

ATP C&L Division Quarterly Newsletter

ISSUE NO.

03

July 2023

Below: Doug Viehland, Ada Woo, and Chris Mills at the ATP conference in March. Doug actually appears in the picture twice... can you spot him?



IN THIS ISSUE

02

A Note from Our Chair
A Note from Our Secretary
Meet Our Spotlight: Frank Williams

04

Introducing the ATP Learning Academy

05

Fun Pictures (Send some!)

06

Automatic Item Generation and the Importance of Metadata

09

Mark Your Calendar
Polling Corner

ATP Europe Will Be Here Before You Know It! ~ A message from Emily Issing at Designing Events ~

September 20-22 in Vienna, Austria

As the assessment world continues to evolve, we're on a collective mission to build better and fairer testing experiences. Our community is constantly innovating with leading edge technology, policy, and practice; E-ATP is the place to connect, share stories, and learn from each other. Take a look at the program to see which sessions might interest you!

<https://na.eventscloud.com/ehome/index.php?eventid=737542&tabid=1210220>

A Note from Our Chair, Bill West

Greetings C/L community!

By responding to the poll in this newsletter (see page 9), you can share the topics that are important to you with the Innovations Program Committee. Help guide the selection process; please participate!

You will also note we're including articles and photos submitted by our community. Please submit interesting articles, photos of gatherings, and other tidbits you think would be fun to put in front of our community.

Finally, please spread the word about our monthly coffee chat and this newsletter. These are opt-in and available for all members of the ATP C/L division.

It was wonderful seeing so many of you in Dallas! Thank you for your engagement and support of our industry.

Bill



Above: One of many great workshops ATP, March 2023—this one led by Ray Nicosia and Elizabeth Azari

Right: Frank Williams—read more about Frank in our spotlight piece starting on the next page

A Note from Our Secretary, Jessica Dangles

Are you managing or consulting with a smaller certification program? Do you have experience with smaller certification programs? We all know smaller programs come with their own unique challenges. If you would be interested in helping start a special interest group for smaller certification programs, please contact Jessica Dangles, Executive Director of the Certification Board of Infection Control & Epidemiology: jdangles@cbic.org.

This Issue's Spotlight, Frank Williams

In our Spotlight piece, starting on the next page, meet Frank Williams, Lead Senior Psychometrician at PSI Services. Frank's educational background includes a PhD in psychometrics, an MA in both psychology and secondary math education, and a BS in mathematics. He currently manages a portfolio of clients while supporting other psychometricians in their effort to strategize solutions for their clients.

After completing his dissertation, Frank was an Associate Research Scientist with ETS working with automated scoring engines. His other professional experience includes serving as the Associate Director of Testing and Assessment at Johns Hopkins University – Center for Talented Youth. Frank is an active participant in the credentialing and licensure monthly coffee chats.



Spotlight on Frank Williams

Lead Senior Psychometrician at PSI
Services

Q: How long have you been involved in the ATP community?

A: This is my first year as an active participant.

Q: Tell us about your career path to become a senior psychometrician.

A: I started off doing research after completing my dissertation. Having a strong technical background has been invaluable. I then moved on to operations which gave me a richer context to understand some of the more technical aspects of testing. I gained more compassion and understanding for the stakeholders and various professionals involved in the testing process. In my current position, I can use both sets of experiences to find creative ways to serve credentialing organizations.

Q: What are some changes you've noticed in the industry over the last several years?

A: From a broad perspective, it seems to be that innovation is always on the move. No two clients/users are ever alike, and the need to serve everyone individually is a pressure that will always exist. Good psychometricians are those who stay current while keeping their focus on the needs of the client. Everyone doesn't need a "10 parameter scoring model powered by ChatGPT 8.0." Sometimes our challenge is convincing our clients. Sometimes our challenge is convincing ourselves.

Q: What advice would you give to someone interested in the field?

A: The advice I would give a junior or potential psychometrician is probably the same I would give any professional. Spend some time knowing who you are and finding your strengths and weaknesses. I think it is important to lead with the aspects that we do well, but it may be equally important to actively improve aspects that you aren't as great at to expand your expertise. Working remotely is an example of that.

“Good psychometricians are those who stay current while keeping their focus on the needs of the client.”

