**The Effectiveness and Acceptability of Empirically-Supported Treatments in
Gender Minority Youth Across Four Randomized Controlled Trials**

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Abstract

Objective: Gender minority youth (i.e., children/adolescents whose gender identity and/or expression is inconsistent with their birth-assigned sex) experience elevated rates of emotional and behavioral problems relative to cisgender youth (who identify with their birth-assigned sex), which are not intrinsic to gender identity but attributable to unique minority stressors. Although empirically-supported treatments have proven effective in treating these mental health concerns generally, randomized controlled trials have not examined effects for gender minority youth.

Method: To address this gap, we pooled data from clinically-referred youth ($N = 432$; $M(SD)_{\text{age}} = 10.6(2.2)$; 55.1% White) assigned to empirically-supported treatment conditions across four previous randomized controlled trials of modular psychotherapy. A proxy indicator of gender identity (i.e., youth's wish to be the opposite sex) was used to classify gender minority ($n = 64$) and cisgender ($n = 368$) youth. Youth- and caregiver-reported pretreatment internalizing and externalizing problems, treatment effectiveness on these domains, and treatment acceptability were compared across groups.

Results: Gender minority youth reported more severe pretreatment internalizing and externalizing problems compared to cisgender youth; in contrast, their caregivers reported less severe problems. Though treatment was equally effective for both groups on most outcomes, gender minority youth's caregiver-reported externalizing problems improved more slowly and less reliably, and their self-reported internalizing problems were more likely to remain clinically elevated. Further, gender minority youth reported lower treatment satisfaction.

Conclusions: While findings suggest that empirically-supported treatments may effectively address many mental health problems for gender minority youth, they also underscore the need for treatment enhancements that improve acceptability and outcomes.

Public Significance Statement: This study examined the effectiveness and acceptability of empirically-supported mental health treatments for gender minority youth (who endorsed a wish to be the opposite sex) and cisgender youth. Gender minority youth reported more severe problems before treatment, demonstrated slower improvement in caregiver-reported behavior problems, and endorsed lower treatment satisfaction. Findings support the potential need for provider-focused trainings relevant to gender minority youth.

Keywords: youth, gender minorities, empirically-supported treatments, psychopathology

The Effectiveness and Acceptability of Empirically-Supported Treatments in Gender Minority Youth Across Four Randomized Controlled Trials

In contrast to cisgender (CG) youth (who identify with their birth-assigned sex), gender minority (GM) youth include children and adolescents whose gender identity (i.e., internal sense of gender) and/or expression (i.e., outward presentation of gender) does not match their birth-assigned sex (Olson-Kennedy et al., 2016; Price & Skolnik, 2017) or align with a binary conceptualization of gender (i.e., male/female; Hope et al., 2016). GM youth may identify as transgender, gender diverse, or nonbinary; yet, there exists a range of gender identities within and beyond these categories for which terminology is continuously evolving (Turban & Ehrensaft, 2018). Gender identity development begins in childhood and continues into adolescence (Boskey, 2014), periods during which psychosocial support may be essential to GM youth's mental health (Olson et al., 2015; Simons et al., 2013). However, many GM youth face persistent exposure to identity-based stressors (e.g., peer victimization; Johns et al., 2019), which can heighten their risk for psychopathology (Veale et al., 2017).

Empirically-supported treatments (ESTs; i.e., psychotherapies shown to be efficacious relative to an active control group in at least two randomized controlled trials [RCTs]; Chambless & Hollon, 1998) *may* effectively address GM youth's mental health needs (Valentine & Shipherd, 2018), but this is not explicitly known, as prior RCTs have not routinely assessed gender identity or related outcomes (Heck et al., 2017). Thus, the present study sought to explore EST effectiveness and acceptability for youth who may identify as GMs (using their self-reported "wish to be the opposite sex"; Achenbach & Rescorla, 2001) by reanalyzing EST-trial data. Though use of this measure as a proxy for GM status is supported in this and previous studies (de Graaf et al., 2018; van der Miesen et al., 2018), this single item is limited in its

generalizability, as it may not be inclusive of some GM identities (e.g., nonbinary youth) nor exclusive to GMs (van der Miesen et al., 2018). Nonetheless, given the paucity of research on EST outcomes for GM youth (Heck et al., 2017), the present study represents an important step in advancing mental health treatment for this population.

