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Beyond the Common Core

(soft skills, noncognitive skills, 21st century skills and competencies, interpersonal & intrapersonal skills, social-emotional skills)

Patrick Kyllonen
Center for Academic & Workforce Readiness & Success

Assessing College- and Career-Readiness: 2015 and Beyond Agenda
Reidy Interactive Lecture Series 2013 (RILS)
Sponsored by the Center for Assessment
September 26-27, 2013 (Sheraton Commander Hotel, Cambridge, MA)

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Outline

- Overview
  - Center for Academic & Workforce Readiness & Success
- What are the important skills?
- How do we improve educational attainment?
- Better measurement
- Uses of the new assessments
- Summary

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Center for Academic & Workforce Readiness & Success

OVERVIEW

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Overview of ETS's "Center for Academic & Workforce Readiness & Success"

- Mission
  - Conduct research on factors not reflected in conventional standardized tests that influence students' preparedness for and success in higher education and the workplace
- ETS is Committed to this Mission
  - 14 scientists (+ consultants, postdocs, research interns); 14 project managers, research associates/assistants; ETS collaborators
- Funding
  - **Internal**: Higher Education & Workforce Research Initiative (2012--2014), GRE
  - **External:** OECD (PISA 2012, 2015, PIAAC Online, Gallup World Poll), Army Research Institute (Cross-Cultural Competence), Private Schools Consortium K-12 (Mission Skills Assessment), Department of Education (NAEP Background Variables), Intelligence Advanced Research Projects Activity (IARPA) (Cognitive biases; Reasoning ability); Department of Labor (TAACCCT); others

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Higher Education and Workforce Research Initiative Agenda

- Promote Student Success
  - Understand the retention process
  - Improve student learning outcomes
    - better assessments, associated feedback & action plans
- Develop Better Measures
  - Identify **cognitive, interpersonal, and intrapersonal skills** necessary for success in higher education and in the 21st-century workforce
  - Focus on **new constructs**
    - collaborative problem solving, cultural competence, creativity, adaptability
  - Develop **innovative methods**
    - Game-like situational judgment tests with avatars & trialogues
    - Structured video interview prompts and scoring methods

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WHAT ARE THE IMPORTANT SKILLS?

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What kind of students are professors looking for? (GRE Horizons project, 1999-2002)

What are professors looking for when they review…

Personal statements?		Letters of recommendation?	
Program fit	47	Capable of graduate work	6
Writing skills	32	Ability to write	3
Commitment to field	15	Quality of work, res experience	6,3
Research experience	3	Independence, open minded	3,3
Logic	3	Problem solving/critical thinking	6
Maturity, values, integrity, character	3,3,3,3	Maturity, values, ethics, character, responsibility	3,3,3,6, 3
		Trustworthy/honest/integrity	6
Determination, initiative	3, 2	Drive/commitment/motivation, work habits, initiative	9,6,9
		Interpersonal skills, leadership, ed ldr	15,6,3
		(teachers) professional involvement	3
Wrote the letter by self	5	Writer knows/frank/enthused	3,3,6

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Millennial Branding Student Employment Gap Study (225 Employers from Experience Inc.'s 100,000 company database)

	What skills are you looking for when you hire?	What skills are hardest to find, but most important to you?
Communication Skills	**98%**	**91%**
Positive Attitude	97%	85%
Adaptable to Change	92%	85%
Teamwork Skills	**92%**	**82%**
Goal Oriented	88%	
Strategic Thinking & Analytics		78%

"Companies are looking for soft skills over hard skills now because hard skills can be learned, while soft skills need to be developed."

http://millennialbranding.com/2012/05/millennial-branding-student-employment-gap-study/

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Employers Rating Skill as "Very Important"

	College graduates	High School Graduates
Oral Communications	**95%**	**70%**
Teamwork/Collaboration	**94**	**75**
Professionalism/Work Ethic	94	80
Written Communications	**93**	**53**
Critical Thinking/Problem Solving	92	58
English Language	**88**	**62**
Ethics/Social Responsibility	86	63
Leadership	82	29
Information Technology	81	53
Creativity/Innovation	81	36
Lifelong Learning/Self direction	78	43
Diversity	72	52
Mathematics	64	30
Science	33	9

Casner-Lotto, J., Barrington, L., & Wright, M. (2006) Are they really ready to work? Conference Board, Corporate Voices for Working Families, Partnership for 21st Century Skills, Society for Human Resource Management

