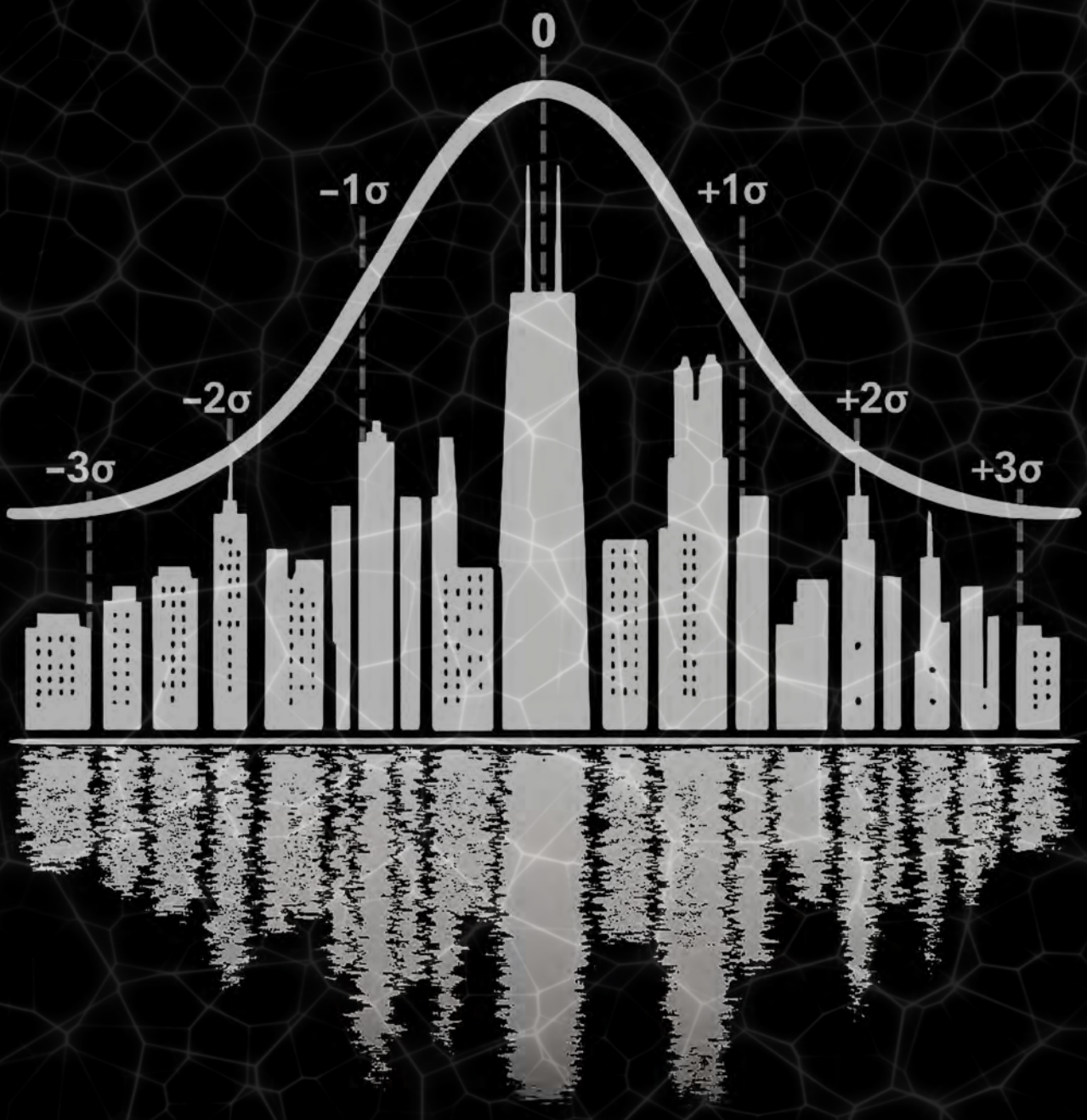
INTERNATIONAL SOCIETY FOR INTELLIGENCE RESEARCH

2025 ANNUAL CONFERENCE



intelligence

NORTHWESTERN UNIVERSITY

JULY 23–26, 2025

isironline.org

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Cover design

Cover art and program were created by Emily Willoughby (willo074@umn.edu); program design based on template at Github by Maximelucas, licensed under GNU General Public License v3.0.

Contents

About

Founded in 2000, ISIR is the focal scientific society for the world's researchers on human intelligence. While the focus of the society is on human intelligence, we are also interested in cognitive abilities in other species. Artificial intelligence is not a current focus of the society. Intelligence research has historically been represented by two major journals: *Intelligence*, edited by Dragos Iliescu and Samuel Greiff, and the *Journal of Intelligence*, an open-access MDPI journal edited by Andrew Conway. In 2025, a new open-access journal, *Intelligence & Cognitive Abilities*, was established by Thomas Coyle and Richard Haier to reflect the growing need for an unbiased publication platform committed to free inquiry. All three journals welcome well-conducted studies, as well as theoretical articles from a variety of perspectives including psychometrics, genetics, individual differences, evolutionary theory and neuroscience. Intelligence is a 'hot topic'. We share a commitment to civility, open dialogue, and respect. Intelligence is a trait. It is an important one with links to many significant outcomes through multiple pathways. Although scores on many measures, including intelligence-type tests, can be ranked from low to high, these ranks do not apply to people, nor to their value. In the absence of global pandemics, we hold an annual conference, usually in July. The venue alternates each year between the USA and Europe. Scholars attend from all over the world to present their latest research, listen to new findings, and explore older ones.

Conference information

ISIR Annual Conference 2025 takes place at Northwestern University in Evanston, Illinois. The conference will be held from Thursday, July 24 until Saturday, July 26, with a special pre-conference event on the evening of Wednesday, July 23. Further information and updates will be announced on the ISIR website as they arise.

Our local host **William Revelle** will receive two of ISIR's distinguished honors this year: Both the 2025 **Lifetime Achievement Award** and the **Distinguished Contributor Interview**, where he will be interviewed by David Lubisnki on Friday afternoon. Our 2025 **Constance Holden Awardee for Distinguished Journalism Claire Lehmann** will deliver her address on Saturday morning. **David Geary** will open on Friday morning with a keynote lecture.

ISIR President and Board 2025

President:	Tom Coyle
Past President:	Rosalind Arden
President Elect:	Jakob Pietschnig
Secretary/Treasurer:	Richard Haier
Board:	John Protzko, Elsbeth Stern, Roberto Colom, Timothy Bates, James Lee, Guy Madison, and Emily Willoughby

Timetable

*All times listed in the schedule are in **Central Daylight Time (CDT).***

Schedule key:

KL : Keynote Lecture
RT : Regular Talk
LA : Lifetime Achievement Awardee
DC : Distinguished Contributor Interview
CH : Constance Holden Award for Distinguished Journalism
SY : Symposium/Panel

Note: Student presenters are eligible for the **Best Student Paper** and **Best Student Poster awards**. For judges' convenience, student talks and posters are labeled with S.

Wednesday, 23rd of July (Swift Hall Room 107)

3:15–3:45	**Registration**		
3:45–4:00	**Opening remarks**		
4:00–5:00	KL	**James Heckman and Zhe Yang** University of Chicago	Relating economic preference parameters with psychological traits
5:00–8:30	**Welcome session, drinks and heavy hors d'oeuvres courtesy of the IMC**		

Thursday, 24th of July (Norris Center Room 2-160)

8:00–8:45	**Registration**		
8:45–9:00	**Welcome**		
9:00–10:00	KL	**Meredith Frey** Otterbein University	ISIR's 25 year anniversary: A tribute to our founder
10:00–10:30	**Morning coffee break**		
10:30–12:10	**Regular talks: Education I *(session chair: Tom Coyle)***		
10:30–10:50	RT	**Ersie Gentzis** Michigan State University	How academic motivation predicts a profile of talent development in intellectually gifted students S
10:50–11:10	RT	**Al Mansor Helal** University of Arkansas	Universal screening in practice: A comparative study of the CogAT and ACT aspire for gifted identification S
11:10–11:30	RT	**Henry Mudenda** Zimbabwe Open University	Enhancing teacher competency on mathematically gifted learners: A case of two Zimbabwe institutions of higher learning S
11:30–11:50	RT	**Kayla Whitley** Michigan State University	How depression and anxiety negatively predict academic psychosocial factors in intellectually gifted students S
11:50–12:10	RT	**Leah Cameron Jansen** Michigan State University	The power of joy for the academically gifted S
12:10–1:30	**Lunch**		
1:30–2:50	**Symposium I: On the generality of IQ test score changes**		
1:30–1:50	SY	**Jakob Pietschnig** University of Vienna	Verbal reasoning, spatial ability, and mathematical reasoning in Austrian undergraduates: Assessments of cross-sectional and longitudinal Flynn effects (2009–2024)
1:50–2:10	SY	**Alina Bugelnig** University of Vienna	The Flynn effect in Austrian conscripts' attention test scores (2010–2022) S
2:10–2:30	SY	**Jonas Lesigang** University of Vienna	On the trail of the Flynn effect: A cross-temporal meta-analysis of Trail Making Test scores (1946–2025) to assess global ability shifts in executive functioning S
2:30–2:50	SY	**Sandra Oberleiter** University of Vienna	A century of IQ shifts: A CHC-based meta-analysis of specific ability trends in the Flynn effect (1909–2025) S
2:50–3:50	**Regular talks: Measurement I *(session chair: Jakob Pietschnig)***		
2:50–3:10	RT	**Audrey Scudder** University of Connecticut	IQ score discrepancies across test batteries in autistic youth: A systematic review S

3:10–3:30	RT	**Saima Ghazal** Missouri University of Science and Technology	Parallel forms of the Berlin Numeracy Test: A step toward measurement of risk literacy development and change
3:30–3:50	RT	**Nathan Kuncel** University of Minnesota	Cognitive predictors of medical resident performance: A meta-analysis
3:50–4:20	**Afternoon coffee break**		
4:20–5:00	**Regular talks: Measurement II *(session chair: Emily Willoughby)***		
4:20–4:40	RT	**Kristof Kovacs** ELTE Eotvos Lorand University	Klein Adaptive Testing System (KATS): A new computerized adaptive test battery that assesses fluid reasoning (Gf) and comprehension/knowledge (Gc)
4:40–5:00	RT	**Devin Burns** Missouri S&T	Rationality, numeracy, and intelligence: An item response theory approach
6:00–8:00	**Poster session with drinks and heavy hors d'oeuvres in Swift Hall Room 107**		

Friday, 25th of July (Norris Center Room 2-160)

9:00–10:00	KL	**David Geary** University of Missouri	The nurture of nature: Why sex differences are larger in healthy and wealthy nations
10:00–10:40	**Morning coffee break**		
10:40–12:00	**Regular talks: Cognitive, Neuroscience & Genetics *(session chair: Jakob Pietschnig)***		
10:40–11:00	RT	**Gabriella Noreen** Vanderbilt University	It's an ipsative life: A multidimensional exploration of career, family, & time allocation among high-potential populations S
11:00–11:20	RT	**Kayla Garner** Northwestern University	Examining associations for spatial cognition with geographic-contextual indicators S
11:20–11:40	RT	**Kirsten Hilger** Würzburg University	Intelligence and the P300 event-related brain potential: Results of a systematic review and meta-analysis
11:40–12:00	RT	**Michael Woodley** Independent	Evidence that phenotypic *g* is both formative and reflective from four, large genetically-informative samples
12:00–1:10	**Lunch**		
1:10–2:50	**Symposium II: Danish Population Studies of Intelligence**		
1:10–1:30	SY	**Gunhild Tidemann Okholm** University of Southern Denmark	Danish draft board cohorts: Studies of associations between intelligence and health
1:30–1:50	SY	**Gunhild Tidemann Okholm** University of Southern Denmark	The Cognition Program: What determines the development of cognitive ability?
1:50–2:10	SY	**Martin Stolpe Andersen** University of Southern Denmark	A composite measure of cognitive ability: Can cognitive ability be estimated from grades and national test scores from Danish registries of school children?
2:10–2:30	SY	**Rebecca Beatrix Clarke** University of Southern Denmark	Childhood adversity trajectories and intelligence in young adulthood: A register-based study including 372,312 Danish men S
2:30–2:50	SY	**Gunhild Tidemann Okholm** University of Southern Denmark	The impact of depression on age-related cognitive changes over more than 40 years
2:50–3:30	**Regular talks: Social factors I *(session chair: Tom Coyle)***		
2:50–3:10	RT	**Maximilian Krolo** Saarland University	Political interest and voting behavior of gifted adults: How giftedness shapes society S

3:10–3:30	RT	**Madlena Arakelyan** Yerevan State Medical University after Mkhitar Heratsi	Gender disparities in the mental health of gifted adolescents: A psychological and psychophysiological perspective S
3:30–4:00	**Afternoon coffee break**		
4:00–5:00	**Distinguished contributor interview**		
4:00–5:00	DC	**William Revelle** Northwestern University	Interviewed by David Lubinski
6:00–7:00	**Reception (Orrington Hotel, 2nd floor Heritage Foyer)**		
7:00–10:00	**Banquet and Student Awards (Orrington Hotel, 2nd floor Heritage Ballroom)**		

Saturday, 26th of July (Swift Hall Room 107)

9:00–10:00	CH	**Claire Lehmann** Quillette Magazine	Constance Holden Address
10:00–10:30	**Morning coffee break**		
10:30–11:50	**Regular talks: Social factors II *(session chair: Emily Willoughby)***		
10:30–10:50	RT	**Leo Hesting** Northern Michigan for Talented Youth	Using the tools: Northern Michigan Talented Youth
10:50–11:10	RT	**Matt McGue** University of Minnesota	The impact of adolescent cognitive ability, non-ability personality and rearing socioeconomic status on adult functioning: Results from two longitudinal family studies spanning adolescence through midlife
11:10–11:30	RT	**Damien Morris** King's College London	Two concepts of meritocracy: Rescuing behavioural geneticists from politically repugnant conclusions
11:30–11:50	RT	**Jonathan Fries** University of Vienna	Intelligence and suicidal ideation in older adults: Insights from the Survey of Health and Retirement in Europe (SHARE)
11:50–1:30	**Lunch and Business Meeting**		
1:30–2:30	LA	**William Revelle** Northwestern University	Lifetime Achievement Award Address
2:30–3:30	**Regular talks: Education II *(session chair: Bill Revelle)***		
2:30–2:50	RT	**Al Mansor Helal** University of Arkansas	College enrollment and selectivity outcomes for gifted students: Evidence from Arkansas
2:50–3:10	RT	**Michael Mhlolo** Central University of Technology	Contradicting the evidence: Using logos to analyse the indigenous language debates and their effect on mathematical giftedness in South Africa
3:10–3:30	RT	**Paul Westrick** College Board	Does timing of most recent SAT math score impact predictive relationships with math course grades in college?
3:30–4:00	**Afternoon coffee break**		
4:00–5:00	**Regular talks: Cognitive *(session chair: Tom Coyle)***		
4:00–4:20	RT	**Russell Warne** RiotIQ	Rethinking mental speed: Unraveling the mystery of item response time

4:20–4:50	RT	**Vanessa Wood** The International Gifted Consortium (IGC), Research Center for Highly-Profoundly Gifted	Prevalence of emotional, intellectual, imaginational, psychomotor, and sensual overexcitabilities in highly and profoundly gifted children and adolescents: A mixed-methods study of development and developmental potential

Abstracts

Abstracts are listed in alphabetical order by presenting author's last name. If a given presentation has more than one author, presenting author's name is underlined.

