

## Supplemental Materials

### Quantitative Study

#### Data Source

As part of routine clinical care at the RCHGS, standardized data are prospectively collected from patients and/or their parents and stored in the RCHGS Clinical Database (DRN #DB089) and subsequently used in the Trans20 study.<sup>22</sup> Surveys are administered at baseline (before FASST), at reevaluation (before the MDC), and then yearly thereafter. This study used baseline and reevaluation data (before MDC) to consider changes after FASST attendance.

#### One-Group, Pre- and Post-FASST Study

Consecutive records from the RCHGS database between January 2017 and January 2019 were analyzed. To be eligible for inclusion, patients who were TGD were required to have attended FASST and a subsequent MDC and to have provided data for at least one of the study outcomes (see below).

Participant characteristics, such as age, biological sex, gender identity, and country of origin, were extracted. Outcome measures encompassing mental health, quality of life, and family functioning were the CBCL,<sup>23</sup> YSR,<sup>23</sup> C-SSRS,<sup>24</sup> FAD,<sup>25</sup> and the CHU9D (Supplemental Table 5).<sup>26</sup> Measures examining support, social transition, medication use, and health professional use were developed by the RCHGS (Supplemental Table 5).<sup>22</sup> FAD, CBCL, and YSR scores were analyzed on both a continuous and categorical basis by using previously published cutoffs (Supplemental Table 5).

#### Nonequivalent Control Group Study

To better determine the impact of FASST on mental health, we also

examined a historical group of control patients who attended the RCHGS before the introduction of FASST in mid-2016. These patients had their first appointment via the MDC, typically after being on the waitlist for ~9 to 15 months. Limited outcome measures were collected for these patients, but the measures included the CBCL and YSR.

#### Statistical Analysis

Data were analyzed in Stata version 15.1 (Stata Corp, College Station, TX).<sup>27</sup> To assess for change after attending FASST, linear mixed-effect regression analysis was performed for continuous outcome variables, and mixed-effect logistic regression analysis for binary outcome variables, with the time of assessment (ie, pre- and post-FASST), age, and sex used as fixed effects, and the individual as a random effect. Differences between pre- and post-FASST outcome variables were calculated by using the fitted models and displayed on forest plots. For continuous outcomes, SMDs, calculated from the mean of the difference pre- and post-FASST divided by the SD, were used to allow comparison on a single scale. For the nonequivalent control group study, simple linear or logistic regression analysis, including age and sex as covariates, were used.

#### Concerns Regarding Social Transition

To determine concerns regarding social transition, answers to the question, "Thinking about socially transitioning, please select up to three of the options that most worry you right now" were considered.

To assess concern regarding support, any endorsement of options

regarding having support from parents, caregivers, siblings, teachers, or friends were taken as an indication that there was concern for support. Similarly, concerns regarding knowledge and safety were recorded if there was endorsement of the options "knowing ways I could socially transition" and "being safe from bullying, prejudice, discrimination, etc," respectively.

