Hire★Vue

WHITE PAPER

THE NEXT GENERATION OF ASSESSMENTS

AUTHORS

Dr. Nathan Mondragon – Chief I/O Psychologist

Dr. Kiki Leutner –Director Assessment Innovation

Dr. Josh Liff - Director Of Assessment Psychometrics & Applied Research

Dr. Lindsey Zuloaga – Chief Data Scientist

OCTOBER / 2021

TABLE OF CONTENTS

ABSTRACT

Predicting performance, predicting turnover, predicting aptitude - hundreds of factors are at play in great hiring decisions.

When validated pre-hire assessments entered the employment space, they promised to bring scientific validity and reliability to what was previously an error filled, intuition-driven process. They gave invaluable insight into the core competencies and traits required for job success, so managers could focus their time on candidates they knew could excel at the job. Today, pre-hire assessments have evolved beyond their legacy self-report roots to measure those critical competencies faster, more accurately, and in a way that enhances the candidate's experience.

A Brief History Of Assessments

Validated pre-hire assessments measuring individual differences gained wide use in the 1970s. Assessments were most often taken at designated testing centers, and usually took the form of a long multiple-choice questionnaire or test.

Through the decades, these multiple-choice assessment tests were transcribed onto the new technologies of the time. The 1980s saw the rise of tests delivered via phone, and the 1990s saw these tests delivered over personal computers and subsequently the Internet.

Up until the early 2010s, pre-hire assessments remained largely the same (e.g. a multiple-choice, closed-ended test). All that changed was the modality: over the phone, on a PC, over the Internet, etc. These assessments were the same legacy tests simply delivered in a different way. They were long, boring and didn't make for a great experience for anyone involved. Today's technology is revolutionizing

the concept of pre-hire assessment. These cutting-edge assessments can be a quicker, more engaging experience that gives candidates room to tell their stories, yet just as predictive as legacy pre-hire assessments.

What's The Value Of Pre-Hire Assessment Testing?

The key factors that distinguish pre-hire assessments from other employee selection methods (interviewing, resume screening, etc.) are scale and validation. A single recruiter cannot consistently and objectively screen thousands of applicants; a pre-hire assessment provides a consistently objective evaluation that can be deployed on a large scale.

Validation is the process by which a selection system is shown to reliably and consistently support valid inferences that relate to, and predict job-related outcomes and behaviors. A validated assessment will have evidence to support how job-related behaviors or characteristics are measured, what is measured, and how that measurement process relates to valued outcomes such as on-the-job performance, core competency behaviors, and retention.

In other words, the scores achieved by assessment takers are statistically correlated to the attribute the assessment is trying to measure. For example, if the ultimate goal is to predict cognitive ability, assessment scores would be compared to cognitive ability test scores on other, validated measures of cognitive ability. In addition, the attribute measured must be relevant in job performance. We draw on decades of research in Psychology to identify attributes most predictive of job performance.

Job Performance >

HireVue Assessments Score >
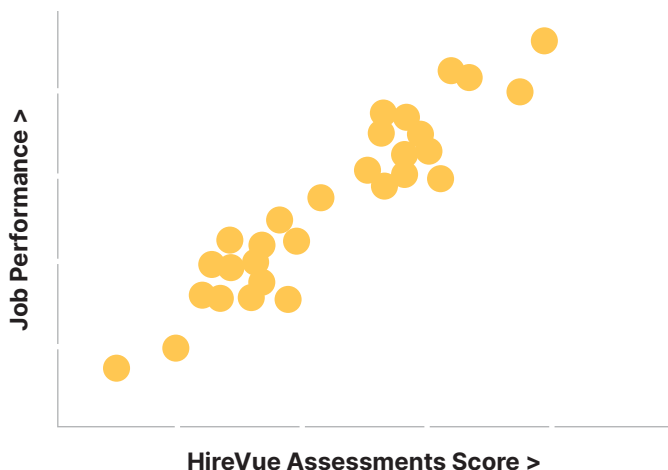
This scientific approach to hiring means that great decisions can be made consistently, and on highly relevant criteria.

THE GOLD STANDARD:

Comprehensive Measurement Of Candidates

The world of work is more complex than ever before. Even entry-level, hourly jobs require a unique combination of job-related competencies. This is likely why cognitive ability (General Mental Ability or GMA) is the best predictor of job success.[1] Even so, people rarely work alone. Emotional intelligence, communication skills, and various personality traits are also critical for success on the job[2].