Despite increased attention from researchers in recent years (Turban & Ehrensaft, 2018), GM youth remain underrepresented in extant literature (Grossman & D'Augelli, 2006), perhaps partly due to the dearth of inclusive and validated measures of gender identity (Olson-Kennedy et al., 2016). Research increasingly highlights variability in gender identity and expression across GM individuals and time (Becker et al., 2017; Steensma et al., 2011), and this work has begun to elucidate the concept of gender fluidity (i.e., the idea that gender identity can fluctuate over time; American Psychological Association [APA], 2015). Indeed, conceptions and measurements of GM identities continue to evolve, and the prevalence of GM youth is similarly unclear (Olson-Kennedy et al., 2016). Emerging studies estimate that 1%–3% of youth may identify as GMs (Johns et al., 2019; Rider et al., 2018), and a study measuring gender variant identities and behaviors in a nationally representative sample found an overall prevalence rate of 6.3%, with more gender variance in younger children (Becker et al., 2017). Prior research also indicates that GM youth might be overrepresented in clinically-referred samples (4%–6.5%; Achenbach & Rescorla, 2001; Steensma et al., 2013; van der Miesen et al., 2018), potentially resulting from stressors that elevate their risk for mental health problems.

This greater risk encompasses an array of internalizing and externalizing mental health concerns. Relative to their CG peers, GM youth experience higher rates of anxiety, depression, self-harm, and suicidality (Becerra-Culqui et al., 2018; Reisner et al., 2015), and childhood gender nonconformity has been associated with elevated risk for PTSD (Roberts et al., 2012).

GM youth's behavioral problems are comparatively understudied but appear to include oppositional behavior (Chen et al., 2017) and substance use (Lowry et al., 2020). In addition, relatively high rates of psychiatric comorbidity (30%–60%) have been observed in GM youth referred to pediatric gender clinics (de Vries et al., 2011; Peterson et al., 2016). GM youth's risk may vary by birth-assigned sex; whereas some research has documented greater rates of suicidality and substance use among birth-assigned girls (Eisenberg et al., 2017; Price-Feeney et al., 2020), other studies have found a higher prevalence of these concerns in birth-assigned boys (Newcomb et al., 2020; Watson et al., 2020).

Importantly, these elevated rates of mental health disorders are not intrinsic to GM identity. Likewise, GM identity is not an indicator of pathology (APA, 2015). Rather, as posited by minority stress theory (Brooks, 1981; Meyer, 2003), these disparities result from *distal* (i.e., external, objective experiences) and *proximal* (i.e., internal, subjective processes) stressors—including disproportionate exposure to, hypervigilance for, and internalization of stigma—which have been shown to induce psychological distress and contribute to the onset and maintenance of psychopathology (Hatzenbuehler & Pachankis, 2016). Minority stress theory has been adapted to capture the unique stressors experienced by GM youth and adults (Delozier et al., 2020; Hendricks & Testa, 2012), and related research consistently finds an association between these stressors (e.g., GM discrimination, internalized transphobia; Chodzen et al., 2019; Veale et al., 2017) and poor mental health.

GM youth are increasingly accessing psychological and medical interventions, which may be attributable to the recent emergence of pediatric gender clinics, increased media attention, and greater access to information about GM health services online (Chen et al., 2016; Spack et al., 2012). Despite this recent increase, GM youth continue to underutilize mental and

medical health services (McBride, 2018; Rider et al., 2018), citing factors such as unsupportive caregivers, fear of identity disclosure, and exclusionary insurance policies (Gridley et al., 2016; Guss et al., 2019; Pullen Sansfaçon et al., 2019). Further, research with GM youth and their caregivers highlights a variety of negative past interactions in health care broadly (e.g., inconsistent use of affirmed name/pronouns, explicit discrimination), primarily resulting from providers' lack of education in GM-specific care (Acosta et al., 2019; Gridley et al., 2016; Heard et al., 2018). These concerns were reflected by health care providers in a recent study, with more than half of those surveyed reporting insufficient training, experience, and comfort in treating GM youth (Vance et al., 2015).

