

# Personality-College Major Match™ and Student Success

A Guide for Professionals Helping Youth and Adults Who are in College or are College-Bound.

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The  
Career  
Key® 

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# What is “Personality-College Major Match”?

Major studies in recent years show great promise -- the closer the match between students’ personality and their college major, the more likely they are to succeed. The research indicates that with a good match, students are likely to:

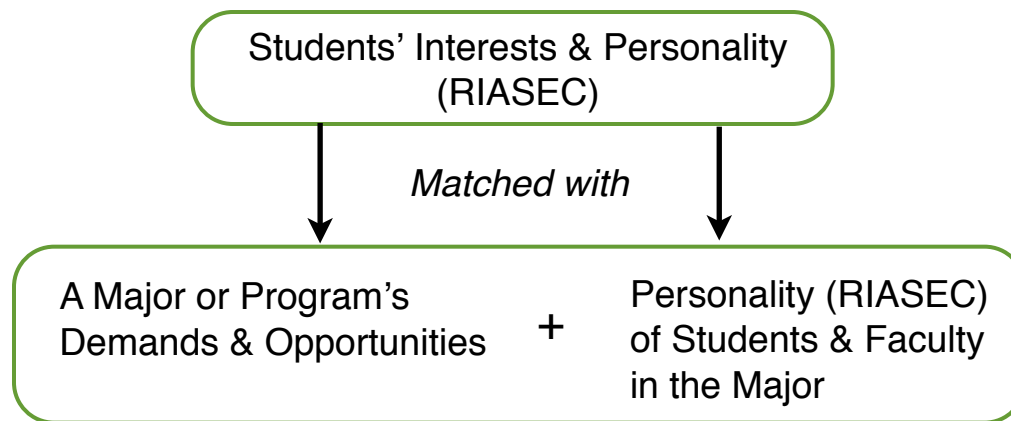
- Higher grades
- Persistence with choice of major through graduation
- Graduation rates

Surprisingly, these findings are not well known. This guide is written to help you understand and apply them to your work.

Most professionals are familiar with [Holland’s Theory of Careers](#) and “personality-career match”. Many, however, are not aware that it applies to educational behavior, at all levels. In fact, the Theory had its origins in John Holland’s early work with college students and faculty.

**Personality-college major match** is the degree to which students' interests and personality match the,

- Demands and opportunities posed by a major or program of study, and
- Personality of the students and faculty they work with in the major.

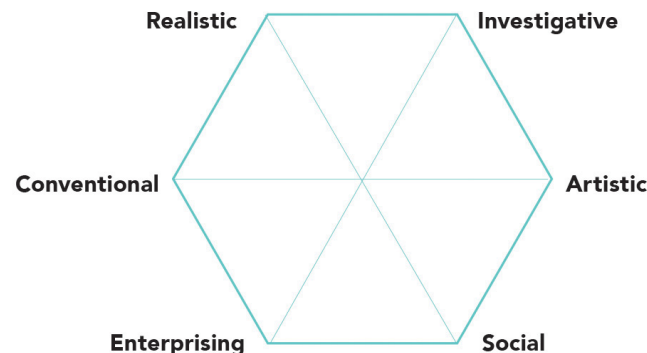


The degree of match between the two is defined by the Holland hexagonal model, using the familiar six personality and environment types -- Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC).

According to the Theory,

“People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles . . .

Behavior is determined by an interaction between personality and environment.” (Holland, 1997, p. 4).



# Why is it important?

Major studies show that,

1. **The Holland personality types are strong predictors of the majors students choose, and the impact of this choice lasts far beyond student learning and success in college** -- job stability, salaries earned, job satisfaction, and career opportunities. (e.g., Porter & Umbach, 2006; See [Is College Worth It?](#))

The more students choose a college major compatible with their “Holland personality type”, the more likely they are to:

- Earn higher grades,
- Persist in their choice of major,
- Graduate on time, and
- Be more satisfied and successful in their career (e.g., Kristof-Brown, et al., 2005).

