bui; Solberg et al.). Finally, college students reporting higher levels of college and social self-efficacy had higher overall satisfaction with college (Dewitz &

Walsh, 2002). Thus, a measure of college-going beliefs would need to include items related to these contributors to self-efficacy beliefs about college persistence.

A review of the literature was conducted to identify existing measures of college-going self-efficacy that included the two factors of college attendance and college persistence and that were appropriate for middle school students. Several self-efficacy instruments were examined, including the College Self-Efficacy Instrument (Solberg et al., 1993), the Middle School Career Decision-Making Scale (Fouad & Smith, 1997), the Educational Degree Behaviors Self-Efficacy Scale (Gloria, Robinson Kurpius, Hamilton, & Wilson, 1999), and the Academic Milestones Scale (Nauta, Epperson, & Kahn, 1998). These scales, however, either were designed for use with students already in college or measured a different type of self-efficacy (e.g., career decision-making). Because self-efficacy is domain specific (Bandura, 1997), it was necessary to create a new instrument. Thus, the purpose of this series of studies was to create a measure of middle school students' college-going beliefs regarding both college attendance and college persistence. This study was part of a larger research project on the college-going beliefs of middle school students, with an emphasis on prospective first-generation college students (Gibbons, 2005). Only scale development of the self-efficacy measure is reported here.

DEVELOPMENT OF THE COLLEGE-GOING SELF-EFFICACY SCALE

In line with the results of the literature review, items were created to reflect the contributors and influences on college attendance and college persistence. In addition, special attention was given to the population to be assessed (i.e., middle school students). Developmentally, these students are unable to answer questions about specific tasks in college, such as doing term papers, living with roommates, or choosing a major. The item stems in the College-Going Self-Efficacy Scale (CGSES), then, were created to be general and easily understandable for this age group. For example, simple words were used, topics were selected that were already familiar to middle schoolers, and item stems were worded so they could be applied to any type of postsecondary experiences. In addition, efforts were made to keep the scale as brief as possible while still attending to the multiple influences on college-going beliefs.

Following the above guidelines, 15 items related to college attendance and 16 items related to college persistence were created. Two counselor educators with expertise in working with both adolescents and self-efficacy measurement reviewed the items to ensure that they were task specific, as required for self-efficacy instruments; that they adequately addressed the contributors

to college-going self-efficacy identified in the literature review; and that they were age-appropriate. One of the experts suggested changing the response prompts to match other self-efficacy instruments, such as the Middle School Career Decision-Making Scale (Fouad & Smith, 1997), the Career Decision-Making Self-Efficacy Scale (Betz & Luzzo, 1996), and the Academic Milestones Scale (Nauta et al., 1998). Thus, the beginning of each prompt was changed from "I will" to "I can" or "I could." This change better reflects students' perceptions of their capability rather than their intentions (Bandura, 1997). The other educator suggested slight wording changes to help make the instrument more readable. Neither expert suggested adding or deleting items.

Subscale Descriptions

College attendance items reflected financial issues (e.g., "I can find a way to pay for college"); issues related to ability (e.g., "I can get good grades in my high school math classes"); family-related issues (e.g., "I can have family support for going to college"); decision-making skills (e.g., "I can choose a good college"); as well as one overall item, "I can go to college after high school." These items reflected the themes found in previous research on college attendance beliefs. Students respond to the prompt "How sure are you about being able to do the following" using a 4-point Likert-type scale (1 = not at all sure, 2 = somewhat sure, 3 = sure, 4 = very sure).

College persistence items reflected financial questions (e.g., "I could pay for each year of college"); ability items (e.g., "I could do the classwork and homework assignments in college classes"); family items (e.g., "I could get my family to support my wish of finishing college"); and life skills (e.g., "I could set my own schedule while in college"). In addition, two overall items about persistence were included (e.g., "I could fit in at college"). Again, the items were based on themes identified through analysis of previous research on college persistence. Students respond using the same prompt and 4-point scale as described for the attendance items.

As designed, subscale scores for attendance and persistence, as well as a total score, provide an indication of strength of college-going self-efficacy beliefs. Higher scores indicate higher self-efficacy perceptions.