KL: Keynote Lecture

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A composite measure of cognitive ability: Can cognitive ability be estimated from grades and national test scores from Danish registries of school children?

Martin S Andersen[1], ***Rebecca B Clarke***[1], ***Gunhild T Okholm***[1], ***Youn-Hee Lim***[2], ***Stéphane Tuffier***[2], ***Steffen Loft***[2], ***Erik L Mortensen***[1,2], ***Trine Flensborg-Madsen***[1] SY

[1] National Institute of Public Health, University of Southern Denmark
[2] Section of Environmental Health, Department of Public Health, University of Copenhagen

Objective: This study aims to extract one or more cognitive factor scores from test results and grades in Danish schools, and subsequently validate the extracted scores against a standardized intelligence test.

Methods: The study merged Danish registry data, encompassing national tests scores, grades from the Danish schools, and intelligence from the national military draft board examinations. Additionally, highest obtained educational level is included for further validation.

Danish national school tests: The national tests, administered between 2009 and 2022, constitute a standardized test battery designed specifically for Danish schools. These assessments measure students' competencies across Danish, Mathematics, English, Biology, Geography, Chemistry & Physics, spanning from 2nd to 8th grade.

School grades from 9th grade: Academic performance in 9th grade in the mandatory subjects Danish, English, Mathematics, and Physics & Chemistry was recorded. These grades were derived from both exams with external assessors and annual teacher evaluations. Assessment formats varied by subject, encompassing written, oral, and practical formats.

Børge Priens Prøve: In Denmark, all male citizens appear before a military draft board, where they undergo both physical and cognitive assessments. Cognitive ability is measured using Børge Priens Prøve (BPP), a standardized intelligence test developed in the 1950s and administered since then. Previous studies have established its validity and reliability.

Results and conclusion: Factor analyses examined the dimensionality of the dataset and extracted meaningful factor scores. Preliminary analyses using scree plot, parallel analysis, and exploratory graph analysis indicated that a four-factor model, consisting of measures of natural sciences, English, Danish from tests, and Danish from grades, provided a coherent structure for the data. A confirmatory factor model yielded fit indices of CFI = .93, TLI = .92, RMSEA = .05, SRMR = .05, with factor scores significantly correlating with BPP (.55 to .70). The results suggest that the underlying model predicts future cognitive ability.

Gender disparities in the mental health of gifted adolescents: A psychological and psychophysiological perspective

Madlena Arakelyan RT

Yerevan State Medical University after Mkhitar Heratsi

Introduction: This study aims to provide a comprehensive assessment of the mental health of gifted adolescents, focusing on psychological and psychophysiological dimensions, and to explore correlations between these components. The research emphasizes gender differences, highlighting disparities in personality traits, anxiety levels, psychosocial adaptation, and the functional state of the organism among gifted adolescents under stress.

Methods: The research was conducted in schools of Yerevan, RA. The initial sample consisted of 500 high school students aged 16–18. During the study, 35 participants were defined as gifted. A quasi-experimental design was used with 35 participants in each of the comparison and experiment groups. An independent t-test was conducted using SPSS V26. The assessment of the functional state of the organism (Stress Index) was conducted using the HRV method. As a potential stressor, the intellectual workload was selected.

Results: As a result, gifted girls display personal traits such as high levels of neuroticism (.001***), anxiety (.000***), depression (.000***), self-criticism (.020*), emotional lability (.001***), low excitement-seeking (.013*), lack of empathy (.009**), low conscientiousness (.006**), self-discipline (.011**), order (.041*), and low fantasy (.038*), feelings (.003**). Gifted boys display neuroticism (.032*), self-criticism (.027*), and emotional lability (.034*). In the context of psychosocial adaptation, gifted girls show emotional discomfort (.004**), while gifted boys exhibit maladjustment (.002**), emotional discomfort (.003**), and internality (.030*). Before and after the intellectual workload, the spectral power of gifted girls (0.08–0.1 Hz) was higher than that of gifted boys. Despite this, after the task, the boys' performance showed a significant change.

Conclusions: Psychological characteristics are reflected at the psychophysiological level, manifesting as heightened tension in the functional state of the organism under stress. These interrelated factors increase mental health risks among gifted adolescents, particularly gifted girls. While boys are more sensitive to failure, girls exhibit persistent neuroticism.

The Flynn effect in Austrian conscripts' attention test scores (2010–2022)

S

Alina Bugelnig[1,2], *Maria Gruber*[1], *Alexander Birner*[1], *Christian Langer*[1], *Martin Voracek*[2], *Jakob Pietschnig*[2]

SY

[1] Military Psychological Service, Austrian Military Health Services
[2] University of Vienna

Throughout large parts of the 20th century, IQ test scores have been observed to increase in the general population. However, changes in intelligence-related domains, such as attention, have so far been only infrequently investigated. Recent evidence suggests that selective attention may mirror the Flynn effects observed in psychometric IQ measures, with performance increasing among adults—but not children—over the past thirty years. In this study, we provide evidence for the Flynn effect on an attention test, yielding increases of 1.13 IQ points in total performance per decade across thirteen cohorts of Austrian military conscripts from 2010 to 2022 (N = 460,000+). Conscripts in more recent cohorts completed more items overall but also made a higher number of errors. This meaningful rise in errors aligns with recent findings in children and could result from more impulsive test taking behaviors across cohorts. Our findings indicate that Flynn effects may exhibit considerable domain specificity, thus contrasting past assumptions of largely uniform trajectories of the Flynn effect in broad IQ domains. Because attention has been related to the development of several cognitive abilities, changes in attention performance may conceivably be responsible for change trajectories in associated intelligence domains, such as fluid reasoning. Consequently, changes in attention scores could possibly represent key drivers of the Flynn effect in other IQ domains.

Rationality, numeracy, and intelligence: an item response theory approach

Devin M Burns[1], ***Saima Ghazal***[1], ***D Steven Stutts***[1], ***Edward Cokely***[2] RT

[1] Missouri S&T
[2] Oklahoma University

Theoretically, rational thinking is a core cognitive competence essential for effective decision-making. However, existing assessments—such as the Comprehensive Assessment of Rational Thinking (CART; Stanovich et al., 2016)—are often too lengthy for practical use, requiring up to three hours (or 100 minutes for the short form). Moreover, critical psychometric aspects of these measures remain underexplored, including their latent structure and item-level properties. This study aimed to address these limitations by refining the assessment of rationality using a psychometric approach. We selected high-performing items from four domains: numeracy, fluid intelligence, and two rational thinking subscales from CART—Reflection vs. Intuition and Scientific Reasoning. These domains represent key facets of rational cognition, including probabilistic reasoning, logical analysis, and the ability to override intuitive biases.

In Study 1 (N = 244), we conducted exploratory factor analysis and item response theory (IRT) modeling. Results revealed a four-factor structure (with many redundancies), with numeracy emerging as the strongest and most distinct factor, accounting for over 50% of the total variance explained. IRT analyses identified 24 items with strong psychometric properties: discrimination indices ranged from 0.77 to 2.48, difficulty parameters from –0.89 to 1.75, and item fit statistics indicated good model fit ($S\text{-}X^2$, $p > .05$). The refined scale, which takes only 15–20 minutes to administer, provides strong measurement precision around the average trait level ($\theta = 0$).

In Study 2 (N = 93), we tested the predictive validity of this refined 24-item scale. Hierarchical regression analysis showed that it accounted for an additional 16% of the variance in decision-making performance—measured through a decision rules task—above and beyond the Big Five personality traits. These findings underscore the central role of acquired cognitive skills, particularly numeracy, in supporting high-quality decision-making. The findings suggest a step toward a psychometrically sound and time-efficient tool for assessing rational thinking, with implications for research, education, and applied cognitive training.

A 30-minute lecture on icon array improves risk literacy and decision making skills

Jinhyo Cho[1], ***Edward T Cokely***[2], ***Adam Feltz***[2], ***Rocio Garcia-Retamero***[3] **PP**

[1] University of Southern California
[2] University of Oklahoma
[3] University of Granada

Some theories suggest that people with high intelligence may generally make better judgements and decisions because they are better able to inhibit biased emotions and intuitions, while engaging in more logical, abstract reasoning (Frederick, 2005; Stanovich & West, 2000). However, a large body of research also suggests that acquired differences in knowledge and skills can be primary drivers of general decision making skills, including risk literacy (Skilled Decision Theory; Cokely et al., 2018). For example, many risk communication studies indicate that transparent visual aids can eliminate large differences in decision quality because they help people understand and evaluate risk (Garcia-Retamero & Cokely, 2017). Here, we present research extending these findings by directly training people's graph literacy skills using a 30-minute lecture-based training program focused on the use of icon arrays in weather risk communication. Icon arrays were selected because they are said to be one of the best "all purpose" types of visual aids for helping reduce a host of biases (i.e., attribute framing bias, denominator neglect). The effect of graph literacy training was then tested on individuals' understanding of icon arrays, susceptibility to multiple cognitive biases, risk comprehension, and decision making performance.

Cognitive path modeling revealed that the training causally improved informed decision making in untrained tasks and domains (e.g., health decisions) by reducing multiple cognitive biases, enhancing confidence, and improving people's understanding of risk communications that did not include visual aids. Results also indicated that most people benefited from the training, including those who were low in other general cognitive abilities (e.g., numeracy skills). To the extent these results generalize, the findings suggest that a brief graph literacy training program may causally improve at least some potentially influential aspects of general decision making skills.

Childhood adversity trajectories and intelligence in young adulthood: A register-based study including 372,312 Danish men

Rebecca B Clarke[1], *Gunhild T Okholm*[1], *Leonie K Elsenburg*[2], *Youn-Hee Lim*[2], *Erik L Mortensen*[2,1], *Naja H Rod*[2], *Trine Flensborg-Madsen*[1]

[1] National Institute of Public Health, University of Southern Denmark
[2] University of Copenhagen

Objective: Childhood adversity (e.g., economic hardship and unfavorable family dynamics) is highly prevalent even in countries with well-developed social security systems. Repeated exposure to childhood adversities may lead to chronic stress and impaired brain development, potentially impacting cognitive ability. However, prior studies investigating association between childhood adversity and cognitive ability, e.g., intelligence, relied on single adversity measures, small sample sizes, and selective participation. Larger studies capturing the accumulation of multiple adversities throughout childhood are needed. Thus, we examined childhood adversity trajectories and intelligence quotient (IQ) in a population-based cohort of 372,312 young Danish men.

Methods: We linked the Danish Life Course cohort containing data on 12 childhood adversities from 0–15 years with the Danish Conscription Registry containing data on IQ assessed at ages between 18–26. We used a childhood adversity measure employing group-based multi-trajectory modelling to identify childhood adversities across three dimensions (material deprivation, loss or threat of loss, and family dynamics) during age 0–15. Based on the adversity trajectories, we divided the children into five groups: 'Low adversity,' 'early life material deprivation,' 'persistent material deprivation,' 'loss or threat of loss,' and 'high adversity.' To assess the association between childhood adversity trajectories and IQ, we used a linear regression model adjusting for birth year, parental origin, maternal age at birth, birth order, and size for gestational age.

Results: The regression model showed that all adversity groups had lower mean IQ scores compared to the low adversity group. The IQ differences ranged from −2.9 points for early life material deprivation to −9.4 points for high adversity, corresponding to 0.6 SD of the sample standard deviation.

Conclusion: This study uniquely captured cumulative childhood adversity exposure throughout childhood and consistently linked childhood adversity to young adult intelligence. The substantial IQ difference in the high adversity group highlights the need for public health interventions.

Tilt increases at higher ability levels: support for differentiation theories

Thomas Coyle PP

University of Texas at San Antonio

Introduction: Tilt refers to an ability pattern based on within-subject differences in two specific abilities (e.g., math, verbal). These differences yield relative strength in one ability (math) and weakness in another ability (verbal). Tilt has been attributed to differential investment, which strengthens abilities in one domain and weakens abilities in another domain. The current study is the first to examine the effects of ability level on tilt. Predictions were based on differentiation theories, which assume that specific abilities (which include tilt) increase at higher ability levels.