2. **A significant number of students choose a major that is not “congruent” with their personality.** A recent [ACT College Choice Report](#) found that only one in three students choose a major that fits their interests. They find themselves studying topics that do not fit their interests or skills, and in an environment of students and faculty who have different interests, skills, and values. Their grades and chances of graduation suffer. Those who do graduate are less likely to be satisfied or successful in their career. (e.g., Smart, et al., 2000)
3. **The cost of dropping out, changing majors, and not graduating on time is high.** Only 39 percent of students in 4-year colleges graduated in four years, 59 percent in six. About 40 percent drop out (National Center for Education Statistics, 2013). The costs to students is high -- those working toward a bachelor’s degree

Good personality-major match



College Success  
Higher Grades  
Persistence  
Graduation On Time

lose in earnings, on average, \$50,000 (in 2013 dollars) for each additional year it takes to finish their degree (Allen & Robbins, 2010). Plus, the psychological costs and the damage to students' future are often great. And, the costs to colleges are high; student retention is a major concern.

**4. Many students are misguided by school, college, and government actions.**

Invalid career tests, pseudo-measures of Holland's personality types, are widely used which,

- Give students incorrect information about their interests and personality, and
- Misdirect them to incompatible occupations, career pathways, programs of study and majors that do not fit their personality (e.g., Jones, 2007).

The Career Clusters Interest Survey (CCIS) is an example. For years it has been widely promoted by states and the federal government to assess students' interests and guide them in choosing one of the USOE [16 Career Clusters and career pathways](#) -- a program of study to pursue in high school and college.

A recent study of its validity, the first and only one done, shows that it does not measure interests in the Data/Idea area -- four of the six Holland personality types: Enterprising, Conventional, Artistic, and Investigative. (Prime & Tracey, 2010).

In other words, thousands of students (and their parents) are being told their interests are something they are not, and are directed toward programs of study and college majors that do not fit their personality.

Some recommend using "informal assessments" like the CCIS "just for exploration". This is unsound even in the middle school years -- when students' RIASEC interests are fairly stable (Tracey, Robbins & Hofsess, 2005), and they and their parents are beginning to make serious decisions about future schooling.

(Disclaimer: The Career Key licenses its career assessment.)

# The research and its application

Personality-major research is relatively recent and unknown. It has been done primarily by scientists associated with ACT® over the past ten years and has been published in technical, peer-reviewed scientific journals that are a challenge to read. It is based primarily on the respected [Holland Theory of Career Choice](#).

This research was recently brought to the public's attention in the free, eBook download, [Choosing a College Major Based on Your Personality, What does the research say?](#), written primarily for students and parents (350,000 downloads in the six months following its publication). Professionals will find pages 6-10 a useful review of Holland's theory.

The studies have been primarily done with college students, but school counselors and educators will see how the findings apply to educational decisions in middle and high school (e.g., choices of courses, career clusters and pathways) and the exploration of colleges that occurs in the middle and high school years.

Researchers have primarily investigated college success in these areas,

- Grade point average (GPA),
- Persistence (whether students continue or dropout),
- Graduating on time, and
- How the RIASEC college environments affect faculty and students.





## Congruence and GPA

Does the degree of match between students' personality and major affect their grades?

Terence Tracey and Steven Robbins investigated this question in an impressive study (2006). They followed 80,574 students in 87 colleges over a five-year period. Students' GPAs were examined at the end of their first, second, academic years and their overall GPA at graduation after five years.

The results showed that good grades are related to having a major close to one's interests/personality. **Most impressively, they found that congruence predicted overall GPA after five years better than ACT scores.**

They also checked to see if other factors might have affected the results, like size of the college, private vs. public, or characteristics of the students (gender, ethnic background, e.g.), academic aptitude (scores on the ACT test, which is like the SAT® test) – and they made no difference. The results held up. The relation between personality-major congruence and GPA was positive and strong.

