

Report of the Research Department

Johnson O'Connor Research Foundation
Human Engineering Laboratory
Johnson O'Connor Research Support Corporation

2018

Goals of the Research Department

1. Isolating aptitudes and studying their role in various occupations.
2. Developing accurate measures of aptitudes.
3. Investigating the role of aptitudes in education.
4. Evaluating age and sex differences and the effect of practice on test performance.
5. Studying the processes involved in the acquisition of knowledge.
6. Developing accurate measures of knowledge.
7. Communicating research findings to the public.

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From the President

It's been an exciting year of changes here at the Johnson O'Connor Research Foundation!

Work continues on the very important effort of the new bargraph program. We have been very favorably impressed with the expertise and dedication of the Aten Design Group, the software company working on the project. This has been a highly complex, collaborative project, depending on the efforts of many individuals. Since it will affect the workings of every department, people in finance, research, testing, and management have all stepped up to provide Aten with the information they need. A special shout out to the tireless efforts of the committee working on the Report Builder (the new summary highlights): Tim Fitzgerald, Lisa Cook, Casa Wilson, and Tommy Jensen. Their duties have been manifold—attending two separate writing meetings, building career lists, writing and editing content, endless data entry, and figuring out the logic of how to tell a programmer what we need.

Back in July, we were very pleased to welcome Ashley Brown to our research staff. She has a PhD in Personality and Health Psychology from Northwestern University, where she worked on a personality assessment called the SAPA project (which the Foundation was also connected with at one time). She did postdoctoral research at the University of Southern California, working on a project involving computational modeling of neural networks and personality. She has a strong background in quantitative analysis, having started out in a graduate program in physics before switching to psychology. She has a particular interest in research on individual differences, and how testing and assessments can help improve people's lives and understanding of themselves.

Ashley worked with Dave Schroeder to present a Technical Report on the aptitudes found in 74 career areas, using data from our own testing population. Since this is an area of particular interest to our summarizers, Ashley and Dave hosted a webinar in April to discuss the data presented in the plots and answer questions from our testing staff. In general, research that is focused on aptitudes and specific career fields has been a strong focus of 2018-19, which is directly relevant to the choices our clients face. Linda Houser-Marko's work on "Person-Job Fit" sums up what just about every client is hoping to find: a job that fits their aptitudes.

I am also very excited by research conducted by our testing staff, in collaboration with the research department. Holly Wilhelm of Atlanta has embarked on an item analysis of our Personality test. Our Chicago staff collected data on an alternate administration of Grip, which led to a change in the administration. Megan Terrazas began (with Linda's help) to analyze the data from her ongoing study of Physical Therapists. Will Eells kicked off another validation study, on translators and interpreters. More validation studies headed by TAs are in the works for this year.

We are also looking outward to find areas where our research might connect with the larger psychology research community. We continue our collaboration with Rex Jung by embarking on a study of brain imaging with a selection of aptitudes we'd like to learn more about. Linda and Ashley are going back

to data from the SAPA project to look at relationships between aptitudes and Big Five personality traits. It's exciting that the study of aptitudes is relevant to neuroscience, personality testing, and other areas of psychological research.



In this age of an ever-more-rapidly evolving job market and the dizzying array of options open to the modern college student or career changer, the knowledge that we provide to our clients regarding their inherent, lifelong abilities, and the solid research that backs up our testing, is more relevant than ever.

Anne Steiner

From the Director of Research

Since the beginning of the Human Engineering Laboratory at General Electric's West Lynn Works in 1922, the focus of Johnson O'Connor and the Foundation he created has been on an understanding of human abilities, and their application to educational and occupational fields. Through the years, most of this work has involved cross-sectional studies, which look at a sample of people in an occupation or a college major field and identify their aptitude scores at the time of the study. We believe it is useful, and reasonable, to assume that an examinee who scores high in the same aptitudes as people who are incumbent in a job, and who express satisfaction with that job, should also find satisfaction there. During 2018, David Schroeder and our new colleague, Ashley Brown, worked on analyzing data from our ever-larger database, and constructed profiles for 74 occupations, reported early in 2019 in Technical Report 2019-1. They also issued Statistical Bulletin 2019-1, which reports occupational means for 27 of the groups on each of the Foundation's tests. Both of these reports will be invaluable contributions to our ongoing efforts to help our examinees find work that will use their strongest abilities.

An exciting new pathway for research was opened in 2016, when Linda Houser-Marko proposed and carried out a follow-up study of persons tested ten years before. The Foundation had made some attempts at follow-up studies before, notably in the early 1970s, but a lack of staff to review and analyze the responses, as well as the general and open-ended nature of the questions asked in the surveys, created difficulties; while a few notable studies did emerge, for the most part attempts at follow-up with large numbers of past examinees proved too cumbersome.