Instrument Readability

Readability was measured in two different ways. First, the Flesh-Kincaid Grade Level measure found on Microsoft Word was used. The CGSES represented a grade level of 6.1. Second, participants were asked to rate the readability of the survey during the administration process (see below). Specifically, they were asked about the clarity of the directions and individual items and were prompted to list those items that were confusing. No major issues arose related to readability.

Discussion

A review of the Phase 1 data for the CGSES suggested initial support of its content validity and construct validity. Items were grounded in empirical research on college-going beliefs and were judged to reflect that literature adequately by the expert reviewers. The reviewers also indicated that the scale reflected guidelines for creating self-efficacy scales. Finally, the reviewers and the readability analysis both suggested that the scale was appropriate for middle school students, indicating it was appropriate to proceed to an initial test with early adolescents.

PHASE 1: INITIAL RELIABILITY, READABILITY, AND CLARITY OF ITEMS

The main focus of the first phase of the study was to determine initial reliability estimates for the scale. In addition, instrument readability and clarity of instructions were examined. Results are described in detail.

Participants

Participants ($n = 22$) were sixth through eighth graders involved in Boy Scouts and Girl Scouts. They ranged in age from 11 to 13, with a mean age of 11.59 years old ($SD = .67$). Thirteen females and 9 males participated in the study. Most of the participants were Caucasian ($n = 12$), followed by African American ($n = 6$), multiracial ($n = 2$), Hispanic/Latino ($n = 1$), and other ($n = 1$). All of the participants planned to graduate from high school and 20 (90.9%) indicated they planned to enter a 2-year or 4-year college after high school. Participants rated the likelihood of graduating from college on a 10-point scale as well ($M = 8.23$, $SD = 2.11$), indicating a high perceived likelihood of persisting in college.

Procedure

Scoutmasters were contacted by phone and asked if they would be willing to allow their troop to participate. Eight Scout troops (four boy and four girl) were contacted. Two of the Girl Scout troops did not meet the age requirement, one Boy Scout group declined, and two others initially agreed but had to withdraw due to scheduling issues. Ultimately, participants were recruited through contact with three local Scoutmasters, one boy and two girl groups. In return for allowing data collection, the primary researcher (first author) offered to provide a summary of the results and bring a snack for participants on the day of data collection.

Depending on the Scoutmaster's requests, participants were given a packet containing a letter to their parents requesting permission for their child to participate in this study either on the day of the study or the week prior to the study). All Scouts who were given permission forms returned them signed by a parent (100% response rate). They were given the survey packets during a Scout meeting and completed the packet at that time; packets took 15-30 minutes to complete. As this was part of a larger study, each packet contained a short demographic form, four surveys related to college-going beliefs, including the CGSES, and readability surveys for each survey; surveys were completed in the same order by all participants. The researcher was present during the administration of the survey packets. Although no consequences existed for the Scouts who decided not to participate, all agreed to answer the survey questions. One male Scout was unable to focus his attention on the task, so his answers were not included in the results. Each Scout received a small gift and snacks after completing the packet.

Results

The original version of the CGSES had a total of 31 items, with 15 measuring attendance and 16 measuring persistence. The Cronbach's alpha ($n = 22$) for the attendance subscale was .81; for the persistence subscale it was .92. The overall alpha coefficient was .92.

Scores for attendance had a possible range of 15 to 60; the mean was 45.77 ($SD = 5.81$). The persistence scale had a possible score range of 16-64, with a measured mean of 50.82 ($SD = 7.66$). Mean scores for the subscales indicated that the respondents had fairly high college-going

self-efficacy beliefs. Apparently, this group of middle school students believed they could complete the tasks needed both to attend and complete college.

Participants reported that both the directions and the overall survey questions for the CGSES either were clear or very clear, indicating adequate readability for use with middle school students. Nearly all of the respondents reported that none of the questions were confusing to them, and all but one felt the length of this survey was just right. It took participants approximately 5 minutes to complete the CGSES.

Discussion

Preliminary analyses from this initial study suggested that the CGSES was appropriate for measuring college-going beliefs in middle school students. Both subscale scores and the total scale score were adequate and suggested good internal consistency. The students seemed to have good variance in their responses, indicating that the measure adequately allowed for reporting of a range of responses. The small sample size precluded any further analyses.