Method: Test scores were obtained from the 1997 National Longitudinal Survey of Youth (N=6,969). Ability level was based on *g* factor scores from the 12 tests of the Armed Services Vocational Aptitude Battery (ASVAB). Tilt was based on test scores (math, verbal, technical) from college aptitude tests (SAT, ACT, PSAT) and the ASVAB, yielding math tilt (math > verbal or tech) and verbal tilt (verbal > math or tech). Structural question modeling estimated linear and nonlinear (quadratic) effects of *g* on tilt. Standardized effects (betas) are reported as significant at $p < .05$.

Results: *g* was positively and linearly related to the absolute value of tilt difference scores (e.g., math minus verbal) (beta = .16). For subsamples showing math or verbal tilt, *g* was positively and linearly related to both types of tilt, with stronger effects for math tilt (effect = .33) than verbal tilt (beta = .14). Quadratic effects (beyond linear) of *g* on math or verbal tilt were non-significant (beta < |.07|).

Discussion: Consistent with differentiation theories, tilt increased at higher *g* levels, suggesting that specific abilities (which include tilt) are more pronounced at higher ability levels. Future research should examine moderators of *g*-tilt relations. These include personality traits (e.g., self-efficacy and life history speed) and age, which may amplify the effects of *g* on tilt.

Specific cognitive abilities predict socio-political attitudes above and beyond *g*

Ryan T Dobson[1], ***Tobias Edwards***[2]

PP

[1] University of New Mexico
[2] University of Minnesota

Recent research suggests that specific cognitive abilities predict socio-political attitudes above and beyond *g*. Edwards et al. (2025) found that verbal IQ, and to a lesser extent, performance IQ, are associated with political attitudes (e.g., social liberalism) and traditional moral attitudes. This prior research is limited by its reliance on multiple regression, which cannot isolate the effects of latent specific abilities from *g*. In the present study, we use structural equation modeling (SEM) with data from the National Longitudinal Survey of Youth 1979 cohort to provide a more rigorous test of the predictive power of non-*g* factors.

An exploratory bifactor analysis of the ASVAB revealed three specific cognitive abilities: speed, math, and technical ability. We then fit a full SEM that incorporated the orthogonal bifactor measurement model and predicted political party affiliation (Democrat, Moderate, Republican) and frequency of religious service attendance from the cognitive abilities. Results indicate that higher *g* and math ability were associated with a greater likelihood of Republican party affiliation, whereas speed and technical ability showed no significant effects. More frequent religious service attendance was associated with higher math ability and lower technical ability, but was not associated with *g* or speed. Specific abilities added considerable predictive power over *g*, underscoring the importance of considering them when examining the cognitive underpinnings of socio-political attitudes.

A cross-trait analysis of the Dunning-Kruger effect

Curt Dunkel[1], ***Dimitri Van der Linden***[2]

RT

[1] USA
[2] Erasmus University

Debate surrounding the Dunning-Kruger effect (DKE) has focused on finding the correct analytical approach to separate variance due to real psychological phenomena from statistical artifact. The current investigation is premised on the idea that redirecting attention toward a fundamental premise of the DKE may also help to move the discussion, and our understanding of the DKE, forward. Proponents of the DKE have stated that it is a function of the domain of aptitude and not the individual. This assertion is tested by looking at the DKE across traits.

Within and cross-trait analyses of cognitive ability and physical attractiveness for the DKE were performed. Replicating previous results, within trait analyses for each trait yielded significant DKEs. Additionally, cross-trait analyses showed a significant cognitive ability to physical attractiveness DKE such that those low in cognitive ability overestimated their physical attractiveness to a larger degree than those with higher cognitive ability. A significant physical attractiveness to cognitive ability DKE was not found. The results suggest that both individual differences and domain specific metacognitive processes play a role in the DKE. Future research should incorporate a greater number and diverse set of traits in cross-trait analysis of the DKE.

Predicting success: Meta-analytic insights into performance predictors of West Point cadets

Benjamin J Elliott*, *Nathan R Kuncel

PP

University of Minnesota

Our research investigates predictors of leadership success in a unique educational setting, focusing on West Point cadets which trains officers for the US Army. This study assesses both non-cognitive (e.g., personality traits, peer-rated leadership, grit) and cognitive (e.g., standardized tests, high school GPA) predictors of performance. This meta-analysis is the first comprehensive review of performance predictors at any military academy in the United States.

Preliminary results indicate that conscientiousness (r = .27, k = 7, N = 4,726) is the most robust non-cognitive predictor of leader performance when measured by cumulative progressively weighted averages of grades in leadership and military dimensions. Other personality traits, including agreeableness (r = .06, k = 6, N = 4,135), openness (r = .04, k = 6, N = 4,119), extraversion (r = .04, k = 7, N = 4,849), and neuroticism (r = –0.03, k = 6, N = 4,117) are largely unrelated to leader performance. Grit has a small correlation to predict leadership (r = .14, k = 6, N = 15,818) yet more strongly than hardiness (r = .09, k = 3, N = 3,235) and shows a low positive correlation with academic performance (r = .06, k = 6, N = 15,818). Standardized test scores are highly correlated with academic success (r = .49, k = 4, N = 17,406) and are lesser yet still significant predictors of leadership (r = .10, k = 5, N = 19,104) ratings.

Ongoing analyses will examine additional factors, such as peer and subordinate ratings of leadership potential. As cadets are evaluated on multiple outcomes (military, physical, and academic) and monitored throughout their career, linking these predictors to early- and mid-career performance outcomes aims to provide compelling practical implications. Further implications may exist for leadership and higher education selection.

Intelligence and suicidal ideation in older adults: Insights from the Survey of Health and Retirement in Europe (SHARE)

Jonathan Fries*, *Sandra Oberleiter*, *Jakob Pietschnig

RT

University of Vienna

The risk of suicide increases markedly around retirement age. Prior research suggests that higher intelligence may be a protective factor against suicide, possibly mediated via intelligence's well-known links to better physical and mental health. However, it remains unclear whether intelligence is also associated with a reduced likelihood of suicidal thoughts in older adults. Here, we aimed to examine the relationship between intelligence and suicidal ideation in later life.

We analyzed data from Wave 9 of the Survey of Health and Retirement in Europe (SHARE), a longitudinal study of adults aged 50 and above. Intelligence was assessed using a battery of cognitive tasks including Raven's Progressive Matrices, the Wechsler Logical Memory Scale, and number series. These scores were linked to self-reported suicidal ideation, resulting in a sample of 2,561 participants from the Czech Republic, Denmark, France, Germany, and Italy. We also explored potential moderators of this link including general health, mobility limitations, and functional impairments.

Logistic regression analyses indicated that, in general, individuals with higher intelligence reported fewer suicidal thoughts (OR = 0.73). However, this effect was reduced after adjusting for age and sex (OR = 0.83) and became negligible when functional limitations were included in the model.

In sum, while intelligence appears to be associated with lower suicidal ideation in older adults, this relationship may be understood as a consequence of the well-established link between cognitive ability and better physical and mental health.

Examining associations for spatial cognition with geographic-contextual indicators S

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RT

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Spatial navigation and orientation abilities are an important realm of individual differences with significant implications for cognitive health and involve how individuals navigate and perceive space as well as how they integrate cues and landmarks to navigate to a destination. Furthermore, spatial navigation ability is associated with a variety of elements in the geographic environments that individuals live in (Coutrot et al., 2022; Coutrot et al., 2018). For example, living in more rural areas or living in areas with higher street entropy are both associated with greater spatial navigation performance (Coutrot et al., 2022). To build on existing literature, we used data from the Synthetic Aperture Personality Assessment Project (https://sapa-project.org) and the Midlife in the United States (MIDUS) study to examine associations for walkability, transit accessibility, commute modality, urbanicity-rurality, and environmental quality with spatial navigation and orientation ability across the USA at the county level. The individual-level spatial cognition indicators used in this study were the Santa Barbara Sense of Direction scale (Hegarty et al., 2002) (SAPA Project), 3-Dimensional Rotation (3DR) ability (SAPA Project), and the O*Net (Peterson et al., 1999) spatial orientation measure (MIDUS).

We found that walkability and proximity to transit stops were associated with lower levels of spatial orientation. Sociodemographic environmental quality (i.e., local economic indicators and local crime rates) was associated with higher spatial orientation scores. No notable associations were found for the 3DR and sense of direction measures with the geographic indicators of interest. Overall, given the implications that spatial cognition has for cognitive health as well as the significant role environments play in shaping how individuals navigate, perceive, and understand space and direction, understanding associations, or lack thereof, between various measures of spatial ability and geographic indicators is important for disentangling the interplay between environmental factors and spatial abilities.

How academic motivation predicts a profile of talent development in intellectually gifted students

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RT

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According to the National Association for Gifted Children (2019), two areas needing further exploration among intellectually gifted children are social-emotional development and precursors of gifted underachievement (Steenbergen-Hu et al., 2020). Some research has found that students' psychosocial perceptions (i.e., self-beliefs) are vital in predicting achievement (Dixson et al., 2023), with academic motivation being especially influential. For example, academic motivation has been found to moderate the relationship between intellectual giftedness and academic achievement (Schick & Phillipson, 2009). However, few studies have comprehensively evaluated gifted students' motivation styles and related outcomes. To explore these relationships, the current study aims to investigate how academic motivation styles predict psychosocial perceptions and achievement-related behaviors among gifted students.

Hierarchical linear regressions (HLRs) were conducted among a sample of 325 students attending two gifted summer programs. Students' academic motivation was examined with items ranging from intrinsic reasons to go to school (e.g., "Because I learn about things that interest me"), to extrinsic reasons (e.g., "In order to have a better salary later on"), to completely lacking motivation (e.g., "I don't know what I'm doing in school"). Motivation styles were entered one-by-one in separate HLR steps. Outcome variables were hope, academic self-efficacy, academic self-concept, school belonging, and behavioral, emotional, and intellectual engagement.

Results indicated that academic motivation styles predicted small (10.8%) to medium (21.8%) amounts of psychosocial perceptions and medium (14.1%) to large (65.4%) amounts of academic engagement. Intrinsic motivation was the only consistently significant predictor of the outcome variables ($p < .001$). These results indicate that academic motivation strongly relates to gifted students' self-beliefs and behaviors. This suggests that academic motivation interventions should be embedded into gifted programming, and that helping students identify something intrinsically motivating is key for keeping them engaged and successful.

Parallel forms of the Berlin Numeracy Test: A step toward measurement of risk literacy development and change

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RT

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The Berlin Numeracy Test (BNT) has been found to be one of the strongest general predictors of decision making skill and risk literacy, typically doubling the predictive power of other cognitive ability assessments, such as fluid intelligence tests (Cokely et al., 2018). Since its development in 2012, the test has been completed by more than 150,000 people from at least 100 countries (see www.RiskLiteracy.org), contributing to hundreds of studies on decision making and cognitive bias in diverse disciplines (e.g., psychology, business, medicine, law, health, education, engineering). Given the growing potential risk of item familiarity and repeated exposure, we aimed to develop and validate new parallel forms of the BNT, using a cloning method.

In Study 1, two parallel forms were created and tested with a sample of 70 undergraduate students, who also completed relevant criterion measures (e.g., risk comprehension). In Study 2, the forms were cross-validated in a larger, more diverse sample (N = 200), allowing for more extensive analyses of factor structure, reliability, and other aspects of construct validity (e.g., predictive validity).

Results indicated that the two new tests both met established criteria for parallelism based on CTT criteria (e.g., comparable means, variances, factor structures, reliabilities) and IRT criteria (e.g., equivalent item and test information functions), within accepted psychometric tolerance standards ($\bar{x} \pm 0.1$). We interpret these results as a step toward the establishment and validation of new Berlin Numeracy Test resources that may have many potential applications (e.g., longitudinal designs, experimental studies, training interventions).

Intelligence and individual differences in astrological belief

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Astrology is a theory of individual differences. Owing substantially to the influence of Hans Eysenck, it has been taken seriously and tested scientifically by psychologists, but has nevertheless been found wanting of any predictive validity. Despite its appearance of being a pseudoscientific account of individual differences, astrology has millions of believers; who are they, and why do they believe it? In a sample of 8,553 Americans from the General Social Survey, we undertake a high-powered study of the correlates of astrological belief. Of our psychological measures we find intelligence, as measured with Wordsum, to have the largest effect size, negatively predicting belief in astrology. Education also predicts disbelief, supporting the "superficial knowledge" hypothesis. Measures of religiosity and spirituality had null effects, in contradiction of the "metaphysical uncertainty" hypothesis that a need for metaphysical beliefs causes one to believe in astrology. We find that right-wing individuals are less likely to believe in astrology, in contradiction to Theodore W. Adorno's "authoritarian" theory of astrology. We also find no effect of scientific trust on astrological belief. Our research highlights how prior hypotheses poorly account for individual differences in astrological belief.

Developmental dynamics of cognitive processes network: an individual differences investigation on cognitive development

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PP

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This study focuses on the concurrent understanding of cognitive development by integrating contemporary psychometric modeling techniques to capture both broad latent cognitive abilities and specific, time-sensitive interactions within distinct domains. Using the Adolescent Brain Cognitive Development (ABCD) study as a primary data source (Casey et al., 2018), we develop and validate a hybrid psychometric model grounded in Process Overlap Theory (Hao et al., 2025; Kovacs & Conway, 2016) that incorporates latent change score models (Kievit et al., 2018) and network modeling (Epskamp et al., 2018). Our study focuses on revealing how domain-general and domain-specific cognitive functions evolve and interact over time in adolescents.

In this exploratory investigation, the interrelations among cognitive measures in the large-scale ABCD dataset are examined using psychometric network modeling across multiple time points. Additionally, latent change score models track individual developmental trajectories of broad cognitive factors, namely working memory, executive functioning, and verbal ability, as identified in previous research on ABCD neurocognition measures (Moore & Conway, 2023). These findings illuminate the interdependencies among latent constructs, offering insights into the dynamic mechanisms underpinning cognitive change.

This framework informs current experimental investigations by providing a developmental perspective on cognitive processes within the context of Process Overlap Theory. By exploring the developmental dynamics of both domain-specific and domain-general abilities, our project contributes to concurrent theory building in cognitive individual differences and has practical implications for both educational and clinical interventions.