Enter the internet, and in particular the ability to create online surveys to which links can be sent via email. We had only begun asking for email addresses in 2006, so 2016 was the first year in which a ten-year follow-up survey could reasonably be accomplished. Since then, Linda, ably assisted by our Research Assistant, Alison White, has added a five-year and a one-year follow-up. Each year, now, should see requests going out to past examinees to participate in one of these surveys. We have already begun to see a number of interesting results, as seen in last year's Annual Report, and on page 9 of this report.

Of particular note, last year we wrote, "Career satisfaction is an important, ultimate criterion which is most likely determined by many factors. However, the Foundation asserts that aptitudes and how they fit with a person's chosen career have an important role in career satisfaction." Alison's report on page 9 is an encouraging first look at this question: while the sample size is still fairly small, we can see a distinct difference in satisfaction levels among those who report that they use their aptitudes often in their work versus those who sometimes, and those who rarely or never, use their aptitudes on the job. If this preliminary finding holds up through ongoing surveys, we will have taken a big step toward that future envisioned by Johnson O'Connor, in which each person sees the value in learning about his or her own strengths, and the importance of using each to the full.

Rusty Burke

Research Staff



Russell E. Burke, Research Director, joined the Foundation in 1983 in New Orleans, and served as Director in Houston before moving to Washington, D.C., where he has served as both a summarizer and Director before taking on his current role guiding the Foundation's research efforts.

David H. Schroeder, Research Manager, joined the Research Department in August 1984. He has a B.S. from the University of Illinois and an M.S. from Colorado State University, as well as an M.A. and a Ph.D. in personality psychology from The Johns Hopkins University.



Linda S. Houser-Marko, Senior Researcher, joined the Research Department in October 2010. She has a B.A. from Gustavus Adolphus College in Minnesota and a Ph.D. in social and personality psychology from the University of Missouri. She has published research on the self, identity, and motivation.

Ashley D. Brown, Researcher, joined the Research Department in September 2018. She earned her B.S. in psychology from the University of Kentucky and her Ph.D. in personality and health psychology from Northwestern University. She has published research on psychometric methods and individual differences.

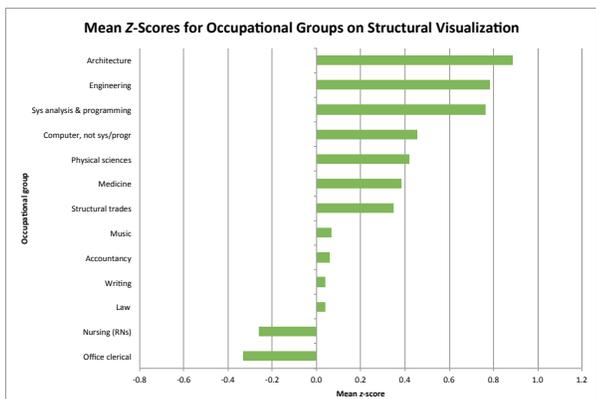


Alison V. S. White, Research Assistant, first joined the Foundation in 2011 and worked in the Atlanta and Chicago labs as a test administrator before transitioning to her current role in the Research Department. Alison holds a degree in psychology from Georgia State University.

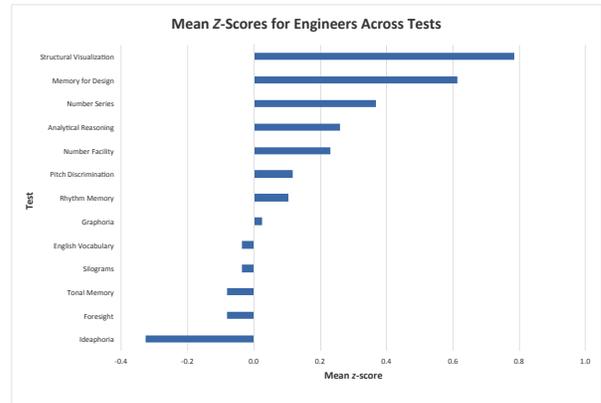
Occupational Plots

In 2018 David Schroeder, Research Manager, and Ashley Brown, Researcher, initiated a project in which they used the Foundation’s database of examinee scores to analyze how examinees from various occupations tend to score on the Foundation’s standard battery of tests. This project was an updating of a similar project carried out by Chris Condon, then a researcher at the Foundation, and Schroeder in 2004-05. As in the earlier project, we examined only scores for examinees who reported liking their jobs.

