The science behind YouScience®

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For more than 100 years, psychologists have been studying what makes people happy and successful at work. Two fundamental ideas have persisted: (1) people tend to choose and remain in careers that interest them, and (2) people succeed in careers where they can use their natural talents. YouScience is premised on these ideas. We help you uncover your interests and aptitudes and then help you find careers that match up with them. It all sounds quite simple, right?

Actually, doing this right can be harder than you might think. For example, consider the following:

- How do we know which interests to ask you about?
- How do we know which aptitudes to ask you about?
- How do we measure your interests and aptitudes? (We can't see them.)
- How do we match you to careers based on your interests and aptitudes?

Answers to all of these questions could be simply made up by a few people sitting in a room, but the results wouldn't be pretty. Or even correct. The answers YouScience provides are grounded in nearly a century of research and scientific data analysis stemming from the fields of vocational counseling and industrial-organizational psychology.

Your interests

Early in the 20th century, psychologists began to study people's work-related interests.[1,2,3] Of course, individuals hold a variety of interests. But what psychologists have found over the years is that when you ask people about the types of activities they like and then analyze their responses, you find that they can be grouped into six types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC).[4] As it turns out, the types of activities people perform at work can also be described using these same six types. Together, these types constitute what psychologists call the RIASEC model of vocational interests,[4] which has become the dominant model of interests used by vocational counselors and researchers alike. Numerous research studies conducted over the past several decades indicate that the degree to which a person's interests match up with the type of activities performed on a job can predict a number of important outcomes, such as (a) which careers people choose,[5, 6] (b) whether people are satisfied with their jobs,[7,8] (c) whether they stay in or leave a job,[9] and (d) how well they perform on the job.[9,10] The approach YouScience uses to measure your interests is based on the RIASEC model.

Your aptitudes

Since the late 1800s, scientists have worked to understand the nature of human aptitudes.[11] You can think of aptitudes as natural abilities that make it easier (or harder) for you to learn (and be good at) various types of work and careers. As with interests, one might imagine that people can have a really wide range of aptitudes. Again, scientists have conducted numerous studies that enabled them to boil aptitudes down to some major types. Indeed, back in 1940, a

psychologist named Louis Thurstone conducted a study that involved administering a large number of ability tests (56 total) to a large group of students.[12] Upon analyzing the students' scores on these tests, Thurstone found that subsets of those tests produced similar results and reflected what he called a person's primary mental abilities. Since Thurstone's work, many psychologists have conducted similar types of research and have come to similar conclusions: Human mental abilities can be condensed to a limited number of key types, and these types keep showing up across multiple studies.[13] The types of aptitudes assessed within YouScience are consistent with those found by Thurstone yet offer finer-grained perspectives on your abilities, which, in turn, can help us better pinpoint the careers where you may perform well.[14,15]

Measuring your interests and aptitudes

Measuring your psychological attributes, such as interests or aptitudes, is not like measuring your physical attributes like height or weight. You can't literally see a person's interests or aptitudes. So how do we measure it?

Because of the complexity involved in measuring what you can't see, there's actually a science behind assessing psychological attributes called psychometrics. There are standards for determining the quality of psychological measurements, which are grounded in the principles of psychometrics and reflect the views of psychologists and experts in the field.[16]

Two critical indicators of quality measurement are that the scores resulting from psychological measures show evidence of reliability and validity given their intended use.[17] Think of reliability as the consistency of the scores produced by a test. For example, if we ask you similar questions, would you give us similar answers? If we ask you the same questions on different occasions, would you provide similar answers? If not, your scores wouldn't be considered reliable because we wouldn't know which answers really reflect the real you.

As for validity, think of it as evidence that your test scores will allow us to draw accurate conclusions regarding how you will behave or feel. For example, if your scores indicate that you'd potentially be good at or interested in a career involving science, would you actually be? Validity basically refers to evidence that supports making connections between test scores and the claims someone wants to make based on those specific test scores. In this case, our focus is on using your interest and aptitude scores to make claims ("inferences") that you would perform well or be happy with different types of careers.

OK, that finishes our quick lesson in Psychometrics 101. So, how do measures used within YouScience® Aptitude & Career Discovery stack up in terms of reliability and validity evidence?

The interest measurement underlying the YouScience system—the Interest Profiler Short Form (IPSF)—was developed by psychologists working for the National Center for O*NET Development.[18] The Occupational Information Network (O*NET) is the primary source of occupation information in the U.S. and was developed (and continues to be maintained) by the U.S. Department of Labor's Employment and Training Administration.[19,20] Research conducted during the development of the IPSF provides solid evidence that (a) it produces reliable scores for each of the RIASEC interest dimensions, and (b) the scores it produces for those dimensions show a good correspondence with another well-established, independently developed measure of the RIASEC interest dimensions (a key form of validity evidence).[21]

The aptitude measure underlying the YouScience system is a computerized variation of the Ball Aptitude Battery (BAB).[15] The BAB is one of the better-known and well-researched multi-aptitude tests available today. Previous research established evidence of (a) the reliability of aptitude scores it produces, (b) the correspondence of its aptitude scores with other well-established and independently developed measures of aptitudes (a key form of validity evidence), and (c) its ability to predict actual performance on various jobs.[14,15,22,23,24]

Matching you to careers

This is where the magic happens. We have scores that tell us about your interests and aptitudes and good evidence that those scores are reliable and valid. The final piece of the puzzle involves matching you to the right careers. To do so, we return to O*NET. As noted earlier, the Department of Labor's O*NET system provides a comprehensive source of information about careers. Among the types of data maintained within O*NET are how important different natural abilities are to successful performance on more than 900 careers and the degree to which an individual RIASEC dimension describes and characterizes a particular career.

Once we measure your aptitudes and interests, we compare your collection of scores (your "profile") to the profiles of more than 600 O*NET careers. This subset of careers was strategically selected for inclusion in YouScience based on their current and future promise. Next, we generate "fit" scores for you for each of those careers in terms of aptitudes, interests, and overall fit and present you with a list of careers that fit you best. The algorithms we use to compare your score profile to the career profiles are informed by decades of psychological research on factors to consider when matching people to careers.

Why it matters

Why is it important to find your best-fit career that matches your aptitudes? Consider what our own research discovered: nearly one-third (31%) of recent high school graduates (class of 2023) are still not certain where they are or want to be in their education or career paths.[25] The class of 2022 reported similar feelings (34%). In addition, 83% of 2023 graduates stated they would have been more engaged in learning had they understood their aptitudes and how they matched to potential opportunities.

These findings show that when you understand your aptitudes and what career pathways are possible, you become more active in planning your future by making informed, intentional decisions about your post-graduation future. Our research found that 64% of 2023 graduates changed their major from their initial choice, while 45% changed their major two or more times. If these students knew their aptitudes prior to enrollment, they could make better educated decisions about college and their future.[25]

Continual improvement of the matching process

One very powerful feature of the YouScience platform is that the AI-powered algorithms used to compare your aptitudes and interests to career profiles are being continuously evaluated. We are dedicated to providing you with the best career recommendations possible and are always looking to improve the person-to-career matching process and provide the best recommendations possible to you and future generations of users.

References

We've noted many pieces of scientific literature in the sections above. Here are the full references for those citations where you can learn more.

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