Universal screening in practice: A comparative study of the CogAT and ACT Aspire for gifted identification

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Previous research indicates that many academically accomplished students from disadvantaged backgrounds are not identified for gifted and talented (G/T) programs. This study investigates the potential of two commonly used assessments, the Cognitive Abilities Test (CogAT) and the ACT Aspire, to widen the net for G/T identification in practice. We analyzed a large sample of students (N = 10,508) from 15 school districts in Northwest Arkansas, replicating the analysis across two cohorts (2018–19 and 2021–22). These students took both the CogAT and the ACT Aspire test.

Utilizing Pearson correlations, ordinary least squares (OLS) regression, and linear probability models (LPM), we examined test similarities and differences as well as predictive value for G/T identification. Our results demonstrate that the ACT Aspire and CogAT have a significant correlation in our sample of r = .59. However, the correlation varies across cohorts noticeably from r = .72 to r = .49. OLS regression results also demonstrated similar discrepancies between two cohorts. These variations may be partially attributable to COVID-19-related school disruptions, but they also suggest greater caution in the interchangeable use of ACT Aspire and CogAT as indicators.

Additionally, LPM results with respect to the likelihood of each test ensuring diversity and inclusiveness in G/T identification showed mixed results. Neither assessment emerged as a clearly superior tool for diversifying the identification process. These findings have implications for gifted identification, broader use of assessments in selection procedures, and add to the literature on ability and achievement tests.

College enrollment and selectivity outcomes for gifted students: Evidence from Arkansas

Al Mansor Helal[1], *Andy Parra-Martinez*[2], *Rian Djita*[1], *Jonathan Wai*[1], *Sarah McKenzie*[1]

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[2] Mississippi State University

There is a growing body of longitudinal studies that address the academic and later life outcomes of gifted and talented (G/T) students. Research from the Study of Mathematically Precocious Youth (SMPY) (Lubinski & Benbow, 2006) are notable examples, whose samples largely came from regions outside the heartland of the U.S.

Building on this tradition, this study adds to the understanding of academic and long-term outcomes among individuals enrolled in gifted and talented (G/T) programs. Specifically, we explore postsecondary college enrollment rates and selectivity trends of G/T students in a Southern state. Using multilevel modeling, we analyzed a sample of 184,515 observations from the 2014–2019 academic years merging data from the state Department of Education and the National Student Clearinghouse.

We found that G/T students, overall, were more likely (OR = 1.97) to attend any postsecondary institution than typically developing students. G/T students, compared to their typically developing peers, were 65% more likely to attend selective postsecondary institutions. These results hold after accounting for key covariates, including student-level demographics and school-level characteristics. These findings add to the college outcomes literature on G/T students as well as add to policy discussions surrounding higher education access, mobility, and choice, for students in the heartland.

Tracing educational roots: The K–12 backgrounds of high-achieving immigrants in the United States

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PP

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The United States has long been a global magnet for talent, attracting and cultivating high-achieving individuals across diverse fields, from Nobel laureates and Fortune 500 CEOs to federal judges and other leaders of national influence. While prior research often highlights these individuals' postsecondary trajectories, little is known about their earlier educational histories—specifically, the role of K–12 schooling in shaping their long-term outcomes. This study seeks to fill that gap by examining the primary and secondary schooling histories of high-achieving individuals in the U.S., with a particular focus on immigrants.

Leveraging a newly compiled dataset that includes the educational and immigration backgrounds of more than 7,000 prominent figures—such as federal judges, corporate executives, and Nobel Prize winners—we categorize individuals based on their K–12 educational experiences: U.S.-based, foreign-based, or mixed. We then assess patterns in the timing of immigration, country of origin, and field of achievement to understand how early educational investment aligns with later national benefit.

Our preliminary findings indicate that, on average, around 15%–20% of these highly achieving people moved to the U.S. as immigrants at some point in their lives, while the majority of them had their K–12 education in their home countries. For example, among the CEOs and founders of billion-dollar companies, around 32%–36% are immigrants, with over 65% of them completing K–12 schools in countries different from the U.S.

These results offer policy-relevant insights into the timing and nature of the U.S.'s implicit investment in high-achieving individuals. The study contributes to broader discussions on human capital development, global talent flows, and the returns to educational systems—domestic and international alike. In doing so, it offers a new perspective on the intersection of immigration, intelligence, and elite performance.

Cross-national differences in (non-verbal) spatial task performance may be rooted in measurement non-invariance: Evidence from Austrian and Filipino undergraduates

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Non-verbal standardized psychometric tests have been frequently suggested to represent ability measures that are largely unaffected by problems that are related to between-groups measurement non-invariance, thus providing a means for largely fair cross-national comparisons. However, some prior evidence from cross-national assessments of spatial ability in east-Asian and central-European countries indicates that this assertion might not necessarily hold up, especially when examining countries that possess a rather large cultural distance.

In the present study, we contribute toward this idea by comparing the spatial task performance from N = 300+ undergraduate students in Austria and the Philippines, respectively, on the Three-Dimensional Cubes Test (3DC). The 3DC is a well-established Rasch-calibrated standardized non-verbal spatial ability test that has been originally developed for the use in Germanophone countries, but has been demonstrated to yield measurement invariant results in other Western countries such as the United States and was therefore deemed to represent a suitable measure for cross-national comparisons.

We used a stepwise approach to establish cross-national measurement invariance and therefore meaningfulness of performance comparisons between countries. First, we established Rasch-homogeneity of the measure by examining the split-criteria mean and median performance, sex, as well as odd vs. even participant numbers within each country. Wald-tests were used to remove non-fitting items (in both countries) when likelihood-ratio tests indicated suboptimal model fit until Rasch-homogeneity was established. Subsequently, between-groups cross-national Rasch-models were fitted and the iterative model-fitting process was repeated until model fit was reached.

Our results indicate that measurement non-invariance appears to be a substantial driver of cross-national spatial task performance differences between Austrian and Filipino undergraduates. This finding suggests that other non-verbal measures may be susceptible to similar effects, thus emphasizing the necessity of establishing cross-national measurement invariance before interpreting test performance differences.

Using the tools: Northern Michigan Talented Youth

Leo Hesting RT

Northern Michigan for Talented Youth

A portfolio of 6 tests of g and (pursuant to Benbow) spatial aptitude are assembled. Though interesting data may accrue, the tests' aim is toward serviceability in an effort to support talented youth in northern Michigan. Considerations when choosing testing instruments include cost, simplicity, licensing, attractiveness, speed, and flexibility.

The state of Michigan in 2009 eliminated funding, staffng, and policies for gifted students, therefore in-school programs, created and funded on an ad-hoc basis, vary in quality, depth, and availability. Need goes unmet. Persons who've worked with high-I.Q. youth generally acknowledge that much - perhaps most - benefit comes from simple congregation, which may be achieved outside schools. Benefit occurs spontaneously, naturally, "the magic happens" as the youth self-organize and co-create social networks, bonds, recognition, understanding, learning strategies, and learning itself. Primary benefits are social and psychological as the youth may be effectively liberated from inaccurate and/or negative self-assessments and suboptimal behaviors, attitudes, and strategies.

This happens given a critical mass of youth with I.Q. sufficiently high. An outwardly similar group of, say, students with high grades, mightn't generate nor experience the "magic effect" as the nature of cognition and native inquiry style/modality are different.

The 6 screening tests currently being piloted are:

- Context Independence—A test said to originate decades ago in the USAF
- Baddeley variants—Baddeley's original 1968 instrument plus variants
- ITY—Updated version of a 1977 I.Q. test for children, tweens, and teens
- Vocabulary—Open-source vocabulary test, seeded with moral and ethical terms
- Redrawn Revised PSVT-R (Purdue Spatial Visualization Test)
- 4D-to-3D projection, rotation, and navigation

The tests will be briefly described, demonstrated, and discussed, with mention of the last test's relevance to 21st century thought.

Intelligence and the P300 event-related brain potential: Results of a systematic review and meta-analysis

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RT

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Intelligence scores aim to capture in a single metric an individual's mental capacity to understand complex ideas, to engage in various forms of reasoning, to learn from experience, and to adapt to new situations by taking thought. Reliable measures were developed and allow to study associations between intelligence and brain activity. Electroencephalography (EEG) recorded during cognitive tasks presents a promising candidate, as reflected in many studies focusing on the P300 event-related brain potential. Unfortunately, high heterogeneity in the definition of intelligence, the tasks during which brain activity was recorded, the operationalization of the P300, and contradictory results across studies prohibit drawing clear conclusions. So far, a quantitative assessment of this literature is missing.

This talk presents a preregistered meta-analytical research project developed to close this gap. Specifically, we quantitatively analyzed all studies that have examined associations between intelligence and features of the P300. We screened over 5,641 articles published between 1970–2023, while 214 of these were eligible for full-text review and 50 studies with 388 effects were usable for meta-analytical comparisons. Finally, study design quality was assessed with the Study Design and Implementation Assessment Device (DIAD), which we significantly refined to make it applicable for neuroscientific research on individual differences.

Consistent with our hypotheses, we observed a significant positive association of small size between intelligence and P300 amplitudes (r = .12; 95% CI [.06, .18]) and a significant negative association of small effect size for P300 latencies (r = –.18; 95% CI [–.23, –.12]). Across-study heterogeneity was substantial (60%) and sub-analyses highlight potential moderators. We detected no obvious signs of publication bias, although the DIAD revealed problems in study design quality. These issues must be addressed in future research and we propose guidelines to this end—ultimately, to foster the validity of research on the neurobiological bases of human intelligence.

The power of joy for the academically gifted

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RT

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Adolescent mental health has meaningfully declined over the last decade (CDC, 2023). For instance, over six years, there was a 124% increase in the number of children and adolescents admitted to hospitals for mental health concerns (Clarify Health, 2023). One subset of adolescents who may experience mental health challenges (e.g., anxiety) at a higher rate than others are academically gifted students: those who demonstrate exceptional academic aptitude or ability in one or more academic areas. These students may be more susceptible to mental health challenges due to the robust expectations that typically accompany the classification (Eren et al., 2018). Schools and gifted programs have employed many different interventions aimed at increasing either the academic skills or the well-being of these students. However, very few have targeted a positive construct that may meaningfully affect both areas.

In this study, how joy relates to several mental health and academic markers was investigated in a sample of 195 academically gifted students over the course of a six-week summer program for the academically gifted. The results of a series of linear regressions indicated that the students? joy accounted for a large effect size amount of variance in their levels of behavioral engagement (11.3%), anxiety (11.8%), depression (14.7%), academic self-efficacy (17.8%), emotional engagement (29.9%), and flow/flourishing (48.7%). Over the six-week timeframe, this relationship stayed relatively stable, with the students? joy at the start of the program accounting for a large effect size of variance in all outcome variables (9.2%–37.2%) at the end of the program. Additionally, joy was a significant contributor in all conducted regressions ($p < .01$).

As schools aim to be more academically competitive, they may wish to critically consider the joy of their students moving forward, as joy may affect several aspects of a student's ability to live up to their full potential and well-being.

Leaving their mark: New computational methods reveal rich latent structure in children's human figure drawings

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Because most children happily produce drawings, there has long been interest in what those drawings might suggest about a child's inner life. From the earliest descriptions of children's drawings through more careful and rigorous scientific research, it is common to begin with two basic assumptions. The first holds that across the drawings that children produce, there will be many commonalities shared between children. The second assumption is that within the drawings an individual child produces, some aspect or group of features will connote abilities, competencies, emotional/mental states, or underlying characteristics of that particular child.

So that any commonalities, discrepancies, or attributes can be better identified, both historic and current methods of drawing assessment involve checklists wherein raters determine the presence or absence of a predetermined set of features (e.g., within human figure drawings: head, arms, eyes, etc.). After indicating which features are present, individual features can be summed together to produce a single integer score for a given drawing. The resulting drawing scores are then aggregated with other behavioral and cognitive measures or used independently to predict a diversity of outcomes with perhaps surprising effectiveness. Nevertheless, the checklist method may—despite its apparent simplicity—both add an unnecessary burden to the researcher while also underrepresenting the performance of the child.

To address this concern, we present recent research that leverages computational advances in collecting and analyzing crowd-sourced perceptual judgments and convolutional neural networks trained on photographs of real-world images to uncover latent structure in children's drawings. These methodologies offer an opportunity to both improve and enhance the assessment of children's development through their drawings.

Klein Adaptive Testing System (KATS): a new computerized adaptive test battery that assesses fluid reasoning (*Gf*) and comprehension/knowledge (*Gc*)

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RT

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Klein Adaptive Testing System (KATS) is a novel test battery designed to assess two broad cognitive abilities under the Cattell-Horn-Carroll model of human cognitive abilities: fluid reasoning (*Gf*) and comprehension/knowledge (*Gc*). Fluid reasoning is measured with Scrambled Adaptive Matrices (SAM), a nonverbal reasoning test with a novel format, optimised for digital administration. Comprehension/knowledge is measured with the Nondirectional Vocabulary Test (NoVo). Besides providing individual results on each of these tests, KATS also offers a *Gf*/*Gc* cluster score.

KATS uses computerized adaptive testing (CAT) methodology, tailoring the difficulty of items to the test-taker's performance, which enhances precision and efficiency.

In this presentation, we introduce KATS as well as its cutting-edge norming procedure. SAM and NoVo were normed on a large and representative UK sample, using advanced statistical methods inspired by the Woodcock-Johnson tests. This includes bootstrap resampling to adjust for sampling biases as well as a half-normal distribution to model the data. The result is a continuous, model-based norm that is superior to conventional norms based on the empirical distributions of subgroups.

By offering a flexible and precise solution, KATS has the potential to improve the assessment of cognitive abilities in educational, clinical, and research settings.