The first accompanying figure shows the mean z-scores for 13 occupations on Structural Visualization. As can be seen, the highest scoring occupations were architecture and engineering, which we would expect to score high on Structural Visualization. Their mean z-scores correspond to the 81st and 78th percentiles, respectively. Systems analysis/computer programming showed a mean that is nearly as high as engineering, with other computer professions coming next in line. Many occupations, including writing and law, scored neither high nor low, and nursing and office-clerical work showed modest tendencies to score below the mean.



In addition to plots for each of our tests, Schroeder and Brown constructed plots that display mean scores on our battery tests for individual occupations. The second figure here shows mean scores for engineers. As noted earlier, engineers tend to score high on Structural Visualization and also on Memory for Design and, to a lesser extent, Number Series and Analytical Reasoning. They scored near the Foundation mean on Graphoria and English Vocabulary and somewhat below average on Ideaphoria.



Brown and Schroeder also constructed plots that display the 95% confidence intervals for the various means. For example, for the mean Structural Visualization score for architecture ($z = .89$), the 95% confidence interval (0.68 to 1.09) represents the range of mean values that one would obtain 95% of the time if the study were repeated an infinite number of times with the given sample size. So, for architecture, we can be 95% sure that their population mean is between z-values of 0.68 and 1.09. In constructing these plots, we are attempting to address a developing norm for professional researchers to provide information on uncertainty ranges for reported findings.

Finally, Brown constructed a one-page matrix of the mean values for 27 occupations that is called a “heat map,” in which numerical values are represented by means of colors in addition to the numbers themselves. An abbreviated version of the matrix is shown on the facing page. In the column for Ideaphoria, one can see strongly orange colors for the means for writing and editing and a moderately blue color for structural trades. Similarly, in the row for Architecture, there are strongly orange colors for Structural Visualization and Memory for Design and a slightly blue color for Ideaphoria.

Schroeder and Brown presented their plots by test in Statistical Bulletin 2019-1, Updated Occupational Plots for the Foundation’s Standard Test Battery, and their plots by occupation in Technical Report 2019-1, Occupational Plots for the Foundation’s Standard Battery.

Heat Map of Occupations by Mean Z-Scores on Battery Tests

Occupation	GR	ID	FO	AR	NS	NF	SV	TM	PD	RM	MD	SI	EV
Architecture	-.01	-.11	--	.19	.31	.24	.89	--	.27	.09	.62	-.05	.19
Engineering	.02	-.33	-.08	.26	.37	.23	.78	-.08	.12	.10	.61	-.04	-.04
Physical Science	.14	.10	.08	.42	.42	.30	.42	-.18	.05	.18	.38	.09	.29
Sys analysis/programming	.22	.00	.06	.39	.53	.25	.77	.23	.22	.22	.58	.26	.29
Computer, not sys/progr	.12	-.04	.01	.20	.18	.01	.45	.00	.06	.09	.37	.02	-.10
Medicine	-.09	.32	.21	.33	.39	.08	.38	.14	.33	.14	.34	.25	.60
Nursing (RNs only)	-.19	.05	.05	.01	-.30	-.08	-.26	-.13	-.19	-.08	-.16	.28	-.17
Law	.09	.45	.23	.26	.43	.18	.04	.18	.11	.23	.06	.36	.78
Writing	.15	.61	.54	.19	.38	.18	.04	.29	.25	.29	.06	.60	.68
Editing	.14	.61	.35	.34	.35	.18	-.10	.32	.15	.26	.09	.62	.75
Music	-.06	.00	.08	-.01	.09	-.10	.07	1.07	.95	.79	.03	.20	.25
Accounting	.60	-.02	-.01	.17	.32	.27	.06	-.21	-.14	-.11	.10	.11	.07
Office Clerical	.23	-.22	-.28	-.22	-.23	-.06	-.33	-.14	-.14	-.25	-.15	-.04	-.36
Structural Trades	-.48	-.46	-.32	-.20	-.22	-.14	.35	-.01	.04	.02	.01	-.56	-.50

Test Scores Across Time

In recent years, Schroeder has also been examining trends across time on scores on the Foundation's tests. In 2018 Schroeder presented some of his findings at the annual meeting of the Association for Psychological Science. In particular, after years of observing slowly rising scores on many of our tests, we are seeing declines in the 2010s in many areas.

Schroeder will present additional findings in this area at the 2019 meeting of the International Society for Intelligence Research.

Writing Speed

In 2017, Schroeder examined relationships between scores on our Writing Speed test and a number of other variables, including sex, age, and scores on other Foundation tests. In 2018 he reported some of his findings in Statistical Bulletin 2018-3, Writing Speed: A Series of Analyses. He expects to report on the relationship between Writing Speed and performance on Ideaphoria in 2019.