They concluded, “Presumably individuals with interests akin to the major find the content more interesting and thus spend more time involved. This involvement pays off in better grades.” (p. 85).

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### TAKEAWAY FOR YOU

**Students earn better grades in college if they choose a major that fits their dominant Holland personality type.**

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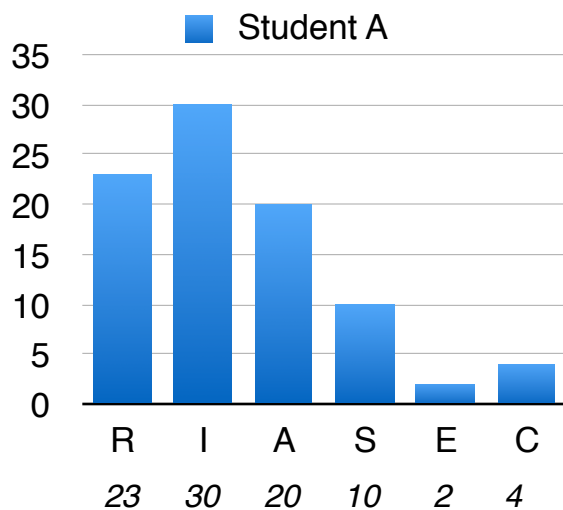
## Congruence, persistence, and interest flexibility

In the same study, Tracey and Robbins asked, “Does the match between personality and major predict students who stay enrolled in college over a five-year period?”

They found that congruence did not predict persistence overall, but it did when students’ “interest flexibility” was taken into account. Interest flexibility refers to whether individuals like a wide variety of activities or only a few.

It turned out that congruence predicted persistence for those students who were low in interest flexibility. It didn’t for those high in flexibility. In other words, those who like relatively few types of activities need a closer fit with their environment if they are to be satisfied and stay enrolled in school.

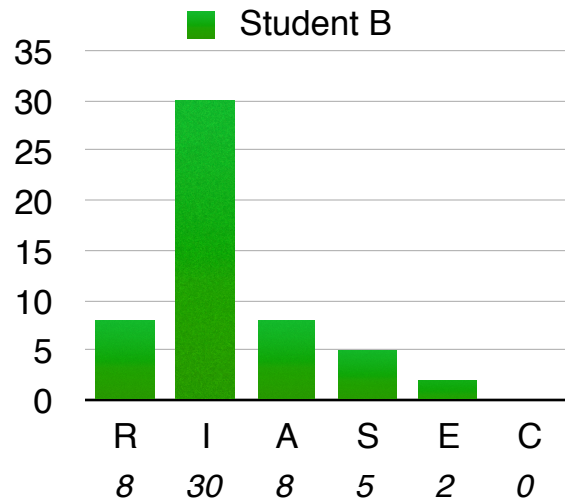
To make “interest flexibility” more concrete, imagine two students. Student A’s scores on a measure of Holland’s six personality types look like this,



Student A likes a wide variety of types of activities (Investigative, as well as Realistic and Artistic) and is high in interest flexibility.

For students like this, the match between personality and major does not predict whether they will stay in school or not. Personality-major congruence is much less important. They are likely to stay enrolled in a broader range of majors/environments.

Student B's scores look like this,



They show someone with low interest flexibility (only interested in Investigative activities).

It's important for students like this to find a close match if they are to stay in school.

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### TAKEAWAY FOR YOU

**It's important for students with low interest flexibility to find a close match if they are to stay in school.**

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This is especially true for students who begin their first-year in school who have already chosen their major. How well students do in their first-year has a significant effect on whether they graduate or not. (Tracey & Robbins, 2006)

## Congruence and persistence in the same major

“Does the match between students’ personality and major predict who will be in the same major three years after they start college?” This is the question ACT scientists Jeff Allen and Steve Robbins (2008) asked.