Political interest and voting behavior of gifted adults: How giftedness shapes society S

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Gifted adults are more likely than non-gifted adults to attain leadership positions and to play a crucial role in societal progress. In contrast to its importance, the political behaviors of gifted adults such as political interest, voter turnout, and vote choice remain largely underexplored. More intelligent individuals showed higher interest in politics (Deary et al., 2008) and voter turnout (Edwards et al., 2024). Findings on US vote choice revealed either preferences for the Democratic Party of more intelligent individuals (Choma & Hanoch, 2017) or non-significant associations (Ludeke & Rasmussen, 2018). In the German multi-party system, the average IQ of voters for the ecological-oriented The Greens (IQ = 107) and the libertarian Free Democratic Party (IQ = 105) were higher than for other left-wing, center-left, center-right, or right-wing parties (Bell et al., 2020; similar for UK: Deary et al., 2008).

To examine the political behaviors of gifted adults more comprehensively, we used data from the Marburg Giftedness Project (Rost, 1993, 2009). From a non-preselected nationwide West German sample of 7023 third graders (1987/1988), 151 highly intelligent children (IQ $\geq$ 130) and 136 children with average intelligence (IQ $\approx$ 100) were identified. Following intelligence re-testing in ninth grade, 107 gifted and 107 non-gifted adolescents were identified. In a follow-up 35 years after the initial identification, 87 gifted and 71 non-gifted adults (response rate: 74%) reported their political interest, voter turnout, and party preference in the 2021 German federal election.

An ANOVA with giftedness and sex as independent variable revealed a significant main effect for sex on political interest indicating higher interest in men. A logistic regression on voter turnout showed no significant effects. Bayesian multinomial logistic regressions with five parties as dependent variables revealed multiple meaningful results, for example, gifted adults favored The Greens above other parties. We will discuss new insights into the political behavior of gifted adults.

Cognitive predictors of medical resident performance: A meta-analysis

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RT

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We performed a literature search on the association between applicant factors and residency performance, identifying over 15,000 studies as potentially relevant. At least two researchers screened each of the articles, yielding 779 papers for an in-depth review. These studies were coded and reviewed, resulting in a meta-analytic database of 151 studies examining the relationship between predictors used in residency selection and subsequent resident performance with a total listwise sample of 84,421 residents.

Tests of medical knowledge and skill in the form of licensing examination tests (USMLE Step 1 and 2 scores) were consistently one of the best predictors of a range of outcomes. USMLE Step 1 and 2 scores were moderate predictors of overall supervisory performance ratings (r = .17 and .24) and strong predictors of medical specialty specific skill assessments in the form of In-Training Examination (r = .48 and .52) and Board Certification exam scores (r = .44 and .44). Both licensing examinations were also moderate predictors of ACGME medical knowledge ratings (r = .22 and .30) and weak but significant predictors of ratings of patient care and systems-based practice. Across the different performance measures, USMLE Step 2 scores were slightly but consistently better predictors than Step 1.

In contrast, interviews and letters of recommendation were generally weak predictors of performance. Other popular predictors were ineffective, including prior research accomplishments, which predicted subsequent research productivity and nothing else. Overall, the most evidence was available for USMLE Step 1 and 2 scores, while for some predictors the available research was comparatively thin.

In total, the data supported the use of medical knowledge and skill tests as tools for evaluating potential residents while indicating that common measures used to evaluate other attributes would benefit from additional research and improved measurement.

On the trail of the Flynn effect: A cross-temporal meta-analysis of Trail Making Test scores (1946–2025) to assess global ability shifts in executive functioning

Jonas Lesigang, ***Jakob Pietschnig*** S

SY

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Throughout the last century, intelligence test scores increased over time and generations (the Flynn effect). However, recent studies investigating the Flynn effect based on modern conceptualizations of intelligence (e.g., the CHC model) suggest domain-specific change trajectories. Concurrently, changes in the positive manifold of intelligence have been demonstrated and links to executive functions proposed (e.g., Process Overlap Theory). In this vein, we investigated the trajectory of executive functioning ability over the last 75+ years via a cross-temporal meta-analysis of Trail Making Test (TMT) scores. The TMT is a neuropsychological screening instrument which assesses executive functioning and is employed in its original form since its conceptualization up to this day. From 38,000+ studies published between 1946 and 2025, we identified records reporting TMT mean scores and predicted these scores by data collection year in precision-weighted regressions. We report the trajectory of global TMT scores and their generality regarding age groups, healthy vs. patient samples, as well as computer vs. pen and paper administration. Potential effects of country-specific macro-indicators such as national prosperity were assessed in multiple regression models.

The impact of adolescent cognitive ability, non-ability personality and rearing socioeconomic status on adult functioning: Results from two longitudinal family studies spanning adolescence through midlife

Matt McGue*, *Emily Willoughby*, *Aldo Rustichini*, *Tobias Edwards*, *Alexandros Giannelis*, *James J Lee

RT

University of Minnesota

In his 1998 review on *g*, Arthur Jensen wrote, "No other variable in psychology has such an impressive record for predicting so many different kinds of human performance." Jensen's claim has received consistent support over the past 25 years. Nonetheless, there is an emerging parallel literature on the contribution of non-ability factors to diverse life outcomes. The predictive utility of these factors, variously called non-cognitive skills, soft skills, personality, and social-emotional learning, appears to rival and in some cases even exceed the predictive utility of general cognitive ability (GCA).

Using data from two longitudinal studies spanning adolescence through midlife (Ns of 1,232 and 3,766, respectively), we investigate the adolescent origins of adult social, economic, and health functioning. First, we develop and replicate composite measures of non-ability personality attributes predictive of adolescent academic achievement net GCA. Second, we investigate the utility of these measures relative to GCA and rearing socioeconomic status for predicting early- and mid-adult functioning in (1) social achievements, (2) mental health, (3) physical health, (4) substance use and abuse, (5) economic behavior, (6) social adjustment, and (7) good citizenship. We discuss our results in light of the larger literature on human capital formation and its consequences.

Contradicting the evidence: Using logos to analyse the indigenous language debates and their effect on mathematical giftedness in South Africa

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Today in South Africa, mathematical giftedness has both a 21st century appeal as well as an emancipatory one. From its 21st century appeal, the national strategy for mathematics expects gifted learners to be taught mathematics in English, yet from an emancipatory appeal, the mother tongue intervention says nae, learners must be taught mathematics in their indigenous languages. This paper was premised on the view that there are fallacious claims that proponents of indigenous languages are making that derail efforts towards gifted education and therefore need to be investigated. This is important because intervention studies are developed with the goal of improving practice. In this regard continuing to argue that South African gifted mathematics learners will benefit from the use of indigenous languages has been described as pure sophistry or fake academia. Aristotle proposed a theorem with three 'means of persuasion' where the rhetor uses either ethos (the rhetor's credibility), or logos (logic or rationality), or pathos (emotional appeal) to persuade the audience. Being aware of these methods of persuasion helps the researcher to become critical of the illogical ways politicians and other experts influence national decisions. In Aristotle's logic a counter example can be a useful tool to determine how an argument reaches a false conclusion. Hence this paper analysed fallacies in some of the claims made by experts in the unending debates on the use of indigenous languages in the teaching of mathematics. Results show that four fallacies are made regarding the translation of mathematical concepts into indigenous languages. The implication for practice is that gifted learners are neither empowered nor emancipated by this intervention because it creates a domesticated other. This paper recommends that mathematically gifted learners should continue struggling to learn mathematics in English.

Predicting human intelligence from structural brain connectivity: A systematic evaluation of different predictive modelling frameworks

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Human intelligence varies across individuals, and structural brain networks have been shown to predict this variation, although the accuracy of such predictions vary considerably depending on the strengths and limitations of different machine learning-based modeling approaches.

In this preregistered study, we systematically compare and discuss different machine learning-based predictive modelling approaches to forecast individual intelligence scores from structural brain connectivity. Our analysis spans whole-brain connectivity as well as connections within and between specific subnetworks. To this aim, we use open-access data from 1,049 participants of the Human Connectome Project and derive structural connectivity from diffusion-weighted imaging. Intelligence is estimated as latent *g*-factor from 12 cognitive tasks.

We start by evaluating the most popular approach, Connectome-based Predictive Modeling (CPM), and compare it to Covariation Maximizing Eigenvector-based Prediction (CMEP), while both approaches were originally designed to predict intelligence from functional brain connectivity. Building on recent trends in neuroscience, we further assess graph neural networks (GNN), which inherently account for graph structure in neural data.

Notably, our results reveal that GNNs outperform other approaches in predicting individual intelligence scores, emphasizing their potential to offer more accurate forecasts of human intelligence based on structural brain data. Our findings highlight the critical role of network size in prediction performance. Further, subnetwork selection evolved as crucial impact factor with some subnetworks consistently showing higher predictive performance regardless of the method used, reinforcing the robustness of previous findings. Overall, our study offers strategies to enhance the robustness and generalizability of research on the neural correlates of human intelligence by integrating the graph structure of neural data into predictive frameworks.

Two concepts of meritocracy: Rescuing behavioural geneticists from politically repugnant conclusions

Damien Morris RT

King's College London

Research on the genetics of cognitive traits and socioeconomic outcomes is controversial because it bears directly upon longstanding debates about meritocracy. I propose that much of the ambivalence towards this research is driven by the confusion between two distinct meanings of "meritocracy" that have become entangled in popular usage: "authoritarian meritocracy," which implies the coercive sorting of individuals into social strata by an autocrat or central planning committee based on criteria they deem meritorious; versus "liberal meritocracy," under which different people's attributes and behaviours are differentially valued and rewarded by others expressing their individual preferences in a free society.

Authoritarian meritocracy was the dystopian conception of meritocracy Michael Young introduced in 1958. Arguably, the positive connotations the term has acquired since the 1970s mainly flow from the concept of liberal meritocracy.

The conflation of both concepts leads many researchers to draw deeply illiberal conclusions from their findings. Some feel compelled to reject meritocracy entirely. Others interpret meritocracy as equal environmental opportunity, under which undeserved genetic advantages are curiously tolerated while undeserved environmental advantages are not.

Both groups repudiate the differences in prestige and wealth that spontaneously emerge in liberal, capitalist societies as similar evils to the social inequalities in feudal societies. Moreover, both ironically approve the same authoritarian methods as the monarchs and autocrats they claim to abhor—namely the coercive appropriation and redistribution of wealth and opportunity to achieve their vision for society. Indeed, proponents of equal environmental opportunity sometimes find themselves supporting the genetic stratification of society by government bureaucrats, despite ostensibly being opposed to authoritarian eugenic regimes.

I showcase examples where conflating these two conceptions of meritocracy leads prominent writers and researchers to flirt with dangerously authoritarian ideas and show how disaggregating liberal meritocracy from authoritarian meritocracy rescues us from these politically repugnant conclusions.

Enhancing teacher competency on mathematically gifted learners: A case of two Zimbabwe institutions of higher learning

Henry Mudenda RT

Zimbabwe Open University

The academic needs of mathematically gifted learners remain overlooked in Zimbabwe's institutions of higher education. While global trends emphasize the importance of gifted education, Zimbabwe seem not having a structured approach to identifying and supporting mathematically gifted students, particularly in teacher training programs. This shortfall may hinder the academic and developmental potential of such learners, limiting their future contributions to national progress. Numerous studies have recommended the introduction of gifted education in Zimbabwe implying little is known about how giftedness education is incorporated into teacher training programs. Drawing on Francoys Gagné's (2015) Differentiated Model of Giftedness and Talent (DMGT), which emphasizes the necessity of targeted support for gifted learners, this study explored how well teacher education programs in two Zimbabwean higher learning institutions prepare educators to address the needs of mathematically gifted students. The research aimed to assess current practices, identify existing gaps, and offer strategies for improvement.

Using secondary data analysis, the study reviewed educational programs and institutional reports from the selected institutions. The analysis focused on curriculum design, pedagogical strategies, and professional development opportunities related to gifted education.

Findings revealed a notable lack of focus on gifted education. Teacher training programs often omit guidance on how to effectively teach mathematically gifted learners. As a result, educators frequently feel ill-equipped to adapt their teaching methods to support high-ability students, leading to uniform instruction that fails to meet diverse learning needs.

The study calls for urgent reforms in teacher education. Recommendations include introducing specialized coursework on gifted education, training in differentiated instruction, and continuous professional development. Strengthening teacher competency in these areas is essential for creating a more inclusive and supportive learning environment. By doing so, Zimbabwe can foster the growth of mathematically gifted learners and tap into their potential to contribute meaningfully to the country's intellectual and economic development.

Linking fluid and crystallized intelligence to static and dynamic models of brain network controllability

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Fluid intelligence (*gF*; solving novel problems) and crystallized intelligence (*gC*; application of acquired knowledge) are core domains of cognition. The Network Neuroscience Theory of Human Intelligence proposes that these domains arise from distinct brain-wide properties of connectivity. Drawing on network control theory, modal controllability—how well regional connectivity facilitates transitions into distant brain states requiring high energy to reach—may underlie the capacity to assemble novel representations with high cognitive effort, characteristic of *gF*. Conversely, average controllability—how well regional connectivity facilitates transitions into nearby brain states requiring minimal energy to reach—may underlie the capacity to retrieve established representations with minimal cognitive effort, characteristic of *gC*.

Cognitive variance in *gF* and *gC* can be decomposed into general intelligence (*g*; shared variance across all cognitive tasks) and domain-specific components (*gF-g* and *gC-g*). Brain connectivity can be modelled using structural connectivity (SC; tractography dMRI), static functional connectivity (sFC; time-averaged fMRI), or dynamic functional connectivity (dFC; time-varying fMRI). Using data from the Human Connectome Project (n = 945), we applied kernel ridge regression to predict *gF*, *gC*, or their components (*g*, *gF-g*, *gC-g*) from regional controllability metrics measured using SC, sFC, or dFC.

