

Manual for the
Transition to College Inventory



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In the 21st century, college and university faculty and administrators are faced with millennial students, many of whom come to college less well prepared academically and/or disengaged from learning. They have graduated from high school with good GPAs earned spending an average of five hours or less per week studying. Typically their high schools have failed to challenge them to learn the study and time management skills necessary to succeed in college. More of their time has been spent working and socializing. Most students are also career oriented although those who have chosen careers have done so with little exploration of how their skills and interests fit into the world of work. And, as “customers” many have a sense of entitlement about earning their degrees. At the same time, faculty and administrators are challenged by parents, legislators, governing boards and media, like *U S News and World Report*, to raise admission standards and improve retention and graduation rates. How can faculty and administrators help students to be more successful and simultaneously improve their institution’s retention and graduation rates?

After more than 10 years of development and testing including a major revision in 2003, the designers of the Old Dominion University Freshman Survey (ODUFS), renamed the instrument the *Transition to College Inventory (TCI)* to prepare it for use at other institutions. Initially the *TCI* was developed to help understand at-risk first-year (FY) students. Subsequently, it was designed to identify and treat students at risk for academic difficulty and subsequent attrition. The development of the *TCI* was informed by the work of many scholars, most notably Vincent Tinto’s retention studies, Alexander Astin’s body of research on the CIRP Freshman Survey, and William Sedlacek’s work with the Noncognitive Questionnaire. It also draws on the research of many others who have examined unique noncognitive contributors to these phenomena, as well as our own extensive experience working with first-year students. Since 1993, Old Dominion University (ODU) has been using the *TCI* to identify and treat first year students at risk for academic difficulty. At-risk students are identified by the *TCI* Index derived from answers to the *TCI*. The *TCI* Indexes are interpreted by students’ academic advisors who can then recommend appropriate interventions.

The development and use of the *TCI* and *TCI* Index were discussed in an invited essay on the First Year Assessment Listserv (Pickering & Calliotte, 2002). In 2002 ODU received a Southern Association of Colleges and Schools / Commission on Colleges (SACS/COC) Commendation in part for our assessment work with the *TCI*. Finally, in the 1996 book *Assessment in Practice*, Banta and associates (1996) cited ODU as an example of an institution that “uses assessment data to drive improvements in an area of particular concern, its persistence rates. Since it is imperative that students stay in school in order to obtain the benefits that accrue from a college education, the university has intentionally designed an assessment strategy focused on this one goal” (p. 22).

The *TCI* is a noncognitive measure designed to enhance the predictions of academic performance based only on cognitive (high school GPA, SAT / ACT scores) and demographic (gender, race, first generation) factors. The *TCI* is a self-report of attitudes, personality characteristics, and behaviors while in high school along with predictions about performance and involvement in college. It is designed to be administered prior to, or at the beginning of, the first year of college, and is divided into the following sections:

1. Reasons for Attending College
2. Reasons for Choosing This College

3. Experiences During the Senior Year of High School
4. Self Ratings of Abilities and Traits
5. Attitudes About Being a College Student
6. Predictions About Academic Success at College
7. Predictions About Involvement in College

The *TCI* was developed at ODU, which is a midsize, urban, doctoral research extensive institution with average high school GPA of 3.15 and average SAT scores of 1034. Among the approximately 21,000 students who attend ODU, fewer than 10% are first-time FY students. In addition, while there is great diversity in the overall ODU student population, the vast majority of FY students are 18 or 19 years old and graduated from high school within the preceding year. The following data analyses were completed using a data set of four years (1999-2002) of *TCI* data ($N = 5684$) during which the average size of the FY class was 1586. Approximately 90% of all entering first-year students during those four years completed the *TCI*. Several of the demographic characteristics of this group include, 55% female, 59% Caucasian and 27% African American. In addition, 55% planned to live in campus residence halls while 45% commuted to the campus. The average age was 18.