To reduce such barriers within mental health treatment, professional organizations have produced guidelines for gender-affirming care designed to validate GMs' identities while recognizing the unique stressors they experience (e.g., APA, 2015). These approaches may be especially valuable for GM youth, as those supported in their identities are at lower risk for internalizing symptomatology (Olson et al., 2016). Despite these advances, therapists are rarely trained in gender-affirming care (Austin et al., 2016; Martin et al., 2009), and there exists a significant gap between the development of ESTs and their uptake in clinical practice (Weisz et al., 2015). Consequently, therapists may be limited in their ability to integrate gender-affirming principles with existing ESTs (Pachankis, 2018).

“Standard” and “modular” ESTs are empirically tested procedures for addressing youth's emotional and behavioral problems (Southam-Gerow & Prinstein, 2014), including internalizing (e.g., depression; Becerra-Culqui et al., 2018; Reisner et al., 2015) and externalizing (e.g., oppositionality; Chen et al., 2017) symptomatology prevalent in GM youth. Standard ESTs are administered in a relatively fixed order over a prescribed number or range of sessions, targeting

one or more related disorders (Chorpita et al., 2013). In contrast, modular ESTs utilize a multi-diagnostic framework, drawing on procedures from various ESTs to address a broad range of psychopathology (Weisz et al., 2019) and offering therapists flexibility to tailor treatment to each youth's most pressing needs (Weisz et al., 2012). Standard and modular ESTs have evidenced effectiveness in improving youth- and caregiver-reported internalizing and externalizing problems (Chorpita et al., 2013), and, in two studies, a modular EST (i.e., the Modular Approach to Therapy for Children with Anxiety, Depression, Trauma, or Conduct Problems; Chorpita & Weisz, 2009) outperformed standard ESTs (Chorpita et al., 2017; Weisz et al., 2012).

Given the extent of psychopathology experienced by GM youth, researchers have recommended the use of ESTs to address their concerns (Valentine & Shipherd, 2018). The multi-diagnostic nature of modular ESTs may be particularly advantageous for treating comorbidity in GM youth (Hatzenbuehler & Pachankis, 2016). Despite the proliferation of ESTs for youth (Southam-Gerow & Prinstein, 2014), we are not aware of any RCT that has analyzed gender identity or other relevant data (Heck et al., 2017). Thus, treatment effects for GM youth remain largely unexplored. Researchers have called for increased efforts to develop and test trainings for therapists in gender-affirming care (Austin et al., 2016; Lelutiu-Weinberger & Pachankis, 2017), which may allow them to adapt ESTs to better address the specific needs of GM youth (Hope et al., 2016). In order to assess the need for such trainings and associated treatment modifications, GM youth's treatment outcomes should first be evaluated in ESTs. That is, a better understanding of EST effectiveness and acceptability for GM youth might inform if and how these interventions should be modified (Pachankis, 2018).

The present study examined pretreatment symptomatology, treatment effectiveness, and treatment acceptability (e.g., satisfaction, youth-therapist alliance) across four prior RCTs, as

reported by clinically-referred youth (and their caregivers) assigned to EST conditions (but not to control conditions; i.e., usual care). Using data relevant to gender identity (i.e., youth's wish to be the opposite sex; Achenbach & Rescorla, 2001), youth were categorized into one of two groups: GM-classified and CG-classified youth (hereafter, "GM" and "CG" youth). We explored three hypotheses grounded in the research literature on GM youth. First, consistent with prior research (e.g., Becerra-Culqui et al., 2018; Chen et al., 2017), we expected that GM youth would have higher pretreatment self- and caregiver-reported internalizing and externalizing problems compared with CG youth, as they likely face unique minority stressors and stress processes associated with psychological distress (Chodzen et al., 2019; Veale et al., 2017). Second, we anticipated that GM youth's symptoms would improve across treatment, but more slowly than those of CG youth, as the ESTs were not designed to address concerns specific to GMs. This hypothesis stems from emerging research illustrating the potential benefits of ESTs broadly adapted for both GM youth and sexual minority youth (e.g., lesbian, gay, bisexual, or asexual youth; Austin et al., 2018; Cohen, 2019). Third, we predicted that GM youth would report lower treatment acceptability, as the potential absence of gender-affirming features (e.g., using clients' affirmed name/pronouns; Acosta et al., 2019) might threaten treatment satisfaction (Inwards-Breland et al., 2019) and undermine therapeutic alliance (Alessi et al., 2019).