Unfortunately, legacy pre-hire assessments do not allow for the comprehensive measurement of job-relevant competencies in an efficient, candidate friendly manner. A test that measures personality traits won't measure cognitive ability or job-specific competencies; and a cognitive ability test won't give insight into personality or technical competencies. To evaluate candidates on a range of job-relevant competencies and attributes and obtain a comprehensive evaluation of their job fit several tests need to be administered - referred to as a test battery. Getting a complete evaluation of a candidate like this is unworkable for most roles. To gather enough data for a comprehensive, validated evaluation of a candidate, hours of testing would be required.

In the 21st century we can't expect candidates to spend one hour on an assessment, much less two or three.[3]

This is where today's technology - namely artificial intelligence - comes into play. Combined with timetested techniques from Industrial/Organizational (I/O) Psychology, we can finally move beyond the legacy multiple-choice test and deliver assessments in an expedited, candidate-friendly modality. Rather than put a candidate through an hour or more of testing, we can evaluate a candidate's job fit - the optimal combination of personality traits, cognitive ability, and competency areas for a target set of job roles - in under 30 minutes.
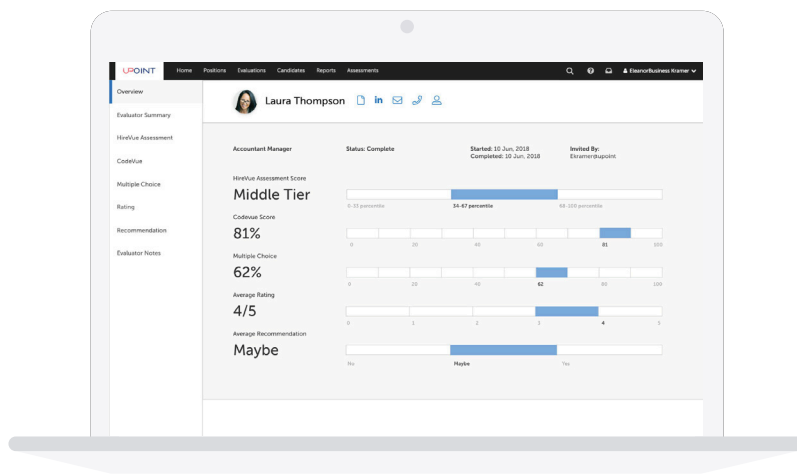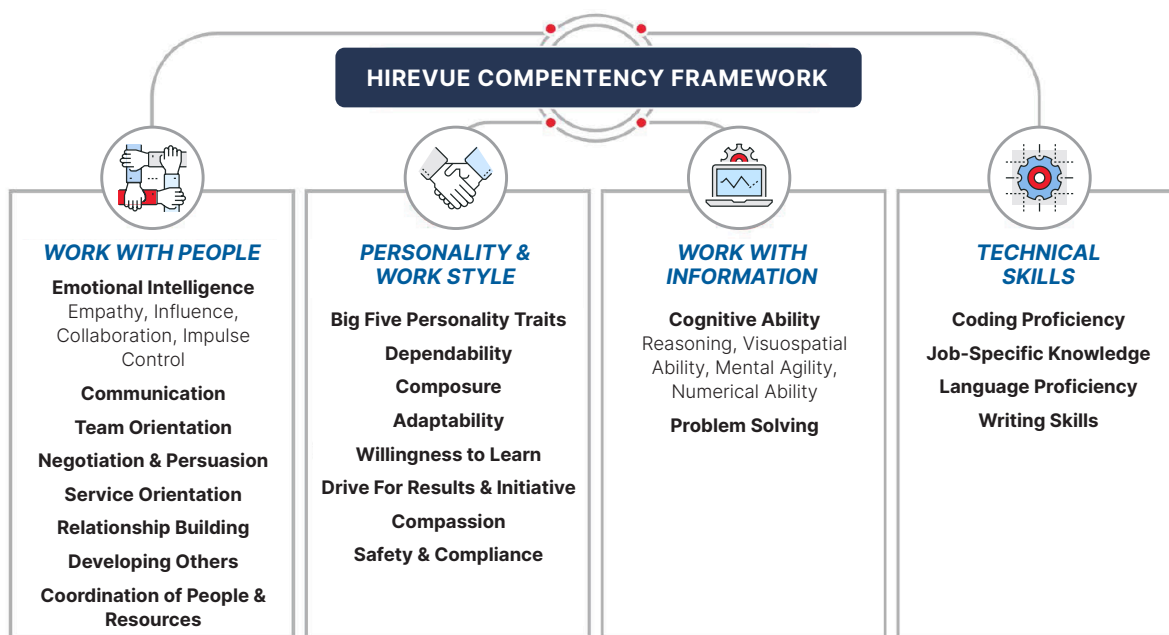
Hirevue's Approach To Measuring Job Fit

