

Using the NIH Toolbox with Transgender and Non-Binary Youth

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Background



Transgender & Non-Binary (TNB) Youth

- Gender identity = internal sense of self as a boy/man, girl/woman, both of these, neither of these, or some other gender¹
- TNB youth's sex assigned at birth and their gender identity are not necessarily the same.¹⁻²
- Approximately 150,000 youth (ages 13-17) in the US identify as transgender.³
- TNB youth exhibit disproportionately high rates of depression, anxiety, substance use, self-harm, and suicidality.⁴⁻⁵

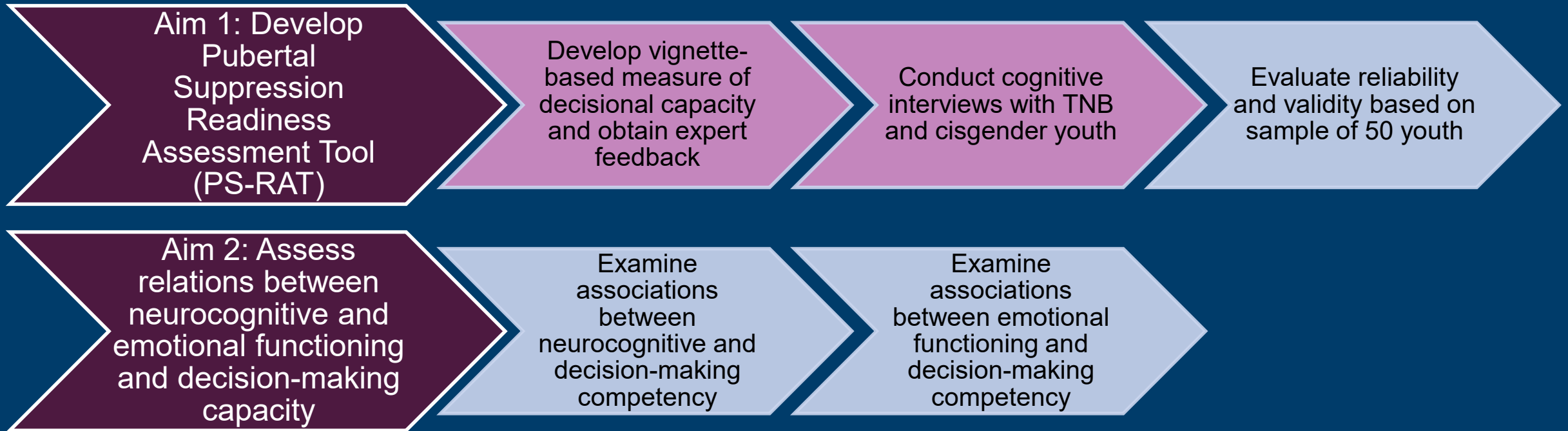
Controversy Surrounding Appropriate Norm Use

- No consensus exists on how best to score validated measures with gender-specific reference norms with TNB youth.⁶
- Previous research indicates that measure interpretation may be different based on whether assigned sex versus affirmed gender norms are used.⁷
- There is some concern that scoring measures based on assigned sex norms may systematically over-pathologize TNB youth behavior.
- This project examines the impact of norm selection on NIH Toolbox scores for Emotion battery measures.

Parent Study

- Aims to develop a structured tool to assess readiness for gender-affirming medical intervention.
- Explore how neurocognitive and emotional functioning, as measured by the NIH Toolbox Emotion and Cognition batteries, is related to readiness for medical treatment.

Trans Youth Decision-Making Project (TYDP)



Trans Youth Decision-Making Project

Current Status

Completing data collection from October 2017-present	Target: $n=50$	Enrolled: $n=40$
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Eligibility

TNB youth	Tanner stages 2, 3, or 4 if not in high school	Either puberty blockers naïve or on blockers <1 year
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Trans Youth Decision-Making Project: Phase 2

Visit 1

- PS-RAT
- MacCAT-T
- **NIH Toolbox: Emotion Battery**

Visit 2

- WRAML
- WASI
- WISC
- D-KEFS
- NIH Toolbox: Cognition Battery

Types of Scores

Emotion Battery

- Uncorrected T-Score
- Age-and Gender-Corrected T-Score

Cognition Battery

- Uncorrected Standard Score
- Age-Corrected Standard Score
- Fully Corrected T-Score

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Current Project: Types of Scores

Emotion Battery

- Uncorrected T-Score
- **Age- and Gender-Corrected T-Score**

Determine if age- and gender-corrected T-scores on the NIH Toolbox Emotion battery **differed significantly** based on male norms versus female norms used