#### Support Scoring

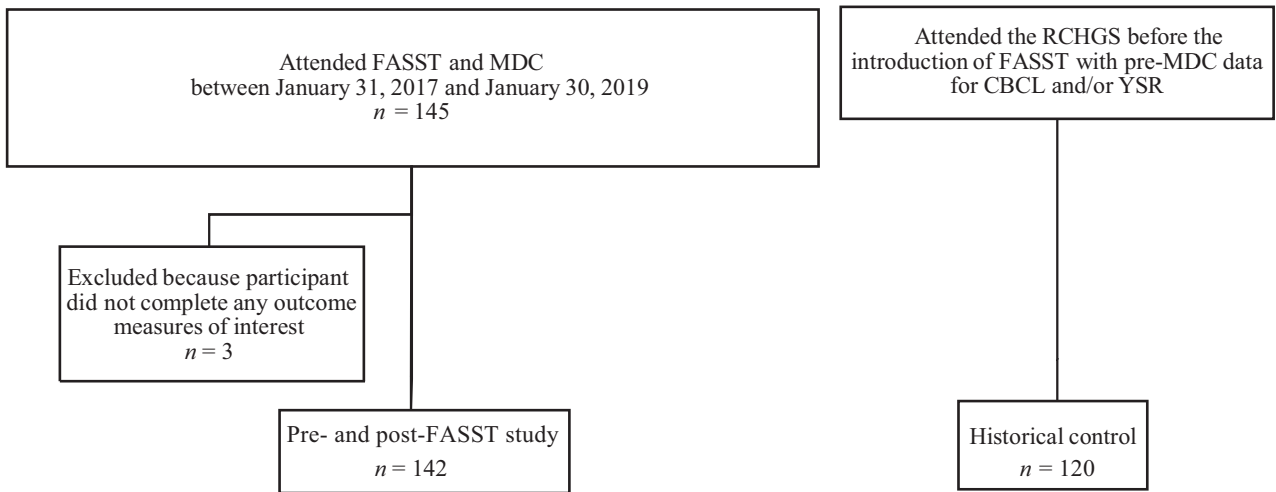
Support from family, friends and teachers was assessed on the basis of the question, "Overall, which of these people have been supportive of your gender identity?" to which multiple possible answers were provided. To score support from family, answers to the options "Mother," "Father," "Other parent/guardian" and "My siblings" were considered and converted to a binary outcome of receiving full support (100%) or not. An identical method was used to score support from friends, in which answers to the options, "Friends I see in person" and "Friends I have online" were considered. Teacher support was based on the option "My school teachers."

#### Social Transition Scoring

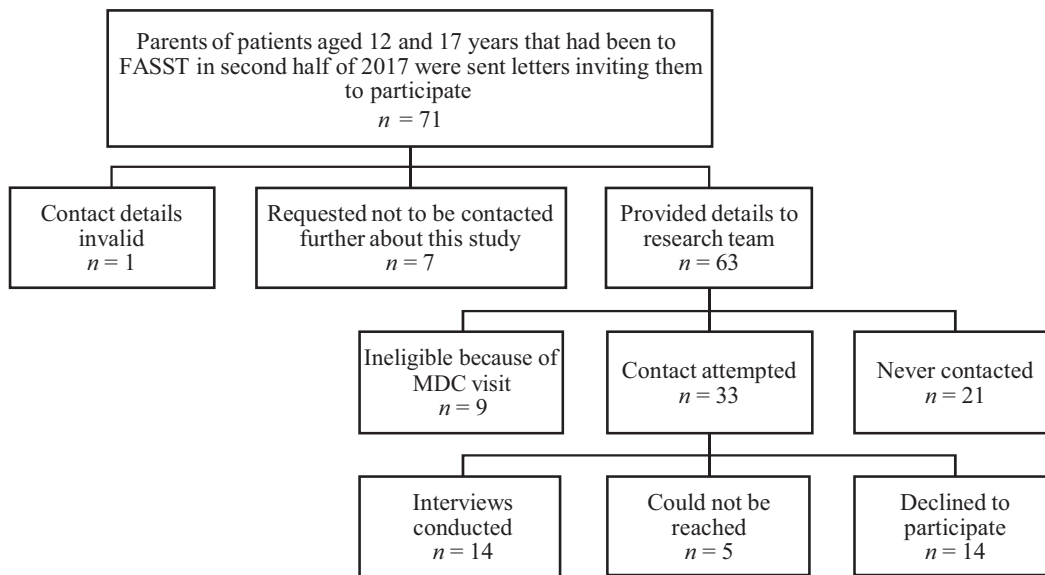
To classify levels of social transition, survey questions related to social transition were considered either overall or in terms of specific areas (name, pronouns, and look) and settings (at home, school, and online). To score the answers for each question, the following rules were applied:

- an answer of "I have changed my ..." was treated as a positive response (given a value of 1);
- an answer of "One day I will change my ..." or "I don't know"

A



B



**SUPPLEMENTAL FIGURE 3**

Summary of participant inclusion for quantitative component (A) and participant recruitment for qualitative component (B).

- was treated as a negative response (given a value of 0); and
- answering “I don’t want to change my ...” or “Not applicable” was treated as missing data. This was to account for the fact that some people may not want to or be able to socially transition in every way (eg, if they had a

gender-neutral name assigned at birth, then they might not want to change it).

