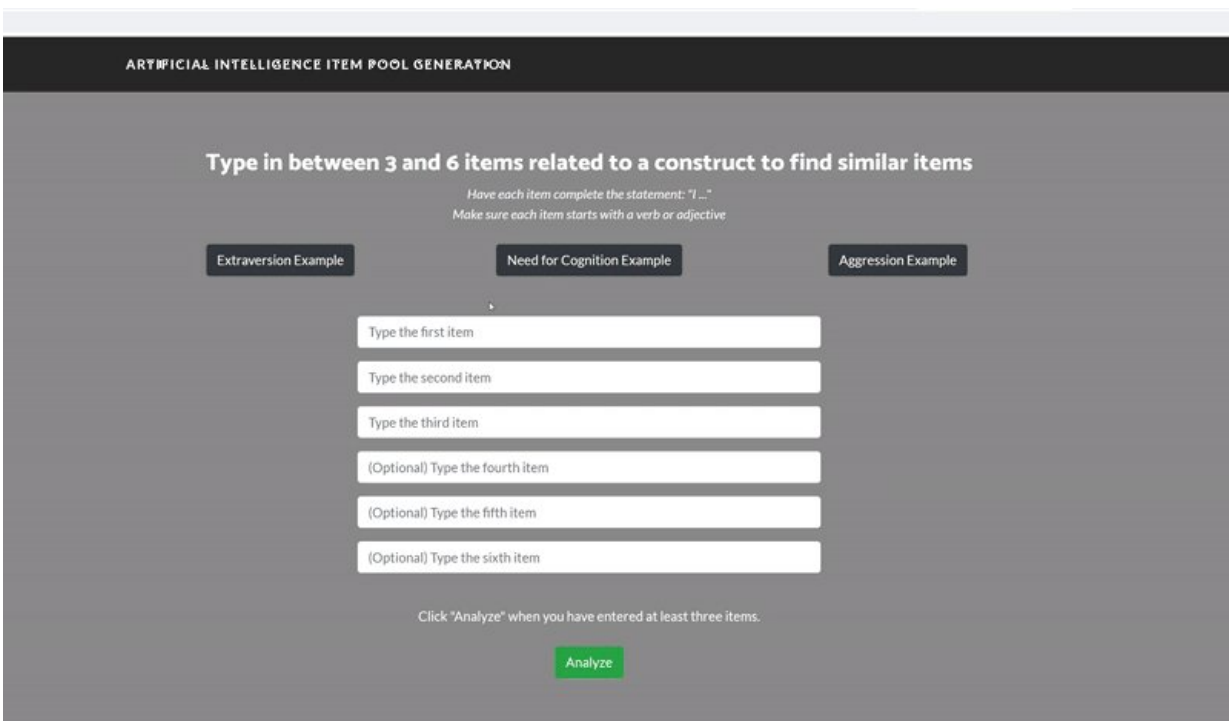


Using artificial intelligence to gain insights into personality

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The screenshot shows a web interface titled "ARTIFICIAL INTELLIGENCE ITEM POOL GENERATION". Below the title, it instructs users to "Type in between 3 and 6 items related to a construct to find similar items". It provides three example categories: "Extraversion Example", "Need for Cognition Example", and "Aggression Example". The main input area consists of six text boxes: "Type the first item", "Type the second item", "Type the third item", "(Optional) Type the fourth item", "(Optional) Type the fifth item", and "(Optional) Type the sixth item". A green "Analyze" button is located at the bottom. A note at the bottom of the form states: "Click 'Analyze' when you have entered at least three items."

The artificial intelligence item pool generation tool uses natural language processing to create items that can be used in the development of personality scales. Credit: Ivan Hernandez

When it comes to hiring, it can be a challenge for an employer to find the perfect person for the job. As a result, organizations often utilize personality scales as an aid in determining whether a candidate is the

right fit.

While there are several widely used [personality tests](#) on the market, organizations may be looking for traits or skills that are not measured by scales already in existence. Creating a new scale—which takes the work of experts such as [personality](#), organizational, social, or [clinical psychologists](#)—can be time-consuming and costly.

With this in mind, Ivan Hernandez, an assistant professor in the Virginia Tech Department of Psychology, wanted to find a way to make the creation of personality scales easier and more accessible.

"As psychologists, there are so many different aspects of personality that we'd be interested in measuring," said Hernandez. "But the hard part is, how do you do it? How do you come up with the right questions to know if a person is a good friend, to know if a person would be a diligent worker, to know if a person is emotionally intelligent?"

While those questions are typically devised by subject matter experts, Hernandez has suggested an alternative source—artificial intelligence.

Working with research consultant Weiwen Nie of Hogan Assessment Systems Inc. Hernandez has created a [framework](#) for using various natural language processing models to assist researchers with developing valid psychological scales.

In the traditional method of creating personality scales, subject matter experts are called on to create a pool of items that may fit a particular personality trait—for example, "I like going to parties" as a measure of extraversion. That pool forms the basis for the scale creation, which is administered and tested before being deployed.

In Hernandez's framework, a transformer-based language model

generates the artificial intelligence-based item pool (AI-IP), consisting of a million new items—far more than any group of experts could create. Additional language processing models narrow the pool to the items most relevant to the desired construct, such as extraversion.

Essentially, this multimodel framework enables researchers to create longer, cohesive scales from a small set of relevant items.

The best part? Scales created using the AI-IP perform just as well as scales that are created through the human process of validation and calibration.

"When we give these items to people and we show them real items that were not made by a computer, people just can't tell the difference," said Hernandez. "This song and dance that we do as humans of making personalized scales through committee can really be resolved by leveraging the internalized knowledge of an artificial intelligence model."

The framework designed by Hernandez and Nie can help organizations cut down on the time and expense involved in creating personality scales. By relying on artificial intelligence to create the pool of items, the inherent subjectivity, inconsistency, and bias of humans is also bypassed.

More importantly, the framework, which is openly available, achieves Hernandez's goals of improving accessibility to personality measurements. Now anyone—whether it's a lawyer who wants to gauge the trustworthiness of a jury pool or a [college student](#) wondering about their new roommate's cleanliness—can create a personality scale.

"This framework was intended for organizational use, but I truly think it's something that can help everyday people," said Hernandez. "People are interested in personality—but I think they just perhaps don't know of

more validated ways to go about exploring their interest than the measures most commonly seen on [social media](#) or in pop culture."

An article describing the framework and how it was created is being published in a 2023 *Personnel Psychology* special issue focused on [artificial intelligence](#) and machine learning applications in personnel selection and staffing.

Those interested in experimenting with the AI-IP generation tool can access the [application](#) online.

More information: Ivan Hernandez et al, The AI-IP: Minimizing the guesswork of personality scale item development through artificial intelligence, *Personnel Psychology* (2022). [DOI: 10.1111/peps.12543](https://doi.org/10.1111/peps.12543)

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