Administering the *TCI*

One of the goals in designing the *TCI* was to enable ODU to identify students at risk for academic difficulty prior to, or early in, the first semester so that treatment could begin in the critical first 6-8 weeks of college. Thus, at ODU, the *TCI* is administered during Preview, the 2-day summer orientation program. Students take the *TCI* as a group in a proctored environment along with placement tests in writing and math during the morning of the first day of Preview. The *TCI* are scored that afternoon and individual *TCI* Advising Profiles are generated for each student. The *TCI* Advising Profiles are included in each student's advising folder along with the results of the writing and math placement tests. During advising sessions on the second day of Preview, advisors use the *TCI* Advising Profile to recommend potential curricular interventions for students identified as at risk based on their *TCI* Index.

Other institutions may choose to administer the *TCI* in an orientation program immediately prior to the beginning of classes or during the first week of classes. Institutions are encouraged to administer the *TCI* in a proctored group environment to encourage open and honest answers. If taken at home or in a residence hall the presence of parents or peers might influence students' responses. A web-based *TCI* has been developed, however, for institutions that might require it. The *TCI* was *not* designed to be used as an admissions requirement.

More specific instructions for administering the *TCI* are included in Appendix A.

***TCI* Index and Factors**

Individual responses to the *TCI* yield both the *TCI* Index and nine factors to facilitate individual interpretation and treatment of at-risk students. The *TCI* results also provide a profile of the entering first year class. The *TCI* Index is used to identify students at-risk for academic

difficulty at the end of the first semester. An individualized *TCI* Advising Profile is generated that reveals both the *TCI* Index and responses to all of the items that constitute the *TCI* Index for that student. Academic advisors and/or counselors can then review the *TCI* Advising Profile with the student and develop plans for remediating problematic responses. The nine factors represent broader areas that may contribute to students' academic difficulty. They can also be interpreted individually or can be analyzed across students to develop a profile of the entering first year class. As a result of these analyses completed in 2003, the *TCI* was reduced to 115 items of which 45 are included in the *TCI* Index.

TCI Index

The *TCI* Index was derived by comparing the responses to each item by first-year students who ended their first semester in academic difficulty versus those who did not. The methodology was designed based on one originally developed by Strong, and subsequently refined by Campbell, in the development of the Occupational Scales of the *Strong Campbell Interest Inventory (SCII)* (Campbell & Hansen, 1981). In the *SCII*, items were chosen for each Occupational Scale if they showed a significant difference between respondents who were in the occupation versus a general sample of those who were not. The same type of differentiation was sought when using the *TCI*, i.e., between students who were successful (GPA \geq 2.00) versus those in academic difficulty (GPA $<$ 2.00) at the end of the first semester of college. The goal was to identify approximately 45 – 55 items to include in the *TCI* Index to enhance reliability. The items that contribute to the *TCI* Index were chosen if they met the following two criteria:

1. There was a statistically significant difference in the percentage responding between those students who were in academic difficulty and those who were not (minimum difference of 5-7 percentage points) to enhance validity; and
2. The items made sense conceptually and could be interpreted in a counseling session.

When students choose a response identified as part of the *TCI* Index, the score is incremented by one. Thus, the *TCI* Index can range from 0 to 45. In the ODU sample, the scores had an average of $\bar{M} = 3.80$ and $\underline{SD} = 3.43$. In addition to reviewing the mean and standard deviation in order to set a cut-off score, the frequency distribution of *TCI* Indexes among FY students in academic difficulty after their first semester was analyzed (Figures 1 & 2). Of those who had *TCI* Indexes of 0-5, **18%** were in academic difficulty compared to **33%** of those who had *TCI* Indexes of 6-8 and **42%** of those who had *TCI* Indexes of 9 and above. The average academic difficulty rate during the four years included in the study was 22%. Based on these data, FY students with ***TCI* Indexes less than 5 are considered to have low risk** while those FY students with ***TCI* Indexes of 6-8 are considered to have above average risk** and those with **indexes of 9 or higher are considered to have a high risk** of academic difficulty without intervention. Thus, the cut-off score was set at 9, approximately 1.5 standard deviations above the mean. Any student with a *TCI* Index of 9 or greater is considered to be at high risk for academic difficulty after their first semester.