To then generate outcomes from these scores, a fraction of social transition completed over total social transition possible was created. To determine social transition completed, all positive

responses were added up. To determine total social transition possible, all positive and negative responses were counted. The fraction generated from this was then converted to a binary outcome of full (100%) versus not full social transition. The answers considered to generate the fraction depended on the outcome

**SUPPLEMENTAL TABLE 5** Questionnaires, Outcome Measures, and Scoring for Quantitative Analysis

Questionnaire	Completed by the Following Group	Scoring Process	Outcome Measures	Result Format
About the young person's medical and developmental history <sup>a</sup>	Parents of patients of all ages	N/A	Medication use: antidepressants, period suppressors Health professional use: general practitioner, pediatrician, psychiatrist, psychologist, other	Taking or not Seen in last 12 mo or not, and No. visits
About your gender <sup>a</sup>	Patients of all ages	RCHGS method <sup>a</sup>	Support: family, friends, teachers	Receiving full support or not
About socially transitioning <sup>a</sup>	Patients aged ≥8 years	RCHGS method <sup>a</sup>	Concerns regarding social transition: knowledge, safety, support Social transition: overall, name, pronouns, look, home, school, online	Concerned or not Full social transition or not
FAD general functioning subscale <sup>25</sup>	Patients aged ≥12 years	Boterhoven de Haan et al <sup>25</sup>	General family functioning	Raw score
C-SSRS screener <sup>24</sup>	Patients aged ≥12 years (in clinic)	Miller et al <sup>21</sup> The Columbia Lighthouse Project <sup>29</sup>	Suicide risk	Unhealthy range or not <sup>b</sup> High risk or not
CBCL <sup>25</sup>	Parents of patients aged ≥6 years	Achenbach and Rescorla <sup>23</sup>	DSM-oriented scales: depressive and anxiety problems	<i>T</i> score Borderline/clinical range or not <sup>c</sup>
YSR <sup>23</sup>	Patients aged ≥11 years	Achenbach and Rescorla <sup>23</sup>	DSM-oriented scales: depressive and anxiety problems	<i>T</i> score Borderline or clinical range or not <sup>c</sup>
CHU9D <sup>26</sup>	Patients aged 6 to 17 years	Furber and Segal, <sup>26</sup> Ratcliffe et al <sup>30</sup>	Quality of life	Utility score <sup>d</sup>

DSM, *Diagnostic and Statistical Manual of Mental Disorders*; N/A, not applicable.

<sup>a</sup> Developed by RCHGS; see Supplemental Materials for more information.

<sup>b</sup> Unhealthy range defined as an FAD score of >2, as previously published.<sup>21</sup>

<sup>c</sup> Borderline or clinical range defined as a *T* score of ≥65, as previously published.<sup>23</sup>

<sup>d</sup> Calculated from CHU9D score and Australian adolescent tariff, as previously published.<sup>30</sup>

of interest. For social transition of name, pronouns and look, the “At home,” “At school,” and “Online” answers were considered within “About my name,” “About my pronouns,” and “About my look,” respectively. For social transition at home, school and online, all answers for “At home,” “At school,” and “Online,” respectively, were considered across the “About my name,” “About my pronouns,” and “About my look” questions. Social transition overall looks at the combination: all answers to “About my name,” “About my pronouns,” and “About my look” within “At home,” “At school,” and “Online.”

## QUALITATIVE ARM

### Sampling Strategy

Potential participants, who were aged between 12 and 17 years and had attended FASST in the second half of 2017, were identified through the RCHGS database. Recruitment calls and interviews were conducted in the first half of 2018. A purposive sampling strategy<sup>12</sup> was used with the aim of capturing information-rich cases as well as a spread of gender identities and ages.

### Data Collection

Semistructured phone interviews were conducted by a single interviewer (S.D.A), who was

independent of the clinical team. Questions explored participants' feelings before FASST and their experience at and after the clinic.

### Data Processing and Analysis

Interview recordings were transcribed verbatim. Inductive content analysis was used to analyze the data.<sup>28</sup> Line-by-line coding was completed manually, followed by an iterative process of categorization by multiple members of the research team.