Lominger's 67 Competencies

Action Oriented	Confronting Direct Reports	Hiring and Staffing	Motivating Others	Political Savvy	Building Effective Teams
Dealing with Ambiguity	Creativity	Humor	Negotiating	Presentation Skills	Technical Learning
Approachability	Customer Focus	Informing	Organizational Agility	Priority Setting	Time Management
Boss Relationships	Timely Decision Making	Innovation Management	Organizing	Problem Solving	Total Work Systems
Business Acumen	Decision Quality	Integrity and Trust	Dealing With Paradox	Process Management	Understanding Others
Career Ambition	Delegation	Intellectual Horsepower	Patience	Drive for Results	Managing Vision and Purpose
Caring About Direct Reports	Developing Others	Interpersonal Savvy	Peer Relationships	Self-Development	Work/Life Balance
Comfort Around Management	Directing Others	Learning on the Fly	Perseverance	Self-Knowledge	Written Communication
Command Skills	Managing Diversity	Listening	Personal Disclosure	Sizing Up People	
Compassion	Ethics and Values	Managerial Courage	Personal Learning	Standing Alone	
Composure	Fairness to Direct Reports	Managing & mea suring work	Perspective	Strategic Agility	
Conflict Management	Functional/Tech nical Skills		Planning	Managing Through Systems	

Important recent validity studies

- Lindqvist & Vestman (2011)
  - 14,000 Swedish enlistees
  - Tested as 18 year olds, Evaluated 20 years later

	For 1 SD increase in …	
	Cognitive scores	Noncognitive scores
Wages	5%	9%
Employment	1.1%	3.3%
Chronic unemployment	-.2%	-4.7%
(20 years later)		

- Segal (2012)
  - Misbehavior in 8th grade
  - Predicts better than cognitive test scores:
    - Educational attainment
    - Labor market outcomes 20 years later

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Identifying Important Skills through Job Incumbent (and Expert) Ratings

- DoL's O*Net database:
  - 136 skill ratings x 536 occupations (of 974 total occupations)
- Reduce 136 ratings to 15 components through principal component analysis:
  - *problem solving*
  - *mechanical skills*
  - *service orientation*
  - *cultural literacy*
  - *business literacy*
  - *science literacy*
  - *civic literacy*
  - *information processing*
  - *athleticism*
  - *visual acuity*
  - *reasoning ability*
  - *communication skills*
  - *teamwork*
  - *achievement/ innovation*
  - *attention to detail/ near vision*

* 5-point rating scale, "not…," "somewhat…," "important," "very…," "extremely…" converted to 100-point scale for reporting

Burrus et al. (2013). Identifying the Most Important 21st Century Workforce Competencies: An Analysis of the Occupational Information Network (O*NET)

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Importance and Wages associated with the 15 O*Net Components

"The more <communication skills> is important to a job, the more that job pays"

"The most important skills for jobs are problem solving, reasoning ability, teamwork, achievement orientation & innovation, and communication skills"

15 Components (Jobs involving…)	Simple *r* with Wages	Importance* (rank)
Communication Skills	.60	5
Problem Solving	.58	1
Achievement Orientation/Innovation	.46	4
Reasoning ability	.41	2
Information Processing	.30	9
Science Literacy / ITC literacy	.29	7
Business Literacy	.19	6
Civic Literacy	.14	8
Cultural Literacy	.13	12
Attention to Detail/Near Vision	.13	11
Service Orientation (collaboration)	.10	10
Teamwork	.00	3
Mechanical Skills	-.16	15
Visual Acuity	-.23	14
Athleticism	-.41	13

Burrus et al. (2013). *Identifying the Most Important 21st Century Workforce Competencies: An Analysis of the Occupational Information Network (O*NET)*

* Sum of the descriptor importance scores weighted by the PCA component regression coefficients

