SPRING 2025, VOL. 37 NO. 2; ISSN 1051-0796



- ▶ Overview of this Issue of RMT -- Stefanie A. Wind & Leigh Harrell-Williams
- Remembering Mark Stone -- William P. Fisher Jr.
- Rethinking Item Difficulty in Test Design: Why Uniform Distribution Matters Agustin Tristán & Austen El-Osta
- Conference Announcement: Pacific Rim Objective Measurement Seminar (PROMS)
- ► Special Issue Announcement:
- ▶ Updates about the 2025 International Objective Measurement Workshop
- ► Announcements from Rasch Measurement SIG
 - Snapshot of Rasch SIG events at AERA 2025
 - o Details about Rasch SIG events
- ► Rasch-related events at AERA 2025

Transactions of the Rasch Measurement SIG American Educational Research Association

Overview of The Issue

The Spring 2025 issue of Rasch Measurement Transactions (RMT) includes several announcements that may be interesting to our community of Rasch measurement researchers.

The issue begins with a note of remembrance for Mark Stone authored by William P. Fisher Jr.

Next, we present an announcement about the Pacific Rim Objective Measurement Seminar (PROMS), which will be held in Singapore in July 2025.

Third, have included updates from the AERA Rasch Measurement Special Interest Group (SIG). We highlight some upcoming events at the AERA 2025 conference.

We end the issue with a list of Rasch-related sessions at AERA 2025.

As always, we welcome your contributions to the next issue for RMT. We would appreciate receiving your research note, conference or workshop announcement, etc. by May 19, 2025. Please contact Stefanie at <u>swind@ua.edu</u> or Leigh at leigh.williams@memphis.edu to submit something for inclusion.

Sincerely, Stefanie A. Wind & Leigh Harrell-Williams Rasch Measurement Transactions www.rasch.org/rmt Copyright © 2025 Rasch Measurement SIG, AERA Permission to copy is granted.

Editors: Leigh M. Harrell-Williams & Stefanie A. Wind Email submissions to: swind@ua.edu RMT Editors Emeritus: Richard M. Smith, John M. Linacre, & Ken Royal Rasch SIG Chair: Stefanie A. Wind Secretary: Kaiwen Man Treasurer: Audrey Conway Roberts Program Chairs: Kaiwen Man & Audrey Conway Roberts

Remembering Mark H. Stone

William P Fisher Jr

Mark Stone, a long-time colleague of Ben Wright and co-author of *Best Test Design*, passed away in May 2020. Stone was born on April 15, 1936, in Massachusetts. He and his wife, Betty, were happily married for 57 years, until her passing in 2017.

As recounted in his *Chicago Tribune* obituary (Stone, 2020), Mark began his career as a teacher and principal before becoming a licensed clinical psychologist and Adlerian psychoanalyst. He earned his first doctorate in psychology, and a second in measurement and statistics. Mark maintained a private practice in clinical treatment and served as Academic Dean and Director of Research at The Adler School of Professional Psychology, in Chicago. Upon retiring, he taught at Aurora University in the departments of psychology, mathematics, and social work.

Mark published his ninth book in 2018 and had by then published over 350 research and technical papers in various professional journals in psychology and measurement/statistics. He also authored a series of proprietary tests for Chicago companies screening for honesty, alcoholism/drug abuse and propensity for violence.

Wright and Stone's *Best Test Design* remains, after more than 45 years, an exemplary instance of a measurement system integrating interdependent but discontinuous levels defined, first, by a formal explanatory model's contextualization of an empirically validated abstract unit quantity, and second by the context these provide for understanding and communicating concrete response data.

In 2014, Mark and I had informal weekly telephone conversations just to trade thoughts on what we'd been doing. It was a real pleasure to get to know him a bit. I was particularly intrigued by his fascination with Alfred Adler and Henrik Ibsen. We had long talks about them and his book, "Life-Lies and Self-Deception." The connection with measurement is immediately apparent in the unavoidable paradox common to both identified psychometric models and psychological models of personal identity: neither kind of model is completely true. They can serve as eminently practical heuristic fictions in the living and writing of one's life or measurement stories, but if they are applied in rigid or lax ways, they can be incoherent or even destructive.

Mark published 32 articles on Alfred Adler's approach to psychology and edited a book of Adler's unpublished lectures. He also wrote extensively about the psychological aspects of the plays of Henrik Ibsen, developing his ideas on this theme most thoroughly in his 2002 book, *Life-Lies and Self-Deception*, and in the 2014 *Henrik Ibsen: Poet, Playwright, & Psychologist* (Stone & Wagner, 2014) he co-authored with his daughter, Cheryl.

The issues raised in that body of work also came through in his measurement writings,

as when Burdick, Stone, and Stenner (2006) approvingly quoted Cartwright's (1983, p. 129) observation that: "fundamental equations do not govern objects in reality; they govern only objects in models." Stone's grasp of the fictional quality of models as idealizations more useful than perfectly true may seem most obviously rooted in Rasch's (1960, pp. 37-38) conceptualization of this issue. He also tapped, however implicitly, into Rasch's adoption (Fisher, 2023) of Maxwell's method of analogy (Nersessian, 2002) and its focus on the epistemological advantages of focusing on the model instead of on phenomena supposedly existing independent of the model (Black, 1962; Boumans, 1993; also see Nöth, 2018).

In an earlier, October 2011, conversation on this topic, Stone said he had been present at—and greatly influenced by—Robert Oppenheimer's September 1955 address to the American Psychological Association meeting in San Francisco, when he spoke on analogy in science (Oppenheimer, 1956). Stone was able to summarize complex issues like these briefly and effectively, as when he dealt with the differences between empiricist and constructivist approaches to data in terms of collecting versus manufacturing (Stone, 1996).

