Predicting College Student Retention

In this report, Hanover Research briefly reviews existing research on statistical models predicting college student retention. In addition to the “traditional” factors commonly used in retention modeling, we pay special attention to the burgeoning research on psychological predictors of retention. The report concludes with summaries of various best practices employed by postsecondary institutions that use data mining and predictive modeling methods.
Overview

Advancements in data analysis and computing technology have enabled colleges and universities to build powerful statistical models that predict student behavior. Using regression analysis to determine what factors correlate with student retention, researchers are now able to predict with considerable accuracy whether a student will persist through graduation. Predictive modeling allows faculty and administrators to understand why some students persist and others do not. This knowledge can be leveraged into positive action through targeted intervention programs.

Predictive models have tremendous potential both to improve student success and increase tuition revenue for colleges. In addition, given that retention rates are traditionally lower among disadvantaged groups, predictive models—paired with effective intervention programs—help to achieve diversity and access goals.

This report explains which factors researchers have found to be important in predicting retention. While we cover many different factors in this report, they are grouped into five categories: achievement, demographic, financial, social, and psychological. We pay particular attention to psychological factors, because research on psychological predictors of retention is relatively new.

While it is hard to identify the “correct” model for an institution, especially prior to actual data analysis, there are some standard variables that should serve as the foundation for the predictive model: high school GPA, admissions test scores, gender, and race/ethnicity. Researchers have consistently found these factors to be significant predictors of retention.\(^1\) Of course, research continues to identify other important predictors. This report describes some of these other factors that might add predictive power beyond the traditional measures.

After providing this overview of existing research, we briefly profile several data mining and predictive modeling programs in place at postsecondary institutions around the country. These best practices bridge the gap between the data collection and model building stage and the intervention stage. The most common intervention approach appears to be increased contact and mentoring between students and staff.

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Table 1. Retention Predictors Profiled in this Report

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Section One: Predicting College Success

Preliminary Modeling Considerations

While there is no single way to define student success, the most common measure in academic research is retention. Persistence is a simple way to measure success: students either stay in school and graduate or they do not. Consequently, retention models usually predict a dichotomous dependent variable: students who have dropped out are coded with one value (e.g., “0”) and students who have not are coded with another value (e.g., “1”). Analysts then typically estimate the model using logistic regression, which is appropriate when the dependent variable is binary in nature.

A slightly more complex relevant modeling technique is survival analysis. This type of regression model incorporates both if an event (i.e. retention) occurs and when it occurs. Rather than assigning the probability of retention for a single period of time, researchers can assign a probability for each time period under consideration (e.g. semesters). Thus, the benefit of using survival analysis over logistic regression is the added time component.

These methods also allow researchers to know how successful their model is in predicting student behavior. After estimation, the analyst is provided with a number indicating the percentage of cases the model correctly predicts. Statistical models will almost always yield false positives and negatives, but the goal is to be able to predict as many cases as possible.

Another modeling consideration is whether to create separate models: one for incoming freshmen and another for returning students. Pre-enrollment models appear to be more popular, but as Wild shows, pre-enrollment and post-enrollment models do have important differences. The post-enrollment model typically incorporates factors like first-semester (or year) GPA, number of credits completed, and extracurricular activities.

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2 However, GPA is also a popular focus.
Achievement Predictors

High school achievement factors are among the most consistent predictors of retention. Common high school achievement variables are high school GPA and SAT/ACT test scores. In their study of 8,000 students, Astin and his co-authors found that students with an “A” average in high school were seven times more likely to graduate than students with a “C” average, and students with the highest SAT scores were six times more likely to graduate in four years than students with the lowest SAT scores. In their institution-level study, Levitz, Noel, and Richter show that schools with the highest averages of test scores report a first- and second-year retention rate of 91 percent. Meanwhile, this rate was only 56 percent among students with the lowest test score averages.

The predictive power of these variables varies by study. The study by Astin and his colleagues indicate that high school GPA and test scores account for only 12 percent of the variance in retention. However, Tross and his co-authors show these two variables accounting for 29 percent of the total variance in retention. Existing research indicates that high school GPA is the stronger predictor of the two, but the high degree of correlation between these two variables makes it difficult to be certain that one is more powerful than the other.