Crosswalk: 15 O*Net Components x 3 21st Century Skills Projects

Category	Skill	ATC21S	F&G	P21	Burrus et al (2013)
Analytic Skills	Critical Thinking (Reasoning Ability)	X	X	X	.41 (2)
	Problem Solving	X	X	X	.58 (1)
	Decision Making (Information Processing)	X	X		.30 (9)
	Research and Inquiry		X		
Interpersonal Skills	Communication	X	X	X	.60 (5)
	Collaboration (Service Orientation)	X	X	X	.10 (10)
	Leadership and Responsibility		X	X	
Ability to Execute	Initiative and Self-Direction		X		
	Productivity (Achievement/Innovation)		X		.46 (4)
Information Processing	Information Literacy (Science literacy)	X	X	X	.29 (7)
	Media/ICT Literacy	X	X	X	
	Digital Citizenship		X		
	ICT Operations and Concepts		X		
Capacity for Change	Creativity/Innovation (Achievement/Innovation)	X	X	X	.46 (4)
	Adaptive Learning/Learning to Learn	X	X		
	Flexibility		X		
Living in the World	Citizenship/Civic Literacy	X		X	.14 (8)
	Life and Career	X		X	
	Personal and Social Responsibility	X			
Core Subjects and 21st Century Themes	Mastery of Core Academic Subjects			X	
	Global Awareness (Cultural Literacy)			X	.13 (12)
	Financial, Economic, Business, Entrepreneurial Literacy			X	.19 (6)
	Health Literacy			X	

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HOW DO WE IMPROVE EDUCATIONAL ATTAINMENT?

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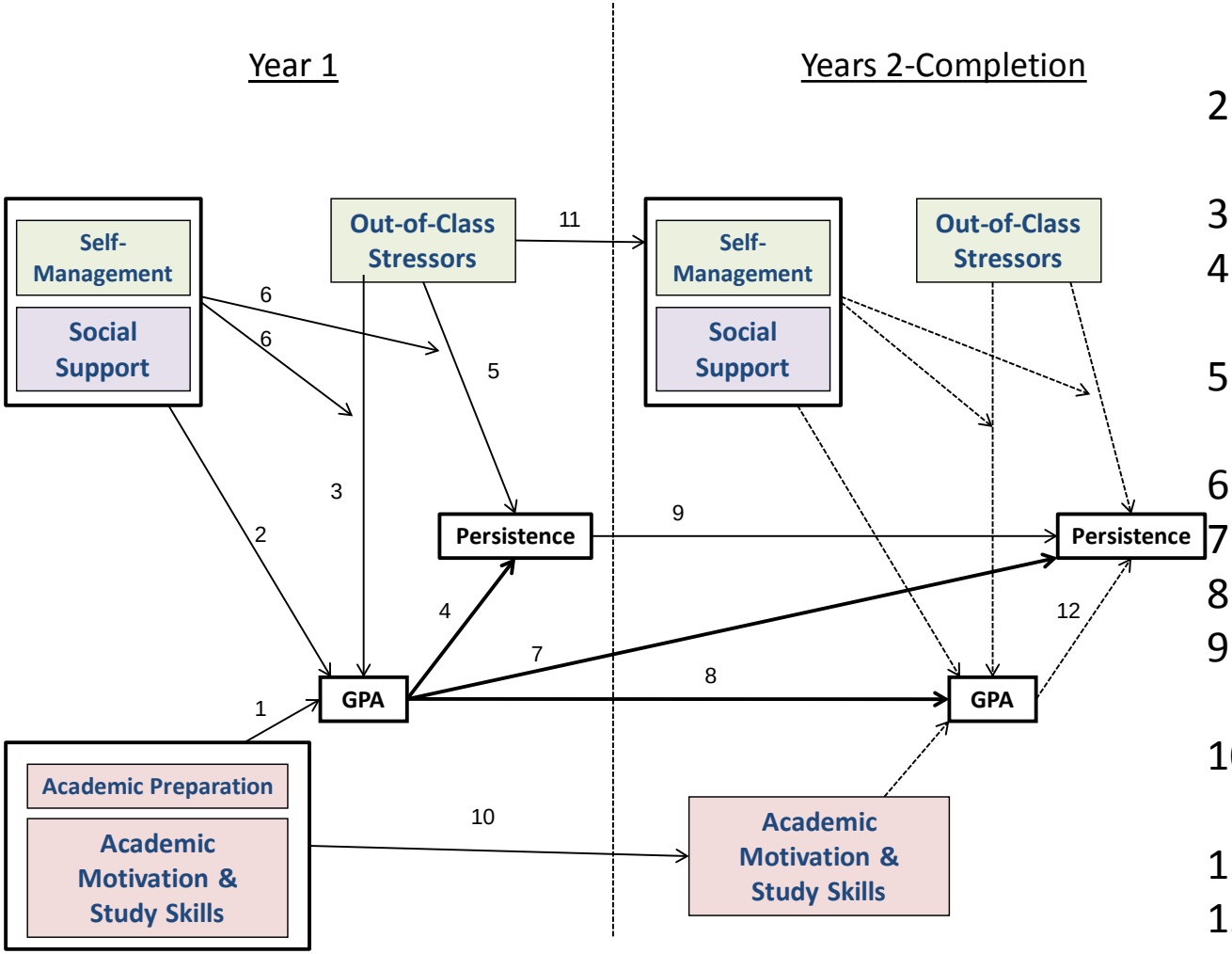
Towards a Comprehensive Model of Persistence and Goal Attainment