Though Mark did not attend measurement conferences, the breadth, depth, and volume of his writing on quantitative methods and the care he invested in his thinking were truly significant. His writings are technically astute, psychologically subtle, and philosophically profound. Connecting with matters of current interest (Mari, et al., 2023; Pendrill, 2019), Stone (1998), along with Duncan (1984, pp. 12-38), Wright (1997, pp. 33-34, 43), and Fisher (1997, pp. 88-89; Fisher, et al., 1995, pp. 19-20), was among the first to relate the "wide acceptance" of additive conjoint modeling's achievement of fundamental measurement (Narens & Luce, 1986, p. 169) with historical metrology. In addition, his note (Stone, 2002) on the correspondences of musical temperaments with approaches to psychological measurement sets up another rich series of associations in need of further exploration.

During one of our 2014 conversations, Mark said his association with Ben Wright began in the 1950s when they both were employed at Burleigh Gardner's Social Research Inc. (SRI) in Chicago. Gardner was a Professor of Industrial Relations at the University of Chicago and aimed to integrate theory and practice via SRI (on this, see Gardner & Moore, 1955). Wright made considerable use of his computer skills in these years and was, like Stone, a licensed psychoanalyst. Though Wright did not share Stone's Adlerian perspective on psychoanalysis, they were both not only intensely interested in the complexities of human struggles to find meaning in life but also sought the kinds of practical results SRI aimed to provide the Chicago business community.

Mark followed Ben's development of Rasch's ideas from the start. He was acquainted with Bruce Choppin and was present at the first-ever conference session on Rasch measurement—chaired by Jane Loevinger and organized by Wright—in 1965 at the meeting of the Midwest Psychological Association in Chicago (Wright & Choppin, 1965; referenced by Wright, 1988, 1996, 2009). Finally, Stone's (2017) account of the writing of *Best Test Design* conveys a humorous glimpse into some of the drama that could ensue in the wake of Wright's sometimes exasperating behaviors.

I encourage everyone to investigate what Mark had to say; a few select entries from his CV are listed below.

Acknowledgements. This article is based on a presentation made in 2023 at the International Objective Measurement Workshop in Chicago.

References

- Black, M. (1962). *Models and metaphors*. Cornell University Press.
- Boumans, M. (1993). Paul Ehrenfest and Jan Tinbergen: A case of limited physics transfer. In N. De Marchi (Ed.), Nonnatural social science: Reflecting on the enterprise of "More Heat than Light" (pp. 131-156). Duke University Press.
- Burdick, D. S., Stone, M. H., & Stenner, A. J. (2006). The Combined Gas Law and a Rasch Reading Law. *Rasch Measurement Transactions, 20*(2), 1059-1060 [http://www.rasch.org/rmt/rmt202.pd f].
- Cartwright, N. (1983). *How the laws of physics lie.* Oxford University Press.

Duncan, O. D. (1984). Notes on social measurement: Historical and critical. Russell Sage Foundation.

- Fisher, W. P., Jr. (1997). Physical disability construct convergence across instruments: Towards a universal metric. *Journal of Outcome Measurement, 1*(2), 87-113. <u>http://jampress.org/JOM_V1N2.pdf</u>
- Fisher, W. P., Jr. (2023). Separation theorems in econometrics and psychometrics: Rasch, Frisch, two Fishers, and implications for measurement. *Journal of Interdisciplinary Economics*, 35(1), 29-60.

https://journals.sagepub.com/doi/10. 1177/02601079211033475

- Fisher, W. P., Jr., Harvey, R. F., & Kilgore, K. M. (1995). New developments in functional assessment: Probabilistic models for gold standards. *NeuroRehabilitation*, 5(1), 3-25.
- https://journals.sagepub.com/doi/pdf/10.323 3/NRE-1995-5102
- Gardner, B. B., & Moore, D. G. (1955). Human relations in industry. RD Irwin.
- Mari, L., Wilson, M., & Maul, A. (2023). *Measurement across the sciences: Developing a shared concept system for measurement, 2nd ed.* (Springer Series in Measurement Science and Technology). Springer. <u>https://link.springer.com/book/10.10</u> <u>07/978-3-031-22448-5</u>.
- Narens, L., & Luce, R. D. (1986). Measurement: The theory of numerical assignments.

Psychological Bulletin, 99(2), 166-180.

- Nersessian, N. J. (2002). Maxwell and "the method of physical analogy": Modelbased reasoning, generic abstraction, and conceptual change. In D. Malament (Ed.), *Reading natural philosophy: Essays in the history and philosophy of science and mathematics* (pp. 129-166). Open Court.
- Nöth, W. (2018). The semiotics of models. Sign Systems Studies, 46(1), 7-43.
- Oppenheimer, R. (1956). Analogy in science. *American Psychologist*, 11(3), 127-135.
- Pendrill, L. R. (2019). Quality assured measurement: Unification across social and physical sciences.
 (Springer Series in Measurement Science and Technology). Springer.
- https://link.springer.com/book/10.1007/978-3-030-28695-8
- Rasch, G. (1960). Probabilistic models for some intelligence and attainment tests (Reprint, with Foreword and Afterword by B. D. Wright, Chicago: University of Chicago Press, 1980).
 Danmarks Paedogogiske Institut.
- Stone, M. H. (2020, May 31). Obituary. *Chicago Tribune*. <u>https://www.legacy.com/us/obituarie</u> <u>s/chicagotribune/name/mark-stone-</u> <u>obituary?id=2822691</u>
- Wright, B. D. (1988). Georg Rasch and measurement: Informal remarks by Ben Wright at the Inaugural Meeting of the AERA Rasch Measurement SIG, New Orleans -- April 8, 1988. *Rasch Measurement Transactions, 2,*

25-32

[http://www.rasch.org/rmt/rmt23.htm]. (Rpt. in J. M. Linacre, (Ed.). (1995). *Rasch Measurement Transactions, Part 1* (pp. 25-32). MESA Press.]