HireVue's overarching framework draws on over 100 years of research insights in the field of I/O Psychology (a well established, scientific field that studies human behavior in organizations and the workplace) to identify the attributes that are most important for job performance[4]. As outlined with select competencies in Figure 1 below, the individual factors critical for job effectiveness are the following:

- ✦ **Work with People:** The extent to which people can form productive and rewarding relationships with others.
- ✦ **Work Style & Personality:** The extent to which individuals have the right level and mix of personality, motivation, and attitudes to meet the people, data, and information demands of the job.
- ✦ **Work with Information:** The extent to which individuals have the cognitive abilities to effectively process information and data they encounter in the role to drive decisions and action.
- ✦ **Job-Specific Knowledge / Technical Skills:** The extent to which individuals have job-specific knowledge and skills required for effective performance in a role.

FIGURE 1:

HIREVUE COMPENTENCY FRAMEWORK

WORK WITH PEOPLE	PERSONALITY & WORK STYLE	WORK WITH INFORMATION	TECHNICAL SKILLS
Emotional Intelligence Empathy, Influence, Collaboration, Impulse Control	**Big Five Personality Traits**	**Cognitive Ability** Reasoning, Visuospatial Ability, Mental Agility, Numerical Ability	**Coding Proficiency**
Communication	**Dependability**	**Problem Solving**	**Job-Specific Knowledge**
Team Orientation	**Composure**		**Language Proficiency**
Negotiation & Persuasion	**Adaptability**		**Writing Skills**
Service Orientation	**Willingness to Learn**		
Relationship Building	**Drive For Results & Initiative**		
Developing Others	**Compassion**		
Coordination of People & Resources	**Safety & Compliance**		

With the rapid pace at which jobs transform and new technology tools and systems constantly replace others, it is important to focus on broad abilities and personality skills that determine whether individuals can continuously learn and adapt. HireVue's assessment solution ensures individuals possess the comprehensive set of knowledge, skills, abilities, motivation, and personality critical for effective performance in specific job roles.

This is possible by harnessing two new and complementary assessment delivery modalities: AI-powered interview and game-based assessments.

Assessments that measure different traits and abilities are additive. Combined together they provide a much better candidate experience while maintaining prediction of job success.

What Are Interview Assessments?

Since 2015, HireVue has used artificial intelligence to replace close-ended questionnaires used in psychometric assessments with open ended interview questions.

The result is a powerful, validated pre-hire assessment that reduces bias and augments talent decisions at scale.

HireVue interview assessments are asynchronous. Candidates record their responses to interview questions at the time of their choosing, on any device. In the same fashion, recruiters and hiring managers can review candidates' interviews side-by-side at any time. The average recorded interview is 15-20 minutes long.

Interview answers contain rich information about the candidate that forms the basis of the interview assessment score.

Interviews are scored entirely based on the content of candidates' responses, using state-of-the-art speech-to-text transcription and natural language processing.

A combination of leading-edge data science (a field that has only come into its own in the last decade), and I/O Psychology (a decades-old, established assessment sciences field) makes this new approach to assessment possible.

The questions candidates answer are carefully designed according to I/O Psychology best practices after an in-depth job analysis. The questions in interview assessments are crafted specifically to elicit responses predictive of the attribute measured. These are generally situational judgment, scenario-based, and past behavior interview-type questions.

Having candidates provide responses via video more closely approximates the job environment than traditional, legacy assessments and allows candidates to exhibit behaviors relevant to job performance (e.g., simulating communicating orally with team members through a video response), versus responding to static multiple-choice type questions.

We are able to sample behavior in a substantially richer and more interactive medium than could be achieved with close-ended multiple choice questions typically included in a legacy assessment.

Interview-based assessments work by statistically linking the interview data to competencies. The scoring algorithm undergoes full validation testing, as well as mitigating adverse impact towards protected groups.

In contrast, with legacy assessment design, adverse impact is not apparent until the test is completed. At this point an organization may decide to use the assessment so long as it is validated for the job with minimal adverse impact. Removing questions that cause adverse impact is usually not an option; every question is critical for the accuracy of the assessment. Since interviews are data-rich, any data that contributes to adverse impact can be removed from consideration without significantly impacting the assessment's accuracy.

The result is a highly valid, bias-mitigated assessment of specific competencies. The interview medium - combined with artificial intelligence - provides excellent insight into attributes like social intelligence (interpersonal skills), communication skills, personality traits, and overall job aptitude.