(Burrus et al, 2013)



1: Richardson et al, 2012; Robbins et al, 2004; Crede & Kuncel, 2006
2: Pascarella & Terenzini, 1983
3: Robbins et al., 2004
4: Pascarella & Terenzini, 2005
5: Berkner et al., 2002; Leppel, 2002
6: Bray et al, 1999
7: Westrick & Robbins, 2012
8: Westrick & Robbins, 2012
9: <Ouellette & Wood, 1998>
10: <Ouellette & Wood, 1998>
11: Paulsen & St. John, 2002
12: Westrick & Robbins, 2012

See also Tinto (1975) "Theory of student departure;" Bean (1980) "Model of student attrition"

SuccessNavigator Battery

Academic Skills	*Organization*	I make a schedule for getting my school work done. I take due dates seriously.
	Meeting Class Expectations	I attend almost all of my classes. I complete the reading that is assigned to me.
Self-Management	*Sensitivity to Stress*	I get stressed out easily when things don't go my way. I am easily frustrated.
	Determination	When feeling stressed about the amount of homework I have, I try to get organized to get on top of my homework. When worried about a test, I get prepared regardless.
	Academic Self-Efficacy	I'm confident that I will succeed in my courses this semester. I can do well in college if I apply myself.
	Test Anxiety	When taking a test, I think about what happens if I don't do well. Before a test, my stomach gets upset.
Social Support	*Connectedness*	I feel connected to my peers. People understand me.
	Institutional Support	If I don't understand something in class, I ask the instructor for help. I know how to find out what's expected of me in classes.
	Barriers to Success	Family pressures make it hard for me to commit to school. People close to me support me going to college.
Commitment	*Commitment to College*	One of my life goals is to graduate college. The benefit of a college education outweighs the cost.
	Institutional Commitment	This is the right school for me. I'm proud to say I attend this school.

SuccessNavigator Validity Study

- Initial online data collection for national field trial
  - ~8,000 students/10+ institutions (2-year, 4-year)
  - Scores predicted retention, course grades, grade-point average (controlling for SAT/ACT and college placement test scores)
- Transition from research to product
  - July 21, 2013
  - $5 / assessment
- Uses
  - With City Colleges of Chicago course placement study
    - Accelerate students based on success prediction given by cognitive placement test AND noncognitive assessment battery
  - Early warning indicator

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Other Field Trials: Teacher Workforce Assessment

- NJ State Department of Education collaboration
  - Administer behavioral & interest measures to teachers
  - Link to the new NJ longitudinal database
  - Enable career trajectory studies
- Measures
  - Self-report behavioral assessment (15 facets)
  - Interest inventory
  - Situational judgment test (3 dimensions)
  - Peer report behavioral assessment (6 dimensions)

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BETTER MEASUREMENT

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Standard Method: Simple Rating Scale

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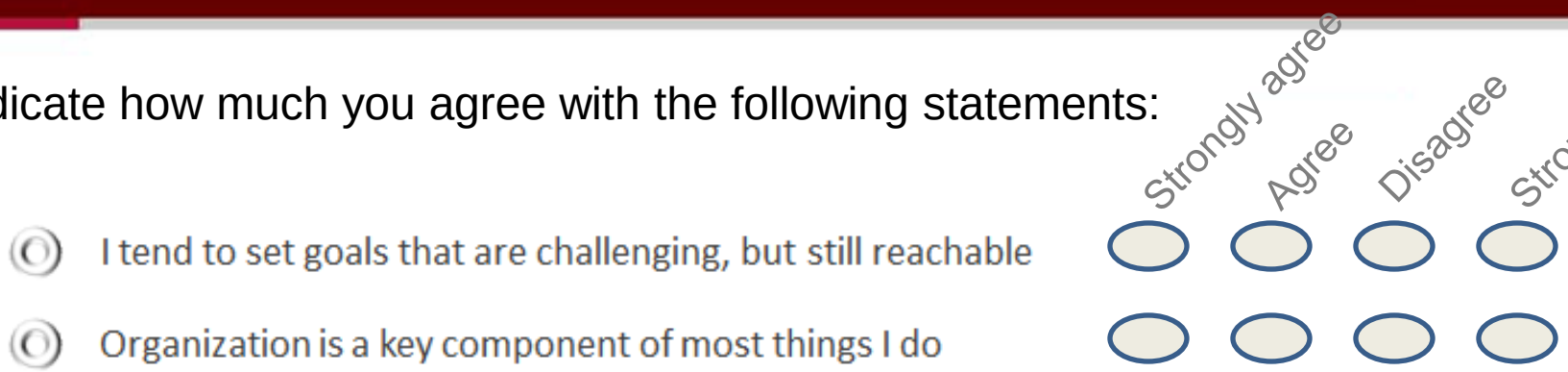
Workforce Readiness