One important change, however, was made based on the results. One item on the CGSES attendance scale, "I can choose the best college for me, even if my parents feel I made the wrong choice," appeared to correlate poorly with the other items on the scale. In addition, the Cronbach's alpha increased to .83 if this item was deleted. It was the only item that had a complex sentence structure, so it may be that the wording made it too difficult to understand. Thus, this item was dropped. Generally, then, there was at least minimal support for the scale as constructed, indicating it was appropriate to proceed to Phase 2 with a larger and more diverse sample.

PHASE 2: RELIABILITY AND FACTOR ANALYSIS WITH A DIVERSE GROUP OF SEVENTH GRADERS

Phase 2 consisted of using the revised instrument with a larger and more diverse participant group. The goals were to further test the reliability and validity of the scale. Specifically, internal consistency was analyzed again, and a factor analysis of the CGSES was conducted to determine in a single score or subscores best reflected the content.

Participants

Although the first phase included students in sixth, seventh, and eighth grades, it was decided to focus solely on seventh graders for the second phase. These students are in the midst of their middle school careers but have not yet completed the high school registration process. The high school registration process may bias the results because it encourages thought about career and college planning. By focusing on seventh graders, this potential bias was eliminated.

Because the larger study (Gibbons, 2005) emphasized prospective first-generation college students, schools selected for participation in this study were chosen carefully based on demographic information. Prospective first-generation college students are more likely to be of an ethnic minority and come from low-income households (Horn & Nunez, 2000), so attention was paid to ethnicity of students and the percentage of students on free or reduced lunch. This helped ensure that sufficient numbers of first-generation college students were included as part of the study. The goal, which was met, was at least 100 first-generation students and 100 non-first-generation students from the targeted middle schools. A total of 109 participants were classified as prospective first-generation college students, meaning that neither parent had any formal education beyond high school.

Seventh-grade students from four middle schools located in three separate counties in a Southeastern state were offered the opportunity to participate in this study. Counties were selected based on convenience and location. One school was located in an urban area, one was suburban, and two were suburban-rural. All four schools had a traditional middle school curriculum; three were public schools and one was a public charter school. The four seventh-grade class sizes ranged from 96 to 250. A total of 275 students returned parental consent forms and participated in the survey; three of these did not indicate parent education level and were eliminated from the study, leaving a total sample size of 272 seventh-grade students. At each school, slightly more females than males participated in the survey, yielding a total of 154 females and 118 male participants. The average age of the participants was 12.65 ($SD = .61$, range = 12-14 years). Participation rates at each school ranged from 29.6% to 43.2%, with an average participation rate of 37.66%.

In the sample, there was a large representation of Caucasian ($n = 93$), African American ($n = 83$), and Hispanic ($n = 65$) students that closely mirrored the entire school population at each site.

Consistent with previous research on first-generation students, 58 of the Hispanic students, 24 of the African American students, and only 15 of the Caucasian students were prospective first-generation college students. For the purposes of data analysis, an "Other Ethnicity" category was created to combine the remaining students. This category included Native American (n = 1), Asian American (n = 5), multiracial (n = 17), and other (n = 7). No assumptions were made regarding the similarities of the students in this group; the combination was done for convenience and statistical purposes only.

Procedure

All seventh-grade students in each school were invited to participate. The first author went to each school several days prior to data collection and read a brief introduction regarding the purpose of the study to each class. Students had an opportunity to ask the researcher questions about the study. They then were given a consent form and a short parent survey to take home to their parents.

Several days later, the same researcher returned to the school and collected the signed consent forms. Students who returned the consent form and parent survey then were given the surveys to complete during class time. The researcher read a brief explanation of the directions, distributed student assent forms, and then remained in the class in order to answer questions. At the end of data collection, participants received a small gift for their participation. Students who did not return the consent form read silently in the classroom. No penalty was given to those students who chose not to participate in the study.