Method

Data were pooled from four previous RCTs (Chorpita et al., 2013 [NCT01178554]; Weisz et al., 2019 [NCT02229305]; Weisz, Santucci, et al., 2018 [NCT03153904]; Weisz, Ugueto, et al., 2018 [NCT03112304]) of standard and modular ESTs for youth delivered by therapists in community-based mental health clinics. RCTs shared overlapping procedures, including random assignment of therapists to condition, inclusion and exclusion criteria, EST

modalities, and outcome measures (for RCT information, see Supplementary Table S1 in online supplemental materials).

Participants

Only youth (a) assigned to an EST condition and (b) with self- and caregiver-reported data from at least two assessments were included in the present study. We limited our analysis to youth assigned to EST conditions because we sought to examine the potential need for future treatment adaptations for GM youth (Pachankis, 2018), which are designed based on existing ESTs (Barrera & Castro, 2006). Moreover, only two of the four RCTs included a control condition representing a different treatment modality (i.e., usual care; UC), one of which found that youth in EST conditions exhibited significantly more symptom improvement (Chorpita et al., 2013). Including youth in UC conditions would thus require model adjustments (e.g., controlling for condition effects), which would reduce statistical power and hamper our ability to draw clear conclusions from the results. In sum, only youth assigned to EST conditions were relevant to the goals of our study.

Participants were 432 clinically-referred youth (ages 7–15; $M(SD) = 10.6(2.2)$) diverse with respect to birth-assigned sex (55.3% boys [$n = 206$], 44.7% girls [$n = 162$]) and race/ethnicity (55.1% White [$n = 205$], 14.6% Black [$n = 53$], 11.6% Latinx [$n = 43$], 1.2% Asian [$n = 4$], 15.9% multiracial [$n = 57$], 1.6% other [$n = 6$]). They were treated for anxiety (22.9% [$n = 82$]), depression (32.9% [$n = 128$]), conduct (40.0% [$n = 144$]), or trauma (4.2% [$n = 14$]). Pretreatment symptom severity, treatment effectiveness, and treatment acceptability were examined for subsamples of 368 CG and 64 GM youth, who were classified based on their responses to a proxy indicator of GM status (i.e., youth's wish to be the opposite sex).

Procedure

Study and Participant Inclusion and Exclusion Criteria

Five RCTs of modular youth psychotherapy effectiveness were considered for inclusion in the present study (Chorpita et al., 2013; Chorpita et al., 2017; Weisz et al., 2019; Weisz, Santucci, et al., 2018; Weisz, Ugueto, et al., 2018), and four were included because they administered the measures we used for GM classification and primary outcomes. These RCTs examined the effectiveness and acceptability of ESTs in comparison to UC (Chorpita et al., 2013; Weisz et al., 2019) or when delivered by therapists receiving varying levels of supervision (Weisz, Ugueto, et al., 2018) or consultation (Weisz, Santucci, et al., 2018). The first (Chorpita et al., 2013) included three conditions to which youth were assigned: modular EST, standard EST, and UC (i.e., therapists' everyday practices; Weisz et al., 2012). Long-term treatment outcomes did not differ by EST condition in this trial or in the present study; thus, youth were included if assigned to a standard or modular condition (youth in the UC condition were excluded). Inclusion of youth in the standard EST condition was further supported by post-hoc power analyses, which indicated that their exclusion would reduce our ability to detect a small to moderate effect size.

Youth assent and caregiver consent were obtained from participating families prior to study enrollment, and study procedures for RCTs were approved by their respective IRBs. Youth were eligible if they were (a) 7–15 years old, (b) referred by a participating therapist, and (c) determined to have a primary problem of anxiety, depression, conduct, or trauma. Exclusion criteria included past suicide attempt as well as diagnoses of schizophrenia spectrum and other psychotic disorders, bipolar and related disorders, eating disorders, neurodevelopment disorders, and ADHD (unless secondary to the primary problem).

