The Science Behind Interests and Student Success

Presented by: Mike Morris

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1. Theory behind why interests are important
2. Outcome studies with students and adults
3. Current research projects and an opportunity

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Theory behind why interests are important

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Theoretical model of interests, motivation, behavior, and outcomes

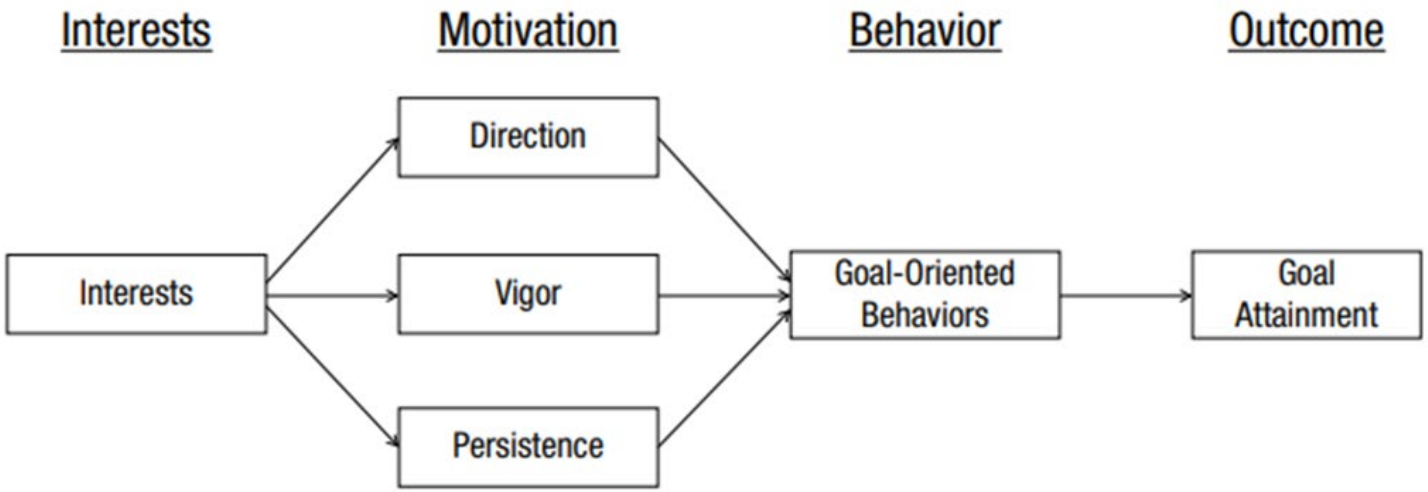

Fig. 1. Theoretical relationships among interests, motivation, goal-oriented behaviors, and goal-attainment outcomes.

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E.K. Strong's Theory

- What people do is a "reflection" of their interests
- The *Strong* measures **interests, not abilities**
- The *Strong* does not tell you what you should be
- The *Strong* is **most useful when it is used to open up, rather than limit**, the world of occupational choice

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Holland's Theory: Four Main Assumptions

1. Majority of people can be categorized into six interest areas
2. Occupational environments can be divided by the same interest areas
3. People look for occupational environments that allow them to use their skills and aptitudes, express their values
   - *And avoid tasks that they find daunting or distasteful*
4. Our behavior is determined by an interaction between our personality and the environment in which we work
   - *This interaction influences job satisfaction, performance, and stability*

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Holland's Theory: The Six Interest Areas

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Types of measures on the Strong assessment

- General Occupational Themes (Holland's RIASEC)
- Basic Interest Scales
- Personal Style Scales
- Occupation Scales

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Why measuring interests early on is important

- Learn about yourself
- Broaden the number of career paths that students are aware of
- Make better career decisions earlier in life

- Remember: Interests can change over the lifespan

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Outcome studies with students and adults

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College major choices

- "Using discriminant analyses, three sets of content scales were used to predict major field of study. These were six General Occupational Scales, five Personal Style Scales, and 30 BISs. Each set of scales showed substantial concurrent validity in differentiating college major for women and men. The most specific scales, the BISs, were the most predictive of major, with hit rates 6 times greater than chance. Results clearly supported the concurrent validity and counseling utility of the content scales of the SII" (Gasser, Larsen, & Borgen, 2007)