Results

The revised version of the CGSES had 14 questions measuring attendance and 16 questions measuring persistence, for a total of 30 questions. Reliability was measured through a Cronbach's alpha coefficient. For the attendance subscale, the reliability alpha was .89; for persistence it was .90. The total scale had a coefficient alpha of .94, suggesting good evidence of internal consistency.

An exploratory factor analysis of the CGSES was conducted to offer additional information about construct validity. Specifically, a principal component exploratory factor analysis with a varimax rotation method was completed to determine the fit of the two factors. Six components had an eigenvalue over 1.0, although a significant drop-off occurred after the first component. Because of the predicted factors in the scale, a two-factor approach was attempted. The results of this second analysis are detailed in Table 1.

A two-factor solution appeared to be a good fit to explain college-going self-efficacy. The two factors accounted for 42.2% of the total variance, with factor 1 (attendance) representing 21.3% and factor 2 (persistence) 20.9% of the variance. The items primarily loaded on the predicted factors. Three items originally identified as persistence items loaded on the attendance factor and one item originally identified as attendance loaded on the persistence factor.

Even using a liberal item-to-assignment rule (i.e., .30 or more and .25 or less), however, many of the items did not clearly load on one factor. For example, items 6, 10, 11, 13, 16, 20, and 21 loaded nearly equally on the two factors, indicating a high level of overlap in the two factors. Although the evidence is equivocal and permits using attendance and persistence as separate scales, the results of the factor analysis also support the idea of using only the total score. A correlation coefficient was run to determine the relationship between the two factors; the high correlation ($r [1] = .77, p < .01$) also supported use of the total score only.

Mean score for the first-generation students was 90.36 (SD = 14.00), and for the non-first-generation students it was 99.19 (SD = 13.81), with a possible range of 30-120. The mean score with all participants was 95.73 (SD = 14.55). A significant difference in total mean scores was found between first-generation students and their peers ($F = 8.66, df = 1, p = .04$), meaning that prospective first-generation students had lower college-going self-efficacy beliefs. There was variability in responses although, generally, participants had a moderate level of college-going self-efficacy.

Discussion

Several results are important to review. First, the CGSES again demonstrated good reliability based on Cronbach's alpha, highlighting the consistency of student responses within each instrument. Second, although both attendance and persistence are necessary components of

college-going self-efficacy (Betz, 2007), it appears that the total score of the CGSES is more appropriate than the subscale scores. Overall, results supported the viability and utility of the CGSES as a measure of college-going self-efficacy.

Results were in line with previous research indicating that college attendance and college persistence are different but related beliefs structures (e.g., Horn & Nunez, 2000; Warburton et al., 2001). Results of the factor analysis contribute to evidence of construct validity for the scale. Differences between first-generation students and non-first-generation students would be predicted from both self-efficacy theory and empirical research on first-generation students (e.g., Helman & Harbeck, 1997; Kerpelman & Musher, 2004; Reid & Moore, 2008), providing indirect support for the scale's construct validity.

PHASE 3: TEST-RETEST RELIABILITY

In order to add to the evidence of reliability, a small test-retest study was conducted with a separate group of participants. The results related to the CGSES are reported here.

Participants

Participants were seventh graders at a middle school in a Southeastern state. The seventh grade at this school is divided into two teams, and students from one team were asked to participate in the study. A total of 32 students returned permission slips; however, 7 participants only partially completed the survey and another 7 were sick during the second round of data collection. Therefore, 18 students completed both surveys and were included in the results, for a 34% response rate. Of the 18 participants, 13 were female and 15 were Caucasian/ White. All but one planned to continue onto a 4-year university.

Procedures

The school counselor for the seventh grade arranged for one team to participate in the study. Students were read a short explanation of the assessment and asked to return a signed parental permission form to be included in the study. All students were required to take the assessment as

part of a classroom guidance activity; only students returning their consent forms, however, were included in the test-retest analysis. Teachers offered a small amount of extra credit for returning consent forms, but no consequences were given to students who failed to return the forms.

For the first testing, students completed the CGSES and a short demographic survey during class. Three weeks later, students were asked to complete just the CGSES for a second time. The two surveys from each student were clipped together with the demographic sheet and consent form (if one had been returned). All of the first-round surveys were analyzed for the school counselor but only results from those who returned consent forms are presented below.