The *TCI* Index adds significantly to the prediction of academic difficulty by cognitive predictors alone. It is now used to identify and treat first-year students who are at-risk. The benefit of using the *TCI* Index rather than the factors to identify and treat at-risk FY students is that it allows for individual differences. Each student who is at risk, even students who have the

same *TCI* Index, can / will have a unique combination of risk factors that provide advisors a list of specific issues to discuss in counseling the student. Thus, **academic difficulty is not caused by any one or two broad issues, but by accumulating nine or more specific risk factors that offer a unique perspective on each student.**

Beyond academic difficulty in the first semester, most institutions are concerned about retention into the second year and graduation rates after six years. Figure 3 shows **significantly lower attrition rates** for low risk (20%) versus above average risk (27%) and high risk (36%) FY students in the 2002 entering class. Similarly, Figure 4 shows **significantly higher graduation rates** for low risk (50%) versus above average risk (39%) and high risk (32%) FY students from the 1998 entering class.

TCI Advising Profile

Once the data are collected during summer orientation, the *TCI* Index is calculated and an individual *TCI* Advising Profile is created for each student. The *TCI* Advising Profile is released to the student's advisor if the student grants permission to do so as part of the *TCI*. The *TCI* Advising Profile is divided into two parts: (1) the banner heading, which offers a variety of demographic and cognitive information about the student, and (2) a listing of all of the items included in the *TCI* Index.

Banner Heading. The banner heading includes identifying information (name, student ID number, college); cognitive data from the student database (high school GPA and SAT scores); and the *TCI* Index as well as several key responses from the *TCI*.

TCI INDEX : The *TCI* Index is a tabulation of responses to 45 items that are disproportionately chosen by students in academic difficulty (GPA < 2.00). For each of those responses chosen by the student, the *TCI* Index is incremented by one.

Indexes of 0 - 5 are considered to be at **low risk** for academic difficulty

Indexes of 6 - 8 are considered to be **above average risk**

Indexes of 9 and above are considered to be **high risk** and should definitely receive some intervention assistance in the fall if they are to avoid academic difficulty in their first semester of college. A curriculum based intervention such as a UNIV 100 type course or Learning Community should be strongly recommended and individual follow-up or referral should occur in the fall for additional assistance.

EARN DEGREE / MOST LIKELY CAUSE: Item #76 asks students if they were to leave college before earning a degree, what would be the most likely cause. Successful students typically choose the response, "I am absolutely certain that I will obtain a degree." If they have done that, "*Obtain Degree*" will be printed next to Earn Degree. If not, "*Drop Out*" will appear next to Earn Degree AND a reason for leaving college early will appear next to Most Likely Cause. (This item was developed by Bill Sedlacek and is used with permission.)

MARCIA SCALE: A measure of career identity status. Have students made a career choice? If not, are they concerned about it and seeking assistance? If yes, have they based that decision on little thought or a thorough exploration of themselves in relation to the job market?

<i>Identity Diffused:</i>	No choice and not worried about it (about 8% of ODU FY students)
<i>Moratorium:</i>	No choice but concerned and would like assistance (about 17% of ODU FY students)
<i>Foreclosed:</i>	Choice, but little or no exploration of it or of alternatives (about 40% of ODU FY students)
<i>Identity Achieved:</i>	Choice with exploration of chosen area and of alternatives (about 35% of ODU FY students)

BLANK: This indicates the number of items in the *TCI* Index that students left blank.

Listing Of TCI Index Items. The Banner Heading is followed by a listing of each of the items of the *TCI* that contribute to the **TCI Index**. If blank, the student did not answer that item in the same manner as students prone to academic difficulty. If a response appears, it is the same response as the one given by students with a higher probability of academic difficulty. The number of responses printed will equal the **TCI Index** in the banner heading.