The Foresight Aptitude and Creative Achievement

Linda Houser-Marko's most recent research revolves around one of her favorite topics; namely, the nature of creativity. Researcher-of-genius Dean Keith Simonton once asked "What criteria must be used in judging an idea's creativity? Who evaluates those criteria in assessing the idea's creativity?" and opined that there are two types of the latter: "Little-c creativity," which posits that the evaluator of the actual or potential creative work is the individual creator; and "Big-C Creativity," which assumes that an evaluation is a consensus among persons other than the creator (colleagues, critics, patent examiners, audiences, etc.). Furthermore, evaluations are themselves based on several factors, three of which are fluency (number of ideas), flexibility (number of categories represented among ideas), and originality (uniqueness of ideas).

For this study, which was published as a Statistical Bulletin earlier this year, Houser-Marko used Foundation examinees' scores on the Foresight and Ideaphoria tests to operationalize creative fluency and, by extension, creative potential. No effort was made to judge the creativity of the Foresight and Ideaphoria responses; however, as was noted in an earlier Statistical Bulletin (2016-2), fluency and originality are positively correlated in the Foresight test. A measure of creative achievement, the self-report Creative Achievement Questionnaire (CAQ) provided outcome measures spanning ten domains, namely, architecture, culinary, dance, humor, inventions, music, science, theater, visual arts, and writing.

An age-diverse (mean = 30.3 years, range = 20-76) sample of 936 examinees (53% male)

recruited from the Foundation's New York, Los Angeles, D.C., and Seattle labs provided responses on Foresight, Ideaphoria, and the CAQ, as well as on the usual four cognitive group factors, Numerical (N), Spatial (SV), Memory (M), and Speed of Reasoning (SR). Most of the sample (60%) were college graduates. Results showed that creative achievement was heavily skewed right (i.e. more people were at the low end of the scale); that is, CAQ scores ranged from 0 to 83 with a mean of 10.9, and the lower, middle, and upper thirds of the sample earned scores of 0-4, 5-10, and 11-83, respectively. Houser-Marko correlated CAQ overall and subscale scores with fluency and cognitive group scores; she also regressed CAQ overall score on Ideaphoria, Foresight, and the four abilities.

The correlations indicated that Foresight ($r = .26$) is more closely related to creative achievement (i.e. total CAQ score) than Ideaphoria ($r = .10$); notably, both the SV ($r = .18$) and SR ($r = .16$) group factors had stronger positive correlations than Ideaphoria with creative achievement. The fact that SR and Foresight were themselves moderately correlated ($r = .25$) points the way toward a partial explanation, along which the regression was meant to travel further. Nevertheless, SR was not a significant predictor of the CAQ total in the simultaneous regression; only Foresight ($b = .248$), SV ($b = .174$), and (unexpectedly) N ($b = -.112$) enjoyed that distinction. The N group was positively correlated with everything (ability groups, fluency, and overall CAQ), but much less so to the CAQ than anything else. The bottom line here is that it's possible that the part of Numerical aptitude that's independent of the other aptitudes is negatively related to creativity.

“Fit”: Aptitudes, Interests, and Fit With College Majors and Occupations

“Person-job fit” is a term from industrial-organizational psychology used to describe how well people fit into their occupational environments. Foundation Researcher Linda Houser-Marko suspected she could learn something useful by adding a person-job fit measure to clients’ follow-up surveys. In particular, she focused on the aspect of person-job fit that involves how a person’s abilities fit with the demands of their work in two studies addressing fit between people and their (a) college majors and (b) occupations.

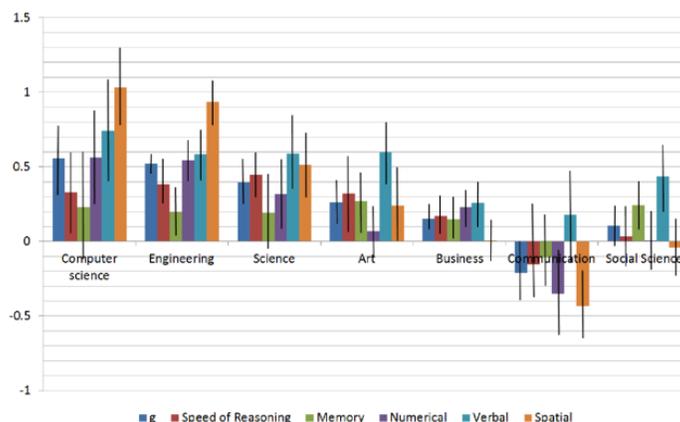
The first of these, the results of which were presented in a poster at the International Society for Intelligence Research’s (ISIR) 2018 meeting, examined differences in aptitudes by self-reported college major as well as relationships between aptitudes and perceived fit with major. Data were gathered from follow-up surveys taken 5-10 years after testing at the Foundation, and an average of 5 years after respondents (N = 500, 56% female) had graduated from college. Respondents’ mean age at follow-up was 28 years (ranging from 19 to 49). Respondents retrospectively rated fit on a scale of not very much (1) to very much (5), and analyses focused on seven of the most popular college majors (groups ranged in size from computer science, n = 28, to business, n = 156; see accompanying figure). Selected standard battery tests were combined to form group factors of related aptitudes: Numerical (N), Structural Visualization (SV), Memory (M), and Speed of Reasoning (SR); these along with a Verbal score (EV) were further combined into general factor (g) scores. Two factors’ mean scores by gender