Does congruence predict those who change majors from those who don’t?

This massive, sophisticated study included 47,914 students in 25 colleges.

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### **TAKEAWAY FOR YOU**

“Our findings support Holland’s theory of vocational preferences and the proposition that students are more likely to flourish in academic environments that fit their personality types. We now know that interests affect both choice of entering major and the likelihood of persisting in a major.”(p.75) (Allen & Robbins, 2008).

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## Congruence and graduating on time

In a more recent study, Jeff Allen and Steve Robbins (2010) investigated the effect of personality-major congruence on whether students graduated in a “timely fashion”. This meant getting a bachelor’s degree at the end of the fourth year for students in a 4-year college, and for those in a 2-year school, it meant receiving an associate’s degree or completing a certificate program at the end of the second year.

Their study followed 3,072 students in 15 four-year colleges or universities and 788 students in 13 two-year community colleges.

The results showed that higher levels of congruence lead to a greater likelihood of attaining a degree in a timely fashion (Allen & Robbins, 2010).

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### **TAKEAWAY FOR YOU**

**A congruent personality-major match is an important step toward students graduating on time.**

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## Congruence and Holland academic environments

According to Holland's Theory, **human behavior is the result of the interaction between individuals' personality and the environment.** When individuals choose a college major, they are also choosing an environment with which they will interact. According to the Theory, most of that environment is transmitted through other people. It affects what students learn, do not learn, and their academic and career success. An "environment" is a situation or atmosphere created by the personality types of people who dominate it.

### Illustration: Investigative Academic Environment

An "Investigative college major environment", is one dominated by professors with an Investigative personality. They create an atmosphere and opportunities that encourage students -- among other things -- to develop scientific, analytical, and mathematical skills and competencies.

As might be expected, their classroom goals, teaching strategies, values, and attitudes are often different from professors in the other five environments.



Investigative Academic Environment  
created by...

- Professors**
- Most with Investigative Personality,
  - Encourage development of scientific, analytical, and mathematical skills and competencies, and
  - Adopt teaching strategies, values, attitudes that often differ from professors in other 5 environments.
- Students**
- Most with Investigative Personality,
  - Attract and reward others who share interests, abilities, values, and
  - Create Investigative "peer culture".

To some degree, students also contribute to this atmosphere. Investigative students, for example, dominate the Investigative environment and are attracted to and reward other students who share their interests, abilities, and values. Together, they create an Investigative "peer culture".

## Effect on Students

Students who have a dominant Investigative personality who choose a major in an Investigative environment (physics or biology, for example) are likely to earn higher grades, stick with their choice of major, graduate on time, and be more satisfied with their career.

This success makes sense because Investigative students are doing what interests them with faculty and students who have similar interests, abilities, skills, and values. They are rewarded and reinforced for these traits and given opportunities to

strengthen them. Further, they are being socialized to this group -- learning its norms, values, behavior and social skills. The group becomes part of their identity.

On the other hand, students for whom the Investigative environment is an “incongruent” choice, are challenged by an environment that does not reward or reinforce their interests, values, abilities, or political views -- it may even be aversive to them. Incongruent choices frequently have adverse effects on grades earned, persistence, and timely graduation. This is especially true for individuals who do not have a broad set of likes; a congruent choice is crucial for them.



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### **TAKEAWAY FOR YOU**

**Holland’s theory gives us a practical way to understand and predict how students interact with and are affected by academic environments.**

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# The work of Smart, Feldman, Ethington, and others

For a better understanding of this area, we are indebted to the groundbreaking review, research study, and analysis of John C. Smart, Kenneth A. Feldman, and Corinna A. Ethington in their challenging book, *Academic Disciplines, Holland's Theory and the Study of College Students and Faculty* (2000).