In addition to referring students with *TCI* Indexes of 9 or above to a curricular intervention, the advisor should schedule meetings early, and with as much frequency as possible, in the fall semester to review the *TCI* Advising Profile with them. As a first step, advisors should review the items contributing to the *TCI* Index with the student to validate them. The advisor and student should then develop strategies, preferably over several sessions, to overcome the particular difficulties suggested by each item or combination of similar items. Our experience has been that a single meeting to point up potential difficulties to students with indexes of 9 and above will not create a sufficient impact to alter these often long held attitudes and behaviors. If advisors are unable to work with the student over time during the fall, a referral to the Counseling Center is recommended where more in depth assistance can be provided.

Factors

The *TCI* was also factor analyzed in 2003 to identify factors that might be related to academic performance. Items that failed to load well (.40 or greater) on a factor and that did not contribute to the *TCI* Index were deleted to reduce the length of the *TCI*. As a result of these analyses the *TCI* was reduced to 115 items of which 45 are included in the *TCI* Index. An exploratory factor analysis with the principal axis method and varimax rotation indicated that a 9-factor model provided the best solution. The following 9 factors emerged from the analysis:

1. **College Involvement** – Describes the extent to which students intend to actively participate in a variety of in- and out-of-class activities and experiences during college.
2. **Influences on College Choice** – Describes how important a variety of external factors, people and college characteristics were in making the decision to enter this particular college.
3. **Student Role Commitment** – Describes the extent to which the student ascribes to behaviors and attitudes associated with being successful in college.
4. **Athletic Orientation** – Describes the student’s intention to devote a significant amount of time to organized sports and/or a personal exercise program while in college.
5. **Personal / Academic Concerns** – Describes the extent to which the student expresses a variety of personal and academic concerns that can interfere with their success in college.
6. **Self Confidence** – Describes the student’s level of confidence in a variety of academic and personal skills and abilities.
7. **Institutional Commitment** – Describes the extent to which the student is committed to attending and graduating from this particular institution.
8. **Socializing Orientation** – Describes the student’s inclination to participate in social activities of the type and to the extent that they could negatively affect his/her academic performance.
9. **Independent Activity Focus** – Describes the student’s inclination to participate in activities and pastimes that do not involve active interaction with others.

The factors were entered into a stepwise logistic regression to determine which were significant predictors of academic performance at the end of the first semester. The analysis retained five factors in the model that predicted the likelihood that a student would receive a first-semester GPA of less than 2.00. The five significant factors and their relationship with first-semester GPA are listed below:

Factor 3 – “**Student Role Commitment**” – lower levels were associated with greater likelihood of academic difficulty (GPA < 2.00)

Factor 4 – “**Athletic Orientation**” – higher levels were associated with greater likelihood of academic difficulty

Factor 6 – “**Self Confidence**” – lower levels were associated with greater likelihood of academic difficulty

Factor 8 – “**Socializing Orientation**” – higher levels were associated with greater likelihood of academic difficulty

Factor 9 – “**Independent Activity Focus**” – higher levels were associated with greater likelihood of academic difficulty

Reliability and Validity

The *TCI* was found to be a reliable and valid measure for predicting academic difficulty among first year students as demonstrated by the previous analyses. Reliability was demonstrated by completing the factor analysis and identifying 9 factors among the 115 items. While not the traditional measure of internal consistency reliability, the factor analysis was based on correlations among all of the items with each other. Criterion-related validity of the factors was demonstrated by the logistic regression, which revealed that five of the nine factors were significant predictors of academic difficulty at the end of the first semester. Similarly, criterion-related validity of the *TCI* Index was demonstrated by the figures that show the increasing rate of academic difficulty as the *TCI* Index increases. Validity of the *TCI* Index was further demonstrated by the method in which the index was developed, that is, the identified responses to the 45 items that comprise the index were significantly related to academic difficulty at the end of the first semester.