differed significantly: SV (.50 vs. .08 for males and females, respectively) and Memory (.02 vs. .30 for males vs. females).

Mean levels of g and aptitude factors for each major are shown in the figure. ANOVA results indicated that majors differed in their average levels of g, SR, N, and SV. Probing for greater detail with post-hoc tests, Houser-Marko learned that computer science, engineering, and science majors were above the overall mean on g, N, SV, SR, and EV; art majors were higher on SR and EV; social science majors were better at EV; and communications majors were below the mean on g, N, and SV. M, the Memory factor, wasn’t above or below the mean for any of the majors.

Mean college major fit rating was high (3.78 out of 5), which is obviously good. Because we’d expect that when a person thinks they fit better with their college major, their aptitude patterns would fit more closely with those in the figure, Houser-Marko correlated majors’ fit ratings with cognitive group factors. In several cases, expectations were borne out: engineering and computer science majors’ fit was positively correlated with SV; computer science majors also felt they fit better when they were better at SR and N. Houser-Marko found something she wasn’t expecting, as well; i.e. that arts and social science majors’ fit ratings were negatively correlated with the Memory factor! Stay tuned for updates on this finding; research is, as it fairly goes without saying, ongoing.

Factor Levels by College Major



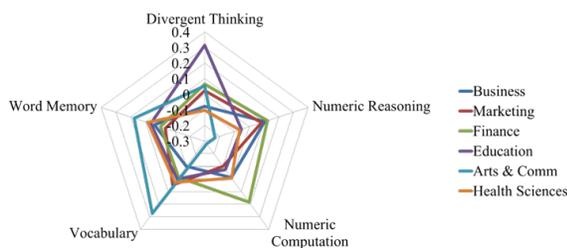
Next, Houser-Marko looked at the relationships between employed former examinees' perceived occupational fit and their aptitudes (on five Foundation tests; see aptitude figure) and interests (see interest figure). In this study, which was presented in a poster at the 2018 Association for Psychological Science conference, Houser-Marko wanted to see what kinds of differences she could find among occupations. The sample (N = 635), as was the case for the ISIR study, was drawn from the follow-up survey group. Respondents were a bit older on average (34 years at follow-up) and their ages varied more (range = 14 to 60 years at testing). Occupational fields were self-reported in the follow-up survey, and the six most frequently occurring fields (ranging in size from arts/communication, n = 60, to business, n = 109; see figures) were selected for further study. Standardized aptitude and interest scores were adjusted for age, but Houser-Marko wanted to look at relative scores. To find those, she found each person's mean on all aptitudes and their mean on all interests. Then she subtracted their scores on each specific aptitude or interest test from the corresponding mean.

The relative aptitude scores were compared for each of the occupational fields, with few surprises (see aptitude figure), although Foresight's results continue to be among the more intriguing in the standard battery (Only educators have more of it—so is it creativity? Long-term planning ability? Skill in

communicating effectively? Etc.). Mean ratings of person-job fit were, happily, relatively high, ranging from just slightly (3.1, finance) to well above (3.7, arts/communication and health sciences) the middle of the 5-point scale. As for college majors, Houser-Marko expected higher fit ratings would accompany higher levels of occupation-specific aptitudes, and tests revealed two marginal correlations: better-fitting people in arts and communication fields had higher English Vocabulary scores ($r = .27$) and fit in marketing and sales was better with higher Foresight ($r = .20$); stick a pin in this last one, Houser-Marko and colleagues will be pursuing it further in the future.