Before summarizing the relevant findings, you should note that their study was limited to four of the six Holland personality types and environments – Investigative, Artistic, Social, and Enterprising (IASE) – as there were insufficient numbers of students and faculty in Realistic or Conventional environments.

## What we've learned

1. **The Holland Theory predicts faculty attitudes and behavior.** As previous studies have reported, they found that faculty in academic departments, when classified according to Holland's environments, differ in their attitudes and behavior as the Theory predicts – for example, “. . . faculty in Investigative environments, not surprisingly, assign a decidedly greater importance to providing a basic understanding in mathematics and science than do their colleagues in other environments . . . “(p. 96).
2. **Use “vignettes” or profiles that describe the academic (Holland) environments to help students.** Based on research findings, they present vignettes for four of the six Holland academic environments (IASE) -- including the competencies emphasized, orientation toward scholarship, classroom strategies, importance given to examinations, and classroom goals.

*“We urge institutional and government officials to encourage and support the development, dissemination, and use of such descriptive materials . . . to assist students in their selection of academic majors [that best fit] their personal and professional goals . . .” (Smart, Feldman, & Ethington, 2006, p. 36).*

Independently, based on Holland’s Theory and a review of the research, we have created a web article describing each of the environments, [The Holland College Major Environments](#), and two companion articles, [Learn More about College Major Environments](#), and [Personality-College Major Match, Why it is Important](#).

- 3. Students generally choose environments (majors) congruent with their personality type, but it varies according to personality type and gender.**  
Freshmen with a dominant Investigative or Enterprising personality generally chose a congruent environment. This was also true for female students with a dominant Social personality, much less so for the male students, however.  
  
Only 19 percent of the freshmen with a dominant Artistic personality chose an Artistic environment. There was a stronger tendency for them, however, to switch later to an Artistic major environment by the time they graduated four years later.  
  
In short, students making a congruent personality-major match varies according to their dominant RIASEC personality type and gender.
- 4. Academic environments “socialize” students** -- they reinforce and reward different patterns of abilities, interests, and values in students as predicted by Holland’s Theory. “The evidence is compelling that students in the four distinctive academic environments change in ways that are consistent with the prevailing norms and values of the respective environments” (p. 168). It is important for students and faculty to understand this.

- 5. Students' abilities and interests of those who choose a congruent major are particularly strengthened.** This was true for students with dominant Investigative, Artistic, and Enterprising personalities.

For example, the artistic abilities and interests of students with a dominant Artistic personality show decidedly greater growth if they chose an Artistic environment, rather than an incongruent one. "The differences were dramatic" according to Pascarella and Terenzini (2005; p. 323, 605) when reviewing these findings. The abilities and interests of Artistic students in incongruent environments significantly declined.

# An incongruent major as a rational choice

There will be instances when individuals with good reason will choose a major that is less than congruent with their dominant personality. For example,

- Persons with a dominant Conventional personality are limited in the number of 4 year college majors that exist from which they might choose, and they decide upon a major in adjacent area on the Holland hexagon, like Enterprising;
- The occupational outlook for the majors in another RIASEC type may be more attractive;
- Students who want a “broad” educational experience; or
- Adults returning to school to broaden their competencies -- perhaps a science technician (Investigative) choosing to major in Agricultural Business and Management (Enterprising).



People considering this will want to carefully weigh the pros and cons. Career Key's [ACIP decision making approach](#) is especially well suited for this.

# Summary and Recommended Practices

## 1.

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**Use a scientifically valid measure of Holland’s personality types** -- one supported by peer-reviewed, scientific studies that show it truly measures what is claimed. These include the Strong Interest Inventory® assessment, the Self-Directed Search, ACT® UNIACT, and The Career Key®. Carefully check validity claims made for other measures ([what to look for](#)).

## 2.

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**Use a comprehensive, up to date list of majors and programs of study that have been scientifically classified according to the Holland environment types,**

like [5 Steps to Choosing the Right Career Cluster Field, or Pathway](#) (Jones & Jones, 2013) and [Match Up! Your Personality to College Majors](#) (Jones & Jones, 2014).