Web Site

Further information on the *TCI* is available on the *TCI* website:

<http://www.odu.edu/tci>

References

Banta, T. W., Lund, J. P., Black, K. E., & Oblander, F. W. (Eds.). (1996). *Assessment in practice: Putting principles to work on college campuses*, Jossey-Bass Publishers.

Calliotte, J. A., & Pickering J. W. (1998). The orientation course as a treatment for freshmen identified with noncognitive predictors of academic difficulty and attrition. In B. O Barefoot, C. L. Warnock, M. P. Dickinson, S. E. Richardson, & M. R. Roberts (Eds.) *The first year experience: Exploring the evidence (Volume II): Reporting outcomes of first-year seminars*, National Resource Center for the First Year Experience and Students in Transition, University of South Carolina.

Campbell, D. P., & Hansen, J. C. (1981). *Manual for the Strong Campbell Interest Inventory* (3rd ed.). Stanford, CA: Stanford University Press.

Pickering, J. W., & Calliotte, J. A. (2002). *The Old Dominion University Freshman Survey: Identifying, and intervening with, at-risk first-year students*. Invited essay for the FYA Listserv sponsored by the Policy Center on the First Year of College (<http://www.brevard.edu/fyc/listserv/remarks/pickeringandcalliotte.htm>).

Pickering, J. W., & Calliotte, J. A. (1996). Using a Freshman Survey to identify at-risk freshmen. In T. W. Banta, J. P. Lund, K. E. Black, & F. W. Oblander (Eds.) *Assessment in practice: Putting principles to work on college campuses*, Jossey-Bass Publishers.

Pickering, J. W., Calliotte, J. A., & McAuliffe, G. J. (1992). The effect of noncognitive factors on freshman academic performance and retention. *Journal of the freshman year experience*, 4 (2).

Figure 1
 First Semester Academic Difficulty Rate by *TCI* Index

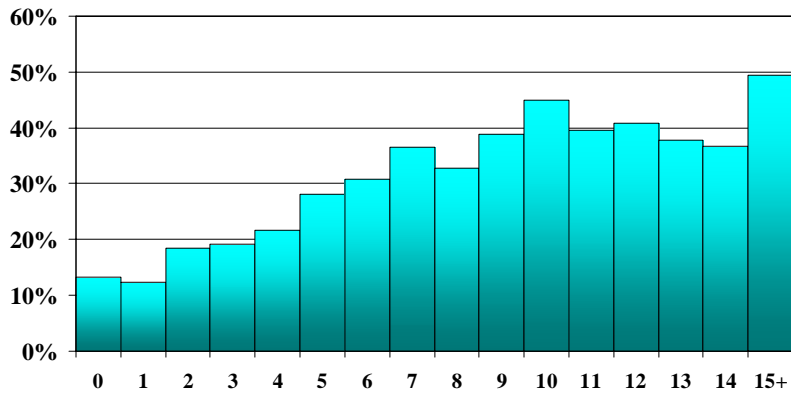


Figure 2
 First Semester Academic Difficulty Rate by *TCI* Index
 Grouped by Risk Categories

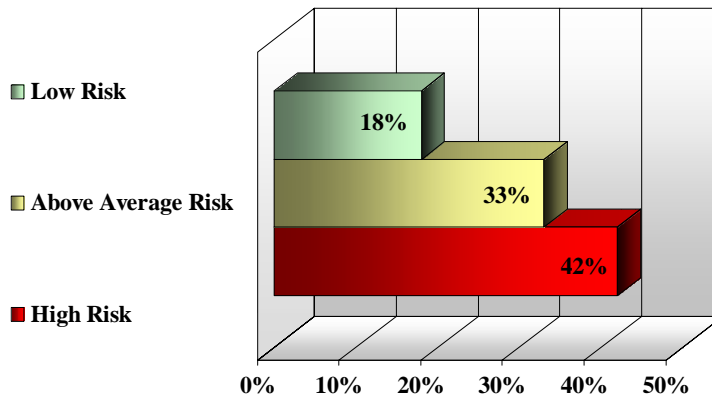


Figure 3
 First to Second Year Attrition
 by *TCI Index*
 Grouped by Risk Categories