- Wright, B. D. (1996). Key events in Rasch measurement history in America, Britain and Australia (1960-1980).
 Rasch Measurement Transactions, 10(2), 494-496
 [http://www.rasch.org/rmt/rmt102q.h tm].
- Wright, B. D. (1997). A history of social science measurement. Educational Measurement: Issues and Practice, 16(4), 33-45, 52 [http://www.rasch.org/memo62.htm]. <u>https://doi.org/10.1111/j.1745-3992.1997.tb00606.x</u>
- Wright, B. D. (2009). Rasch Measurement in America before 1971 [Letter to Eddy Roskam, May 27, 1993]. Rasch Measurement Transactions, 23(1), 1186-1187.
- Wright, B. D., Choppin, B. (1965, April).
 Estimating Rasch models for measurement. In J. Loevinger (Chair), Symposium on Sample Free Probability Models for Psychosocial Measurement. Midwestern Psychological Association, Chicago, IL.

Mark H. Stone: Select publications

Adams, J. W., Stone, M., Vincent, R. D., & Muncer, S. J. (2011). The role of syllables in anagram solution: A Rasch analysis. *The Journal of General Psychology*, 138(2), 94-109.

- Allison, C., Baron-Cohen, S., Wheelwright,
 S. J., Stone, M. H., & Muncer, S. J.
 (2011). Psychometric analysis of the Empathy Quotient (EQ). *Personality and Individual Differences*, 51(7), 829-835.
- Dealey, R. P., & Stone, M. H. (2018). Exploring out-of-school play and educational readiness. *Early Childhood Education Journal*, 46(2), 201-208.
- Freeman, A., Stone, M. H., & Martin, D. (2005). A case history of a borderline personality. In A.
 Freeman, M. H. Stone, & D. Martin (Eds.), *Comparative treatments for borderline personality disorder*, (pp. 21-28). Springer.
- Freeman, A., Stone, M. H., & Martin, D. (2005). Similarities and differences in treatment modalities. In A.
 Freeman, M. H. Stone, & D. Martin (Eds.), *Comparative treatments for borderline personality disorder*, (pp. 259-288). Springer
- Stone, M. H. (1996). Data: Collecting or manufacturing? Rasch Measurement Transactions, 10(3), 517.
- Stone, M. H. (1998). Man is the measure. the measurer. *Journal of Outcome Measurement, 2*(1), 25-32. <u>http://jampress.org/JOM_V2N1.pdf</u>
- Stone, M. H. (2001). Making standard measures. Rasch Measurement Transactions, 15(1), 792-3 [http://www.rasch.org/rmt/rmt151e.h tm].

Stone, M. H. (2002a). *Knox's cube test - revised*. Stoelting.

Stone, M. H. (2002b). *Life-lies and selfdeception*. Phaneron Press.

- Stone, M. H. (2002c). Musical temperament. *Rasch Measurement Transactions,* 16(2), 873 [http://www.rasch.org/rmt/rmt162b.h tm].
- Stone, M. H. (2002d). Quality control in testing. *Popular Measurement, 4*(1), 15-23. <u>https://rasch.org/pm/pm4.pdf</u>
- Stone, M. H. (2003). Substantive scale construction. *Journal of Applied Measurement, 4*(3), 282-297.
- Stone, M. H. (2007). The creative self. In Readings in the theory of Individual Psychology (pp. 109-122). Routledge.
- Stone, M. H. (2008). Fisher's information function and Rasch measurement. *Journal of Applied Measurement*, 9(2), 125-135.
- Stone, M. H. (2011). The meaning of life and Adler's use of fictions. *Journal* of Individual Psychology, 67(1), 13-.
- Stone, M. H. (2014). The double: Manifestations of pathology and a deluded self. *Journal of Humanistic Psychology*, 55(4). <u>https://doi.org/10.1177/00221678145</u> 33994
- Stone, M. H. (2015). Friedrich Nietzsche and Alfred Adler. The Journal of Individual Psychology, 71(4), 415-425.
- Stone, M. H. (2017). Reflections: Ben Wright, *Best Test Design*, and Knox's Cube Test. In M. Wilson & W. P. Fisher, Jr. (Eds.),

Psychological and social measurement: The career and contributions of Benjamin D. Wright (pp. 51-66). Springer.

- Stone, M. H. (2020). Rasch's logistic model applied to growth. *Journal of Applied Measurement*, 21(1), 1-16.
- Stone, M. H., & Hoffman, N. M. (2005). Borderline states and individual psychology. In A. Freeman, M. H. Stone, & D. Martin (Eds.), *Comparative treatments for borderline personality disorder*, (pp. 133-149). Springer
- Stone, M. H., & Stenner, A. J. (2013). Concatenating sticks and measurement axioms. *Rasch Measurement Transactions*, 26(4), 1395-1397.
- Stone, M. H., & Stenner, A. J. (2014). Comparison is key. *Journal of Applied Measurement, 15,* 1-26. (Rpt., W. P. Fisher, Jr. & P. J. Massengill (Eds.), (2023). Explanatory models, unit standards, and personalized learning in educational measurement: Selected papers by A. Jackson Stenner (pp. 251-268). Springer. https://link.springer.com/chapter/10. 1007/978-981-19-3747-7_19)
- Stone, M. H., & Thompson, E. H. (2001). Executive function impairment in sexual offenders. *Journal of Individual Psychology*, 57(1), 51-59.
- Stone, M. H., & Wagner, C. A. (2014). Henrik Ibsen: Poet, Playwright and Psychologist. iUniverse.
- Stone, M. H., & Wright, B. D. (1983). Measuring attending behavior and

short-term memory with Knox's cube test. *Educational and Psychological Measurement*, 43(3), 803-814.