INTERVIEW ASSESSMENTS GIVE INSIGHT INTO:

- Ability to work in teams
- Problem solving skills
- Communication skills
- Adaptability
- Willingness to learn
- Dependability
- Developing others
- Drive for results & initiative taking
- Composure
- And more

What Are Game Based Assessments?

Like interview assessments, game-based assessments leverage breakthroughs in artificial intelligence to deliver pre-hire assessments in a new, candidate-friendly modality.

Put simply, game-based assessments are a series of short psychometric games. Each game takes only a few minutes to complete, and different games give insight into a range of cognitive skills, including numeracy, problem-solving, and attention, as well as non-cognitive abilities, such as empathy and influence. A complete game-based assessment typically involves a battery of different games, and takes only 6-15 minutes to complete.

While HireVue's game-based assessments provide a quick and engaging experience, they maintain a high degree of face validity. The games' assessment nature is not hidden behind cartoon avatars or amusing gameplay mechanics; candidates understand the games are measuring competencies directly related to the position for which they are applying (e.g., working memory for Call Center or Registered Nurse roles).

Like interview data, game data is rich and complex. Games collect a number of different data types, such as level progression, highest level reached, and number of levels lost or won. HireVue's game-based assessments are dynamically progressive. They adapt in real time based on a candidate's performance. If a candidate successfully completes one task in a game, the next task they will be asked to complete will be more difficult. If they struggle and fail a task, they will be given an easier task.

Compare this to a legacy, 30-45 minute cognitive skills test. Since all candidates answer the same questions, there is a need for the test to be lengthy and comprehensive. A progressive, game-based approach means this time can be significantly condensed, as candidates complete challenges based on their skill level. Game-based assessment algorithms are built by statistically linking the data gathered during gameplay to the competency assessed. This is validated against accepted measures of the targeted competencies (e.g., cognitive ability, emotional intelligence, or personality).

Similar to interviews, HireVue's game-based assessments are data-rich, and undergo our comprehensive process to mitigate adverse impact.

The game medium - combined with artificial intelligence - provides excellent insight into both cognitive and non-cognitive attributes like reasoning, problem solving skills, influence, or personality traits.

GAME-BASED ASSESSMENTS GIVE INSIGHT INTO:

+ COGNITIVE ABILITY
- Reasoning
- Mental agility
- Numerical ability
- Visuospatial ability

+ EMOTIONAL INTELLIGENCE
- Empathy
- Influence

+ PERSONALITY

Interview + Game Based Assessments

In today's competitive talent marketplace, the organizations that move fastest are frequently rewarded with the best hires. The combination of interview and game-based assessments means companies can collect a comprehensive set of data on each candidate in a single hiring process step. Interview and game- based assessment scores provide crucial decision support for recruiters and hiring managers, but they do not take away their discretion.

Interview and game-based assessments can be combined into a single experience, providing a comprehensive evaluation of each candidate in under 30 minutes.
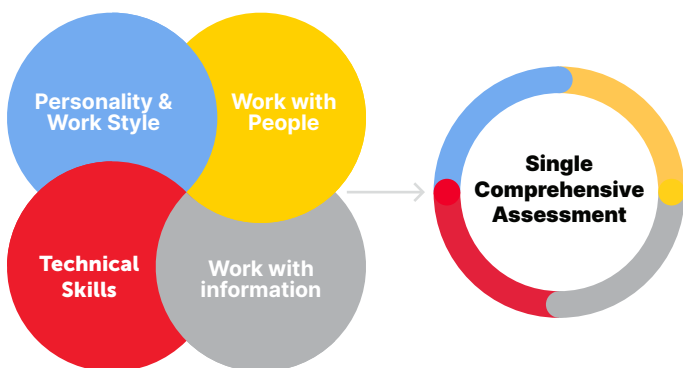
The comprehensive set of data available from these two assessment types also means adverse impact can be mitigated without significantly affecting the accuracy of the assessment, as previously mentioned. Mitigation is performed during the algorithm development stage so that the assessment is released in mitigated form and all candidates who take the assessment are treated equally, regardless of their demographics. Additionally, with insight into a range of different competencies, recruiting teams can enhance hiring decisions with consideration

of complementary attributes - hiring to reflect the complexities of the modern workplace.

Unlike a legacy assessment, where candidate scores are often provided with little context, recruiters and hiring managers can watch a candidate's corresponding interview and make their own evaluation augmented by structure and data-driven decision support.