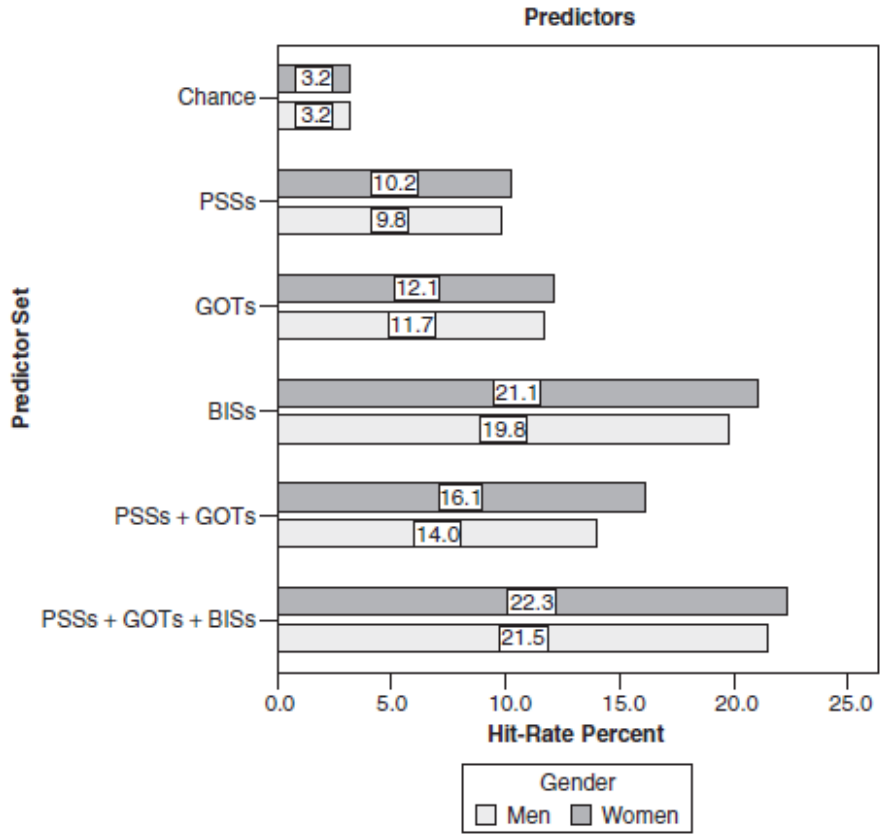

Figure 1. Summary of Discriminant Analyses Hit Rates for Women and Men for the Sets of Predictors.
Note. PSSs = Personal Style Scales; GOTs = General Occupation Scales; BISs = Basic Interest Scales.

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Occupational choices

Table 2
Hit Rate Estimates for Sample and Study-Design Characteristics

Variable	*k*	*n*	Hit rate	95% CI	95% CR[a]	τ
Inventory						.640
Strong	73	46,983	53.8%	[50.0, 57.5]	[24.8, 80.5]	
SDS	23	14,601	48.4%	[41.8, 55.1]	[20.6, 77.2]	
UNIACT	24	245,396	40.5%	[34.4, 46.8]	[15.9, 71.0]	
Kuder	7	5,262	56.3%	[44.2, 67.6]	[25.1, 83.2]	
VPI	15	19,840	46.5%	[38.5, 54.7]	[19.2, 76.1]	
Campbell	5	556	64.2%	[49.8, 76.5]	[30.9, 87.8]	
Other	33	35,762	54.0%	[48.4, 59.5]	[24.7, 80.8]	
Scale type						.705
Occupational scales	57	20,679	57.5%	[52.9, 62.1]	[25.1, 84.5]	
Basic interests/areas	36	56,499	55.2%	[49.4, 60.9]	[23.3, 83.4]	
Specialty scales	6	3,843	45.0%	[31.4, 59.3]	[15.4, 78.5]	
RIASEC	94	318,205	45.8%	[42.2, 49.4]	[17.4, 77.2]	