Controllability measured from dFC exhibited the strongest predictive power across cognitive measures, underscoring the relevance of time-varying brain dynamics to cognition. Contrary to theoretical expectations, modal and average controllability exhibited similar predictive power for *gF*, *gC*, *gF-g*, and *gC-g*, providing limited support for the hypothesized distinction. Furthermore, *g* exhibited the strongest relationship with controllability, rather than domain-specific measures. Interestingly, the regional importance of controllability in predicting cognitive performance correlated with regional position along the principal cortical gradient of functional connectivity—higher average controllability in transmodal association regions and higher modal controllability in unimodal sensorimotor regions were both associated with higher *g*.

It's an ipsative life: A multidimensional exploration of career, family, & time allocation among high-potential populations S

Gabriella D Noreen*, *David Lubinski*, *Camilla P Benbow RT

Vanderbilt University

Prior research on high-potential individuals, those at most promise to manage large amounts of economic and human resources, often working long hours on unpredictable schedules, documents the generality of a "motherhood penalty" and a "fatherhood bonus" on income (Bernstein, 2021). In an extensive series of multivariate analyses of high-potential parents, Bernstein (2021) found that while the average incomes for the sexes diverged following parenthood, both sexes were comparable and impressively well-off on other valued aspects of life: psychological well-being, relationship satisfaction, life satisfaction, and "net" family income. To further understand these patterns, the current investigation uses a mixed methods approach with additional constructs, metrics, and multivariate applications to examine high-potential individuals' personal views and lifestyle choices regarding career and family. Data were obtained from the Study of Mathematically Precocious Youth's age-50 survey responses from talent search participants deemed (Lubinski et al., 2023): Gifted (top 1% in intellectual ability, N = 1,121), Highly Gifted (top 0.5%, N = 481), and Profoundly Gifted (top 0.01%, N = 325) along with a cohort of Top STEM Doctoral Students (N = 519).

Following Hakim's (2000) Preference Theory, participants and their spouses were classified as home-centered, adaptive, or work-centered. Classifications were congruent with prior research on Preference Theory and Hakim's three "types." Notable themes among participants' responses were also consistent with robust themes found in the literature regarding the ipsative nature of time allocation, the non-linear pay scale of "greedy careers," and sex differences in work and lifestyle preferences beyond economic gain—which are subjective and highly personal in value added to one's life (Browne, 1999, 2002; Goldin, 2021; Murray, 2020; Pinker, 2008; Rhoads, 2004). Participants and their spouses appear to make choices that jointly optimize their personal and family's well-being, further demonstrating how and why there are multiple ways to develop a fulfilling life.

A century of IQ shifts: A CHC-based meta-analysis of specific ability trends in the Flynn effect (1909–2025) S

***Sandra Oberleiter**, Jonathan Fries, Johanna Heller, Martin Voracek, Jakob Pietschnig* SY

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Generational changes in IQ test scores, known as the Flynn effect, have been studied extensively over the past decades. While earlier research largely reported consistent gains in fluid, crystallized, and full-scale IQ, recent evidence points to increasingly inconsistent change patterns across specific cognitive domains.

In this study, we present the first formal meta-analysis of the Flynn effect within the framework of the Cattell-Horn-Carroll (CHC) theory, the currently most widely accepted model of human intelligence. Analyzing data from over 2,000,000 individuals across more than 25 countries, we examined over 3,000 test score changes collected between 1909 and 2025, spanning more than 30 cognitive subdomains at CHC stratum I and II levels.

Our results reveal a differentiated pattern of domain-specific IQ changes over time, with annual trajectories ranging from −0.11 to +0.30 IQ points, depending on the domain. These trends vary across countries and appear to be associated with national-level macro indicators such as economic prosperity, healthcare access, and educational quality. Furthermore, we examined the potential impact of measurement invariance on the Flynn effect, i.e., if the observed test score changes reflect genuine cognitive ability changes or may also be attributable to conceptual changes in terms of intelligence models and psychometric testing.

Symposium: Danish population studies of intelligence: the DCD, cognition, and DanACo cohorts

Gunhild Tidemann Okholm[1], ***Rebecca Beatrix Clarke***[1], ***Martin Stolpe Andersen***[1], ***Erik Lykke Mortensen***[2,1], ***Trine Flensborg-Madsen***[1]

SY

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Denmark is unique when it comes to population-based cohorts with available data on cognitive ability. First of all, the military intelligence test, Børge Priens Prøve (BPP), was implemented in the statutory draft board examination in 1957, and more than two million Danish men have since taken the test. Secondly, Denmark has a long history of registering individual level information in administrative registers covering the total Danish population including data on school grades and achieved education. With the unique personal identification number assigned to all Danes since 1968, these data can be linked to social and health-related information from other administrative registers as well as geospatial data on environmental exposures on address level. This provides unique opportunities to conduct large population-based studies on predictors and consequences of cognitive ability.

The symposium will include five presentations:

1. GTO will present "Danish draft board cohorts - studies of associations between intelligence and health"

The Danish Conscription Database (DCD) includes 729,159 men born 1939-1959 with intelligence test scores from draft board examinations. Based on DCD, inverse associations have been established between young adult cognitive ability and later depression, epilepsy, dementia, and mortality. Whereas hearing loss and epilepsy have been associated with lower mean intelligence test scores in a younger draft board cohort (born 1985-2000).

2. GTO will present "The Cognition Program - What determines the development of cognitive ability?"

The Cognition Program is a register-based program set up to investigate the concept of cognition, including predictors and consequences of cognitive ability. This will be done by establishing a Cognition cohort linking prospectively collected register information on indicators of cognitive performance including kindergarten language assessment tests, subject-specific national school tests (age 8-14 years), school grades (age 15/16 years), draft board intelligence test scores, and highest achieved education on more than two million individuals born from 1980 and onwards.

3. MSA will present "A composite measure of cognitive ability: can cognitive ability be esti-

mated from grades and test scores from Danish registries of school children?"

Utilizing the Cognition cohort, factor analysis methodologies were used to extract one or more latent constructs resulting in four factors which were validated by examining their correlation with the draft board intelligence test.

4. RBC will present "Childhood adversity trajectories and intelligence in young adulthood: a register-based study including 372,312 Danish men."

Based on the Cognition cohort, a novel life-course approach was utilized to assess how repeated and accumulated childhood adversities across three dimensions (material deprivation, loss or threat of loss, and family dynamics) during age 0-15 affected draft board intelligence test scores.

5. GTO will present "The impact of depression on age-related cognitive changes over more than 40 years."

The Danish Aging and Cognition (DanACo) cohort includes 5,340 men and is based on re-administration of the draft board intelligence test with more than 40 years between baseline and follow-up. In this cohort, three measures of depression, self-reported, hospital diagnosis, and use of antidepressants, have been associated with modestly larger decline in IQ scores when comparing men with and without depression.

The impact of depression on age-related cognitive changes over more than 40 years

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Objective

The objective was to investigate the influence of three depression measures on cognitive changes from young adulthood to late midlife.

Methods: The study included 5,153 men from the Danish Aging and Cognition cohort with IQ scores on a military intelligence test available from the mandatory draft board examination in young adulthood (mean age 20.4 years) and from a late midlife follow-up examination (mean age 64.4 years), which in addition to the same intelligence test included a comprehensive questionnaire. Three measures of depression were included: self-reported depression from the follow-up questionnaire, hospital diagnosis of depression, and use of antidepressants, both obtained from national registries. Cognitive decline was defined as the difference between draft board and follow-up IQ scores and the associations between depression and cognitive decline were analysed in linear regression models.

Results: Of the 5,153 men, 71.3% had no self-reported or register-based depression whereas 25.4% had used antidepressants, 16.0% had a self-reported depression diagnosis, and 7.4% had a hospital diagnosis of depression. After adjustment for age at follow-up, retest interval, draft board IQ, and years of education, all three measures of depression were associated with a significantly larger IQ decline compared to their respective reference groups, and the strongest association was found for hospital diagnosis of depression (β = -0.07; 95% CI: -3.63, -1.83). Further adjustment for alcohol and smoking as well as Major Depression Inventory score at follow-up attenuated the associations, but they remained significant. Additionally, increasing number of hospital admissions for depression and redeemed prescriptions were associated with larger decline among men having either of the three depression measures.

Conclusion: Depression, both self-reported, hospital diagnosis, and use of antidepressants, was associated with modestly larger decline in IQ scores over more than 40 years from young adulthood to late midlife.

Danish draft board cohorts: Studies of associations between intelligence and health

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Background: The military intelligence test, Børge Priens Prøve (BPP), was implemented in the statutory draft board examination in 1957. The aim of this presentation is to give examples of the use of this important data source for research on intelligence and health. Given the Danish tradition of registering individual level information, it has been possible to link these draft board data with nation-wide data on hospital diagnosis and causes of death.

Methods: Military intelligence test: The BPP is a 45-minute group-administered test comprising 78 items in four subtests: letter matrices (19 items, 15 min), verbal analogies (24 items, 5 min), number series (17 items, 15 min), and geometric figures (18 items, 10 min). The BPP is still used today, and the items have remained unchanged. Only the total BPP score 0-78 has been recorded.

The Danish Conscription Database (DCD) is a large draft board cohort including 729,159 men examined at the draft board from 1957-1977. The Danish Conscription register covers all individuals examined from 2006 and onwards, and 514,931 individuals were registered in the period from 2006-2019. Categorized data on BPP is available for cohorts examined from 1987-2005.

Results: Based on DCD alone and linkage with hospital registers and the cause of death register, inverse associations have been established between young adult intelligence and epilepsy, depression, and cause-specific mortality. Using the DCR, hearing loss and epilepsy registered before or at the draft board examination have been associated with lower mean intelligence test scores.

Conclusion: The Danish draft board cohorts provide unique opportunities to study the relation between intelligence and health. The DCD provides long follow-up enabling studies of health outcomes into late adulthood. Complementarily, the DCR provides data on health outcomes from birth to the time of draft board examination enabling studies of health as a predictor of young adult intelligence.

The Cognition Program: What determines the development of cognitive ability?

Gunhild Tidemann Okholm[1], ***Youn-Hee Lim***[2], ***Rebecca Beatrix Clarke***[1], ***Martin Stolpe Andersen***[1], ***Stéphane Tuffier***[2], ***Erik Lykke Mortensen***[2], ***Steffen Loft***[2], ***Naja Hulvej Rod***[2], ***Zorana Jovanovic Andersen***[2], ***Trine Flensborg-Madsen***[1] SY

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Aim: The Cognition program was established to investigate the concept of cognition, including predictors and consequences of cognitive ability. The program is register-based and covers more than two million Danish individuals followed from birth to young adulthood with individual level data on indicators of cognitive ability. Currently, the program focuses on two main predictors of cognitive ability that are insufficiently studied, namely childhood adversities and environmental pollutants.

Methods: The program will establish a nation-wide Cognition cohort by including data on five different indicators of cognitive ability throughout childhood and young adulthood from all children born in Denmark from 1980 and onwards. Indicators of cognitive ability are:

Language assessments (ages 3-6 years) based on results from national screening tests of language abilities, introduced in 2018. Danish national school tests (ages 8-14 years). Computer-adaptive tests mandatory for pupils from the 2nd to 8th grade, introduced in 2009. School grades from 9th grade (age 15/16 years). Obtained from the Academic Achievement Register, introduced in 2002. Intelligence test scores. Obtained from the Danish Conscription Registry including men examined at the statutory conscription board examination from 2006 and onwards. Educational attainment (from age 16). Information on highest achieved education obtained from Statistics Denmark, introduced in 1970.

The Cognition cohort has been linked to the DANish LIFE course cohort for a subproject on childhood adversities (e.g., material deprivation, loss or threat of loss, and unfavorable family dynamics) and data on air pollution (estimated annual means at a 1 km^2 resolution) and road traffic noise (modelled at façade level using the Nord2000 method for all addresses) will be linked as well.

Implications: The unprecedented documentation of the cognitive consequences of childhood adversities and environmental pollutants will hopefully increase awareness of these factors and cause changes in policy.

On the generality of IQ test score changes: A global perspective on the Flynn effect

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SY

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By now, the scientific literature on generational IQ test score changes (i.e., the Flynn effect) is full of (mostly reasonable) claims, ideas, and speculations about the future trajectory of this phenomenon. Whilst some authors expect the Flynn effect to continue its upward trajectory, others have speculated about a global stagnation or even a reversal of test score gains. A main challenge for drawing reliable inferences about the Flynn effect is the practical infeasibility of conducting targeted prospective investigations and therefore having to rely on archival data that have been collected for other purposes. This means that researchers typically have no control over which IQ domains have been assessed or when, how, and where data were collected. This problem is exacerbated by factors having to do with cross-temporal advances in our understanding of intelligence (e.g., novel theories like the Cattell-Horn-Carroll-model of intelligence, that alters IQ measurement and domain interpretation), differences in population characteristics and test instruments (e.g., potential measurement non-invariance between or even within countries), or the complexity of constructs that IQ changes take place on (e.g., changes on g vs. specific abilities). A main goal of the Flynn effect research to date, therefore, needs to be to examine the generality of IQ test score changes, thus allowing to define conditions in which positive, negative, or even no Flynn effects are likely to occur.

To contribute to clarifying these conditions, the four presenters of this symposium will address evidence for effects of measurement (non-)invariance, trajectory non-linearity, domain specificity, and global generality of changes. First, Jakob Pietschnig will provide evidence from two independent cohorts of psychology undergraduates that were purposefully recruited to investigate the Flynn effect in 2009 (N = 449) and 2024 (N = 409) on three subtests of an original and a revised version of a well-established IQ test battery, thus making it possible to assess changes cross-sectionally as well as longitudinally. Measurement invariant change assessments yielded gains in verbal reasoning and spatial abilities but decreases in mathematical reasoning thus indicating domain specificity, within- country trajectory reversals, and confounding effects of measurement non-invariance. Second, Alina Bugelnig will show attention test score changes in N = 460,000+ Austrian Army conscripts. Test performance increased from 2010 to 2022 despite participants showing larger numbers of errors over time. These attention test performance changes may be responsible for changes in fluid IQ domains. Third, Jonas Lesigang will present executive functioning changes on the trail-making-test in a cross-temporal meta-analysis of all available evidence from 1946 to 2025. Findings from moderator analyses allow an interpretation of effect generality in terms of participant characteristics, administration modality, and participant nationality. Finally, Sandra Oberleiter will present a formal meta- analysis of the Flynn effect in terms of the Cattell-Horn-Carroll-model of intelligence. Based on data from 2,000,000+ individuals and 3,000+ individual test score changes between 1909 and 2025, effects of domain specificity, measurement (non-)invariance, effect linearity, and national macro indicators (e.g., healthcare accessibility) are examined. Domain-specific trajectories yielded annual changes ranging from -0.11 to 0.30 IQ points and indicated non-linearity.