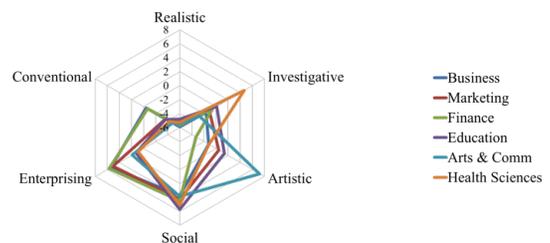
Results for relative interests by field also conformed to expected patterns (see interest figure). Exploratory correlations among interest scores and perceived fit turned up five more marginally significant gems, only two of which were "helpful" (marketers and educators fit their jobs better with more Enterprising interests; $r = .32, .38$). The other three told cautionary tales: woe be unto those with Realistic interests wishing to fit into health sciences fields ($r = -.28$); those with Artistic interests who choose to pursue a career in finance ($r = -.29$); and those in arts-and-communication whose interests lean Conventional ($r = -.25$). The stand-out here in terms of what the Research Department will likely look at next is that higher fit ratings in marketing and education indicate greater interest in Enterprising activities; here again, we see education is a fecund field for further study

Relative Aptitudes by Occupation Field



Note: In this figure, Foresight is labeled "Divergent Thinking," Number Series is labeled "Numeric Reasoning," Number Facility is labeled "Numeric Computation, and Silograms is labeled "Word Memory."

Relative SDS interests by occupation field



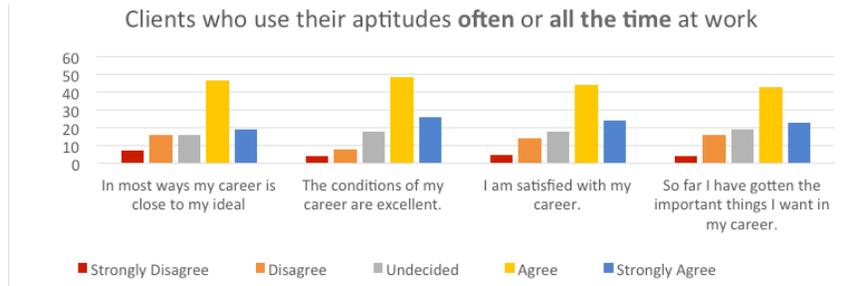
Note: This figure and its mate are a type of graph known as a "spider plot." Each spoke is a number line with values corresponding to those depicted on the central spoke (here, "Realistic," with values ranging from low, -6, at the center to high, 8, at the outside). Bigger numbers mean that the odds are greater that a person high on that interest will be in that field.

Is Aptitude Use Related to Job Satisfaction?

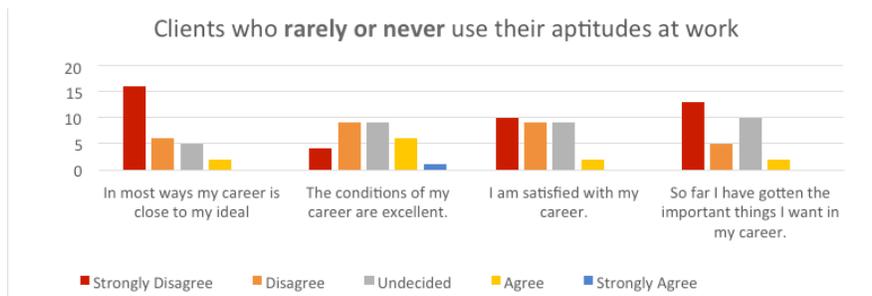
At the Foundation, we have always believed that those who use their aptitudes at work should experience a greater degree of job satisfaction than those who don't. In a 2018 follow-up survey led by Alison White, Research Assistant, we think we've seen some evidence to support our supposition in a series of questions asked of our one-year alumni. First, we asked them to rate how often they use their aptitudes in their work, on a scale from "never" to "all the time." Then, we asked them to rate the following statements on a scale from "strongly agree" to "strongly disagree".

- ◆ In most ways, my career is close to my ideal
- ◆ The conditions of my career are excellent.
- ◆ I am satisfied with my career.
- ◆ So far I have gotten the important things I want in my career.

Clients who told us that they use their aptitudes at work often or all the time showed higher ratings of agreement with these statements. The largest proportion of these clients checked "agree," followed by those who strongly agreed. A few clients strongly disagreed, which makes one wonder if these clients are experiencing other workplace issues like poor management, not seeing eye to eye with those they work with, lack of job security, or any number of other factors.



On the opposite end of the spectrum, clients who told us that they rarely or never used their aptitudes at work were more likely to strongly disagree with every single one of these statements. Only one client strongly agreed that the conditions are excellent, which must be particularly disappointing in light of their other responses. One can only imagine the frustration in believing that you are working at a wonderful place and yet feel so little satisfaction.