If five years ago someone had asked if I would take a remote position, I would have quickly said no because I am somewhat of an extrovert. However, deciding to do so while challenging how I interact with people and manage my time has been one of the best decisions I have made for my career and for my family.

Q: What has been a highlight of your career?

A: I have had several small victories along the way, but I don't know which one I would consider a "highlight." That makes me think of lifetime achievement awards and front page, top-fold news articles. I started my career trying to find if black hats in standardized testing were more myth than reality. And I found out very quickly that the testing charge is led by more good people than I could have imagined. And the fact that I can call some of these people associates—and even friends—is a highlight of a different kind.

Q: What do you enjoy doing in your free time?

A: Free time? Now that is a myth! When I'm not working or being yelled at by my one-year-old for working, I like catching up on Marvel movies. And if I really have some free time, I like spending it in water, preferably on a boat.



Thanks so much, Frank! It has been great getting to know you in our spotlight!

Introducing the ATP Learning Academy

Advancing equity, integrity, and learning are core to ATP's mission. In support of both sharing knowledge and promoting quality in assessment, ATP is proud to announce the ATP Learning Academy! The Learning Academy is a new initiative for ATP to provide education about assessment.

A small working group made up of testing industry leaders has worked over the past year to create the inaugural ATP Learning Academy course: *Introduction to Assessment Literacy*. This course is intended for non-measurement professionals who work in the assessment industry. The objective of the course is to allow participants to develop “conversational fluency” with basic assessment concepts without requiring knowledge of statistics. Recently, 45 individuals completed the initial course as a pilot and provided excellent feedback to improve the course prior to its launch.

Individuals now have access to educational courses on foundational testing and assessment principals in an ongoing effort to improve the quality of assessments and share knowledge with the broader testing community and ecosystem. Over time, coursework will be expanded into many different areas that impact testing in an ongoing effort to educate and promote the value of testing.

Interested? Here is a little more information:

- The course takes about two hours to complete.
- It contains three sections with reflective exercises and quizzes along the way, so you have a real-time opportunity to apply what you learn.
- Each topic is presented by well-respected experts in the testing industry.
- Upon completion, learners receive a digital badge.
- Courses can be taken by anyone, but the first course is at a foundational level best suited for those new to testing, new to the industry, or in a role where increased knowledge of core testing principles such as validity, reliability, and the assessment lifecycle would help them in their roles. It may also be suitable for external groups like board members or subject matter experts (SMEs).
- The course is purchased through ATP and is taken on the Cambridge Assessment Learning platform.
- Best of all, it is affordable! The price is \$40 for non-ATP members and \$30 for ATP members. Group discounts are available if you choose to offer it to groups at your organization.

Many thanks to the following individuals for providing their expertise, time, and the dedication required to successfully launch the first course in the ATP Learning Academy: John Kleeman (Chair), Craig Mills, Joy Matthews-Lopez, Brodie Wise, Ada Woo, Kerry Watt, Sally Brown, G Harris, and Lauren Scheib. Thank you, too, for the support of the donors to the Learning Academy, without which, none of this would be possible: Ascend Learning, ATA, Edu-lab, Examity, ITS, JML Measurement and Testing Services, Meazure Learning, Pearson VUE, Proctorio, PSI, Surpass, and Questionmark/Learnosity.

Go to [ATP Learning Academy](#) to learn more and register today!





Above: A dinner with friends and colleagues, ATP, March 2023



Left Top: Happy hour in Chicago, the night before CNG (Certification Network Group)



Left Bottom: Monthly C&L Division Coffee Chat. Please join us—the last Tuesday of every month from 12:00 to 12:30 EDT. Contact Bill West for the Zoom link: willywest7@gmail.com

Have some pictures to include in a future newsletter? Please share them: smastrrianni@measurelearning.com