## SUPPLEMENTAL REFERENCES

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**SUPPLEMENTAL TABLE 6** Baseline Patient Characteristics of the Quantitative Sample

Variable	Total Sample (n = 142)
Age, median (IQR), y	15.0 (13.7 to 16.2)
Birth-assigned sex, n (%)	
Female	105 (73.9)
Male	37 (26.1)
Gender identity, n (%)	
Transgender male	80 (56.3)
Transgender female	29 (20.4)
Nonbinary	16 (11.3)
Unsure	16 (11.3)
Prefer not to answer	1 (0.7)
Country of birth, n (%)	
Australia	129 (90.8)
Other	8 (5.6)
Not specified	5 (3.5)
Main language spoken at home, n (%)	
English	136 (95.8)
Other	4 (2.8)
Not specified	2 (1.4)
School attendance, n (%)	
Attending	132 (93.0)
Primary school	16 (11.3)
Secondary school	113 (79.6)
Homeschool	1 (0.7)
VET	1 (0.7)
TAFE	1 (0.7)
Not attending	7 (4.9)
Not specified	3 (2.1)
Time between appointments, median (IQR), d	259 (154 to 308)

TAFE, Technical and Further Education; VET, Vocational Education and Training.

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**SUPPLEMENTAL TABLE 7** Changes to Levels of Depression and Anxiety and Family Functioning After Attending FASST in the One-Group, Pre- and Post-FASST Study

	Pre-FASST		Post-FASST		Difference Between Pre- and Post-FASST <sup>a</sup>			
	n	% (n) or Mean (SD)	n	% (n) or Mean (SD)	n	Change <sup>b</sup>	95% CI	P
School-Aged CBCL (borderline or clinical range T score) <sup>c</sup>								
Depressive problems	139	61.2 (85) <sup>d</sup>	133	55.6 (74) <sup>d</sup>	142	−7.10 <sup>b</sup>	−15.5 to 1.3	.097
Anxiety problems	139	54.0 (75) <sup>d</sup>	133	44.4 (59) <sup>d</sup>	142	−7.90 <sup>b</sup>	−16.2 to 0.5	.064
YSR (borderline or clinical range T score) <sup>c</sup>								
Depressive problems	122	69.7 (85) <sup>d</sup>	122	59.0 (72) <sup>d</sup>	129	−12.40 <sup>b</sup>	−21.2 to −3.5	.006
Anxiety problems	122	48.4 (59) <sup>d</sup>	122	45.1 (55) <sup>d</sup>	129	−6.40 <sup>b</sup>	−16.3 to 3.5	.208
FAD General Functioning Subscale (raw score)								
Total score	120	2.17 (0.57) <sup>e</sup>	118	2.06 (0.64) <sup>e</sup>	126	−0.21 <sup>f</sup>	−0.37 to −0.04	.015

n, the total number of patients varies because patients and parents may not be required to complete a questionnaire (based on age of young person) or choose not to.

<sup>a</sup> Mixed-effect logistic models were used for the binary outcomes (depressive and anxiety problems) and mixed-effect linear models for the continuous outcomes (total score) with time of assessment, age and sex as fixed effects and the individual as a random effect.

<sup>b</sup> Difference in proportions adjusted for age and birth-assigned sex.

<sup>c</sup> Borderline or clinical range defined as a T score of ≥65, as previously published.<sup>23</sup>

<sup>d</sup> % (n).

<sup>e</sup> Mean (SD).

<sup>f</sup> Difference in standardized mean adjusted for age and birth-assigned sex.

**SUPPLEMENTAL TABLE 8** Comparison of Levels of Depressive and Anxiety Problems Between Patients Who Did and Did Not Attend FASST Before Being Seen in the MDC in the Quantitative Nonequivalent Control Group Study

	No FASST		Attended FASST		Difference With Attending FASST <sup>a</sup>			
	<i>n</i>	% ( <i>n</i> )	<i>n</i>	% ( <i>n</i> )	<i>n</i>	Change <sup>b</sup>	95% CI	<i>P</i>
School-Aged CBCL (borderline or clinical range <i>T</i> score) <sup>c</sup>								
Depressive problems	115	64.3 (74)	133	55.6 (74)	248	-13.7	-25.9 to -1.5	.027
Anxiety problems	115	65.2 (75)	133	44.4 (59)	248	-21.2	-33.8 to -8.5	<.001
YSR (borderline or clinical range <i>T</i> score) <sup>c</sup>								
Depressive problems	105	59.1 (62)	122	59.0 (72)	226	-3.4	-16.4 to 9.6	.608
Anxiety problems	105	53.3 (56)	122	45.1 (55)	226	-6.6	-20.4 to 7.1	.342

*n*, the total number of patients, varies because patients and parents may not be required to complete a questionnaire (based on age of young person) or choose not to.