Question 1/40

Indicate how much you agree with the following statements:



Candidate rates self -- Most common approach

Invites “faking good”

NEXT

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ETS's BEHAVIORAL ASSESSMENT METHOD

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Workforce Readiness

Question 1/40

For each pair of statements, please click on the one that is most like you

- I tend to set goals that are challenging, but still reachable
- Organization is a key component of most things I do

Student is forced to choose between two statements:

- Prevents "faking good"
- Validated on over 300,000 applicants so far
- More successful at predicting success than simple ratings

Major breakthrough in behavioral assessment!

NEXT

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Behavioral Facets Measured (with this method)

intrapersonal

- Industriousness
- Order
- Self-control
- Responsibility
- Traditionalism
- Virtue

- Adjustment/Anxiety
- Even tempered
- Optimistic

interpersonal

- Dominance
- Sociability
- Excitement seeking

- Warmth/Consideration
- Generosity
- Cooperation/Trust

- Intellectual efficiency
- Ingenuity
- Curiosity
- Aesthetics
- Tolerance
- Depth

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ETS's BEHAVIORAL ASSESSMENT METHOD

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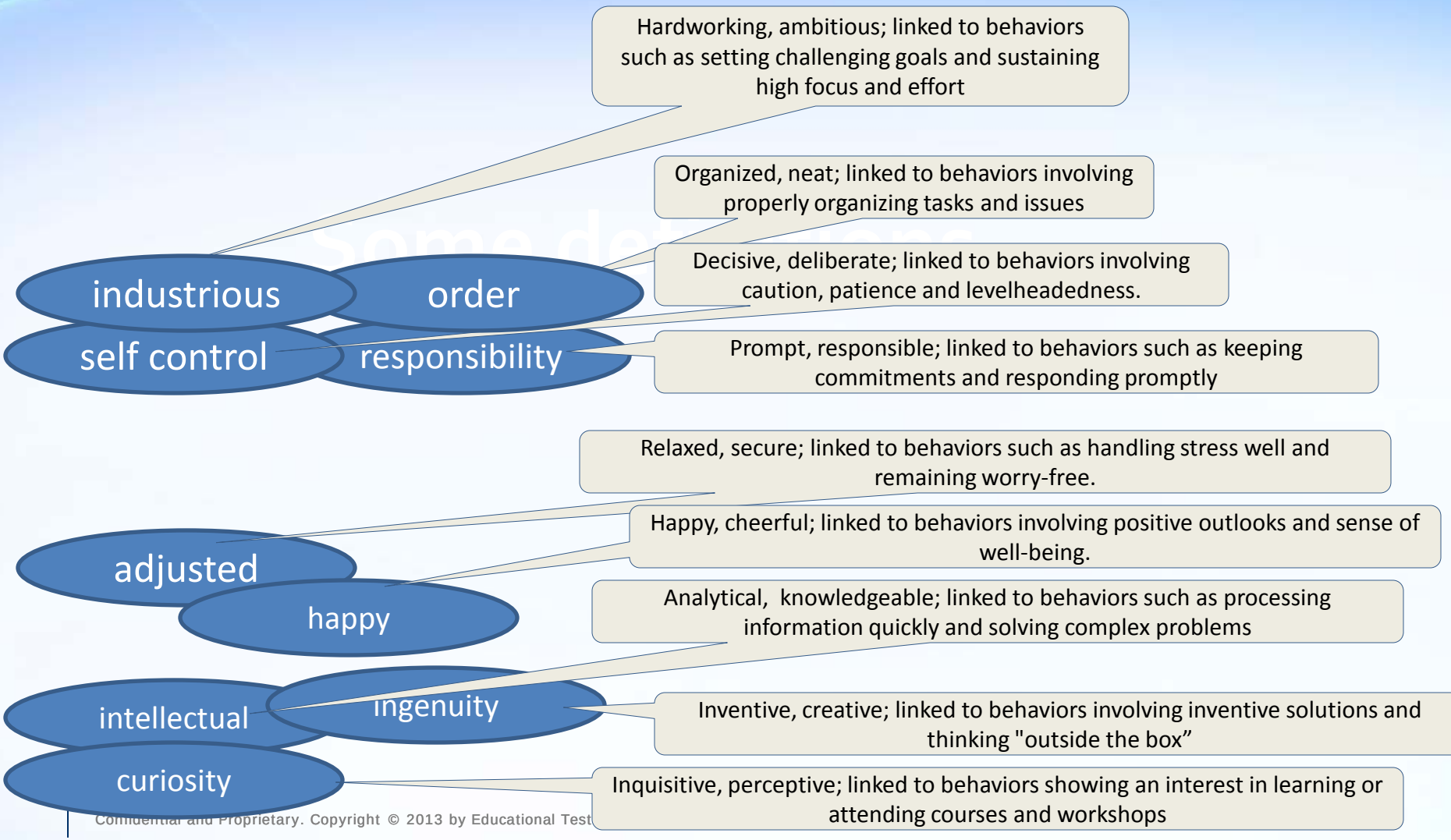