Automatic Item Generation and the Importance of Metadata

Donna Matovinovic, Mark Gierl, Hollis Lai
MGHL Partners

Certification and licensure testing is in a period of transition. Computer-based testing (CBT) has replaced paper-based testing, thereby creating the foundation for the widespread use and implementation of information technology. CBT can be used to implement test designs that permit organizations to collect information that support both formative and summative decisions about examinees. These changes are unfolding on a global scale which means that assessment practices must serve examinees who are educated in different cultures and who speak different languages. To accommodate these changes, the requirements of and methods for item development are evolving. Certification and licensure testing organizations must have access to banks containing thousands of diverse, multilingual, high-quality test items in order to create tests that will be administered under different conditions to produce different types of information. The traditional approach to item development relies on an iterative method where highly-trained groups of subject-matter experts (SMEs) use their experience and expertise to create new items by writing each item individually. Then, after each item is created, it is edited, reviewed, and revised by another group of SMEs until the item meets the appropriate standard of quality (Lane, Raymond, Haladyna, & Downing, 2016). While this approach can be used to create high-quality test items, it is time-consuming and expensive because it relies on the item as the unit of analysis. That is, each item in this process is unique, and therefore each item must be individually written, edited, reviewed, and revised before it can be administered.

Automatic item generation (AIG) is an alternative item development method that overcomes many of the limitations of the traditional approach. AIG is the process of using models to generate items using computer technology (Gierl & Haladyna, 2013; Gierl, Lai, & Tanygin, 2021; Irvine & Kyllonen, 2002). It serves as a form of augmented intelligence because computer systems are used to emulate and extend human cognitive abilities thereby helping to improve human task performance. AIG uses a systematic method for generating test items. This method differs from the traditional approach because it requires the interaction between a human and a computer system in order to transform a cognitive model of thinking, reasoning, and problem solving into a set of test items. AIG has important benefits. It permits an SME to create a single item model that, in turn, yields many test items. An item model is a template that highlights the parts of an assessment task that can be manipulated to produce new items. As a result, one item model can be used to produce hundreds of test items because the model rather than the item serves as the unit of analysis. Item models can be written in different languages to permit multilingual AIG. But most importantly, AIG is a scalable item development method because it relies on the item model as the unit of analysis meaning that AIG is more efficient and economical compared to the traditional approach.

AIG and Metadata

AIG is a method for producing large numbers of test items. But to use these items effectively, they must be managed properly. Managing a traditional bank containing hundreds of items is complex. But when the bank is expanded to include thousands or millions of items, problems related to access, search, and review quickly arise. The challenges inherent to managing item models and generated items warrants a shift in banking methodology where the management task can only be accomplished using metadata. Metadata are data about data (Gartner, 2016). But it is not the data per se that are consequential, it is the relationship between the data elements.

Metadata are only meaningful when one data element can be directly associated with a second data element, where the second element provides data about the first. This relationship is significant because it can be interpreted and, therefore, the relationship between the data elements has meaning. Metadata can therefore be used to describe the characteristics of each generated item thereby allowing the SME to differentiate one generated item from another. It permits the SME to answer questions such as “how similar can two items be before they are considered enemies?” or “when can two items that contain a similar stem but different options be included on the same test?” This type of differentiation is essential when attempting to manage a large bank of generated items. Metadata can also be used to link diverse kinds and diverse sources of information together to create new types of information that, in turn, form meaningful structures of knowledge about the system. Libraries provide a useful example for demonstrating the importance of metadata in an information system like an item bank. Libraries contain data that are used to describe and locate individual books in a collection. As a result, one particular book can be identified and found in a collection. But metadata can also be created to link one book by specific author, as an example, to all books by that author which, in turn, can be linked to all books by that author on a specific topic, such as science fiction. The topic of science fiction can be described by a time period such as the 20th century. Hence the identity of one book in a collection can be used to link authors, topics, and periods through the use of metadata. This simple example demonstrates that data about data initiates a process of linking information where the links form relationships that increase the meaningfulness of the data, specifically, along with the entire information system, more generally. It also demonstrates that metadata can be used to address specific purposes (i.e., creating a library) or to solve specific problems (i.e., finding a particular book in a library). In other words, the links that are created and the knowledge produced from these links is purposeful and intentional. Metadata from an AIG model can be used to store and search for items in bank. But this data can also be used to identify enemy items, analyze a bank, enhance test security, protect against fraudulent test administrations, and personalize student learning, to name but a few examples.