The research findings described in this paper are based on #1 and #2 above. Both are essential in applying this research to help students succeed. Otherwise, individuals will be misinformed about themselves and misdirected to incompatible college major environments.

### 3.

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#### **Help students learn and apply Holland’s Theory to their career and educational decisions.**

The RIASEC cognitive structure, with its hexagon showing the relationship between the personality and environment types, has been shown to help students organize and think about occupations and experience less career indecision (Tracey & Darcy, 2002). Teaching the RIASEC structure in a career course led to increased certainty, congruence, and self-efficacy for those who adhered to the model (Tracey, 2008). It is reasonable to expect that these same benefits apply in helping students make educational choices – choosing a career cluster/pathway, program of study, training program, and college major.

### 4.

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#### **Study Holland’s Theory and monitor related research.**

The Theory has much to offer, and the “secondary constructs” -- consistency, differentiation, and identity -- are useful concepts in practice.

A recent study of “consistent” and “inconsistent” academic environments (Smart, 2010), for example, has important implications for interdisciplinary majors that combine two inconsistent Holland environment types.

### 5.

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**Use descriptions (“vignettes”) of the six Holland academic environments as a way for students to understand them** – their characteristics, how they affect students, and how they relate to students’ own personality -- as recommended by Smart et al. (2000). The web articles previously mentioned, [The Holland College](#)

[Major Environments](#) and [Learn More about College Major Environments](#) should be valuable tools in doing this.

## 6.

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**Provide aids to prospective and current students that help them identify congruent majors** -- such as, flyers, posters, or Internet sources that display majors organized by the RIASEC environment types; Password to take a valid RIASEC measure, like the Strong Interest Inventory or The Career Key. Career and college admissions counselors, and faculty advisors can play a key role here in helping students succeed.

## 7.

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**Display the college majors (or other educational programs) on the Internet, according to the RIASEC environments.** Then, provide links to additional information -- as is being done by Career Key for [Community College of Rhode Island](#). (See screenshot at right)

In this way, prospective students are recruited to the majors in which they are most likely to succeed.

### Realistic

#### *Safety & Law Enforcement*

Law Enforcement  
Fire Science/Emergency Medical Technician

#### *Engineering*

Computer and Networking Technology  
Technical Studies  
Magnetic Resonance Imaging Certificate  
Radiography (X-Ray)

#### *Construction Crafts & Support*

Facilities Management Certificate

#### *Crafts – Mechanical*

Energy Utility Technology Certificate  
Engineering Systems Technology

#### *Crafts – Metal, Plastic, Fabric Opticianry*

#### *Food Preparation*

Culinary Arts Assistant Certificate

### Investigative

#### *Life Sciences*

Biotechnology Certificate  
Science

#### *Health Sciences*

Magnetic Resonance Imaging Certificate  
Radiography (X-Ray)

#### *Mathematics & Data Analysis*

Liberal Arts – Mathematics

#### *Social Sciences*

Liberal Arts – History  
Liberal Arts – Psychology  
Liberal Arts – Sociology



**8.**

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**Provide training** for college and school decision makers, faculty advisors, college student personnel, and counselors on test validity, Holland’s Theory, and personality-major match.

**9.**

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**Collaborate with middle and high schools in developing joint, seamless career guidance programs** that help students (and their parents) match their personality to compatible majors and identify colleges that offer them.

**10.**

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**Evaluate prospective and entering students’ personality-major match to identify those who have chosen incompatible or problematic majors** and provide assistance accordingly.

**11.**

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**Organize students in “academic catch-up” classes according to Holland personality types** so they may build relationships and connections that are mutually beneficial; they can support one another both emotionally and academically through collaborative learning.