A network neuroscience perspective on giftedness

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PP

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Gifted individuals are characterized by advanced cognitive abilities with intelligence test scores of at least two standard deviations above average. Recent empirical studies have investigated both functional and structural connectivity in gifted samples and revealed specific neural connectivity profiles. Yet, the literature remains fragmented, and no comprehensive synthesis has been conducted. This study aims to address this gap by systematically reviewing and quantitatively analyzing research on brain connectivity in gifted individuals using a meta-analytic approach. In accordance with the PRISMA guidelines, we search major databases for peer-reviewed articles published since 1990 in English or German. Our search keywords include, but are not limited to, terms related to giftedness (e.g., "gifted," "high IQ," "advanced cognitive ability," "exceptional intelligence") and brain connectivity (e.g., "functional connectivity," "structural connectivity," "connectome," and "neural networks").

We will extract effect sizes representing the association between measures of brain connectivity and giftedness and study design quality will be assessed systematically. For functional connectivity, primary metrics include global and network-specific connectivity strength. For structural connectivity, measures such as Fractional Anisotropy will be the focus, and graph-theoretical metrics such as network efficiency will be considered when available. Random-effects meta-analyses will be conducted separately for functional and structural connectivity, with heterogeneity assessed via Cochran's Q, I^2, and τ^2. If the number of studies permits ($k \geq 10$), moderator analyses will explore potential sources of variability in effect sizes and publication bias will be assessed using funnel plots, Egger's regression test and Rosenthal's Failsafe N.

By synthesizing the available evidence on network neuroscience studies on intellectual giftedness, this meta-analysis aims to clarify whether gifted people exhibit a specific connectivity profile, which is not only quantitatively but also qualitatively different from that of highly intelligent individuals. Our findings will contribute to a more refined neurobiological model of giftedness, informing network neuroscience theories of intelligence.

Toward a more comprehensive Berlin Numeracy Test: Investigating a wide range of items across four numeracy subskills

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The Berlin Numeracy Test (Cokely et al., 2012) is a psychometrically sound instrument that quickly assesses the statistical numeracy and risk literacy skills of diverse adults, with special emphasis on practical inductive reasoning skills of college-educated individuals. Since its development in 2012, the test has been used by more than 150,000 people from at least 100 countries (see www.RiskLiteracy.org), contributing to hundreds of studies on decision making and cognitive bias in many disciplines (e.g., psychology, business, medicine, law, health, education, engineering). Research further indicates the Berlin Numeracy Test tends to be one of the strongest general predictors of decision-making skill, often doubling the predictive power of other cognitive ability assessments, including fluid intelligence tests (Cokely et al., 2018).

However, one limitation of all current Berlin Numeracy Test forms is that each test has a relatively small item pool and thus may not be suited for some analyses and applications (e.g., comparative assessment of test invariance and differential item functioning; high-fidelity individual assessment and training validation). To begin to address these limits, following expert review, we identified four statistical numeracy component skills for item pool development, including (1) Operations & Number Sense, (2) Proportions, (3) Percentages, and (4) Probability & Statistics. With the help of public online resources (e.g., khanacademy.org; freekidsbooks.org; ChatGpt), we then began psychometric testing of 80 multiple choice items depicting varied problem contexts (i.e., medical, financial, forecast, time management) and spanning a wide range of difficulty (e.g., approximately 3rd grade to college educated ability levels).

Results from a study involving a large sample of undergraduate public college students (n = 400) who completed roughly 3 hours of in-person cognitive testing will be presented in our poster. Analyses will include Item Response Theory and Exploratory Factor Analyses, along with others that are relevant to the development and validation of a more comprehensive Berlin Numeracy Test.

IQ score discrepancies across test batteries in autistic youth: A systematic review

Audrey M Scudder*, *Kevin Melecio*, *Jason Rubb*, *Lucas Vander Ploeg*, *Jacqueline Caemmerer

University of Connecticut

Autistic youth may present with several traits that can interfere with a clinician's ability to obtain a valid estimate of their cognitive abilities, such as behavioral difficulties, communication differences, and significant discrepancies in performance across cognitive domains. While cognitive abilities in people with ASD have been studied extensively, fewer studies utilize multiple assessment batteries or methods, and to our knowledge, no reviews or meta-analyses have been previously conducted to investigate how cognitive test selection impacts the scores of autistic people.

A systematic search of the literature was conducted across several databases, including Embase, APA PsychInfo, ERIC, and Academic Search Premier, to identify studies that compared the performance of autistic youth across cognitive assessment batteries.

Data extraction is currently ongoing. Pilot searches have already identified 11 studies that meet inclusion criteria. Of these studies, 7 reported a significant mean difference in the overall IQ score (*g*) between batteries; these mean standard score differences were as large as 17.8 points. Individual discrepancies as large as 40 standard score points and 50 percentile ranks were reported. Overall, autistic youth receive higher scores on nonverbal tests. Within verbal tests, autistic examinees score higher on tests that do not impose time limits and do not factor processing speed into the overall IQ score.

Given that multiple studies have found significant differences in IQ scores between test batteries for people with ASD, it is particularly important to consider test selection when assessing this population. Furthermore, these discrepancies should be kept in mind when interpreting test results. Practitioners may want to consider alternative or expanded methods of cognitive testing when conducting an assessment for a child or adolescent with ASD.

Measurement invariance of the KABC-II NU across parental education levels

Audrey M Scudder[1], ***Jacqueline Caemmerer***[1], ***Kevin Melecio***[1], ***Natalie Charamut***[1], ***Lucas Vander Ploeg***[1], ***Brittany Dale***[2], ***Melissa Bray***[1], ***Alan S Kaufman***[1]

PP

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The current study is investigating if measurement invariance, or whether the test measures the intended construct in the same manner for different groups, is supported for the Kaufman Assessment Battery for Children, 2nd edition (KABC-II) across parental education groups. Establishing measurement invariance is necessary to compare scores across demographic groups and supports the use of one set of norming data for children with varying characteristics. If invariance across parental education level is supported, this would provide evidence for the assumption that the KABC-II measures intelligence similarly regardless of the examinee's parental level of educational and socioeconomic background.

The KABC-II Normative Update standardization sample collected by Pearson Assessments was analyzed using multi-group confirmatory factor analysis. The sample for this study was limited to children 7 years and older (n = 502). These students were divided into groups based on the highest level of education attained by their parent(s): Grade 11 or less (n = 55), High School Graduate or GED (n = 109), Some College/Tech Certification/Associate Degree (n = 173), and Bachelor's Degree (n = 165). The 11 core subtests administered to children ages 7 and up were included in the model.

A five-factor model with a latent covariance between the fluid reasoning and visual-spatial factors fit the data well (CFI = 0.985, RMSEA = 0.40, SRMR = 0.027). Configural invariance and full metric invariance were supported. Partial intercept invariance was supported with the intercept for Block Counting being allowed to vary across groups. Residual invariance and equality of the first-order disturbances across groups were also supported, allowing for second-order latent variances to be compared. Structural invariance testing revealed that the latent variance of *g* did not meaningfully differ across parental education levels. These findings provide additional validity evidence for the KABC-II for students of varying backgrounds.

Rethinking mental speed: Unraveling the mystery of item response time

Russell T Warne RT

RiotIQ

Mental speed is a construct that has interested intelligence researchers since Galton. Today, processing speed and reaction time are both accepted as *g*-loaded measures of mental speed. However, a third measure of mental speed has been neglected in the intelligence literature: item response time. Psychometric research shows that aggregated item response times, called "tempo," represent a reliable measure of problem-solving speed. This presentation demonstrates that tempo has interesting characteristics that distinguish it from other measures of mental speed.

First, tempo is more strongly related to subtest scores for visuospatial subtests than for verbal subtests. Moreover, the correlation between visuospatial subtest score and visuospatial subtest tempo are positive (r = .091 to .261), whereas for verbal subtests, this relationship is negative (r = –.053 to –.144). This indicates that spending more time per test item is associated with a higher score on visuospatial subtests and a lower score on verbal subtests.

Second, tempo is moderately correlated with processing speed: a processing speed factor correlates –.434 and –.599 with verbal reasoning and visuospatial tempo factors, respectively. But tempo and processing speed are clearly distinct; in measurement models, tempo and processing speed variables do not form a coherent factor.

Third—and most important—measures of tempo are weakly correlated with IQ (r = –.147 to .264). Surprisingly, neither the verbal nor visuospatial tempo factors are *g*-loaded. This finding needs confirmation in future studies, but might indicate that tempo is the first cognitive variable found that is independent of *g*.

These characteristics make tempo a worthwhile construct to explore. Tempo has practical implications for measuring mental abilities (e.g., setting time limits on power tests). But it also has theoretical consequences and can advance the field's understanding of mental speed.

Does timing of most recent SAT math score impact predictive relationships with math course grades in college?

Dr. Paul A. Westrick

RT

College Board

This study examined the effects, if any, of the amount of time between when students last took the SAT math section in high school and their performance in their first math course in college. Data from 152,829 students at 54 institutions was used to conduct differential validity and differential prediction analyses. Measures included SAT score, high school grade point average (HSGPA), and students' first college math course grade. To maximize sample sizes, data from four academic years was aggregated: 2018–2019, 2020–2021, 2021–2022, and 2022–2023 (excluding 2019–2020 due to COVID). Students were split into three SAT examination timeframes: fall of the 11th grade (n = 9,267), spring 11th grade (n = 51,216), and fall 12th grade (n = 92,346). College math courses examined included calculus, pre-calculus, algebra, and statistics. Institutions were analyzed by admission selectivity subgroups: more-selective, admitted no more than 50% of applicants (k=14, n=58,123), and less-selective, admitted more than 50% of applicants (k = 40, n = 94,706).

Analyses focused on differential validity and differential prediction. For differential validity analyses, correlations were run between our predictor measures (SAT scores and HSGPA) with math course grades. Results from the meta-analyses indicated that all the SAT math section score relationships with math course grades were positive, .50 or higher, indicating strong relationships. The 95% confidence intervals for the adjusted correlations for the less- and more-selective institutions overlapped, indicating that the admission selectivity did not moderate the relationships between SAT scores and math course grades. For differential prediction analyses, linear regression analyses were conducted and then residuals were calculated for each student. Overall, math course grades for fall 11th and spring 11th testing students were underestimated, on average, by 0.10 and 0.02, respectively. Math course grades for the fall 12th testing students were overestimated by 0.02. Implications for placement decisions and score value based on timing will be discussed.

How depression and anxiety negatively predict academic psychosocial factors in intellectually gifted students

Kayla Whitley*, *Dante D Dixson

RT

Michigan State University

According to the National Institute of Mental Health (2021), over 20% of adolescents experienced at least one major depressive episode in 2021. This is higher compared to any other age group. Results of a systematic review have shown a well-documented relationship between anxiety and depression and academic pressure (Steare et al., 2023). Being that intellectually gifted students report more pressure to perform compared to their non-gifted peers ($t = 2.68$, $p < .05$; Baker, 1996), decreasing anxiety and depression in gifted students is paramount.

One study found a significant inverse relationship between school connectedness and anxiety and depression ($r = -.38, -.39$, $p < .01$; Eckberg et al., 2017). However, the full scope of the relationship between anxiety and depression with an extended profile of academic psychosocial factors has not yet been examined. Being that previous research has found psychosocial factors such as academic self-efficacy to be predictive of academic achievement ($r = .34$, $p < .003$; Dixson et al., 2016), determining the relationship between academic psychosocial factors and anxiety and depression is critical in assisting gifted students in living up to their full intellectual potential.

Hierarchical linear regressions were conducted among a sample of 210 gifted students examining the relationship between academic self-efficacy, school belonging, and emotional and behavioral engagement and anxiety and depression, respectively. Depression was found to predict 4.7% to 11% of variance beyond demographic factors, and anxiety was found to predict between 2% and 6.1% of additional variance. These results indicate higher levels of academic psychosocial predictors to be associated with lower anxiety and depression. This suggests the importance of interventions to decrease the mental health epidemic. Decreasing anxiety and depression in adolescents would likely have a positive effect on psychosocial outcomes and academic success, allowing students to thrive.

Prevalence of emotional, intellectual, imaginational, psychomotor, and sensual overexcitabilities in highly and profoundly gifted children and adolescents: A mixed-methods study of development and developmental potential

Vanessa Reineke Wood[1], ***Lorraine Bouchard***[1], ***Els De Wit***[1,2], ***Suzanne Pickett Martinson***[1], ***Peter Van Petegem***[3]

RT

[1] The International Gifted Consortium (IGC), Research Center for Highly-Profoundly Gifted
[2] TalentVol
[3] University of Antwerp

This study examined the prevalence of the five forms of overexcitability in children ages 4–13 years who were previously identified as highly or profoundly gifted via a Wechsler Intelligence Scale for Children (WISC) score of 140+. The prevalence of overexcitabilities included an examination of the development and developmental potential according to Dabrowski's human development theory. The results of this study provided an estimate of the prevalence and distinct types of overexcitability among highly-profoundly gifted young people. These findings will aid the inclusive identification and support of highly-profoundly gifted children and adolescents and help curb historical misunderstanding, misidentification, and misdiagnosis.