Metadata and Content Coding

In the library example, the most basic data element was a book. In a certification and licensure testing program, the most basic data element is an item. Many AIG items can be generated from a single item model. As a result, the model can be used to describe the items with tremendous detail because each item contains values embedded in elements embedded in features embedded in sources of information embedded in problems and scenarios (see Gierl, Lai, & Tanygin, 2021, Chapter 2). In addition, every value, element, feature, source of information, and problem can be described uniquely using content codes. Content coding is the method of choice for appending metadata to the generated items because the content that can be used to describe the data in a model is limitless. One familiar type of content information that can be used to describe a test item is the blueprint of the exam. A blueprint is often represented in a two-way matrix. Blueprint categories can be used to describe generated items. Another familiar type of content information that can be used to describe a test item is an assessment framework. Frameworks include a detailed description of the content areas measured in each subject as well as the knowledge and skills examinees require to solve the test items in each content area. Taxonomies serve as a third type of content information. For instance, The International Statistical Classification of Diseases and Related Health Problems (ICD) was created by the World Health Organization to describe diseases by their causes and symptoms. This taxonomy is used extensively in the health sciences. It contains 17,000 categories, 80,000 concepts, and over 1.6 million clinical terms to describe diseases by their causes and symptoms. ICD categories, concepts, and terms can be used to describe generated items in the health sciences.

Summary and Implications

Metadata are created using existing data. Metadata can be practical. For example, metadata can be used to store and retrieve information. Metadata can also be used to link data elements at one level to form a unit that, in turn, is aggregated to form a new data element at another level that, again, is linked. For example, metadata can be used to create a library with information stored in a hierarchy. As linking and aggregation proceed, new metadata from different sources can be introduced into the process thereby creating new links and aggregates. As long as the outcomes from this process can be interpreted, the information that is produced has meaning. Currently, when metadata are used in a certification or licensure testing program, it describes and differentiates items in a bank. But metadata can also be used for other practical and conceptual purposes that require linking diverse types and diverse sources of information in order to create new types of information that form meaningful structures of knowledge about the assessment organization and the information within it. Content coding is a powerful method for appending metadata to the generated items because the content that can be used to describe the data in a single generated item is limitless.

References

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Below: Certification Network Group Presentation
Jasmine Rockett (from Inteleos) speaking



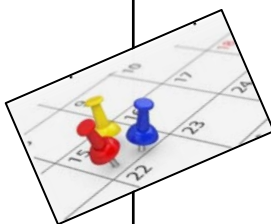
Mark Your Calendars

ATP Europe

September 20-22 in
Vienna, Austria

C&L Coffee Chats

Last Tuesday of every month
12:00-12:30 EDT
Contact Bill West for Zoom link



Acronym Soup

A quick key to some of the acronyms you may have come across in the newsletter

AIG: Automatic Item Generation

C&L: Certification and Licensure

CNG: Certification Network Group

DEI: Diversity, Equity, and Inclusion

SIG: Special Interest Group

POLLING CORNER

Each issue, we will share the results of a polling question asked in the previous issue—and ask another. Last issue we asked, “[In what ways does your organization use micro-credentials?](#)” The results are in:

ANSWER CHOICES		RESPONSES
As a basic, entry-level credential		47.37% 9
As a form of industry-wide recognition		26.32% 5
As acceptable evidence of specialized training		42.11% 8
As an approved source of continuing education		26.32% 5
As a requirement for advancement in the workplace		36.84% 7
As an alternative path to reenter the workforce after an extended absence		0.00% 0
My organization does not use micro-credentials		15.79% 3
Other use (please specify)		10.53% 2
Total Respondents: 19		
#	OTHER USE (PLEASE SPECIFY)	DATE
1	We are in the very beginning stages of developing them!	3/14/2023 5:38 PM
2	Accessibility and accommodations	12/20/2022 5:02 PM

And here is our next question:

[What are the top three topics relating to your testing program\(s\) that your organization is prioritizing in terms of acquiring more knowledge, taking action, or establishing policy?](#)

Your answers will be shared with our division, inform division webinar topics, and inform priorities for Innovations C/L session selection.

Click on this link to participate.

<https://forms.office.com/r/GL9qbDSqPd>

We always want to hear from you! Be it a spotlight piece, some important information to add to the calendar, or something of interest happening in your world, please share!

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