Some researchers have also used high school rank in lieu of GPA. Whalen and Shelly argue that high school rank is an effective measure of both ability and motivation. Whalen and Shelly show that a one spot increase in high school rank (i.e. one spot worse) results in a 15 percent decrease in likelihood of being retained. Similarly, Ting finds high school rank to be a strong predictor of retention. It is unclear, however, whether high school rank is a better or worse predictor of retention than GPA.

Another important achievement predictor is the type of high school coursework the student completed. Whalen and Shelley include the amount of high school

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language credits.\textsuperscript{14} While this variable was not statistically significant in their model, analysts have had better success using high school math preparation. This variable could be particularly relevant for a STEM-oriented college or university. For instance, Moses and her co-authors used ALEKS scores to measure mathematical knowledge among first-year engineering students. Their results indicate a strong relationship between higher math capabilities and likelihood of being retained.\textsuperscript{15}

Collegiate achievement variables are often included in models predicting retention among existing students. A common college-specific achievement variable is \textit{first-semester or first-year GPA}. In his report for Mt. Ida College, Bradford Wild’s post-enrollment model indicates that first-semester GPA is the strongest predictor of retention. Multiple other studies also suggest a strong predictive role for college GPA. Performance in \textit{gateway—or “killer”—courses} might also be a useful post-enrollment predictor of performance and retention.\textsuperscript{16}

\textbf{Demographic Variables}

Demographic variables like gender, race/ethnicity, and household income are standard predictors in retention models. Astin identified gender and race/ethnicity, in particular, as two of the four most consistent predictors of retention.\textsuperscript{17} Household income is perhaps less important, because retention models also often include financial variables like grants and loans. These variables, combined with other demographic variables, probably reduce the need to include household income. This could be especially true if the model includes student financial aid data.

Several studies indicate that male students are less likely to persist than female students.\textsuperscript{18} However, other studies suggest the relationship between gender and retention is complex. Research by both Reason\textsuperscript{19} and St. John and his colleagues\textsuperscript{20} show gender to be a statistically insignificant predictor in models with other important predictors included. It is possible that retention rates vary by environment and course of study. For instance, male students outperform female students in

\begin{flushleft}
\textsuperscript{14} Whalen and Shelley. \textit{Op. cit.}
\textsuperscript{15} Moses, \textit{et al. Op. cit.}
\textsuperscript{17} Astin. 1997. \textit{Op. cit.}
\end{flushleft}
economics and engineering courses, while female students outperform male students in humanities courses.21

Several studies also indicate that race and ethnicity are predictors of retention. White and Asian students tend to be more likely to be retained than Hispanic and African American students. However, these group differences tend to diminish greatly after controlling for things like high school achievement and socio-economic status.22

The educational background of a student’s parents is another background variable measuring socio-economic status that consistently predicts retention. As several studies show, these first generation students are far less likely to persist.23 Compared to their peers, first generation students presumably receive less financial and mentoring support from their families.

Financial Factors

Various researchers have argued that the decision to drop out of college is, in part, a financial one.24 In simple terms, students who can afford to stay in college are more likely to be retained, while students who cannot afford it are more likely to drop out. This hypothesis receives some support from existing research. Whalen and Shelly include loan aid, gift aid, work study aid, and the student’s need in their retention model. All variables are statistically significant and in the expected direction (i.e. more aid = higher probability of retention; greater need = lower probability of retention).25 While additional studies tell a similar story, others find no statistically significant effect. For instance, Knight and Arnold find that both work study aid and loan aid reduced the time to completion—thus increasing the likelihood of not being retained.26 Ishitani suggests that these disparate findings could be the result of different circumstances and different variable construction methods.27

Social Factors

Several researchers point to the importance of socialization in retaining students. Transfer students, particularly in the STEM fields, have experienced difficulty

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adjusting to their new surroundings. According to a recent U.S. Department of Education report, transfer students who enter a STEM discipline from a community college are about twice as likely to leave the four-year institution without a degree. In fact, only 7.3 percent of the transfer students in that study actually obtained a STEM Bachelor’s degree in four years. Another 14 percent were still enrolled in a STEM discipline, and the rest either left without a B.S. or changed to a non-STEM major. Researchers point to a lack of adequate academic preparation and feelings of “being out of place” as reasons for the lower rate of retention among transfer students.