- Stone, M. H., Wright, B., & Stenner, A. J. (1999). Mapping variables. *Journal* of Outcome Measurement, 3(4), 308-322. (Rpt. in W. P. Fisher, Jr. & P. J. Massengill (Eds.), (2023). Explanatory models, unit standards, and personalized learning in educational measurement: Selected papers by A. Jackson Stenner (pp. 109-120). Springer. https://link.springer.com/chapter/10. 1007/978-981-19-3747-7 8)
- Stone, M. H., & Yumoto, F. (2004). The effect of sample size for estimating Rasch/IRT parameters with dichotomous items. *Journal of Applied Measurement, 5*(1), 48-61.
- Wright, B. D., & Stone, M. H. (1979). Best test design: Rasch measurement. MESA Press
- Wright, B. D., & Stone, M. H. (1983).
 Measurement as an instrument of learning. Final report, NIE-G-81-0107 (Tech. Rep. No. ED 238 411).
 Washington, DC: National Institute of Education. (130 pp.)
- Wright, B. D., & Stone, M. H. (1999). *Measurement essentials*. Wide Range, Inc. [http://www.rasch.org/measess/meall.pdf].
- Wright, B. D., & Stone, M. H. (2003). Five steps to science: Observing, scoring, measuring, analyzing, and applying. *Rasch Measurement Transactions*, 17(1), 912-913

[http://www.rasch.org/rmt/rmt171j.ht m].

Wright, B. D., & Stone, M. H. (2004). *Making measures.* Phaneron Press. https://www.amazon.com/Making-Measures-Benjamin-D-Wright/dp/1930847394

Wright, B. D., & Stone, M. H. (2018). Diseño de óptimo pruebas [Best Test Design] (A. Tristán-López & M.-M. Sánchez-Sifer, Trans.). Instituto de Evaluación e Ingeniería Avanzada (Original work published 1979).

Wright, B. D., Stone, M., & Enos, M. (2000). The evolution of meaning in practice. *Rasch Measurement Transactions*, 14(1), 736 [http://www.rasch.org/rmt/rmt141g.h tm].

Yumoto, F., & Stone, M. H. (2011). Comparing item calibration estimates using Winsteps and RUMM2010. *Rasch Measurement Transactions, 25*(3), 1337. https://www.rasch.org/rmt/rmt253e.h tm

Conference Announcement: Pacific Rim Objective Measurement Seminar

Brief description: What is PROMS 2025?

The Pacific Rim Objective Measurement Symposium (PROMS) is an annual nongovernmental professional meeting established to promote objective measurement and contribute to the research and development of Rasch measurement in the Pacific Region. This annual symposium serves as a platform for the international community of researchers and practitioners to learn about the latest developments in the field of measurement.

Call for Submissions

Theme: Next Generation Measurement: When Innovation Meets Objectivity

The theme emphases our commitment to objectivity or measurement invariance in the field in response to cutting-edge advancements and emerging technologies that reshape how we collect, analyze and interpret data. It invites a critical examination of the ways innovation can enhance precision, accuracy and fairness in measurement practices across diverse disciplines.

Submissions from any field across the human sciences, including business, education, health and psychology are welcome. These could include research applying the Rasch model, advances in measurement practices, or reviews of modern measurement theory.

Contact Information

More information on PROMS2025 is available at <u>https://proms2025.com</u>. If you have any questions, please contact <u>proms@suss.edu.sg</u>.

We look forward to receiving your submissions and welcoming you at PROMS2025!

Rethinking Item Difficulty in Test Design: Why Uniform Distribution Matters

For decades, test design according to Classical Test Theory (CTT) was guided by the idea that items should cluster around a 50% success rate to maximize reliability (for instance: Adkins, 1961; Aiken, 2002). The logic is simple: keeping item difficulty near the midpoint enhances statistical precision. Adkins herself put it this way: "For most achievement testing in the classroom, the average difficulty percentage of items in a test should be about fifty... At least a few items significantly easier and a few significantly more difficult than those at the 50 percent level are normally included to motivate the poorest student and challenge the best." However, challenging or motivating students is generally not intrinsic to the trait being measured, and maximizing reliability comes at the expense of validity. The well-known attenuation paradox (Engelhard, 1993; Loevinger, 1954) demonstrates that increasing reliability can, in fact, reduce validity.

But does this approach make sense? Wright and Stone (1979, 1999) and Wright and Masters (2004) take a different stance, arguing that item difficulty should be evenly distributed, much like the markings on a ruler. As Wright explains, "That is the way we construct yardsticks. The test design corresponding to an evenly ruled yardstick is the uniform test, in which items are evenly spaced from easiest to hardest." A systematic model for scale validity was later proposed by Tristán and Vidal (2007).

This structured spread of item difficulties is not just a theoretical preference-it brings real benefits. An item-map based on this distribution strengthens construct and scale validity by aligning item placement with curriculum expectations and measurement needs. Even better, it serves as a practical guide for writing more items, filling gaps, reducing item stacks and refining assessments. In this approach, reliability is not the main target-it naturally follows from well-calibrated, valid instruments. This harmonized approach to objectivity, validity, and reliability applies equally to knowledge tests with dichotomous items and surveys using Likert scales. By reconsidering how item difficulty is distributed, we can move beyond traditional reliability-focused design and create assessments that more accurately measure what they intend to-ensuring items are better targeted to individuals' abilities.