Results and Discussion

The purpose of a test-retest study is to examine evidence of reliability over time. The Cronbach's alpha of the test-retest bivariate analysis ($n = 18$) was .88, indicating a high level of consistency over time. Both the subscales and the total scale appear to produce similar answers from a single participant over a 3week period, indicating that the construct of college-going self-efficacy is relatively stable over time.

OVERALL DISCUSSION AND IMPLICATIONS FOR SCHOOL COUNSELORS

The CGSES was designed to measure college-going beliefs of middle school students in light of empirical evidence (e.g., Atanda, 1999; Oesterreich, 2000; Tierney et al., 2003) that this is a critical time in academic and career decision-making. Results of the three-phase testing of the CGSES provide initial but consistent evidence for the scale's reliability and validity. Internal consistency results were adequate across three different samples of middle school students, including a large and diverse group. Test-retest reliability also appeared to be adequate. Content validity, is reflected in the scale's grounding in empirically based contributors to college-going beliefs and guidelines for creating self-efficacy scales, as well as expert reviews and lack of substantive feedback or questions from participants. Conclusions from the empirical literature also were reflected in the results of the factor analysis, indicating that college attendance and college persistence beliefs are different yet related. These results contribute to the construct validity of the CGSES. Further support for construct validity is suggested in the different scores for first-generation and non-first-generation students. Importantly, the scale was tested with a highly diverse group of middle school students (Phase 2), including Caucasian, African

American, and Hispanic students, as well as prospective first-generation college students. Differences in self-efficacy by ethnicity and parent education level are supported by previous research (Horn, 2006). Thus, the scale seems appropriate for all students. In short, the CGSES appears to have adequate support for use in practice and further research. Suggestions for both of these areas are provided below.

As with any study, there were limitations. Although the studies suggested use of a total score for the CGSES, additional factor analyses with other middle school populations are needed to confirm this result. Also, studies of middle school students outside of the Southeast would help broaden the generalizability of these results. Additionally, no longitudinal effects or changes in self-efficacy beliefs based on interventions were examined. Finally, despite our initial promising results, additional psychometric tests are needed, including additional validity studies.

Implications for School Counselors

The CGSES has potential for conducting needs assessments and completing individual planning with some or all students. By administering the CGSES to all students, school counselors can determine the status of middle schoolers' beliefs about college attendance and persistence. School counselors can use the instrument for early identification of students who may have lower expectations about their abilities to complete the steps needed to attend and persist in college.

Even though the total score is recommended when using the CGSES, analysis of the item responses may help identify specific areas of concern related to college-going self-efficacy that are most prevalent in a school. For attendance beliefs (1-14), school counselors can examine concerns about finances (items 1, 5, 9), abilities (items 2, 6, 10, 11, 13), family (items 3, 7), and decision-making (items 4, 8, 12), along with general feelings about attending college (item 14). For persistence beliefs (15-30), school counselors can focus on ability (items 16, 20, 21, 25, 28, 30), finances (items 15, 20), family responsibilities (items 17, 22), life skills (items 18, 23, 24, 26, 29), and general feelings about continuing in college (items 19, 27). Students who score low on the financially related questions can be given concrete information about the actual costs of college, because students tend to overestimate these costs (Gibbons et al., 2006). Similar interventions could target other belief categories. In addition, school counselors can create classroom guidance and parent presentations that address the many facets of college-going.

Individual planning. A review of the needs assessments for individuals with very low self-efficacy beliefs or targeted use of the assessment with students from at-risk groups may be another application of the CGSES. School counselors may give the CGSES to students from low-income households or low parent education levels, both groups that tend to have lower college attendance rates (Horn & Nunez, 2000). Another group to target might be students with high college-going self-efficacy but low academic grades.

Even for those students who score in the moderate to high range for college-going self-efficacy, a review of the individual items can help school counselors identify potential barriers to college-going for students. In a sense, it can be used more like a checklist, because it reflects factors that influence college-going beliefs. Overall scores on the measures can alert school counselors to those who would benefit from interventions designed to raise their overall college-going self-efficacy beliefs, while individual items may point to specific beliefs that need to be explored or challenged.