Commuters also tend to be more likely to drop out. Scholars have attributed this effect to the lack of social interaction commuters experience. Commuters also presumably experience more time pressures, as they are more likely to be older, be employed, and have a family.

**Psychological Factors**

This section reviews research on psychological predictors of retention. While dozens of studies have examined the effect of psychological factors on college performance, this appears to still be an expanding field. Non-cognitive factors might be particularly important for sorting out student differences that are not captured by traditional cognitive measures. For example, two students can have similar high schools GPAs, test scores, and demographic characteristics, but this does not mean that these students received the same level of preparation and support prior to enrollment. Usage of psychological measures might allow for additional insight into student differences.

**Big Five Personality Trait Domains**

Many different psychological traits and characteristics fall under the academic label of “personality.” This can make personality-based research complex and confusing. Fortunately, developments over the past couple of decades have brought about a fairly standard model of personality known as the “Big Five” or “Five Factor

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The Big Five domains are: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Dr. Tim Pychyl at Carleton University provides these brief descriptions:

- **Openness** – imaginative, independent minded
- **Conscientiousness** – responsible, orderly, dependable
- **Extraversion** – talkative, social, assertive
- **Agreeableness** – good-natured, co-operative, trusting
- **Neuroticism** – anxious, depressive, worried

Several studies examine the correlation between the Big Five personality trait domains and college retention. It is traditionally hypothesized that Openness, Conscientiousness, Extraversion, and Agreeableness all positively predict a higher probability of retention. Individuals with high Openness scores are often regarded as having superior intelligence and complex reasoning skills—characteristics that would seem to promote college success. Similarly, highly Conscientious individuals are disciplined and focused, which are qualities necessary to succeed in most settings. Most scholars agree that Extraversion and Agreeableness should exhibit only a small to moderate relationship with college success—due mainly to the socialization benefits that extroverts and “high agreeables” would experience. Neuroticism, often characterized by excessive anxiety and worry, is often hypothesized to exhibit a negative relationship with persistence.

The link between Conscientiousness and retention has received the clearest evidence in the literature thus far. Students scoring higher on the Conscientiousness domain are more likely to persist in almost every study conducted. Relatedly, these students are also likely to have higher grade point averages.

Multiple studies have also shown that Openness positively predicts both higher grades and persistence. However, a recent meta-analysis showed a statistically insignificant relationship between Openness and retention. But as the authors point out, their analysis included only four studies. It is possible that Openness might have an impact only in certain cases. For example, Moses and her co-authors report a

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34 “Big Five Personality Factors.” Carleton University. [http://http-server.carleton.ca/~tpychyl/011382000/BigFive.html](http://http-server.carleton.ca/~tpychyl/011382000/BigFive.html)
36 Ibid.
38 Ibid.
39 Ibid.
40 Ibid.
positive relationship between likelihood of retention and Openness among first-year engineering students. Meanwhile, Conscientiousness showed no statistically significant effect. Additional insights could be gathered through data mining.41

While Neuroticism is associated with lower grades and a higher risk of dropping out of college, there is only weak evidence to suggest it affects retention. However, it is possible that Neuroticism has an indirect effect on retention through such factors like GPA and satisfaction.42

Some retention researchers have questioned the usefulness of personality measures, because existing variables already capture much of the relevant personality impact. For example, a hard-working, dependable student (i.e. high on Conscientiousness) will probably have above-average GPA and test scores, due in part to his or her personality. In other words, adding personality measures to a model might not provide much added value.43 However, recent research indicates that some personality measures might have an impact—even after controlling for demographic or achievement variables. In a study published in 2004, Oswald and his co-authors show that Conscientiousness positively predicted GPA, even after including a student’s SAT or ACT score. Furthermore, the increase in variance explained by their personality measures was not much less than the variance in GPA explained by test scores.44

Personality profiles of students might be useful in other ways, as well. Scores of studies show personality to be a valuable predictor of negative mental and behavioral attributes, including absenteeism45, binge drinking46, and depression47.

One problem with measuring personality traits using self-reports is that respondents tend to either over- or under-estimate certain personality traits. For example, self-reports for Conscientiousness are notably skewed toward the high end of the scale; most people want to see themselves as responsible, dependable individuals. Respondents also tend to under-estimate themselves on Neuroticism and over-estimate on Agreeableness.