In fact, even respondents who say they only sometimes have the opportunity to use their aptitudes at work still appear to be much more likely to report some greater level of satisfaction. The largest portion of these clients appear to be undecided on each statement except for (once again) the statement pertaining to work conditions. It seems that many of us can recognize that there is a difference between a good place to work and the right place to work.

Dissemination of Research Findings

In recent years we have continued to present findings from our research in scholarly outlets such as professional conferences and journals. In 2018 we made two presentations at the annual meeting of the Association for Psychological Science, which was held in San Francisco. Dr. Linda Houser-Marko presented “Perceived Person-Job Fit and Relative Abilities and Interests for Popular Occupational Fields.” In this presentation, she looked at the relationships between employed former examinees’ perceived occupational fit and their interests and aptitudes on five Foundation tests.

Dr. David Schroeder presented “Declines in Cognitive-Ability Scores: A Negative Flynn Effect?” in which he discussed changes in mean scores on our tests in recent years. Later in 2018, Dr. Houser-Marko presented “Person-Environment Fit as Seen in College Majors and Group-Factor Cognitive Ability Patterns” at the meeting of the International Society for Intelligence Research (ISIR). She discussed differences in aptitudes by self-reported college major as well as relationships between aptitudes and perceived fit with major.

In 2018 we continued to collaborate with Dr. Rex Jung on neuroimaging studies of aptitudes. Articles from our previous work with Dr. Jung continued to receive attention in scholarly circles in 2018. The Jung et al. article in *Frontiers in Psychology* in 2015 has now been viewed 10,835 times and cited in 22 other scholarly articles. The 2014 PLoS ONE article by Dr. Jung and his team has been viewed by 3,884 persons and cited 10 times.

Other scholarly work sponsored by us continued to have impact in 2018. Our 2010 article with Dr. Haier and his associates in *BMC Research Notes* has now been viewed by 12,918 persons and cited 20 times in other articles, while our 2012 BMC article by Dr. Schroeder and others has been viewed by 2,038 persons and cited 3 times. In addition, our 2009 article with Haier and others in *Intelligence* has been cited 83 times, and our 2010 article with Dr. Cheuk Tang and others in *Intelligence* has been cited 66 times.

With regard to earlier publications, Dr. Schroeder’s 2004 article with Drs. Timothy Salthouse and Emilio Ferrer in *Developmental Psychology* has now been cited in 154 scholarly publications, and his article with Salthouse in *Personality and Individual Differences* has been cited 81 times. Our 2001 *Intelligence* article by Dr. Scott Acton, a former research assistant in the Research Department, and Dr. Schroeder has been cited 73 times.

We would also note that Dr. Richard Haier served as the president of the ISIR in 2018. Dr. William Revelle, who is the 2019 president of the ISIR, was the graduate advisor of our new researcher Dr. Ashley Brown, along with a number of graduate students who worked in the Research Department in past years.

In 2019 Drs. Houser-Marko and Brown will present “Aging and the Aspects of Openness: Unpacking Cross-Sectional Patterns” at the annual meeting of the Association for Research in Personality. Later in the year, at the annual meeting of the International Society for Intelligence Research, Drs. Brown, Houser-Marko, and Schroeder will present “Cognitive Abilities, Divergent Thinking, and the Aspects of Openness,” and Dr. Schroeder will also present “A Negative Flynn Effect in Recent Cognitive-Ability Scores.”

Recent Statistical Bulletins

2018

2018-1	Long-Term Stability for Number Facility	David Schroeder
2018-2	Summary of Long-Term Stability Findings	David Schroeder
2018-3	Writing Speed: A Series of Analyses	David Schroeder
2018-4	Information About Norms for each Test	Linda Houser-Marko
2018-5	Research Proposal: The Aptitudes of Translators and Interpreters	Will Eells

2017

2017-1	Poster Presentation for the 29th Annual Association for Psychological Science Convention	Linda Houser-Marko
2017-2	A Neuroimaging Study of the Visual Designs Test	David Schroeder
2017-3	Tweezer Dexterity Test Changes and New Norms for Worksample 18 KA	Linda Houser-Marko, David Schroeder

2016

2016-1	Preliminary Results for the Cognitive Ability Scales From the Revelle/ Condon Project Collaboration	Linda Houser-Marko
2016-2	Frequency and Creativity Scores for Foresight, Wks. 307 AQ	Rusty Burke, Kelsey Bakas
2016-3	Age Curve for the Analytical Reasoning Test	David Schroeder, Linda Houser-Marko
2016-4	Age Curve for the Number Facility Test	David Schroeder, Linda Houser-Marko
2016-5	Results from the Decade Study of Examinees from 2005	Linda Houser-Marko
2016-6	Poster Presentation for Association for Psychological Science Convention	Linda Houser-Marko
2016-7	Internal Analysis of Number Memory	David Schroeder