- “This meta-analysis suggests that vocational interests are highly accurate predictors of career choices, including educational majors and future occupations. Interests predict career choices equally well for men and women, for different types of jobs, and for both current and future career choices.” (Hanna & Rounds, 2020)

Occupational choices

- “This longitudinal study assessed the power of the Occupational Scales (OSs) of the Strong Interest Inventory to predict the participants occupations 12 years after Time 1 testing, 8 years after Time 2 testing, and concurrently at Time 3. Results indicated that OS scores predicted occupational membership at a level substantially higher than chance at all three points in time. Eight-year and concurrent prediction hit rates were not significantly different from each other but were significantly higher than 12-year hit rates.” (Hansen & Dik, 2005)

Timely degree completion

- "Using longitudinal student data from 15 four-year (n = 3,072) and 13 (n = 788) two-year postsecondary institutions, the authors tested the effects of interest–major congruence, motivation, and 1st-year academic performance on timely degree completion. Findings suggest that interest–major congruence has a direct effect on timely degree completion at both institutional settings." (Allen & Robbins, 2010)

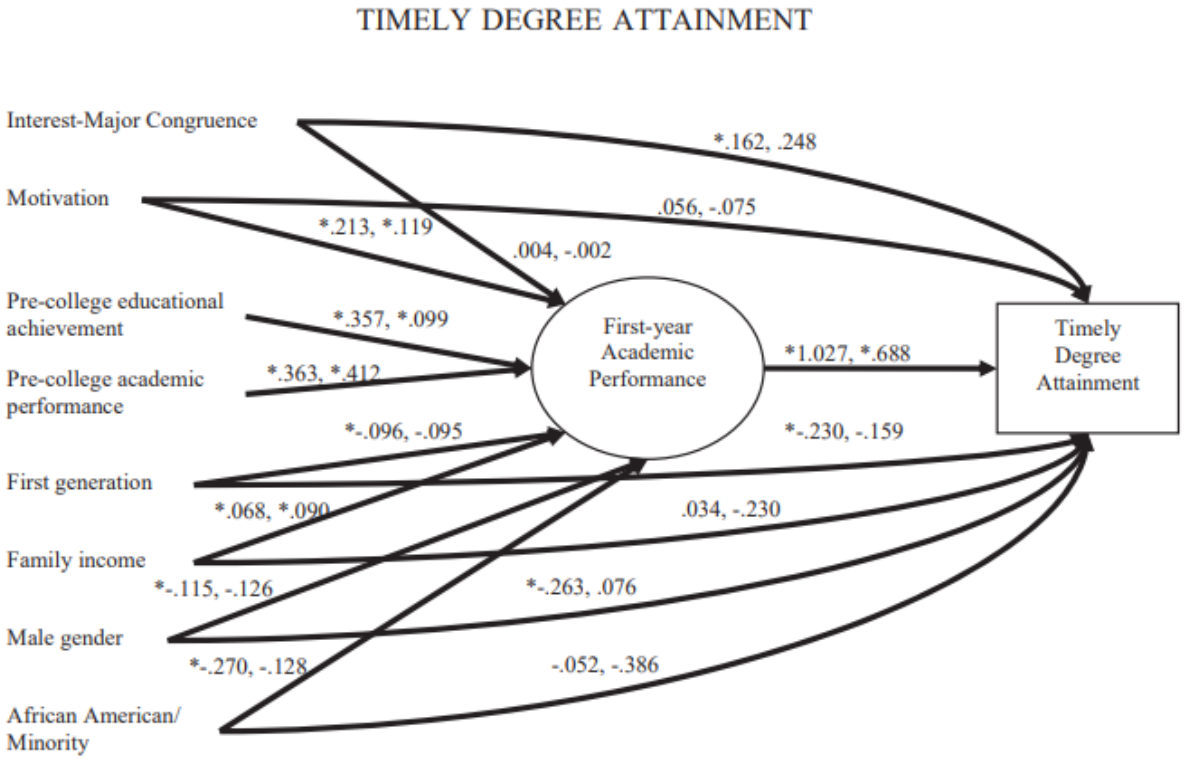

Figure 2. Estimated paths. Weights are given for the 4-year sample, followed by the weights for the 2-year sample. Significant paths are marked with an asterisk. Beta weights are given for paths to first-year academic performance; standardized logistic regression coefficients are given for paths to timely degree attainment.