Methods

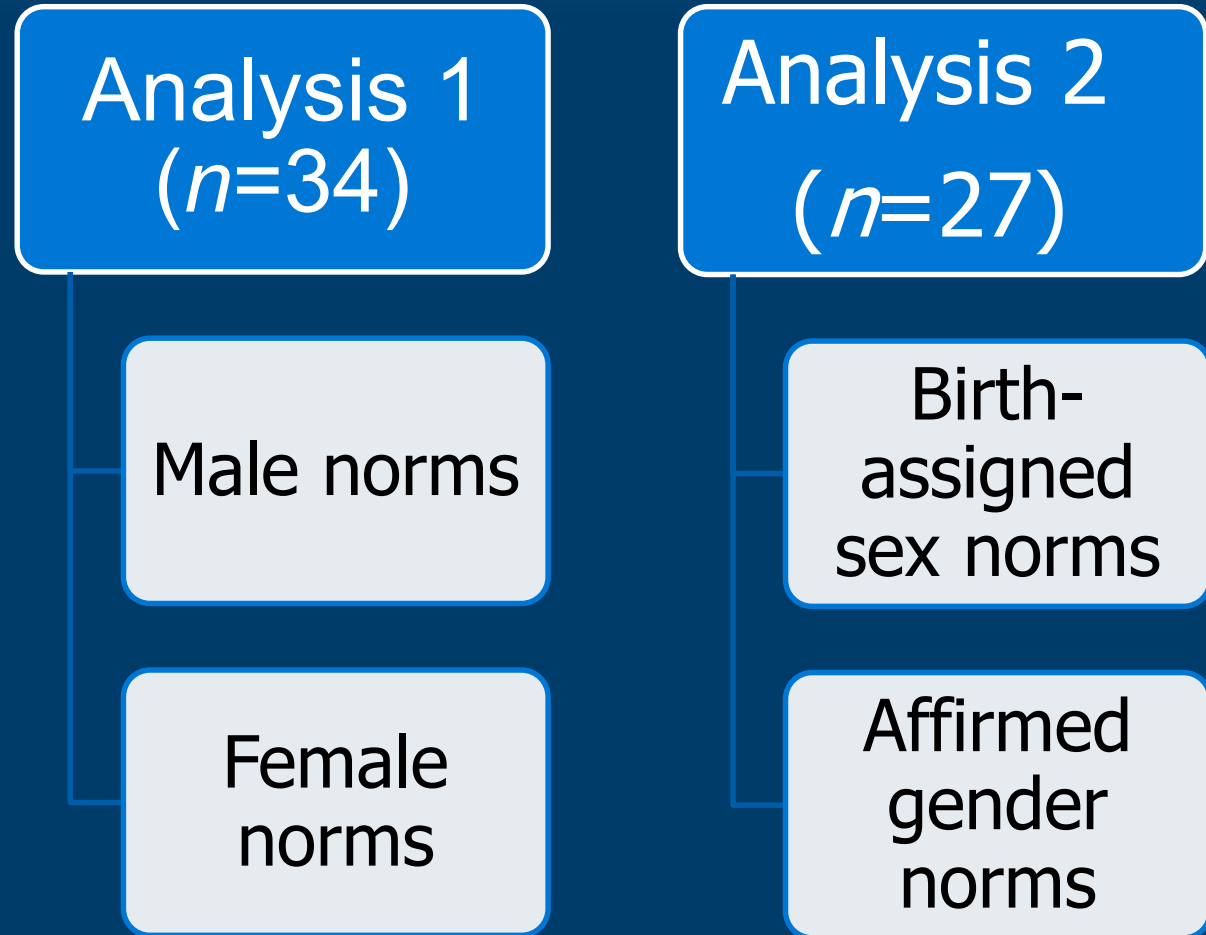


Measures

- Scored participants' Emotion battery scores twice to obtain scores based on male norms and female norms.
- Sub-domains:⁸
 - Psychological Well-being (PW)
 - Negative Affect (NA)
 - Social Satisfaction (SS)
 - Negative Social Perception (NSP)

Analyses

- Paired-samples t-tests to determine whether there were statistically significant mean differences between NIH Toolbox Emotion battery measures comparing:
 - female vs. male norms
 - birth-assigned sex (BAS) vs. affirmed gender (AG) norms



Results



Sample Demographics (N=34)

	<i>M (SD)</i>
Age in years	11.8 ± 1.3

Birth-assigned Sex	<i>N (%)</i>
Male	15 (44.1)
Female	19 (55.9)

Affirmed Gender	<i>N (%)</i>
Trans boy	14 (41.2)
Trans girl	13 (38.2)
Non-binary	7 (20.6)

Race/Ethnicity	<i>N (%)</i>
American Indian or Alaskan Native	1 (2.9)
Asian	2 (5.9)
Black or African-American	3 (8.8)
Hispanic or Latinx	5 (14.7)
White	18 (52.9)
Multiracial	5 (14.7)