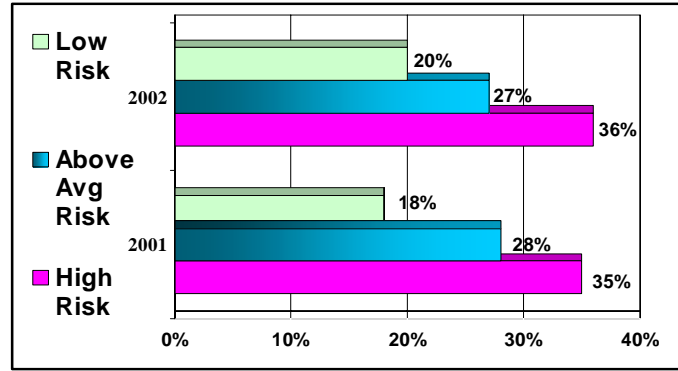
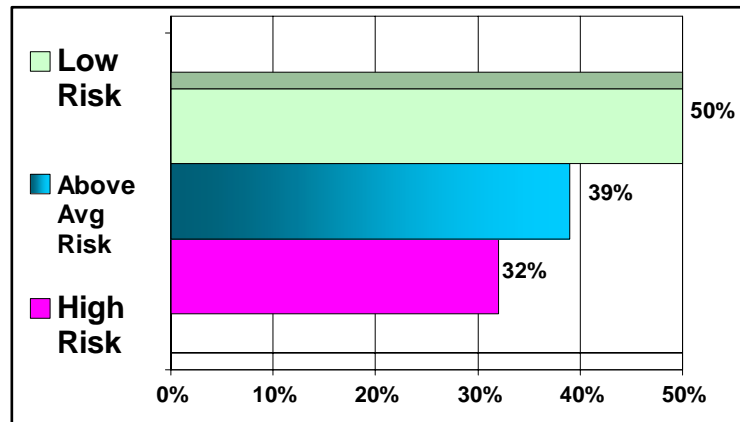


Figure 4.
 6-Year Graduation Rates by *TCI Index*
 Grouped by Risk Categories



Appendix A

Instructions for Using the TCI Answer Forms

IMPORTANT:

Be sure all TCI administrators and participants follow these guidelines! Please read the first section to participants or be sure that they have read it themselves.

NOTE: Use only the answer forms we have provided. Each form is an original and cannot be photocopied or duplicated. **Copies will not scan.** If you need additional answer forms, please email or call us.

During TCI administration...

- Use only a **#2 pencil** on the answer forms. **NO INK!**
- Last Name, First Name, and Student ID must be entered both by writing in the provided spaces **and by filling in the appropriate bubbles underneath.**
- All portions of the *Consent to Participate* section on the bottom front of the answer form must be completed. This means the participant must answer both consent questions by filling in the appropriate bubbles and must sign on the designated line.
- To answer an item on the TCI, fill in the appropriate bubble completely with the #2 pencil. **Do not use x's, checks, or other marks that do not actually fill the bubble.**
- Do not fold or crush the answer forms.
- Do not make any stray marks or write on the answer form except where designated.
- If you must erase a mark, erase the mark completely and do not smear.

TCI administrators should inspect each answer form before accepting it from the participant to be sure the participant followed these guidelines!

After TCI administration...

- Check to be sure the above guidelines have been followed. This means inspecting each answer form.
- Stack answer forms so that they all face the same direction.
- Pack answer forms securely for mailing. Be sure they cannot slide about in the box and become crushed or bent.

Remember – Failure to follow these guidelines will mean lost or invalid data!