The mixed-methods study included 88 study participants (parents) from the United States and Belgium who completed the Overexcitabilities Questionnaire II, Adapted (OEQ II, Adapted), the Development and Family History Questionnaire, and a semi-structured interview. The most prevalent OE profile was all five forms of overexcitability—emotional, intellectual, imaginational, psychomotor, and sensual—exhibited a lot of the time or most of the time. Nearly all (99%) of the highly-profoundly gifted children expressed combinations of three or more higher-level overexcitabilities including emotional, intellectual, and imaginational.

A holistic assessment of overexcitabilities and giftedness by a professional trained in profound giftedness is warranted for unidentified children and adolescents with behaviors and development similar to the identified highly-profoundly gifted children examined in this study. To aid in the inclusive, early identification of giftedness and highly-profoundly gifted children, universal screening is recommended for all children entering kindergarten.

Evidence that phenotypic *g* is both formative and reflective from four, large genetically-informative samples

Michael Woodley of Menie RT

Independent Researcher

Is general intelligence (*g*) a reflective construct, representing a latent causal entity underlying subtest performance, or a formative construct, better understood as an aggregate variable shaped by and summarizing variation across subtests? Genetically informative data provide a framework for testing whether a construct is reflective or formative by comparing common pathway and independent pathways structural equation models (SEMs). Previous studies using biometric SEMs have predominantly supported the reflective model, with phenotypic *g* mediating the effects of additive genetic and environmental influences on lower-level abilities. In the current study, four large genetically informed datasets (three from the US and one from the UK) were analysed to test three competing SEM models—common pathway, independent pathways, and merged—using Confirmatory Factor Analysis (CFA). Genetic *g* was estimated in each sample as a latent variable derived from polygenic scores indexing educational attainment and cognitive abilities. The models were compared as follows: the common pathway model, consistent with a reflective *g*, included a direct path from genetic *g* to phenotypic *g*; the independent pathways model, consistent with a formative *g*, featured indirect paths from genetic g to phenotypic *g* via subtests; and the merged model incorporated both direct and indirect paths. Across all four datasets, the merged model consistently provided the best fit (based on goodness-of-fit and parsimony criteria). Phenotypic *g* mediated between 31% and 81% of the effects of genetic *g* on subtests. These findings suggest that *g* functions as both a reflective and formative entity.

Narcissism and intelligence among children: Self-assessed and objectively measured abilities

Prof. Marcin Zajenkowski*, *Ms. Anna Turek PP

University of Warsaw

Recent research findings indicate that narcissism is a multidimensional construct and consists of agentic (grandiose), antagonistic (core), and neurotic (vulnerable) facets. In adults, narcissism and objective intelligence are essentially unrelated. However, narcissism is associated positively with self-assessed intelligence. Among the facets of narcissism, it is the agentic facet that consistently correlates with the overestimation of one's intelligence. In the current research (N = 240) we investigated how narcissism is associated with intelligence in a sample of eight-year-old children. We used a three-dimensional narcissism scale for children (3D-NSC) created in our previous project, Raven's color matrices, and self-assessed intelligence (i.e., 'how smart you are'). We replicated the finding from adults that agentic narcissism is positively correlated with self-assessed intelligence and intelligence overestimation. Additionally, objective measure of intelligence (Raven's test) was negatively associated with antagonistic facet of narcissism.

List of Participants

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Warne, Russell	RiotIQ
Westrick, Paul	College Board
Whitley, Kayla	Michigan State University
Wood, Vanessa R.	The International Gifted Consortium (IGC)
Woodley, Michael	Independent
Yang, Zhe	University of Chicago
Zajenkowski, Marcin	University of Warsaw

Useful Information

Below, find a map of Northwestern University followed by a map of Chicago's transit system. Locations pertinent to the ISIR conference (**Swift Hall**, **Norris Hall** and the **Orrington Hilton**) are circled in red. Swift Hall and the Norris University Center are both approximately 0.6 miles from the Orrington Hilton, and 0.2 miles from each other.

Floor plan of Norris Hall: https://www.northwestern.edu/norris/about/floor-plans.html
Map of Norris and downtown: https://www.northwestern.edu/norris/about/directions.html

Getting Around Evanston and the Greater Chicago Area

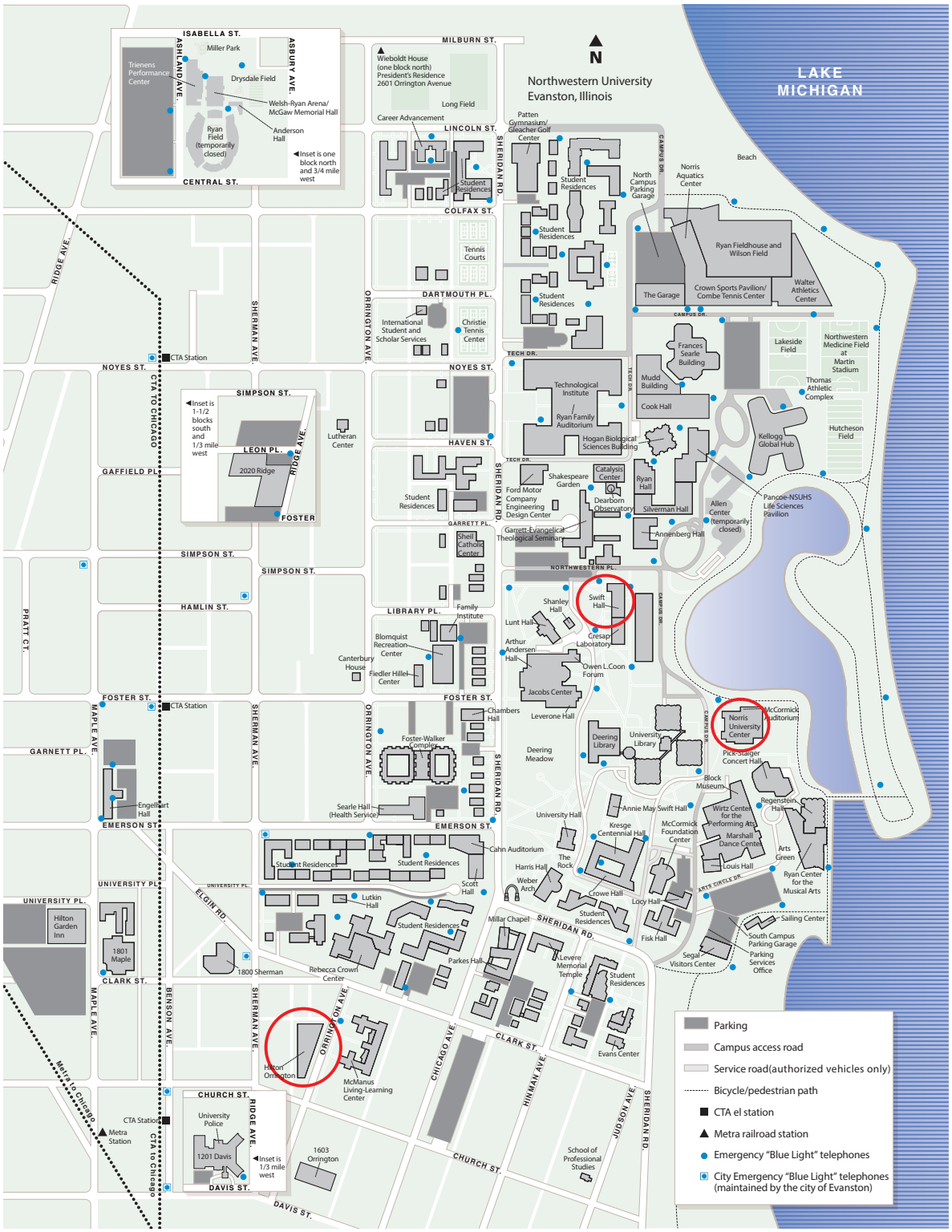
Evanston offers visitors an excellent mix of urban access and small-town charm. The Northwestern University campus is centrally located and well-served by public transportation. The **Purple Line ('L')** of the **Chicago Transit Authority (CTA)** connects Evanston directly with downtown Chicago, with stops convenient to campus. The **Metra Union Pacific North Line** also offers a fast and scenic rail option into the city from Evanston's Davis Street station. If arriving by air, both **O'Hare International Airport** and **Midway Airport** provide easy access to Evanston via CTA trains, regional shuttles, or rideshare services. Within Evanston itself, local buses and a very walkable downtown make it simple to explore without a car.

Things to Do in Evanston

Evanston is known for its lakefront, vibrant downtown, and historic architecture. Visitors can enjoy a stroll along **Lake Michigan beaches** or through the beautiful **Northwestern University campus**. The city features a thriving food scene, from casual cafes to fine dining, particularly along **Davis Street**, **Chicago Avenue**, and **Central Street**. Independent bookstores, galleries, and specialty shops dot the downtown area. For a dose of history, the **Frances Willard House Museum** and the **Evanston History Center** offer fascinating glimpses into the city's past.

Exploring the Chicago Area

If time allows, visitors should take advantage of Evanston's proximity to Chicago. The Purple Line provides direct service into **downtown Chicago**, where world-class museums such as the **Art Institute of Chicago**, the **Field Museum**, and the **Museum of Science and Industry** await. The **Chicago Riverwalk**, **Millennium Park**, and **Navy Pier** are great destinations for sightseeing and leisure.


Northwestern University
Evanston, Illinois
N
LAKE MICHIGAN
Beach
ISABELLA ST.
ASHLAND AVE.
ASBURY AVE.
Miller Park
Trienens Performance Center
Drysdale Field
Welsh-Ryan Arena/ McGaw Memorial Hall
Ryan Field (temporarily closed)
Anderson Hall
Inset is one block north and 3/4 mile west
CENTRAL ST.
MILBURN ST.
Wieboldt House (one block north) President's Residence 2601 Orrington Avenue
Long Field
Career Advancement
LINCOLN ST.
SHERIDAN RD.
Student Residences
COLFAX ST.
Tennis Courts
DARTMOUTH PL.
International Student and Scholar Services
Christie Tennis Center
RIDGE AVE.
SHERMAN AVE.
ORRINGTON AVE.
NOYES ST.
CTA Station
CTA TO CHICAGO
SIMPSON ST.
Inset is 1-1/2 blocks south and 1/3 mile west
LEON PL.
2020 Ridge
FOSTER
Lutheran Center
HAVEN ST.
GAFFIELD PL.
GARRETT PL.
Shell Catholic Center
HAMLIN ST.
PRATT CT.
LIBRARY PL.
Family Institute
Blomquist Recreation Center
Canterbury House
Fiedler Hillel Center
FOSTER ST.
MAPLE AVE.
GARNETT PL.
Engelhart Hall
EMERSON ST.
Chambers Hall
Foster-Walker Complex
Searle Hall (Health Service)
Cahn Auditorium
Student Residences
UNIVERSITY PL.
ELGIN RD.
Lutkin Hall
Scott Hall
Hilton Garden Inn
1801 Maple
1800 Sherman
CLARK ST.
BENSON AVE.
Rebecca Crown Center
Parkes Hall
Hilton Orrington
McManus Living-Learning Center
CHICAGO AVE.
HINMAN AVE.
JUDSON AVE.
CHURCH ST.
CTA Station
Metra Station
Metra to Chicago
University Police
1201 Davis
Inset is 1/3 mile west
DAVIS ST.
1603 Orrington
School of Professional Studies
Evans Center
Levere Memorial Temple
Millar Chapel
Fisk Hall
Locy Hall
Crowe Hall
Harris Hall
Weber Arch
The Rock
University Hall
Kresge Centennial Hall
Annie May Swift Hall
McCormick Foundation Center
Marshall Dance Center
Louis Hall
Wirtz Center for the Performing Arts
Regenstein Hall
Arts Green
Ryan Center for the Musical Arts
Sailing Center
South Campus Parking Garage
Parking Services Office
Segal Visitors Center
Block Museum
Pick-Staiger Concert Hall
Norris University Center
McCormick Auditorium
Deering Library
University Library
Deering Meadow
Leverone Hall
Jacobs Center
Owen L.Coon Forum
Arthur Andersen Hall
Lunt Hall
Shanley Hall
Swift Hall
Crerar Laboratory
NORTHWESTERN PL.
Garrett-Evangelical Theological Seminary
Annenberg Hall
Allen Center (temporarily closed)
Pancoe-NSUHS Life Sciences Pavilion
Ford Motor Company Engineering Design Center
Shakespeare Garden
Catalysis Center
Dearborn Observatory
Ryan Hall
Silverman Hall
Hogan Biological Sciences Building
Technological Institute
Ryan Family Auditorium
TECH DR.
Mudd Building
Cook Hall
Frances Searle Building
Kellogg Global Hub
Lakeside Field
Northwestern Medicine Field at Martin Stadium
Thomas Athletic Complex
Hutcheson Field
Patten Gymnasium/ Bleacher Golf Center
Student Residences
North Campus Parking Garage
CAMPUS DR.
Norris Aquatics Center
Ryan Fieldhouse and Wilson Field
The Garage
Crown Sports Pavilion/ Combe Tennis Center
Walter Athletics Center
Parking
Campus access road
Service road(authorized vehicles only)
Bicycle/pedestrian path
CTA el station
Metra railroad station
Emergency "Blue Light" telephones
City Emergency "Blue Light" telephones (maintained by the city of Evanston)


Downtown Evanston
January 2025
CTA and Pace bus routes
CTA trains and stations
Metra commuter rail
Other symbols
SEE DOWNTOWN MAP
North
Hyde Park
169 69th-UPS Express

Acknowledgements

- Our thanks to The Institute of Mental Chronometry for supporting ISIR 2025
- Our thanks to all the Reviewers who read submissions for this conference
- Our thanks to all members who have given of their time most generously on numerous committees to enable the conference to run smoothly

Future meetings

We usually have the conference in Europe and in the USA alternate years. **Our 2026 meeting will take place from July 13 to 16 in Warsaw, Poland, with local host Marcin Zajenkowski**. We are seeking a host for 2027 in the United States. Please email admin@isironline.org if you'd like to discuss hosting the meeting.

Notes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