Male vs. Female Norms

	Birth-assigned Males (<i>n</i> =15)				
	Male Norms <i>M</i> (SD)	Female Norms <i>M</i> (SD)	<i>t</i>	<i>df</i>	<i>d</i>
Psychological Well-being	43.5 (11.3)	45.3 (10.3)	3.6**	14	0.9
Negative Affect	54.1 (13.2)	51.7 (12.2)	-9.4**	14	-2.4
Social Satisfaction	46.3 (12.8)	47.5 (12)	4.4**	14	1.1
Negative Social Perception	48.4 (9.8)	48.1 (9.4)	-2.1	14	0.5

	Birth-assigned Females (<i>n</i> =19)				
	Male Norms <i>M</i> (SD)	Female Norms <i>M</i> (SD)	<i>t</i>	<i>df</i>	<i>d</i>
Psychological Well-being	46 (14.2)	47.37 (13.5)	3.6**	18	0.8
Negative Affect	53.6 (9.8)	51.4 (9.1)	-1.0**	18	-2.3
Social Satisfaction	45.3 (10.9)	46.3 (10.3)	4.9**	18	1.1
Negative Social Perception	48.3 (7.1)	47.8 (6.8)	-4.0**	18	0.9

Note. ** = $p \leq .01$

Birth-Assigned Sex vs. Affirmed Gender Norms

	Trans-girls (n=13)						Trans-boys (n=14)				
	BAS Norms (male) M (SD)	AG Norms (female) M (SD)	<i>t</i>	<i>df</i>	<i>d</i>		BAS Norms (female) M (SD)	AG Norms (male) M (SD)	<i>t</i>	<i>df</i>	<i>d</i>
Psychological Well-being	42.7 (11.8)	44.6 (10.7)	3.4**	12	0.9	Psychological Well-being	47.5 (15.1)	46.4 (15.6)	-2.9**	13	-0.8
Negative Affect	53.6 (14.2)	51.3 (13.2)	-8.1**	12	-2.2	Negative Affect	50.7 (9.1)	52.6 (9.7)	7.9**	13	-2.1
Social Satisfaction	45.4 (13.5)	46.6 (12.5)	3.9**	12	1.1	Social Satisfaction	46.1 (11.0)	45.2 (11.6)	4.9**	18	1.1
Negative Social Perception	48.3 (10.6)	48.0 (10.1)	-1.8	12	0.5	Negative Social Perception	47.9 (7.4)	48.4 (7.6)	3.6**	13	-1.0