Interventions. Interventions should be based in self-efficacy theory and address ways to increase beliefs about ability to attend and persist in college. Betz (2007) explained that self-efficacy interventions should include access to opportunities for success, role models, encouragement, and concrete information. For example, students without models of college-going adults in their lives might be connected with ethnically or socioeconomically similar adults who are succeeding in their postsecondary pursuits. Also, encouraging students to explore college options and providing them with information on college costs, financial aid, and how to select a college may help students realize that college is feasible. Involving parents in conversations about college and providing tutors for struggling students may provide more opportunities for success. Overall, these ideas target self-efficacy beliefs by raising support and reducing potential barriers to college-going.

Such interventions would reflect findings of Oesterreich (2000) and Tierney et al. (2003) who indicated that effective college preparation programs begin in middle school, involve counseling for those in need, include parents and other role models, and provide accurate information about postsecondary choices. The CGSES may be a way for school counselors to identify students potentially at risk for lowering their vocational and academic plans while there is still time to remediate the situation proactively.

Future Research

Additional validity studies of the CGSES would further support its use by school counselors as well as researchers. Concurrent validity studies might include measures of another self-efficacy scale or other measures of beliefs about college-going. Studies examining the utility of the CGSES with various student groups, including high school students, could determine whether it is appropriate for older adolescents as well.

Other research could be focused on interventions studies. For example, students with low college-going self-efficacy might become part of a small group designed to address this deficit, and the CGSES could be used as a pre-post measure of the effectiveness of the group. Longitudinal studies could examine changes in college-going beliefs over time including students who do and do not go to college and determine the predictive validity, of the CGSES. In all cases, the CGSES might be useful as a measure of changing beliefs about college-going.

The CGSES fits within the framework of the ASCA National Model[R] (American School Counselor Association, 2005) by focusing on both academic and career planning through the use of data collection and analysis. Although more studies using this instrument are needed to fully explore its psychometric fitness, the results provided from these initial studies offer positive initial evidence regarding its use with middle school students.

References

Ali, S. R., McWhirter, E. H., & Chronister, K. M. (2005). Self-efficacy and vocational outcome expectations for adolescents of low socioeconomic status: A pilot study. *Journal of Career Assessment*, 13, 40-58.

American School Counselor Association. (2005). *The ASCA national model: A framework for school counseling programs* (2nd ed.). Alexandria, VA: Author.

Atanda, R. (1999). Statistics in brief: Do gatekeeper courses expand education options? (NCES Report 1999-303). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman & Company.

Betz, N. E. (2007). Career self-efficacy: Exemplary recent research and emerging directions. *Journal of Career Assessment*, 15, 403-422.

Betz, N. E., & Luzzo, D. (1996). Career assessment and the Career Decision-Making Self-Efficacy Scale. *Journal of Career Assessment*, 4, 313-328.

Bui, K.V.T. (2002). First-generation college students at a four-year university: Background characteristics, reasons for pursuing higher education, and first-year experiences. *College Student Journal*, 36, 3-11.

Dewitz, S. J., & Walsh, W. B. (2002). Self-efficacy and college student satisfaction. *Journal of Career Assessment*, 10, 315-326. doi:10.1177/10672702010003003

Fouad, N. A., & Smith, P. L. (1997). Reliability and validity evidence for the Middle School Self-Efficacy Scale. *Measurement and Evaluation in Counseling and Development*, 30, 17-31.

Gianakos, I. (1999). Patterns of career choice and career decision-making self-efficacy. *Journal of Vocational Behavior*, 54, 244-258. doi:10.1006/jvbe.1998.1668

Gibbons, M. M. (2005). College-going beliefs of prospective first-generation college students: Perceived barriers, social supports, self-efficacy, and outcome expectations. *Dissertation Abstracts International*, 66(08A), 2841.

Gibbons, M. M., Borders, L. D., Wiles, M. E., Stephan, J., & Davis, P. E. (2006). Career and college planning needs of ninth graders--as reported by ninth graders. *Professional School Counseling, 10*, 168-178.