We used an opinion-based instrument to measure social connectivity in a large UK sample (Tristan, Majeed and El-Osta, 2025; manuscript in preparation). The instrument used in the Measuring Loneliness in the UK (INTERACT) Study (El-Osta, 2020) included the UCLA 3-Item Loneliness Scale (Russell, 1996) alongside additional social interaction items. The analysis showed that the three UCLA items (1, 2 and 3) had nearly identical measures, while the remaining items were spread across the scale—Item 7 being the hardest and Item 8 the easiest. All the items are coded according to their polarity and the direction of the construct.

Proposal		Mean	SEM	S.D.		Person		Cronbach's		
		measure		pe	ersons	separation		Alpha		
Adkins		0.61	0.14		1.45	1.8	1	0.98	3	
Wright-et-al		0.31	0.10		1.33	1.31		0.97		
Proposal	Iten	Item	Ite	m	Mean	SEM	S.D.	Item	Reliabi	ilitv
		descriptio	on meas	ures	measure	e		separation		
Adkins	1	Q4-How	r		0.00		0.83	0.00		
		often do y	ou	0.07						
		feel	-0.	07						
		that you la	ck							
		social	2						0.00	
		connection	n?							
	-	Q5-How				0.48				
	2	often do y	$\begin{array}{c c} \mathbf{ou} & 0.0 \\ \mathbf{v} 0 \end{array}$)3						
		feel left ou	it?							
	3	Q6-How	7							
		often do y	$\begin{bmatrix} 0.0\\ 1 \end{bmatrix} = 0.0$)3						
		feel isolate	ed							
		from other	·s?							
		O5 Haw								
	2	Q3-How		1 /			0.89	7.86	0.98	
		faal laft av	0u -0.	14						
			u:							
	7	100/-11 1 II	au							
		f_{20} in an	v							
		2.50 III al		20		0.48				
Wright- et-al		could borr	, 1 0.0	<i>,</i> ,	0.00					
		it from a	J VV							
		neighbor	,							
	8	I008-Peop	Je							
		in this								
		neighborhc	bod							
		generally	/ -0	-0.75						
		don't get	t 0.							
		along wit	h							
		each othe	r.							

Table 1. Summary of results of the two sub-instruments with three items.



Figure 1a. Wright map of 3 items UCLA

Figure 1b. Wright map of items 2, 7, 8

To evaluate the effectiveness of different test design approaches, we created two subinstruments of three items and tested them on a sample of 188 community-dwelling adults:

- Adkins' model: Included the three UCLA items, following the traditional approach of keeping item difficulty similar.
- Wright's model: Used just one UCLA item along with Items 7 and 8, ensuring a broader distribution of difficulty.

The results allow for a direct comparison of both designs and their measurement properties (Table 1).

While Alpha is slightly higher in the Adkins model, the difference is not significant. The real contrast lies in item separation since the three UCLA items had a separation of 0.0, while the more varied Wright set achieved a much wider separation of 7.86.

Wright maps for both sub-instruments highlight these differences in item and person distributions (Figure 1a with the UCLA concentrated items and Figure 1b with three items distributed in the scale).

A well-distributed set of items allows for more precise measurement of individuals according to the Rasch model, including those at the extremes, as shown in Figure 1b. In contrast, the UCLA items are concentrated around the middle of the scale, prompting the software to produce more "estimated" measures rather than calculated ones. Comparing raw score-to-measure tables and standard error (SE) values confirms the expected pattern—higher SE values appear at the extremes. These comparisons highlight the impact of item selection on test properties, offering valuable insights for designing better measurement instruments. The most striking finding is that measures near the center of the scale show higher standard error (S.E.) in the instrument with the three UCLA items.

In general, the Adkins approach is less appropriate for measurement than the Wright-et-al proposal, which improves accuracy by incorporating items with a broader range of difficulty levels. When designing a test, it is essential to consider not only the importance of a uniform item distribution—both for ensuring a broad range of difficulties and enhancing measurement precision—but also because a well-distributed set of items strengthens validity. By spanning a wider range of locations on the Rasch scale, the test provides stronger evidence for interpreting ability or performance measures at every point.

Conclusions

These results emphasize the importance of well-spaced item difficulties in test design. While the Adkins CTT model prioritizes higher reliability and clusters items around a 50% success rate, the Wright-Rasch model focuses on objectivity and validity. It demonstrates that a broader distribution of item difficulties enhances measurement validity while maintaining appropriate reliability. The UCLA items, despite their strong reliability, predominantly measure the same construct, which limits their usefulness. In contrast, the Wright approach improves item separation, making the scale more informative. This is particularly beneficial in adaptive testing, where a wider range of difficulties ensures more precise and efficient assessments. A test designed with evenly spaced difficulty levels provides a clear structure, ensuring objective, valid, and reliable measurement. The Rasch model supports this by generating measures that establish a hierarchical ordering of items based on their locations along a linear logit scale.

> Agustin Tristán Instituto de Evaluacion e Ingenieria Avanzada, Mexico Honorary Research Fellow, Imperial College, London

Austen El-Osta Self-Care Academic Research Unit (SCARU), School of Public Health, Imperial College London. Corresponding author: <u>a.el-osta@imperial.ac.uk</u>

References

- Adkins, D. (1961). Test construction. Development and interpretation of achievement tests. Charles E. Merrill Publ. Co. Ohio.
- Aiken, L.R. (2002). Psychological Testing and Assessment. 11th Edition. Allyn & Bacon Eds.
- El-Osta, A. (Measuring loneliness in UK (INTERACT) study. Imperial's School of Public Health, Imperial College

Healthcare NHS Trust and Hammersmith & Fulham. Councilhttps://www.imperial.ac.uk/sch ool-public-health/primary-care-andpublichealth/research/scaru/measuringloneliness-in-uk-interactstudy/?utm_source=chatgpt.com