<sup>a</sup> Logistic regression models were used with age and sex as covariates.

<sup>b</sup> Difference in proportions adjusted for age and birth-assigned sex.

<sup>c</sup> Borderline or clinical range defined as a *T* score of  $\geq 65$ , as previously published.<sup>23</sup>

**SUPPLEMENTAL TABLE 9** Comparison of Levels of Depression and Anxiety, Family Functioning and Suicide Severity After Attending FASST Among Assigned Female Individuals When Use of Period Suppression Is Taken Into Account (Model 2) or Not (Model 1): Binary Outcomes

	Model 1 <sup>a</sup>				Model 2 <sup>b</sup>			
	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>
FAD General Functioning Subscale								
Unhealthy family functioning <sup>d</sup>	99	-9.3	-21.2 to 2.6	.124	99	-5.1	-18.6 to 8.4	.455
C-SSRS								
High risk	96	0.1	-0.5 to 0.60	.845	96	0.0	0 to 0	.900
School-aged CBCL <sup>e</sup>								
Depressive problems	105	-3.0	-11.9 to 5.9	.510	105	-4.8	-14.3 to 4.8	.330
Anxiety problems	105	-5.6	-16.1 to 4.9	.293	105	-10.3	-21.2 to 0.70	.066
YSR <sup>e</sup>								
Depressive problems	101	-8.6	-18.2 to 1.1	.081	101	-4.4	-14.5 to 5.6	.384
Anxiety problems	101	-4.0	-15.6 to 7.7	.505	101	-5.2	-18.2 to 7.7	.430

*n*, the total number of patients, varies because patients and parents may not be required to complete a questionnaire (based on age of young person) or choose not to.

<sup>a</sup> Mixed-effect logistic models were used for the binary outcomes with time of assessment and age as fixed effects and the individual as a random effect.

<sup>b</sup> Mixed-effect logistic models were used for the binary outcomes with time of assessment, age and period suppressors as fixed effects and the individual as a random effect.

<sup>c</sup> Difference in proportions.

<sup>d</sup> Unhealthy functioning defined as an FAD score of  $>2$ , as previously published.<sup>21</sup>

<sup>e</sup> Borderline or clinical range defined as a *T* score of  $\geq 65$ , as previously published.<sup>23</sup>

**SUPPLEMENTAL TABLE 10** Comparison of Levels of Depression and Anxiety, Family Functioning and Suicide Severity After Attending FASST Among Assigned Female Individuals When Use of Period Suppression Is Taken Into Account (Model 2) or Not (Model 1): Continuous Outcomes

	Model 1 <sup>a</sup>				Model 2 <sup>b</sup>			
	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>
FAD General Functioning Subscale (raw score)								
Unhealthy family functioning	99	-0.23	-0.43 to -0.03	.025	99	-0.07	-0.28 to 0.15	.551
School-aged CBCL ( <i>T</i> score)								
Depressive problems	105	-0.20	-0.35 to -0.05	.007	105	-0.23	-0.4 to -0.05	.011
Anxiety problems	105	-0.15	-0.3 to 0	.054	105	-0.29	-0.46 to -0.12	.001
YSR ( <i>T</i> score)								
Depressive problems	101	-0.20	-0.37 to -0.03	.024	101	-0.10	-0.29 to 0.1	.319
Anxiety problems	101	-0.13	-0.3 to 0.04	.137	101	-0.11	-0.3 to 0.09	.271
CHU9D (utility score)								
Utility	105	0.33	0.13 to 0.52	.001	105	0.28	0.06 to 0.5	.013

*n*, the total number of patients varies because patients and parents may not be required to complete a questionnaire (based on age of young person) or choose not to.