Gloria, A. M., Robinson Kurpius, S. E., Hamilton, K. D., & Wilson, M. S. (1999). African American students' persistence at a predominantly White university: Influences of social support, university comfort, and self-beliefs. *Journal of College Student Development, 40*, 257-268.

Gushue, G.V. (2006). The relationship of ethnic identity, career decision-making self-efficacy, and outcome expectations among Latino/a high school students. *Journal of Vocational Behavior, 68*, 85-95.

Hackett, G., Betz, N. E., Casas, J. M., & Rocha-Singh, I. A. (1992). Gender, ethnicity, and social cognitive factors predicting the academic achievement of students in engineering. *Journal of Counseling Psychology, 39*, 527-538.

Helman, C., & Harbeck, D. (1997). Investigating self-regulated learning among first-generation college students. *Journal of Applied Research in the Community College, 42*, 165-169.

Horn, L. (2006). Placing college graduation rates in context: How 4-year college graduation rates vary with selectivity and the size of low-income enrollment (NCES Report 2007-161). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Horn, L., & Nunez, A. (2000). Mapping the road to college: First-generation students' math track, planning strategies, and context of support (NCES Report 2000-153). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college: How social, economic, and educational factors influence the decisions students make*. Baltimore, MD: Johns Hopkins University Press.

Jackson, M. A., & Nutini, C. D. (2002). Hidden resources and barriers in career learning assessment with adolescents vulnerable to discrimination. *Career Development Quarterly*, 51, 56-77.

Johnson, L. S. (2000). The relevance of school to career: A study in student awareness. *Journal of Career Development*, 26, 263-276.

Keller, B. K., & Whiston, S. C. (2008). The role of parental influences on young adolescents' career development. *Journal of Career Assessment*, 16, 198-217.

Kenny, M. E., Bluestein, D. L., Chaves, A., Grossman, J. M., & Gallagher, L.A. (2003). The role of perceived barriers and relational support in the educational and vocational lives of urban high school students. *Journal of Counseling Psychology*, 50, 142-155.

Kerpelman, J. L., & Mosher, L. S. (2004). Rural African American adolescents' future orientation: The importance of self-efficacy, control and responsibility, and identity development. *Identity: An International Journal of Theory and Research*, 4, 187-208.

Lent, R.W., Lopez, F. G., & Bieschke, K. J. (1993). Mathematics self-efficacy: Sources and relations to choice. *Journal of Counseling Psychology*, 38, 424-430.

Lohfink, M. M., & Paulsen, M. B. (2005). Comparing the determinants of persistence for first-generation and continuing-generation students. *Journal of College Student Development*, 46, 409-428.

Luzzo, D. A., & Hutcheson, K. G. (1996). Causal attributions and sex differences associated with perceptions of occupational barriers. *Journal of Counseling & Development*, 75, 124-130.

National Information Center for Higher Education Policymaking and Analysis. (2002). College-going rates of high school graduates, directly from high school Retrieved from <http://www.higheredinfo.org>

Nauta, M. M., Epperson, D. L., & Kahn, J. H. (1998). A multiple-groups analysis of predictors of higher level career aspirations among women in mathematics, science, and engineering majors. *Journal of Counseling Psychology*, 45, 483-496.

Nunez, A., & Cuccaro-Alamin, S. (1998). First-generation students: Undergraduates whose parents never enrolled in postsecondary education (NCES Report 1998-082). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Oesterreich, H. (2000). Characteristics of effective urban college preparation programs (Report No. EDO-UD-00-8). New York, NY: Institute for Urban and Minority Education. (ERIC Document Reproduction Service No. ED448244)

Pajares, F., & Miller, M. D. (1995). Mathematics self-efficacy and mathematics performances: The need for specificity of assessment. *Journal of Counseling Psychology*, 42, 190-198.

Pascarella, E.T., Wolniak, G. C., Pierson, C.T., & Terenzini, P.T. (2003). Experiences and outcomes of first-generation students in community colleges. *Journal of College Student Development*, 44, 420-429.

Reid, M. J., & Moore, J. L., III. (2008). College readiness and academic preparation for postsecondary education: Oral histories of first-generation urban college students. *Urban Education*, 43, 240-261.