43 Ibid.
45 Ibid.
While this is problematic, researchers have developed survey scales to adjust for social desirability bias and self-deceptive enhancement. The Over-Claiming Questionnaire (OCQ) is a list of names. Some of the names are recognizable celebrities, while other names are made-up. Respondents are asked to rate their familiarity with the person. Scores above a certain threshold indicate that the respondent is over-claiming their knowledge. Armed with this information, respondents’ answers can be adjusted accordingly. Another common way of reducing bias is to use the Social Desirability Scale (SDS).

Several question inventories measuring the Big Five traits are available:

- **NEO-P-RI** – This inventory is 240 questions and measures distinct facets within each personality trait domain. This is a commercial product.
- **NEO-FFI** – A shorter version of the NEO-P-RI, the NEO-FFI is 60 questions and is also a commercial product. Analysts are unable to make facet-level distinctions with this tool.
- **Big Five Inventory (BFI)** – This is a 44-question inventory. Users must register online to receive the questionnaire and scoring tool, but it is free for non-commercial purposes.
- **Ten Item Personality Inventory (TIPI)** – This is an extremely brief inventory. It is only 10 questions—two questions per trait. This tool is also free (see Appendix for the questions).

**Locus of Control**

Several studies indicate that Locus of Control (LOC) predicts retention rates. According to Moses, et al., Locus of Control “can be viewed as a person’s perception of influences on life outcomes or the underlying causes of events. Individuals with an internal LOC credit success and failure to personal attributes or their actions, while individuals with an external LOC credit outside forces such as luck or powerful others as being in control of their success and failure.” In short, this measure indicates the degree to which individuals think they have control over their lives.

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52 John, O. “Big Five Inventory.” http://www.ocf.berkeley.edu/~johlab/bfi.htm
In a study published in 2006, Gifford, Briceno-Perriott, and Mianzo found that students with a high internal LOC had higher GPAs than those with a high external LOC. They argue that this affects retention indirectly, as students with higher GPAs are more likely to persist.\(^54\) However, Moses and her co-authors did not find any evidence of a significant direct impact on retention in their study of first-year engineering students when controlling for other personality factors and math readiness.\(^55\) However, the University of Georgia has found success using an LOC measure in their predictive model.\(^56\) The Appendix contains the original LOC scale, developed by Rotter.\(^57\)

*Self-Esteem*

Several studies link self-efficacy—a characteristic similar to self-esteem—to educational success. In a 1997 study, Bandura described self-efficacy as “the belief in one’s capabilities to organize and execute courses of action required to produce given attainments.”\(^58\) It makes sense, then, that students with more self-confidence would be more likely to persist through college. In a 1991 study by Multon, Brown, and Lent, persistence and self-efficacy shared a correlation coefficient of 0.34—indicating a moderately strong relationship. A more recent study by Chemers, Hu, and Garcia similarly shows that self-efficacy promotes academic performance and adjustment.\(^59\) They also found a positive relationship between optimism—a similar construct to self-efficacy—and performance.\(^60\)

There are a variety of self-efficacy and self-esteem measures, but the Academic Self-Esteem Scale appears to be commonly used. The scale is comprised of the following six questions (score using five-point Likert scale)\(^61\):

- I feel confident about my academic ability.
- I am able to understand the material in the readings my instructors assign.
- Some of the concepts that other students seem to grasp easily are difficult for me to learn.

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\(^{60}\) Ibid.

I worry that my academic ability isn’t sufficient for me to do well in my university classes.

I often struggle with the course material I am assigned to read.

I can easily grasp new concepts when they are presented to me.

**Student Readiness Inventory**

The Student Readiness Inventory (SRI) consists of 10 scales that measure “psychosocial and academic-related factors.” Accordingly, the SRI is more of an omnibus tool instead of a distinct trait or characteristic. Researchers have shown the SRI to be a powerful predictor of both GPA and retention, even when controlling test scores, socio-economic status, and the Big Five personality traits.

Researchers at the academic research and testing company ACT, Inc. developed the SRI, so the questions are not available without purchasing the tool directly from ACT. However, Table 2, taken from ACT’s website, lists the 10 scales with corresponding definitions and sample items.