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Uses & Plans

- Fortune 500 employer—screening college graduates for IT, Customer Service, Management Consulting, and other, internationally. Also, screening executives.
- PIAAC Online—Company employee testing in 15 countries/languages.
- College workforce readiness assessment—feedback, development (TAACCCT grant)
- Yale University Business School—Research trial with 1st year students, Spring, 2014.

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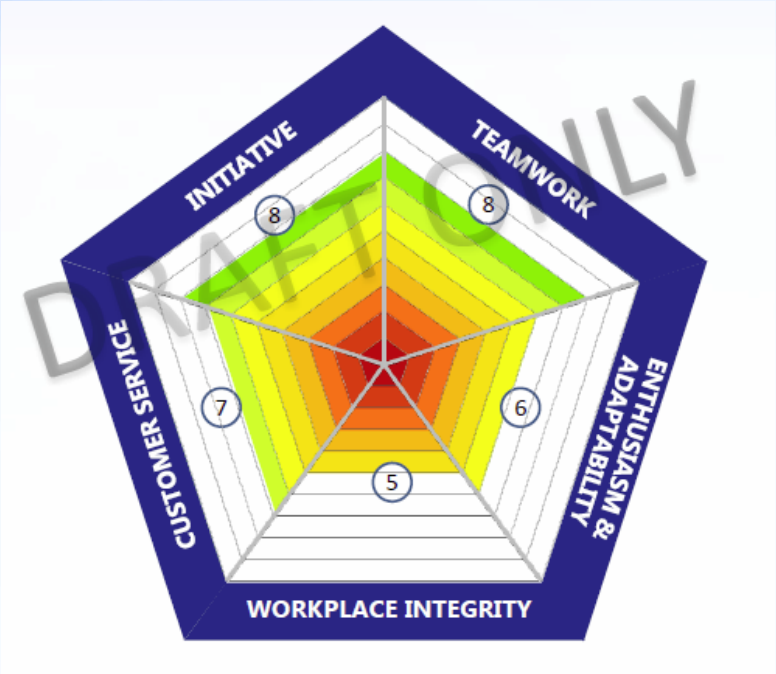
Sample End User Score Report (.pdf)

(we are currently experimenting with several different score reports)



DRAFT ONLY

Candidate ID: Jane Smith, 9087652013

Skill Description	ETS® Workforce Behavior Potential Score

TEAMWORK

Works confidently in a group, contributing own ideas effectively, respecting differing opinions, and taking share of responsibility.

8 (1 – 10) — High: Exceeds expectations for workplace skills likely to lead to success on the job

ENTHUSIASM & ADAPTABILITY

Has the ability to work in diverse environments and situations. Deals positively with change and effectively adapts approaches and shifts priorities to reach goals.

6 (1 – 10) — Average: Meets expectations for workplace skills likely to lead to success on the job

WORKPLACE INTEGRITY

Complies with and champions organizational values, policies and regulations. Demonstrates sound moral judgment, honesty, respectful behavior, and responsibility for own actions.

5 (1 – 10) — Average: Meets expectations for workplace skills likely to lead to success on the job

CUSTOMER SERVICE

Establishes valuable customer relationships in a professional, friendly, and knowledgeable manner. Utilizes good listening skills, clear communication, and efficient use of knowledge and available resources.