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Job performance, job tenure, and job satisfaction

- "This meta-analytic review of 93 studies of employed adults (n = 51,901) found that mean corrected correlations between congruence and outcomes were: job satisfaction (.24), tenure (.13), and job performance (.29)." (Morris, 2003)

Table 4a. Meta-Analytic Results for the Effects of Congruence on Job Satisfaction

	Corrected for Sampling Error	Corrected for Sampling Error and Unreliability
Mean r	0.21	0.24
% of Total Var acct for by artifacts	16.7%	18.8%
Mean standardized difference (g)	0.43	0.50
Confidence Interval (95 percent)		
Upper bound	0.22	0.45
Lower bound	0.20	0.03
Fail Safe N for critical r of .05	238	287

Note: k = 76 studies, total n = 40,436. All data have been transformed using Fisher's Z with Schwarzer's meta-analytic software. Artifact corrections used the Schmidt & Hunter method.

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Job performance, job tenure, and job satisfaction

- "As shown in Figure 2, interests were the most powerful predictor of income (83.3% of VAF) and greatly exceeded the contributions of ability and personality (12.0% and 4.7% VAF, respectively). This finding had not been reported previously and was the most notable finding in the study. Furthermore, Su (2012) showed that interests predicted income within occupational groups after controlling for the contribution of ability and personality, which indicates that equally able individuals do better or worse depending on their interests." (Rounds & Su, 2014)