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64 See: [http://www.act.org/sri/index.html](http://www.act.org/sri/index.html)
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<th>SRI Scale</th>
<th>Definition</th>
<th>Sample Item</th>
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<td>Academic Discipline</td>
<td>The amount of effort a student puts into schoolwork and the degree to which a student is hardworking and conscientious.</td>
<td>I consistently do my school work well.</td>
</tr>
<tr>
<td>Academic Self-Confidence</td>
<td>The belief in one’s ability to perform well in school.</td>
<td>I achieve little for the amount of time I spend studying.</td>
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<tr>
<td>Commitment to College</td>
<td>One’s commitment to staying in college and getting a degree.</td>
<td>A college education will help me achieve my goals.</td>
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<tr>
<td>Communication Skills</td>
<td>Attentiveness to others’ feelings and flexibility in resolving conflicts with others.</td>
<td>I’m willing to compromise when resolving a conflict.</td>
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<tr>
<td>General Determination</td>
<td>The extent to which one strives to follow through on commitments and obligations.</td>
<td>It is important for me to finish what I start.</td>
</tr>
<tr>
<td>Goal Striving</td>
<td>The strength of one’s efforts to achieve objectives and end goals.</td>
<td>I bounce back after facing disappointment or failure.</td>
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<td>Social Activity</td>
<td>One’s comfort in meeting and interacting with other people.</td>
<td>I avoid activities that require meeting new people.</td>
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<tr>
<td>Social Connection</td>
<td>One’s feelings of connection and involvement with the college community.</td>
<td>I feel part of this college.</td>
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<tr>
<td>Steadiness</td>
<td>One’s responses to and management of strong feelings.</td>
<td>I have a bad temper.</td>
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<td>Study Skills</td>
<td>The extent to which students believe they know how to assess an academic problem, organize a solution, and successfully complete academic assignments.</td>
<td>I summarize important information in diagrams, tables, or lists.</td>
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Source: ACT, Inc.
Section Two: Best Practices

This section provides brief descriptions of methods and programs institutions have used to improve their retention efforts.

MAP-Works

MAP-Works is a comprehensive data-mining tool developed by Educational Benchmarking (EBI) and Ball State University. MAP-Works combines institutional data with student survey responses to provide a complete risk analysis of first-year students. First-year students are asked to complete a 15-minute “Transition Survey” the third week of the semester. Questions cover academic, social, and emotional areas. Survey responses are available to faculty and staff, who then suggest appropriate interventions. Students are also able to compare their survey results to aggregated student responses.

According to EBI’s website, six postsecondary institutions use MAP-Works: Slippery Rock University, University of Illinois College of Business Administration, Ball State University, Hastings College, Iowa State University, and Casper College. These institutions reported the following results:

- Slippery Rock: 2.1 percent increase in first-year, fall-to-fall retention rate
- UIC-Business: 10 percent increase in first-year, fall-to-spring retention rate
- Ball State: 3.9 percent retention rate increase from fall 2006 to fall 2009
- Hastings College: 4.7 percent retention increase in first-year, fall-to-fall retention rate
- Iowa State University: Higher GPA for students participating in MAP-Works program
- Casper College: 39 percent increase in fall-to-spring retention rate

Purdue University

“Signals” is a personalized program run through Blackboard. According to the Signals website: “To identify students at risk academically, Signals combines predictive modeling with data-mining from Blackboard Vista.” After the data are collected and analyzed, students are assigned to a specific risk category. Students see this category on their Blackboard course page. They see a green “signal” if they are in the low-risk group, a yellow “signal” if they are on the edge, and a red “signal” if they are at risk of failing. Based on this information, professors can send out customizable

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65 “Campus Highlights.” EBI. http://www.map-works.com/Highlights.aspx
66 “Signals – Stoplights for Student Success.” Purdue University. http://www.itap.purdue.edu/tlt/signals/
emails to students in each risk group. These emails point students to important academic resources.\footnote{Ibid.}

South Texas College

Through its analysis of student data, administrators at South Texas College discovered that students who register late for a course are more likely to fail or withdraw. Realizing that this has a negative impact on retention and time to completion, South Texas decided to eliminate late registration.\footnote{Ibid.}