**12.**

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**Consider how these findings might be used to enhance persistence, satisfaction, and success.** For example: Student attrition among college

freshmen is acute. Do students take a variety of general-education courses in their first year that are new and foreign to their primary interests and abilities?

Smart et al. (2000) suggest allowing freshmen to

*“ . . . take a greater portion of course work in subject-matter areas that are more congruent with their personality types . . . For example, students with a dominant Enterprising personality would be encouraged to take a greater proportion of course work in equivalent (Enterprising) or adjacent (Social, Conventional) academic environments. [This change] . . . would appear to have the potential for promoting student persistence, satisfaction, and success in this critical year of college enrollment . . . ” (pp. 247-248).*

The recommendations to students would be based on the results of a valid RIASEC measure like the Strong Interest Inventory or The Career Key.

### **13.**

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**Inform students, parents, and adults returning to school, of the hazards of using invalid career and educational career guidance systems on the Internet.**

### **14.**

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**Develop an effective system that fosters a good personality-major match --**  
when students and adults,

- Begin to explore colleges and college majors,
- Apply for admission,
- Enter college,
- Enroll in “academic catch-up” classes,

- Are progressing through their courses,
- Change their major, if necessary, and
- Transition to work or further college study.

Recently several leaders have called attention to the promise of Holland's theory, and related research, for helping students and revitalizing educational counseling, academic advising, and career counseling (e.g., Reardon & Bertoch, 2011). Major studies in recent years support this view, and we hope that our review and recommendations here will help you in your work to help students succeed.

## 15.

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**Use all six RIASEC personality types and environments when providing educational guidance and counseling.** Some have emphasized the IASE types at the expense of the R and C types (omitting them) but there are good reasons for including all six:

- There are numerous R and C majors; see figure on the next page. They include important four year majors like Agronomy and Crop Science, Mining and Mineral Engineering, Corrections, and Materials Science; and
- A significant number of people have R and C dominant personality types.

## % of U.S./Canada College Majors & Americans Employed by Holland Personality Type



Note: College major data obtained from *Match Up! Your Personality to College Majors 2014*; published by Career Key, Inc., [www.careerkey.org](http://www.careerkey.org); based on the U.S. Department of Education Classification of Instructional Programs (CIP) 2010. All medical residency program CIPs (N=156) were collapsed, counted as one CIP. The number of CIPs and percent for each Holland RIASEC type were, respectively, 240, 19%; 419, 33%; 123, 10%; 260, 20%; 205, 16%; 30, 2%. People employed data from Table 1 (Reardon, Bullock, & Meyer, 2007); percentages for RIASEC were, respectively, 30, 8, 1, 16, 30, and 15.

# Limitations and acknowledgements

All scientific research has limitations and these studies are no exception. Each report ends describing its limitations. The researchers often say, “These findings *suggest . . .*”

It is difficult to establish cause-and-effect when studying questions like these. For example, you can’t randomly assign students to majors that do not fit their personality and others to ones that do to see what happens. It would be unethical.

Another limitation is that the research is done with large groups and this may obscure important individual or subgroup differences. Further, it is dependent upon our skill and objectivity in summarizing and interpreting the findings.

Regardless, we are fortunate indeed to have these studies . . . and acknowledge the care, knowledge and skill of these scientists, as well as the commitment to research of organizations like [ACT](#) and [National Survey of Student Engagement](#).

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## About the authors

**Lawrence K. Jones, Ph.D., NCC** is *Professor Emeritus* in the College of Education at North Carolina State University, where he trained professional counselors for schools, colleges, and agencies—specializing in career counseling and guidance. He received his master’s degree from the University of Pennsylvania and earned his doctorate in counseling psychology at the University of Missouri.



A recipient of the national award for professionalism from the American Counseling Association, he has developed four career guidance instruments used by over 24 million people worldwide since 1997: *The Career Key*, *The Self-Employment Key*, *Career Decision Profile*, and *Occ-U-Sort*.