Recent Technical Reports

2017-1	Occupations in Education	C. Condon, D. Schroeder
2013-1	Sex Differences in Variability	D. Schroeder
2012-1	Aptitudes, Vocabulary, and Educational Attainment	D. Schroeder
2012-2	The Aptitudes of Engineering Students	C. Condon, D. Schroeder
2012-3	Four Studies of the Self-Directed Search	D. Schroeder

Recent Presentations

Houser-Marko, L. S. (2018, July). *Person-environment fit as seen in college majors and group-factor cognitive ability patterns*. Poster session presented at the annual meeting of the International Society for Intelligence Research, Edinburgh.

Houser-Marko, L. S. (2018, May). *Perceived person-job fit and relative abilities and interests for popular occupational fields*. Poster session presented at the annual meeting of the Association for Psychological Science, San Francisco.

Schroeder, D. H. (2018, May). *Declines in cognitive-ability scores: A negative Flynn Effect?* Poster session presented at the annual meeting of the Association for Psychological Science, San Francisco.

Houser-Marko, L. S., & Schroeder, D. H. (2017, May). *A longitudinal study of abilities and interests in STEM- and people-oriented fields*. Poster session presented at the annual meeting of the Association for Psychological Science, Chicago.

Schroeder, D. H. (2017, May). *Secular trends in specific abilities: Understanding the Flynn Effect*. Poster session presented at the annual meeting of the Association for Psychological Science, Chicago.

Bezruczko, N., & Schroeder, D. H. (2017, February). *Artistic-judgment aptitude factors correlate significantly with increased gray matter*. Poster session presented at the annual meeting of the American Association for the Advancement of Science, Boston, MA.

Houser-Marko, L. S. (2016, May). *Spatial ability and the STEM majors: Where do females with high spatial ability go?* Poster session presented at the annual meeting of the Association for Psychological Science, Chicago.

Schroeder, D. H. (2016, May). *The Flynn Effect: Is it continuing in the United States?* Poster session presented at the annual meeting of the Association for Psychological Science, Chicago.

Recent Publications

Bezruczko, N., Manderscheid, E., & Schroeder, D. H. (2016). MRI of an artistic judgment aptitude construct derived from Eysenck's K factor. *Psychology & Neuroscience*, 9, 293-325. doi: <http://dx.doi.org/10.1037/pne0000064>

Ryman, S. G., Yeo, R. A., Witkiewitz, K., Vakhtin, A. A., van den Heuvel, M. P., de Reus, M., Flores, R. A., Wertz, C. R., & Jung, R. E. (2016). Fronto-parietal gray matter and white matter efficiency differentially predict intelligence in males and females. *Human Brain Mapping*, 37, 4006-4016. doi: [10.1002/hbm.23291](https://doi.org/10.1002/hbm.23291)

Yeo, R. A., Ryman, S. G., Thompson, M. E., van den Heuvel, M. P., de Reus, M. A., Pommy, F., Seaman, B., & Jung, R. E. (2016). Cognitive specialization for verbal vs. spatial ability in men and women: Neural and behavioral correlates. *Personality and Individual Differences*, 102, 60-67. doi: [10.1016/j.paid.2016.06.037](https://doi.org/10.1016/j.paid.2016.06.037)

Jung, R. E., Wertz, C. J., Meadows, C. A., Ryman, S. G., Vakhtin, A. A., & Flores, R. A. (2015). Quantity yields quality when it comes to creativity: A brain and behavioral test of the equal-odds rule. *Frontiers in Psychology*, 6:864. doi: [10.3389/fpsyg.2015.00864](https://doi.org/10.3389/fpsyg.2015.00864)

Jung, R. E., Ryman, S. G., Vakhtin, A. A., Carrasco, J., Wertz, C., & Flores, R. A. (2014). Subcortical correlates of individual differences in aptitude. *PLoS ONE*, 9(2): e89425. doi: [10.1371/journal.pone.0089425](https://doi.org/10.1371/journal.pone.0089425)

Schroeder, D. H., Haier, R. J., & Tang, C. Y. (2012). Regional gray matter correlates of vocational interests. *BMC Research Notes*, 5(1), 242. doi: [10.1186/1756-0500-5-242](https://doi.org/10.1186/1756-0500-5-242)

Haier, R. J., Schroeder, D. H., Tang, C. Y., Head, K., & Colom, R. (2010). Gray matter correlates of cognitive ability tests used for vocational guidance. *BMC Research Notes*, 3(1), 206. doi: [10.1186/1756-0500-3-206](https://doi.org/10.1186/1756-0500-3-206)

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