7 (1 – 10) — Average: Meets expectations for workplace skills likely to lead to success on the job

INITIATIVE

Has the drive, strong work ethic, and self-determination to take on a job or task independently.

8 (1 – 10) — High: Exceeds expectations for workplace skills likely to lead to success on the job

DRAFT ONLY

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Method 2: Others' Ratings

- Others' ratings are typically more reliable AND more valid (predictive of outcomes) compared to self ratings (Connelly, B.S., & Ones, D.S. (2011). An other perspective on personality: Meta-analytic integration of observers' accuracy and predictive validity. *Psychological Bulletin*.)

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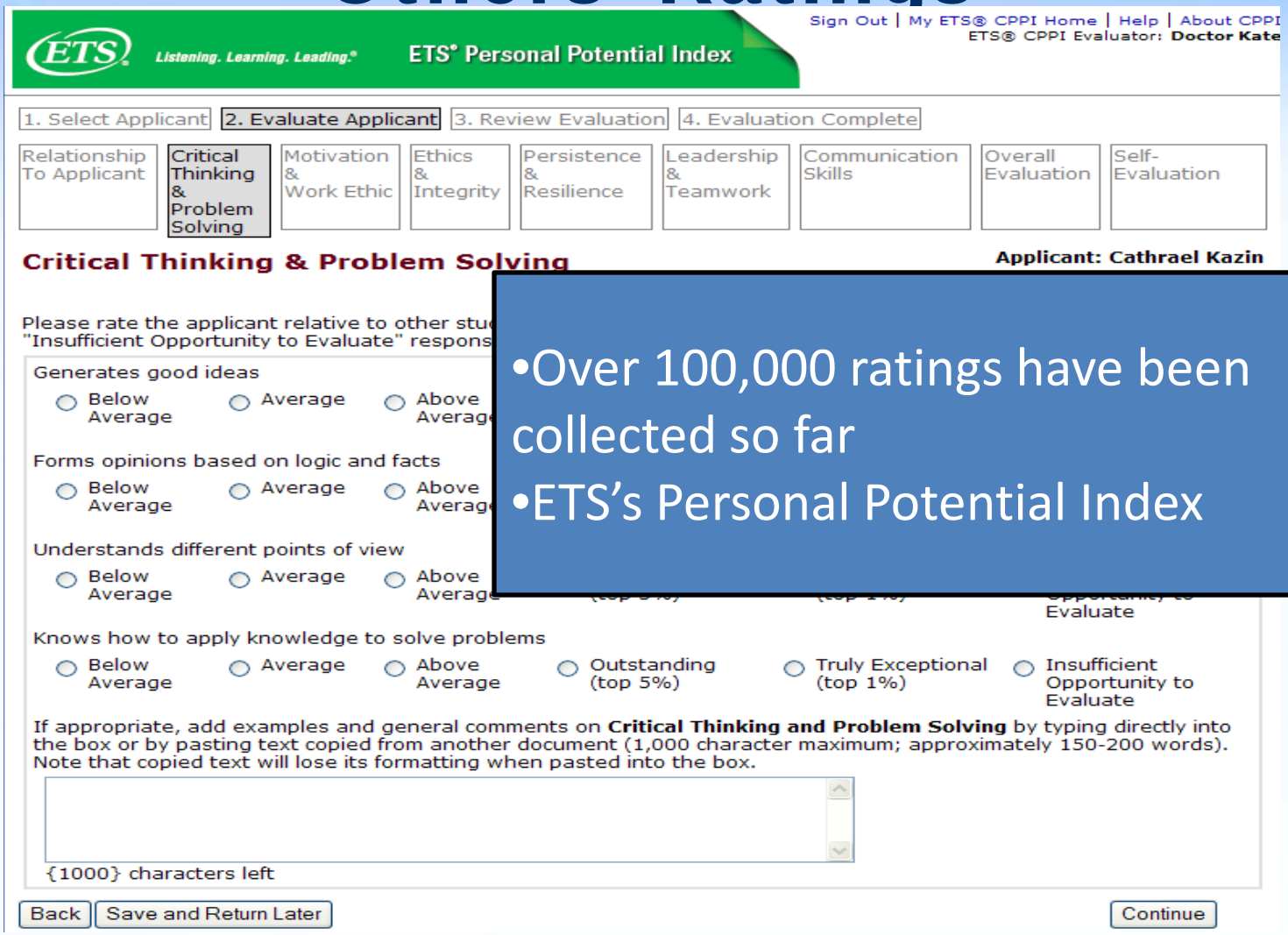
Measuring Noncognitive Skills
Others' Ratings