- Engelhard, Jr. G. (1993). What is The Attenuation Paradox? Rasch Measurement Transactions; 6:4 p. 257. https://www.rasch.org/rmt/rmt64h.htm
- Loevinger, J. (1954). The attenuation paradox in test theory. *Psychological Bulletin*, 51(5), 493– 504. https://doi.org/10.1037/h0058543
- Russell, D. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *J Pers Assess*. 66:20– 40.
- Tristán, L.A., Majeed, A. & El-Osta, A.
 (2025). Loneliness and Social Isolation in the UK: A Rasch Analysis of Age and Gender Differences Among a Sample of 134,164 Individuals. Under publication. Imperial College.
- Tristán, L.A. y Vidal, U.R. (2007). Linear model to assess the scale's validity of a test. AERA 2007. ERIC ED501232. http://www.eric.ed.gov/PDFS/ED5012 32.pdf

Wright, B.D. & Stone, B.D. (1979). Best test design. MESA Press. Chicago.

Wright, B.D. & Stone, M. (1999). Measurement essentials, 2nd ed. Wide Range, Inc. Wilmington, Delaware.

Wright, B.D.& Masters, M.H. (2004). Making measures. The Phaneron Press.

Special Issue Announcement: *Education Sciences*

Guest Editors Prof. Dr. Rachel Vannatta and Dr. Audrey Conway Roberts have shared the following announcement about an upcoming special issue entitled *Educational Assessment Theories and Methodologies: Trends in Standardized Testing*, to be published in the journal *Education Sciences*.

We invite original research papers that address one or more of the following themes:

- *Theoretical Foundations in Educational Assessment:* Frameworks and paradigms guiding testing practices
- *National, State, and Provincial Testing Policies*: Impacts of policy changes on the design and implementation of assessments and/or on student outcomes.
- Artificial Intelligence (AI) in Standardized Testing: Innovations in AIdriven design, scoring, feedback systems, and ethical considerations. -Advances in Adaptive Testing: Novel trends and adaptations, and implications for personalized learning and assessment.
- *Bias, Equity, and Inclusivity*: Addressing bias in test design, accessibility, and fairness.
- *Global Perspectives*: Comparative analyses of testing trends across different regions of the world.

Articles may include empirical research, theoretical or conceptual analyses, case

studies, and/or reviews of current trends and practices. We look forward to engaging with work that critically reflects on the complexities of standardized testing and its future in education.

The deadline for manuscript submissions is October 1, 2025.

Additional details are available at this link: <u>https://www.mdpi.com/journal/education/sp</u> <u>ecial_issues/685AO994KV</u>

Updates about the 2025 International Objective Measurement Workshop (IOMW)

The 2025 IOMW conference will be held on **April 21-22, 2025 in Boulder, Colorado.**

Held bi-annually, the IOMW conference is a great place for experts and practitioners interested in objective measurement to connect.

The conference aims to foster discussion and scholarship on high-quality, rigorous measurement practices in any field. The following topics are points of emphasis at IOMW 2025:

- Measurement in human sciences: education, medicine, licensure, surveys
- Philosophy of measurement
- Measurement models and methodologies

Details about the conference are available on the conference website: <u>https://www.iomw.net/</u>

Snapshot of Rasch SIG Events: AERA 2025

Day	Day Time W		Where?	Why go?		
Friday, April 25	7pm-9pm	Joint Quant SIG Social	Tarantula Billiards Bar & Grill: 1520 Stout St, Denver, CO 80202.	 Free drink tickets for the first 100 guests! Get to know other quant researchers at AERA 		
	8am- 9:30am	Rasch SIG coffee gathering	Assembly Hall Bar & Market, 1st floor of the Hyatt Regency Denver: 650 15th St, Denver, CO 80202	• Connect with other Rasch SIG members		
Saturday, April 26	9:50am- 11:20am	Rasch SIG paper session	The Colorado Convention Center, Floor: Meeting Room Level, Room 705	 Support Rasch research at AERA! 		
	1:30pm- 3pm	Rasch SIG Roundtable paper session	The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 2-3	 Bonus entry for prizes at SIG business meeting 		
	7pm- 8:30pm Rasch SIG Business Meeting		The Colorado Convention Center, Floor: Meeting Room Level, Room 401	 Keynote address by Dr. Trevor Bond Giveaway: Chance to win Rasch books Connect with the Rasch SIG community 		

Updates and Announcements from the Rasch Measurement Special Interest Group (SIG) of the American Educational Research Association (AERA)

The Rasch Measurement SIG has been actively preparing for several exciting events to be held at the 2025 AERA meeting, which will be held in Denver, Colorado April 23-27, 2025.

As shown in the snapshot on the previous page, we have several opportunities for connection at the annual meeting. Please join us for as many of these events as you can. We can't wait to see you soon!

Quant SIG Social Reception

The Rasch SIG is partnering with several other quantitative methods SIGs to host a Quant SIG social reception. Other participating SIGs include: Advanced Studies of National Databases, Educational Statisticians, Structural Equation Modeling, and Multilevel Modeling.

The first 100 guests will receive free drink tickets.

The reception is scheduled for Friday April 25th, from 7pm-9pm at the Tarantula Billiards Bar & Grill: 1520 Stout St, Denver, CO 80202.

See <u>here</u> for a flyer about the event.

Rasch SIG Social Gathering and Restaurant Suggestions

We will meet for coffee on Saturday, April 26th from 8:00-9:30am at the Assembly Hall Bar & Market, located on the 1st floor of the Hyatt Regency Denver: 650 15th St, Denver, CO 80202. Look for the Rasch SIG Sign!

Courtney Donovan has prepared a list of local restaurant recommendations, available <u>here</u>.

Additionally, if you plan to be in Denver for a few extra days and are looking for activity ideas feel free to email Courtney at : <u>Courtney.Donovan@ucdenver.edu</u> for advice (snow sports possible in April!).