Modular Assessments

Modular assessments give organizations access to AI-driven assessments built around competencies indicative of success on the job. Modular assessments use a combination of interview questions, game-based challenges, and - for software developers or other relevant technical roles - coding challenges to measure job related competencies and knowledge domains.

Modular assessments are built around the competencies identified as critical to job success, and are configured for fast deployment after a job analysis confirms the assessment is a good match for a particular role.

Custom Assessments

Custom assessments are built around performance data specific to one job role. They are organization-specific, and designed to evaluate the competencies that uniquely lead to success. Custom assessments can be interview, gamebased, or a combination of the two.

Questions in a custom interview assessment are unique for each organization based on the findings that emerge from a job analysis. They are designed to elicit responses predictive of job performance. Every assessment will have a unique question set. Likewise, game-based challenges are chosen based on the unique competencies identified as crucial for success.

The Impact of Candidate Experience

In the past, candidate experience was a minimal concern when considering a pre-hire assessment. Talent was often asked to wade through a complex hiring processes and time consuming steps including a pre-hire assessment.

Today, top candidates are less willing to invest a lot of time in a pre-hire assessment and expect them to be quick to complete. The best candidates generally do not want to sit through hours of testing.

The candidate experience also has a direct impact on an organization's ability to recruit talent. According to Talent Board's 2017 Candidate Experience Research Report, 82% of candidates with a great experience said they were "Extremely Likely" to refer others to the hiring organization.[5] 44% of candidates with a terrible experience said they would "Definitely Not" refer.

There's a secondary impetus for organizations who sell to consumers. 74% of candidates who had a great experience said they would increase their business relationship with the hiring organization. 46% of candidates with a terrible experience said they would sever their business relationship.

By combining two new, validated, assessment delivery modalities, talent acquisition departments get the best of both worlds. They can respect the candidate's time with a single, engaging assessment, while gaining crucial insight into a comprehensive range of job competencies.

HOW 1.5 MILLION CANDIDATES RATE HIREVUE INTERVIEWS

80%
Enjoyed the experience and appreciated the opportunity to differentiate themselves

85%
Thought it reflected well on the employer's brand

70%
Rated the experience as 9 or 10 out of 10

89%
Said it respected their time

Pre-hire assessments are a scientifically validated way of evaluating candidates and have a long history of success. But legacy assessment testing has not kept pace with technological developments. Evaluating a comprehensive range of competencies required for job success would require hours of testing with conventional methods. This is neither realistic nor respectful to today's candidate.

Artificial intelligence has enabled the creation of two complementary, validated assessment types. Interview assessments evaluate candidates' responses to interview questions. These do an excellent job of evaluating candidates' emotional intelligence, communication skills, and personality traits. Game-based assessments evaluate candidates' performance in games. These do an excellent job of evaluating candidates' fluid IQ, visuospatial reasoning, and working memory, as well as non-cognitive abilities such as emotional intelligence and personality. Games and interviews can be used by themselves to assess job relevant competencies. They can also be combined into a single experience to provide complementary insight into a comprehensive range of attributes necessary for success on the job in under 30 minutes.

Using our sophisticated methods to identify and mitigate adverse impact, HireVue's next generation of Pre-Hire Assessments maintain the predictive accuracy of legacy assessments while minimizing adverse impact.

This time-efficient, combined approach increases the likelihood of completion and provides candidates with an engaging experience that respects their time, while accurately and consistently evaluating them on a wide range of job competencies so recruiting teams have the data they need to make the best possible hiring decisions.

CITATIONS:

1. Schmidt, F. L. (2016). The validity and utility of selection methods in personnel psychology: practical and theoretical implications of 100 years of research findings. (Working Paper).

2. Leutner, F., & Chamorro-Premuzic, T. (2018). Stronger together: Personality, intelligence and the assessment of career potential. Journal of Intelligence, 6(4), 49.

3. HR.com, 2018. "The State of Pre-Hire Assessments".

4. Hogan, Chamorro-Premuzic, & Kaiser, 2013. Employability and Career Success: Bridging the Gap Between Theory and Reality

5. Talent Board, 2018. "2017 Candidate Experience Research Report".

Hire★Vue
WHITE PAPER

THE NEXT GENERATION OF ASSESSMENTS

AUTHORS

Dr. Nathan Mondragon – Chief I/O Psychologist

Dr. Kiki Leutner –Director Assessment Innovation

Dr. Josh Liff - Director Of Assessment Psychometrics & Applied Research

Dr. Lindsey Zuloaga – Chief Data Scientist

OCTOBER / 2021