[More about his publications](#)

Dr. Jones is the author of three popular websites, Career Key ([www.careerkey.org](http://www.careerkey.org)), The Self-Employment Key ([www.self-employmentkey.org](http://www.self-employmentkey.org)), and The Career Key Canada ([www.careerkey-ca.org](http://www.careerkey-ca.org)).

He has written several popular eBooks, including [Match Up! Your Personality to College Majors](#) with co-author Juliet Wehr Jones, GCDF.

**Juliet Wehr Jones, J.D., GCDF** is Vice President of Career Key and author of [The Career Key Blog](#).

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[Lawrence K. Jones](#), President, Career Key

[Juliet Wehr Jones](#), Vice President

# About The Career Key

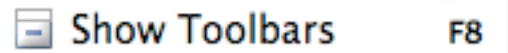
[Career Key](#) began in 1997 as a philanthropy to help youth and adults make good career and educational decisions, especially those who are low-income and underserved, and those in developing countries. This work continues. Later, a business arm was developed to complement these efforts. [More . . .](#)

In 1997, Career Key was the first to offer a scientifically valid career test on the Internet, [The Career Key® test](#). With over 30 million users, the test and site are well known and respected in the professional career counseling and development community. It offers,

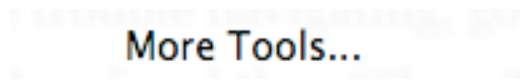
- **A respected, valid career measure of Holland’s personality types.** It takes about 10-15 minutes to complete, is suitable for middle school – adult students, and is the only valid career test that can be licensed for use on other websites. The [group purchase discount](#) is the most affordable of any valid Holland measure.
- **Help with matching college majors and training programs, added to the Career Key test in April 2014.** Each major links to descriptive information and colleges with that major using U.S. Department of Education’s *College Navigator*.
- **A crosswalk database**, developed over a year of research and analysis, that relates the Holland personality types to occupations, USOE career clusters, career pathways, and college majors;
- **Practical, high quality career guidance articles** based on the best practices and science of the field – like,
- The eBook "**Match Up! Your Personality and College Majors**" has received high praise. It is the only book or source that lists all majors and programs found in colleges in the U.S. and Canada organized by Holland type.

# Important tips for viewing this eBook

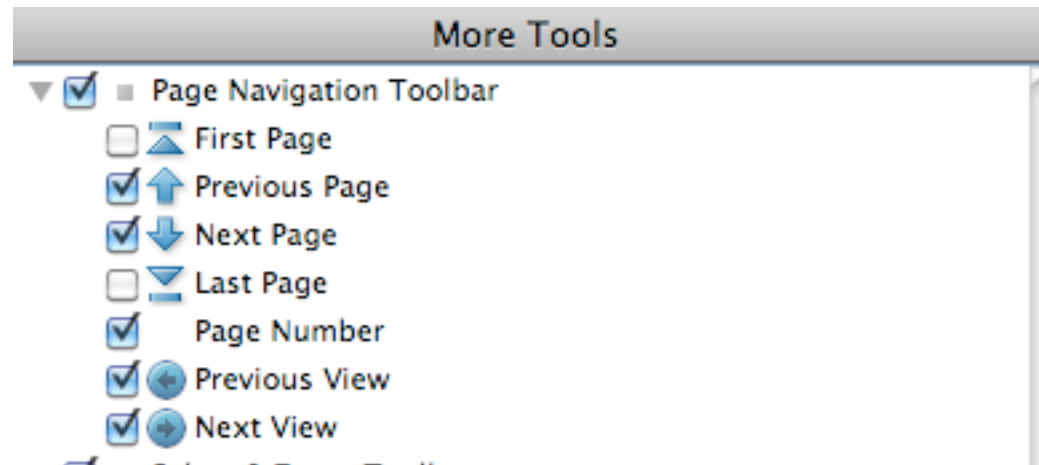
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