Solberg, V. S., O'Brien, K., Villareal, P., Kennel, R., & Davis, B. (1993). Self-efficacy and Hispanic/Latino college students: Validation of the College Self-Efficacy Instrument. *Hispanic Journal of Behavioral Sciences*, 15, 80-95.

Tierney, W. G., Colyar, J. E., & Corwin, Z. B. (2003). Preparing for college: Building expectations, changing realities. Los Angeles, CA: University of Southern California, Rosser School of Education, Center for Higher Education Policy Analysis.

Turner, S. L., Steward, J. C., & Lapan, R.T. (2004). Family factors associated with sixth-grade adolescents' math and science career interests. *Career Development Quarterly*, 53, 41-52.

Wahl, K. H., & Blackhurst, A. (2000). Factors affecting the occupational and educational aspirations of children and adolescents. *Professional School Counseling*, 3, 367-374.

Warburton, E. C., Bugarin, R., Nunez, A., & Carroll, C. D. (2001). Bridging the gap: Academic preparation and postsecondary success of first-generation students (NCES Report 2001-153). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

York-Anderson, D. C., & Bowman, S. L. (1991). Assessing the college knowledge of first-generation and second-generation college students. *Journal of College Student Development*, 32, 116-122.

Melinda M. Gibbons, Ph.D., is an assistant professor in educational psychology and counseling at the University of Tennessee, Knoxville. E-mail: mgibbon2@utk.edu

L. DiAnne Borders, Ph.D., is a professor in the Department of Counseling and Educational Development, University of North Carolina at Greensboro.

Table 1. College-Going Self-Efficacy Scale, Phase 2 Study:

Rotated Component Matrix, Principal Component Factor

Analysis, Constrained to Two Factors

Item	Factor 1	Factor 2
# Item	(Attendance)	(Persistence)

1	I can find a way to pay for college	.78#	.18
2	I can get accepted to a college	.70#	.26
3	I can have family support for going to college	.66#	.04
5	I can get a scholarship or grant for college	.64#	.23
14	I can go to college after high school	.64#	.32
15	I could pay for each year of college *	.64# *	.25
12	I can choose the high school classes needed to get into a good college	.55#	.36
16	I could get A's and B's in college *	.55 * **	.45 * **

17	I could get my family to support my wish of finishing college *	.53#	.14 *
8	I can choose college courses that best fit my interests	.50#	.27
4	I can choose a good college	.50#	.28
6	I can make an educational plan that will prepare me for college	.46 **	.41 **
10	I can get good grades in my high school math classes	.46 **	.39 **
7	I can make my family proud with my choices after high school	.40#	.28
13	I can know enough about computers to get into college	.35 **	.33 **
9	I can pay for college even if	.35#	.24

my family cannot help me

- | | | | |
|----|--|-----|------|
| 29 | I could pick the right things
to study at college | .23 | .71# |
| 19 | I could fit in at college | .18 | .69# |
| 28 | I could be smart enough to
finish college | .42 | .64# |
| 24 | I could make friends at
college | .13 | .63# |
| 25 | I could get the education I
need for my choice of career | .34 | .61# |
| 30 | I could do the classwork and
homework assignments in
college classes | .32 | .59# |
| 23 | I could set my own schedule
while in college | .22 | .58# |
| 18 | I could take care of myself in
college | .13 | .57# |

22	I could care for my family responsibilities while in college	.23	<u>.57#</u>
27	I would like being in college	.2	<u>.57#</u>
21	I could finish college and receive a college degree	.46 **	<u>.54 **</u>
20	I could get good enough grades to get or keep a scholarship	.50 **	<u>.53 **</u>
26	I could get a job after I graduate from college	.29	<u>.50#</u>
11	I can get good grades in my high school science classes *	.47 * **	<u>.47 * **</u>

Note. N= 271. Italicized items originally were predicted to be grouped with the other factor. Bolded items indicate factor affiliation. Underlined items indicate affiliation with both factors.

Note: N= 271. Italicized items originally were predicted to be grouped with the other factor is indicated with *.

Note: Bolded items indicate with # factor affiliation is indicated with.

Note: Underlined items indicate with ** affiliation with both factors.