- Over 100,000 ratings have been collected so far
- ETS's Personal Potential Index

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Scales and Items from Personal Potential Index (CPPI)

•Critical Thinking and Problem Solving

- Generates good ideas
- Forms opinions based on logic and facts
- Understands different points of view
- Knows how to apply knowledge to solve problems

•Motivation and Work Ethic

- Works hard
- Is goal-oriented
- Shows initiative
- Meets deadlines

•Ethics and Integrity

- Shows respect for coworkers
- Is worthy of trust from others
- Is engaged in citizenship activities
- Treats all people fairly

Persistence and Resilience

- Remains calm under pressure
- Accepts feedback w/o getting defensive
- Can overcome challenges and setbacks
- Does not give up easily

Leadership and Teamwork

- Is skilled in handling social situations
- Has a talent for influencing people
- Works well in group settings
- Gives criticism/feedback to others in a helpful way

Communication Skills

- Writes reports well
- Expresses ideas clearly in short written text (emails, notes, memos)
- Expresses ideas clearly in oral presentations
- Effective at getting point across in conversations and discussions

Method 3: Situational Judgment Tests (SJTs) "Teamwork & Collaboration"

As part of a class project you serve as a volunteer for a non-profit agency. In a discussion about how to find new volunteers, you bring up what you think is a great new idea. But the others tell you that the idea is "off base" and not workable. How would you handle this situation?

Best	Worst	
○	○	Drop your idea because the group is probably right.
○	○	Point out several good reasons why your idea might work.
○	○	Drop your idea for now, but tell it to your boss later.
○	○	Tell the others that lots of people don't recognize great ideas at first.

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Method 3: Situational Judgment Tests (SJTs)

- Validity
  - High content validity, high face validity, moderately high criterion-related validity*
- SJTs Developed at ETS
  - General business
    - Communication, teamwork, critical thinking, organizational skills, leadership
  - Business Analysts
    - Strategic Consulting; Communication, critical thinking, problem solving
  - Health Care Workers (video)
    - Communication Skills
  - Athletes
    - Work ethic, emotional stability, integrity, people skills, communication, self-confidence
  - Middle skill workers (video)
    - emotional intelligence in school, personal life, and workplace

*(U.S. Office of Personnel Management (OPM) http://www.opm.gov/policy-data-oversight/assessment-and-selection/other-assessment-methods/situational-judgment-tests/)

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Method 4: Structured Interviews

- Traditionally expensive
- Trend is to replace screening interviews with tests
- But applicants like them & they have high reliability, validity, and legal defensibility*

*U. S. Office of Personnel Management (OPM). http://www.opm.gov/policy-data-oversight/assessment-and-selection/structured-interviews/guide.pdf

Image source: http://thumbs.dreamstime.com/thumblarge_534/1282959958zh6zck.jpg

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Method 4: Structured Interviews

- Online asynchronous interviews may be a solution
- Quick & inexpensive, but captures much of the information as a face-to-face interview

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USES OF THE NEW ASSESSMENTS

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How Can We Use New Assessments?

- Admissions
  - Noncognitive skills increase student quality with less adverse impact
  - Can be used in placement
- Student development
  - Noncognitive skills can be evaluated with advisor, self-help, early warnings
- Institutional studies
  - Noncognitive skills to evaluate campus climate, serve as pre-post measures, accreditation

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For $99.99, the Reflect™ tool offers actionable ways to help you improve your professional qualities and plan for your success.

- INSIGHTS
- ACTIONS
- RESOURCES
- BENCHMARKING

A Personalized report that explains what your score in each of 10 key competencies means for you

B Learning resources selected to further your professional development

C Development tips that are specific to your strengths and development opportunities

Summary

- Educators & employers know 21st Century competencies "beyond the common core" are important for college and career readiness
- Communication skills, teamwork, critical thinking, work ethic are among the most important competencies
- Variety of ways to measure these, from self & others' ratings to performance tests to interviews
  - Self ratings (current SuccessNavigator) are fine for low stakes
  - Forced-choice formats are an advance, resist "faking" (e.g., ETS's Behavioral Assessment)
  - Evaluator ratings (e.g., ETS's PPI) can measure noncognitive skills
  - Multiple methods are also useful (e.g., situational judgment, interviews)
- Various uses
  - Admissions
  - Student development
  - Institutional studies (e.g., student outcomes)

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Questions?

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