Rasch SIG Research Presentation Sessions

The Rasch SIG will host two research presentation sessions throughout the day on *Saturday, April 26, 2025*.

The paper session will be held at 9:50am, and a roundtable session will be held at 1:30pm. <u>Please use this link to find details</u> <u>about the Rasch SIG sessions.</u>

Please attend these sessions to support our colleagues conducting Rasch-related research.

Business Meeting: Keynote and Giveaway!

The Rasch SIG business meeting is scheduled for 7:00pm on Saturday, April 26, 2025, in The Colorado Convention Center, Meeting Room Level Room 401.

The business meeting will feature a keynote address from Dr. Trevor Bond, recipient of the 2024 Benjamin D. Wright Senior Scholar Award. We will also provide updates on SIG operations and discuss opportunities to engage with the Rasch SIG.

The Business Meeting will also include a giveaway with opportunities to win Raschrelated books. *All SIG members who attend Rasch SIG sessions earlier in the day on Saturday will receive two entries for the giveaway!*

Please $\underline{\text{RSVP}}$ to let us know that you plan to attend the business meeting.

Update on SIG Membership:

Urgent Call for Renewal

As some of you know, membership and participation in the Rasch SIG has been steadily declining over the past several years. Despite our efforts to increase membership over the last few months, our current membership count remains below the minimum required to maintain the SIG as part of AERA.

To ensure that our SIG can continue to provide this welcoming space, I am kindly asking you to (re)join the Rasch SIG for the next year. Please also invite your colleagues and students to join. The current membership due is \$7 per year. These dues allow the SIG to exist as an official sub-unit of AERA and provide research awards to junior and senior scholars.

Our current membership roster lists 61 members. We need at least 75 to be considered "viable" according to AERA.

I extend my sincere thanks to those of you who have recently renewed your SIG membership. If you have not done so, **please consider renewing your membership to the Rasch SIG as soon as possible.**

Opportunities to Contribute to the SIG

The Rasch SIG is actively working to increase engagement within our community of Rasch scholars. Our current efforts are focused on three main activities: (1) mentoring; (2) webinar series; and (3) inperson activities at AERA 2025.

If you are interested in contributing to any of these efforts, please reach out to me directly via email: swind@ua.edu. I would love to hear from you!

Stefanie A. Wind Chair, Rasch Measurement SIG

Rasch-Focused Presentations at AERA 2025

Wednesday, April 23, 2025

Virtual Poster Session - SIG-Rasch Measurement

- Time: April 23, 8:00 AM April 27, 4:00 PM
- Location: Virtual Posters Exhibit Hall, Virtual Poster Hall
- **Paper:** Rasch Analysis of a Financial Self-Efficacy Scale Distributed Among College Students
 - **Author(s):** H. Cowherd, University of Kentucky

Roundtable Session - Graduate Student Experience and Institutional Structures

- **Time:** 12:40 PM 2:10 PM
- Location: The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 1
- **Paper:** Community Predicts Stress and Finances Predict Commuting Graduate Students
 - **Author(s):** M. Tuck, University of Kentucky

Poster Session II: Measurement, Psychometrics, and Assessment

- **Time:** 2:30 to 4:00pm
- Location: The Colorado Convention Center, Floor: Exhibit Hall Level, Exhibit Hall F
- **Paper:** Multidimensional Rasch Measurement on Intellectual Disabled Students' Interpersonal Skills
 - Authors(S): H. Zhan, K. Mutua, A. Williamson, University of Alabama

Thursday, April 24, 2025

Roundtable Session - Parent-Family Engagement in Bi-/Multilingual Education

- **Time:** 8:00 AM 9:30 AM
- Location: The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 1
- **Paper:** Parental Perceptions of Bilingual Education: A Study of Parental Views on Schools and Teachers
 - Author(s): H. Rivera, H. Chang, Z. Eslami, M. Bemani, M. Taheri, Y. Zhu, Texas A&M University; D. Jimenez, Texas A&M University-Corpus Christi

Paper Session - Measuring Reading and Writing Development

- **Time:** 8:00 AM 9:30 AM
- Location: The Colorado Convention Center, Floor: Meeting Room Level, Room 304
- **Paper:** Applying an Analytic Rubric to Examine the Nature of Early Writing Development for Struggling Writers
 - Author(s): E. Rodgers, J. D'Agostino, K. Shilling, J. Sonalkar, K. Stephany, A. Vesner, The Ohio State University; N. Blevins, Newark City Schools,

Friday, April 25, 2025

Paper Session: New Developments in Item Response Theory Modeling and Applications

- **Time:** 9:50 to 11:20 am
- Location: The Colorado Convention Center, Floor: Meeting Room Level, Room 707
- **Paper:** Measuring undergraduate evolution learning the CANS: Assessing psychometric properties using a Rasch measurement framework
 - Authors: Z. Zuckerman, University of California- San Diego, G. Sheglia, San Diego State University

Saturday, April 26, 2025

Symposium Session: Revolutionizing Math Engagement: Culturally Sustaining Measures for Black and Latina/o Students

- **Time:** 9:50 to 11:20 am
- Location: The Colorado Convention Center, Floor: Meeting Room Level, Room 107
- **Paper:** Using the Rasch Model to Develop a Culturally Sustaining Measure of Student Math Engagement
 - Author(s): M. Crowder, McREL International

Paper Session - Measurement and Validation Across Diverse Contexts: Applications of Rasch Models (*RASCH SIG SESSION*)