<sup>a</sup> Mixed-effect linear models were used for the continuous outcomes with time of assessment and age as fixed effects and the individual as a random effect.

<sup>b</sup> Mixed-effect linear models were used for the continuous outcomes with time of assessment, age and period suppressors as fixed effects and the individual as a random effect.

<sup>c</sup> Difference in standardized mean score.

**SUPPLEMENTAL TABLE 11** Comparison of Levels of Depression and Anxiety, Family Functioning and Suicide Severity After Attending FASST When Social Transition Is Taken Into Account (Model 2) or Not (Model 1): Binary Outcomes

	Model 1 <sup>a</sup>				Model 2 <sup>b</sup>			
	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>
FAD General Functioning Subscale								
Unhealthy family functioning <sup>d</sup>	126	-11.0	-21.4 to -0.6	.039	126	-11.0	-21.8 to -0.1	.047
C-SSRS								
High risk	123	-0.1	-0.2 to 0.1	.450	123	0.0	0 to 0	.912
School-aged CBCL <sup>e</sup>								
Depressive problems	142	-7.1	-15.5 to 1.3	.097	142	-9.8	-18.3 to -1.2	.025
Anxiety problems	142	-7.9	-16.2 to 0.5	.064	142	-8.7	-17 to -0.4	.041
YSR <sup>e</sup>								
Depressive problems	129	-12.4	-21.2 to -3.5	.006	129	-13.0	-22 to -4.10	.004
Anxiety problems	129	-6.4	-16.3 to 3.5	.208	129	-7.1	-16.9 to 2.7	.156

*n*, the total number of patients, varies because patients and parents may not be required to complete a questionnaire (based on age of young person) or choose not to.

<sup>a</sup> Mixed-effect logistic models were used for the binary outcomes with time of assessment, age and sex as fixed effects and the individual as a random effect.

<sup>b</sup> Mixed-effect logistic models were used for the binary outcomes with time of assessment, age, sex and full social transition as fixed effects and the individual as a random effect.

<sup>c</sup> Difference in proportions.

<sup>d</sup> Unhealthy functioning defined as an FAD score of >2, as previously published.<sup>21</sup>

<sup>e</sup> Borderline or clinical range defined as a T score of ≥65, as previously published.<sup>25</sup>

**SUPPLEMENTAL TABLE 12** Comparison of Levels of Depression and Anxiety, Family Functioning and Suicide Severity After Attending FASST When Social Transition Is Taken Into Account (Model 2) or Not (Model 1): Continuous Outcomes

	Model 1 <sup>a</sup>				Model 2 <sup>b</sup>			
	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>	<i>n</i>	Change <sup>c</sup>	95% CI	<i>P</i>
FAD General Functioning Subscale (raw score)								
Unhealthy family functioning	126	-0.21	-0.37 to -0.04	.015	126	-0.20	-0.37 to -0.03	.023
School-aged CBCL ( <i>T</i> score)								
Depressive problems	142	-0.24	-0.36 to -0.11	<.001	142	-0.31	-0.44 to -0.18	<.001
Anxiety problems	142	-0.14	-0.26 to -0.02	.025	142	-0.17	-0.30 to -0.04	.010
YSR ( <i>T</i> score)								
Depressive problems	129	-0.24	-0.40 to -0.09	.002	129	-0.26	-0.42 to -0.11	.001
Anxiety problems	129	-0.17	-0.32 to -0.02	.029	129	-0.18	-0.33 to -0.02	.025
CHU9D (Utility score)								
Utility	142	0.39	0.23 to 0.56	<.001	142	0.39	0.22 to 0.56	<.001

*n*, the total number of patients varies because patients and parents may not be required to complete a questionnaire (based on age of young person) or choose not to.

<sup>a</sup> Mixed-effect linear models were used for the continuous outcomes with time of assessment, age and sex as fixed effects and the individual as a random effect.

<sup>b</sup> Mixed-effect linear models were used for the continuous outcomes with time of assessment, age, sex, and full social transition as fixed effects and the individual as a random effect.

<sup>c</sup> Difference in standardized mean score.