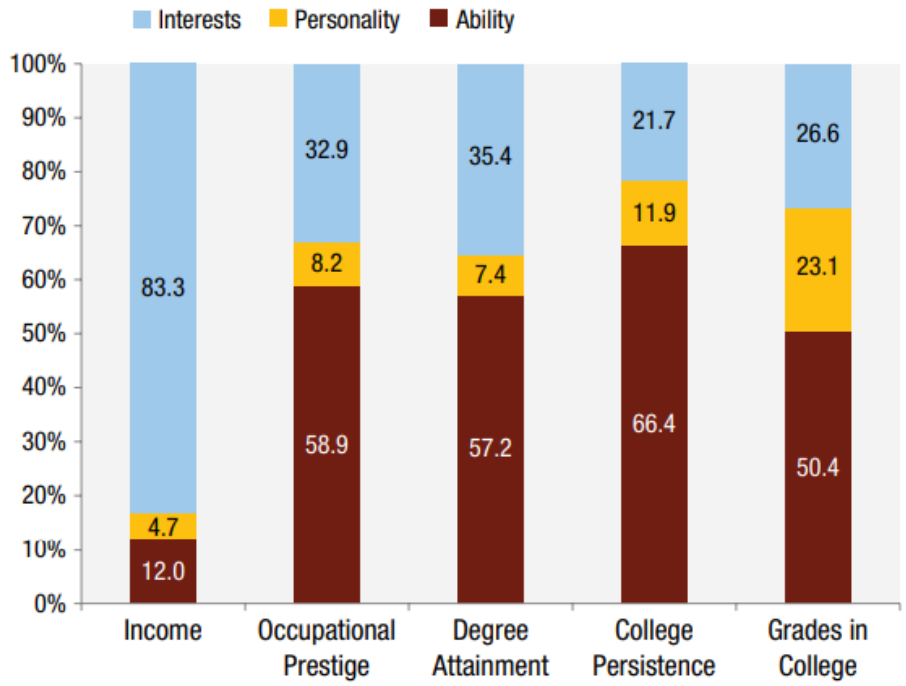

Fig. 2. The relative importance of interests, personality, and ability for educational and career success. The graph shows the percentage of total variance accounted for by interests, personality, and cognitive ability in explaining the five educational- and career-success criteria. The total amount of variance accounted for (R^2) for each criterion is 25% for income (25% × 83.3% = 20.82% by interests, 25% × 4.7% = 1.18% by personality, 25% × 12.0% = 3.00% by cognitive ability), 33% for occupational prestige (10.86% by interests, 2.70% by personality, 19.44% by cognitive ability), 40% for degree attainment (14.16% by interests, 2.96% by personality, 22.88% by cognitive ability), 22% for college persistence (4.77% by interests, 2.62% by personality, 14.61% by cognitive ability), and 19% for grades in college (5.05% by interests, 4.39% by personality, 9.57% by cognitive ability).

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Job performance, job tenure, and job satisfaction

- "A literature search identified 60 studies and approximately 568 correlations that addressed the relationship between interests and performance. Results showed that interests are indeed related to performance and persistence in work and academic contexts. In addition, the correlations between congruence indices and performance were stronger than for interest scores alone. Thus, consistent with interest theory, the fit between individuals and their environment was more predictive of performance than interest alone." (Nye, Su, Rounds, & Drasgow, 2012)

Table 1. Meta-Analytic Corrected Correlations Between Interests and Performance in the Employed Samples

	Task performance		OCB		Persistence[a]		CWB[b]	
Moderators	Scale score	Congruence Index	Scale score	Congruence index	Scale Score	Congruence index	Scale score	Congruence index
Interest scale								
Self-Directed Search	.05	.21	.10	.26	.05	.21	.15	−.01
Vocational Preference Inventory	.10	.26	.15	.31	.10	.26	.10	−.06
Kuder Preference Record	.06	.22	.11	.27	.06	.22	.14	−.02
Strong Interest Inventory	.11	.27	.16	.32	.11	.27	.09	−.07
Other inventories[c] (e.g., homegrown)	.14	.30	.21	.37	.14	.30	.06	−.10
Study characteristics								
Cross-sectional studies[c]	.14	.30	.21	.37	.14	.30	.06	−.10
Longitudinal studies	.12	.28	.19	.35	.18	.34	.08	−.08
Subjective criteria[c]	.14	.30	.21	.37	[a]	[a]	.06	−.10
Objective criteria	.08	.24	.15	.31	.14	.30	.12	−.04
Single occupation examined[c]	.14	.30	.21	.37	.14	.30	.06	−.10
Multiple occupations examined	.08	.24	.15	.31	.08	.24	.12	−.04

Note. All values represent the estimated correlations corrected for indirect range restriction and attenuation in the criterion. OCB = organizational citizenship behavior; CWB = counterproductive work behavior.
[a]Because the measures of persistence were all objective, correlations were not estimated for subjective persistence measures.
[b]The signs of the predicted correlations have been reversed back to their original direction (see Appendix for additional details). As such, negative correlations with congruence indicate that individuals who are more interested in their jobs will engage in less counterproductive work behavior.
[c]Using the regression-based approach to meta-analysis, these correlations represent the baseline estimates of the meta-analytic correlations (see the Appendix for additional details). As such, the baseline correlations represent the relationships between interests and performance in employed samples when the data are cross-sectional, the samples are from a single occupation, and subjective measures of performance (e.g., supervisory ratings) are used as the criteria.

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Career decision making self-efficacy

- "Participants [(N=99)] were randomly assigned to one of three experimental groups: the Strong Interest Inventory (SII) with feedback group, the SII completion-only group, or the control group. Students who completed the SII and participated in a social cognitive-based group feedback and interpretation session exhibited higher levels of posttest career decision-making self-efficacy and differential career beliefs relative to students in the other experimental groups." (Luzzo & Day, 1999)