• **Time:** 9:50 AM – 11:20 AM

- Location: The Colorado Convention Center, Floor: Meeting Room Level, Room 705
- Chair: Yuan Ge, The College Board
- Papers:
 - Assessing Researchers' Adherence to ITC Translation and Adaptation Guidelines: Application of the Many-Facet Rasch Model
 - Author(s): C. Amissah, R. Anderson, F. Kumolalo, G. Umeobi, A. Alkhalaiwi, T. Rollins, G. Buame, T. Haines, Morgan State University
 - Creating a Measure of Meaningful Science Museum Experiences
 - -Author(s): C. Donovan, University of Colorado-Denver, E. Roth, Denver Museum of Nature & Science, B. Phan, Cherry Creek Schools, S. O'Brien, Colorado Department of Education, S. Rayburn, Denver Museum of Nature & Science, E. Hill. Denver Museum of Nature & Science
 - Using Rasch Models to Evaluate the Perceived Stress Scale among Black Perinatal Women
 - Author(s): K. Hylick, J. Li, G. Engelhard, University of Georgia

 Exploring the Practical Impact of Item Fit Evaluation Approaches for Polytomous Ratings: A Systematic Review, Demonstration, and Simulation Study

Author(s): S. Wind, C. Ocheni, University of Alabama; B. Aksu-Dunya, Bartin University

In Event: Teaching Practices and Professional Development

- **Time:** 11:40 am to 1:10pm,
- Location: The Colorado Convention Center, Floor: Meeting Room Level 706
- **Paper:** Development and Validation Study of the Preschool Teaching Efficacy Belief Instrument
 - Author(s): K. Koskey, Drexel University, T. May, K. Provinzano, Binghamton University- SUNY, J. Genovesi, Drexel University, J. Jovanovic, Growing Great

Roundtable Session - Transitioning to Adulthood: Career Readiness and Inclusion for Students with Disabilities

- Time: 8:00 AM 9:30 AM
- Location: The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 2-3
- **Paper:** Enhancing Career Development Assessment for SEN Students: Psychometric Validation of the Career Maturity Inventory
 - Author(s): F. Gao, L. Yang, K. Sin, Education University of Hong Kong

Roundtable Session- STEAM

- **Time:** 9:50 to 11:00 am,
- Location: The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 1
- **Paper:** Investigating Design Features of Items in an Assessment of Computational Thinking for Early Childhood
 - Author(S): C. Na, J. Clarke-Midura, W. Dijk, Utah State University

Roundtable Session - Multidisciplinary Measurement Using Rasch Modeling (RASCH SIG SESSION)

- **Time:** 1:30 PM 3:00 PM
- Location: The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 2-3
- Chair: Y. Lim, University of Cincinnati
- Papers:
 - A Parable of The Measurer: Disentangling Adjacent Categories in Ordered Multiple Choice Assessments
 - Author(s): A. Blum, R. Silverman, J. Yeatman, Stanford University; R. Irey, University of California-San Francisco
 - A Rasch Analysis of the Family Partnership Survey
 Author(s): J. Spotts, University
 - Evaluation of State Anxiety Inventory among Informal Caregivers in Southwest Nigeria: A Rasch Analysis-

- Author(s): F. Banji Kumolalo, Morgan State University
- Investigating the alignment between the empirical Rasch ordering of Linear Algebra assessment items and that predicted by APOS theory
 - Author(s): S. Bansilal, University of KwaZulu-Natal, C. Kazunga, University of KwaZulu-Natal
- Using Generative Artificial Intelligence to Develop Attitude Scales
 - Author(s): E. Lee, University of Georgia, G. Engelhard, University of Georgia, Y. Yuan, Graduate Management Admission Council
- Using Rasch-Based Indices to Detect Careless Responses in Surveys with Missing Data- Y. Ge, The College Board, S. Wind, University of Alabama, E. Jones, University of Memphis, C. Tsai, University of Northern Colorado

Roundtable Session- Global Perspectives on Formative Assessment: Strategies, Challenges, and Innovations in Diverse Educational Environments

- Time: 1:30 pm- 3:00pm
- Location: The Colorado Convention Center, Floor:

Ballroom Level, Four Seasons Ballroom 4

- **Paper:** Teacher Formative Assessment; Literacy and Perceptions Scales in the Confucianism Context: A Mixed Study
 - Author(S): R. Fu, K. Koh, University of Calgary

Rasch Measurement SIG Business Meeting

- **Time:** 7:00 pm to 8:30 pm
- Location: The Colorado Convention Center, Floor: Meeting Room Level, Room 401
- Chair: S. Wind, University of Alabama
- Speaker: T. Bond

Sunday, April 27, 2025

RoundTable Session- Important Considerations in Mentoring

- **Time:** 9:50 to 11:20 am
- Location: The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 1
- **Paper:** Validating the Identity-Based Mentoring Scale for Undergraduate Engineering Students with Minorized Identities
 - Author(s): R. Ghosh, Teachers College, Columbia University, T. May, Binghamton University-SUNY

Roundtable Session - Advances in Differential Item Functioning (DIF) Detection: Methods, Applications, and Implications

- **Time:** 11:40 AM 1:10 PM
- Location: The Colorado Convention Center, Floor: Ballroom Level, Four Seasons Ballroom 1
- **Paper:** Application of Differential Item Functioning (DI) in the Evaluation of the Rosenberg Self-Esteem Scale
 - Author(s): T. Niyirinda, C.
 Ocheni, D. Oyeniran,
 University of Alabama

Paper Session - Scale Development and Validation Across Diverse Educational Contexts

- **Time:** 9:50 AM 11:20 AM
- Location: The Colorado Convention Center, Floor: Meeting Room Level, Room 702
- **Paper:** A Survey Instrument Exploring Students' Attitudes Toward Data Science
 - Author(s): Z. Mandy Li, X. Qian, Boston College; O. Szendey, WestEd; M. Nur Kursav, S. Pauls, Dartmouth College