Note. ** = $p \leq .01$

7 non-binary youth excluded in these analyses

Conclusions & Discussion



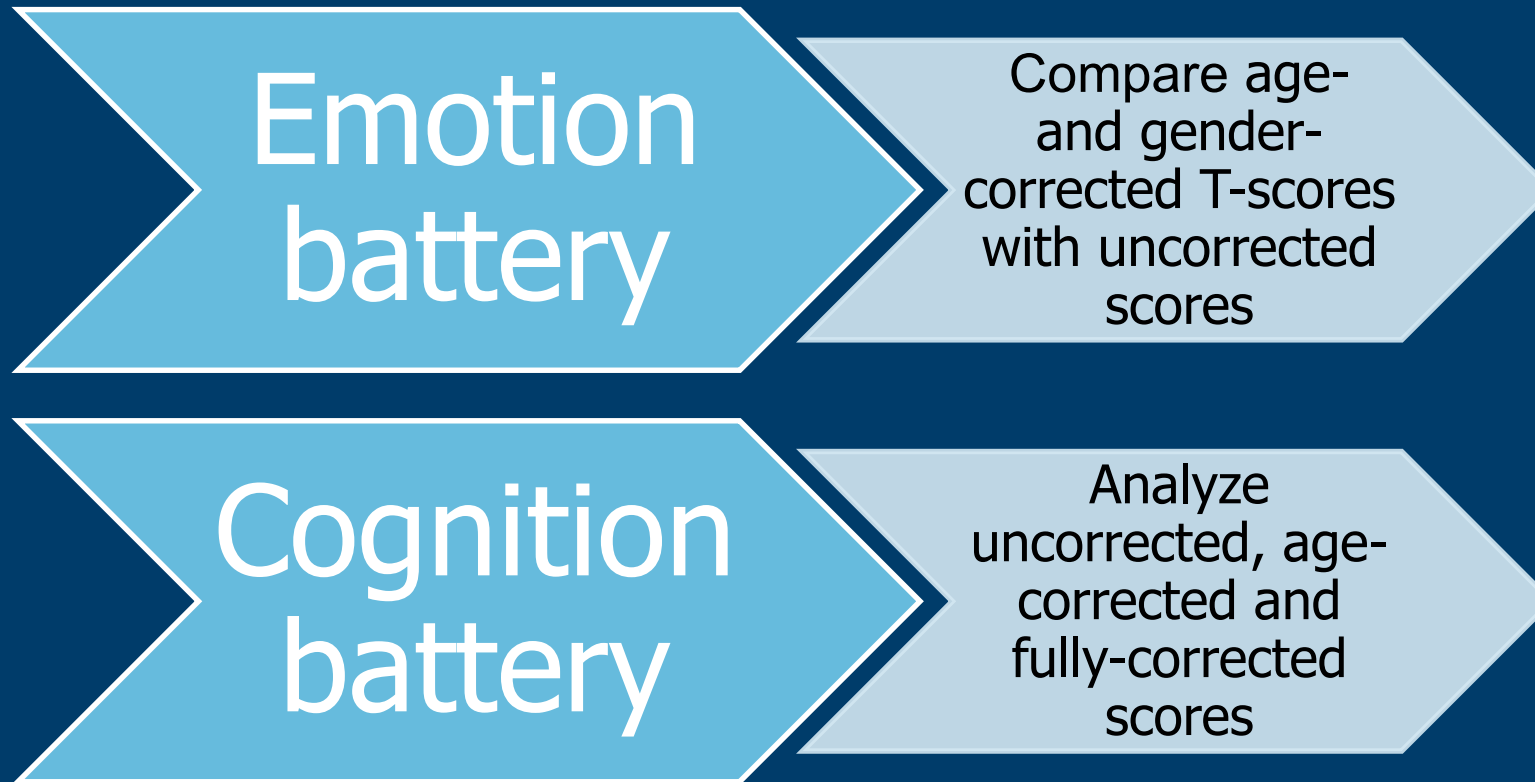
Conclusions

- Psychological well-being, negative affect, social satisfaction, and negative social perception T-scores differed significantly based on whether male versus female, and assigned sex versus affirmed gender scoring norms were used.
- However, the pattern of findings do not support the argument that using assigned sex norms systemically over-pathologizes TNB youth functioning.
- Irrespective of assigned sex at birth and gender identity, using the female scoring template resulted in a more positive picture of emotional functioning.
 - This highlights a potential gender bias reflecting either over-estimating emotional distress in boys or under-estimating emotional distress in girls.

Discussion

- Gender affirmative assessment practices
 - Need to affirm an individual's gender identity AND accurately capture their experiences/distress
 - TNB youth experience minority stress related to their gender minority status,⁹ thus gendered norms may be completely inappropriate for this population
- Given that gender norm selection affects scores on the NIH Toolbox Emotion battery measures, we recommend using uncorrected T-scores with TNB youth.
- More research is needed!
 - Larger samples of TNB youth
 - Standardized measures for which non-gendered scoring options do not exist (e.g., CBCL)
 - Standardized measures with clinical cut off scores

Next Steps



References

- ¹Definitions. (n.d.). Retrieved from <http://www.transstudent.org/about/definitions/>
- ²American Psychological Association. (2015). Guidelines for psychological practice with transgender and gender nonconforming people. *American Psychological Association, 70*(9), 832-864.
- ³Herman JL, Flores AR, Brown TNT, Wilson BDM, & Conron KJ. (2017). Age of individuals who identify as transgender in the United States. *The Williams Institute UCLA School of Law*.
- ⁴Reisner, S.L., et al. (2015). Mental health of transgender youth in care at an adolescent urban community health center: a matched retrospective cohort study. *Journal of Adolescent Health, 56*(3), 274-279.
- ⁵Toomey, R.B., A.K. Syvertsen, & M. Shramko. (2018). Transgender adolescent suicide behavior. *Pediatrics, 142*(4), e20174218.
- ⁶Keo-Meier, C. & Fitzgerald, K. (2017). Affirmative psychological testing and neurocognitive assessment with transgender adults. *Psychiatric Clinics, 40*(1), 51-64.
- ⁷Keo-Meier, C., Herman, L., Reisner, S.L., Pardo, S., Sharp, C., & Babcock, J. (2015). Testosterone treatment and MMPI-2 improvement in transgender men: A prospective controlled study. *Journal of Consulting and Clinical Psychology, 83*, 143-156. doi: 10.1037/a0037599.
- ⁸Scoring and interpretation guide for the iPad. (2016). Retrieved from https://nihtoolbox.desk.com/customer/portal/kb_article_attachments/98102/original.pdf?1476908403
- ⁹Hendricks, M. L., & Testa, R. J. (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the Minority Stress Model. *Professional Psychology: Research and Practice, 43*(5), 460-467.

Questions?

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