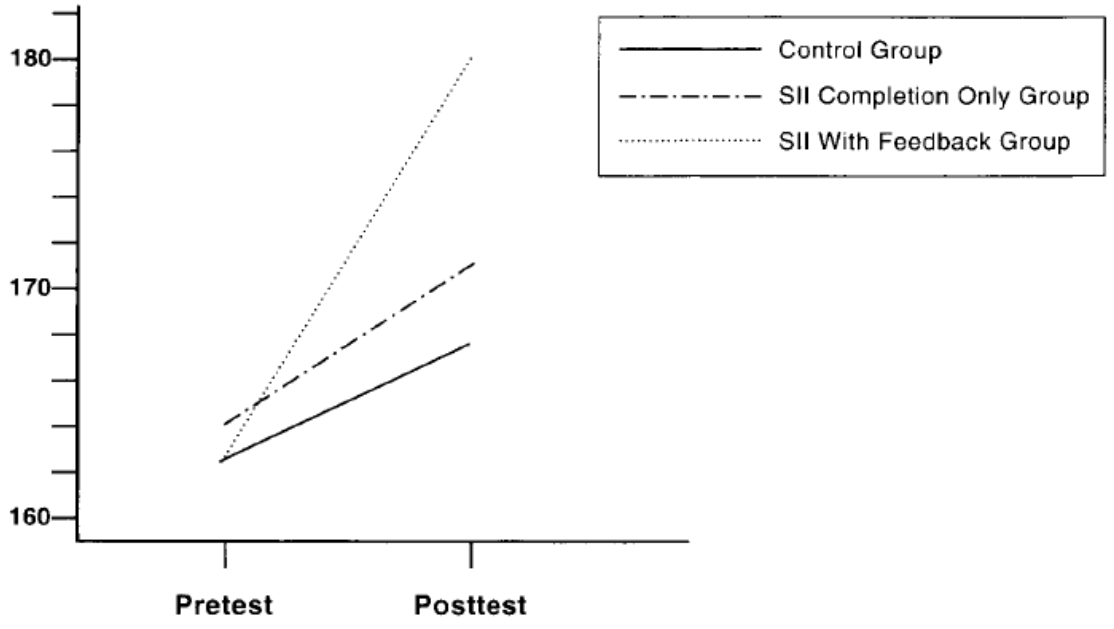

Figure 1. Mean pretest and posttest CDMSES-SF scores across treatment groups.

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Career decision making self-efficacy

- "The treatment condition consisted of administering the MBTI Complete, Newly Revised Strong (Strong Interest Inventory 2004 edition), and Skills Confidence Inventory and follow-up counseling to the treatment group. After six weeks the treatment (N=77) and control group (N=88), were administered [a career decision making self efficacy measure, CDMSE]. Paired sample t-tests and hierarchical multiple linear regression analysis found a significant treatment effect indicating administration of career assessments with follow-up counseling raised CDMSE among active-duty Coast Guard personnel compared to the control group." (Brennan, 2009)

Table 9

$H_0$2 CDSE-SF Pre and Post-Measure Score Descriptive Statistics by Group

Variable		Mean	Std. Dev.	N
CDSE-SF Pre-Measure Score				
	Treatment Group	93.05	14.040	77
	Control Group	96.65	12.217	88
	Total	94.97	13.182	165
CDSE-SF Post-Measure Score				
	Treatment Group	99.86	12.240	77
	Control Group	97.26	13.460	88
	Total	98.47	12.931	165

Note: *The IV group was added in second stage of the hierarchical regression analysis.*

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Summary

1. Helping people understand their interest profiles increases confidence that they can make good career decisions
2. People who understand their interests have a better chance of finding environments (academic programs, occupations) that are congruent with their interests
3. Congruent interests are associated with lots of important outcomes

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Current research projects and an opportunity

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Current research projects

- Distribution of worker interests vs distribution of jobs
- Overall degree of interest fit in the workforce
- Gender differences in interests and representation in the US workforce

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Opportunity to take, view results, and provide feedback on new Strong Version 3 assessment

- Features of new Strong assessment
  - Gender neutral scoring - no gender response required
  - New similarity scales for 243 occupations and 33 academic majors
  - New satisfaction scores for the same occupations and majors
  - Shorter assessment
- New report for use with practitioner; self-directed option as well

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