State University of New York at Buffalo

The engineering school at SUNY-Buffalo rates incoming students on seven academic factors related to their preparation and test scores. If a student is substandard on five of these factors, then the schools advises the student to enroll in specialized tutoring sessions for entry-level courses.\footnote{Ibid.}

Tiffin University

Through predictive modeling, Tiffin found that academic, financial, and social factors all affected retention risk. High-risk students are assigned to personal mentors. A chief retention office monitors students in the medium-risk group. Students in the low-risk group receive an automated email message informing them of relevant extracurricular activities.\footnote{Rampell. \textit{Op. cit.}} Through its efforts, Tiffin improved its one-year retention rate from 51 percent to 63 percent in just five years.\footnote{“Tiffin University Boosts Students Retention with Hobsons.” Hobsons. April 29, 2009. \url{http://www.hobsons.com/about/news/2008/042908.php}}

University of Alabama

Students in a graduate course built a predictive model of retention using SAS software. One of the group’s findings was that commuter students are more likely to drop out of the school. Consequently, the university decided to require all freshmen to live on-campus. Furthermore, the university recruited at-risk students to participate in specialized seminars and other programs.\footnote{Rampell. \textit{Op. cit.}}
University of Central Florida

After building a predictive model with hundreds of variables, UCF contacted the 1,000 most at-risk students at the university. The school encouraged these students to join the “Knight Success Program,” which provides students with special advising.73

University of Georgia

UGA built a predictive model of retention using data from past online courses. In addition to academic, demographic, and financial factors, UGA included website usage and a locus of control measure as predictors. Administrators formulated best practices, including online student engagement monitoring, for faculty members.74

73 Ibid.
74 Ibid.
Appendix A: Ten-Item Personality Inventory-(TIPI)

Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

1 = Disagree strongly
2 = Disagree moderately
3 = Disagree a little
4 = Neither agree nor disagree
5 = Agree a little
6 = Agree moderately
7 = Agree strongly

I see myself as:

1. _____ Extraverted, enthusiastic.
2. _____ Critical, quarrelsome.
3. _____ Dependable, self-disciplined.
4. _____ Anxious, easily upset.
5. _____ Open to new experiences, complex.
6. _____ Reserved, quiet.
7. _____ Sympathetic, warm.
8. _____ Disorganized, careless.
9. _____ Calm, emotionally stable.
10. _____ Conventional, uncreative.

TIPI scale scoring (“R” denotes reverse-scored items):
Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness: 3, 8R; Emotional Stability: 4R, 9; Openness to Experiences: 5, 10R.
Appendix B: Locus of Control Scale

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people’s lives are partly due to bad luck.
   b. People’s misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don’t take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run people get the respect they deserve in this world.
   b. Unfortunately, an individual’s worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don’t realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try some people just don’t like you.
   b. People who can’t get others to like them don’t understand how to get along with others.

8. a. Heredity plays the major role in determining one’s personality.
   b. It is one’s experiences in life which determine what they’re like.

9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student there is rarely, if ever, such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.
b. There is some good in everybody.

15. a. In my case getting what I want has little or nothing to do with luck.
b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
b. By taking an active part in political and social affairs the people can control world events.

18. a. Most people don’t realize the extent to which their lives are controlled by accidental happenings.
b. There really is no such thing as “luck.”

19. a. One should always be willing to admit mistakes.
b. It is usually best to cover up one’s mistakes.

20. a. It is hard to know whether or not a person really likes you.
b. How many friends you have depends upon how nice a person you are.

21. a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort we can wipe out political corruption.
b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can’t understand how teachers arrive at the grades they give.
b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.
b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don’t try to be friendly.
b. There’s not much use in trying too hard to please people, if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.
b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
b. Sometimes I feel that I don’t have enough control over the direction my life is taking.

29. a. Most of the time I can’t understand why politicians behave the way they do.
b. In the long run the people are responsible for bad government on a national as well as on a local level.

Score one point for each of the following:
2.a, 3.b, 4.b, 5.b, 6.a, 7.a, 9.a, 10.b, 11.b, 12.b, 13.b, 15.b, 16.a, 17.a, 18.a, 20.a,
21.a, 22.b, 23.a, 25.a, 26.b, 28.b, 29.a.
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Note

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