EST Modalities

Therapists in modular EST conditions (Chorpita et al., 2013; Weisz et al., 2019; Weisz, Santucci, et al., 2018; Weisz, Ugueto, et al., 2018) were trained in the Modular Approach to Therapy for Children with Anxiety, Depression, Trauma, or Conduct Problems (MATCH; Chorpita & Weisz, 2009). MATCH includes treatment procedures from various ESTs, including CBT and behavioral parent training, which are packaged and delivered in modules to target internalizing, externalizing, and comorbid symptomatology (Weisz et al., 2012). To personalize treatment to youth's primary problems and address their shifting concerns in therapy, MATCH allows therapists to choose and sequence intervention components from 33 modules grouped across protocols for anxiety, depression, trauma, and conduct problems (Weisz et al., 2012). Example modules include (a) psychoeducation for anxiety, (b) behavioral activation for depression, (c) trauma narrative for posttraumatic stress, and (d) caregiver-specific strategies (e.g., active ignoring) for behavior problems (Chorpita & Weisz, 2009). Therapists in the standard EST condition (exclusive to Chorpita et al., 2013) were trained in the same content but required to deliver intervention components sequentially based on youth's primary problems.

Data Inclusion and Measures

Primary variables of interest were assessed via identical measures delivered on a schedule that varied slightly across trials. Accordingly, only data collected at the same timepoints across trials were analyzed (e.g., only one trial collected data 24 months after treatment initiation, and thus those data were excluded). Treatment effectiveness was evaluated by modeling change in youth- and caregiver-reported mental health symptomatology assessed at pretreatment (0 months) and regular intervals thereafter (3, 6, 9, 12, 18 months). Acceptability (i.e., satisfaction, youth-therapist alliance) was measured following treatment. Treatment duration was also explored as a potential indicator of acceptability. However, because duration is variable in

modular psychotherapy (Weisz et al., 2019), interpretation is limited (see Supplemental Part II and Supplementary Table S5 in online supplemental materials). Other measures administered in all trials (e.g., Top Problems Assessment; Weisz et al., 2011) were not examined as outcomes due to measure differences across studies (e.g., response scales used).

Caregiver-Reported Symptomatology

Caregiver-reported mental health symptomatology was assessed via the Child Behavior Checklist for Ages 6–18 (CBCL), a well-validated and reliable questionnaire assessing youth's emotional and behavioral problems within the past six months (Achenbach & Rescorla, 2001). Consistent with the original EST trials, symptomatology was measured on the CBCL internalizing (depression, anxiety, and somatization) and externalizing (conduct difficulties and oppositional defiance) problems scales. Internal consistency was excellent for these scales in the present study (internalizing: $\alpha = .90$; externalizing: $\alpha = .92$).

Youth-Reported Symptomatology

Youth's self-reported symptomatology was captured on the Youth Self-Report for Ages 11–18 (YSR), which parallels the CBCL in format (Achenbach & Rescorla, 2001). Treatment outcomes were evaluated on the same broadband scales, which have evidenced strong psychometric properties in previous studies (e.g., Ebesutani et al., 2011) and showed excellent internal consistency in the present study (internalizing: $\alpha = .90$; externalizing: $\alpha = .90$). The YSR was verbally administered by trained research assistants, a mode of delivery that has been shown to enhance item comprehension and regulate response rate, thereby reducing risk for response nondifferentiation (i.e., “straightlining”; Di et al., 2016). Analyses of responses indicated that no youth endorsed the same response option on every item (i.e., no “straightliners” were identified).

GM Classification

GM status was classified using YSR Item #110 (“I wish I were of the opposite sex”; Achenbach & Rescorla, 2001). Youth who indicated that they 0 (*never*) wished to be of the opposite sex across all timepoints were categorized as CG youth, and those who endorsed 1 (*sometimes*) or 2 (*very often*) on this item at one or more measurement occasions were categorized as GM youth (see Supplemental Part I in online supplemental materials for more details). While this item does not explicitly inquire about youth’s gender identity, it has been used as a proxy measure of GM status in previous studies and has evidenced reliability and validity (de Graaf et al., 2018; van der Miesen et al., 2018). For example, mean scores on this item were similar in a large sample of youth referred to gender clinics across four European countries (range: 1.8–2.0; de Graaf et al., 2018). The present study found further support for this item’s reliability and validity by (a) comparing three measurement methods for GM classification (e.g., item endorsement at one versus multiple time points), (b) examining its association with an idiographic measure of youth’s behavioral and emotional problems, (c) comparing the prevalence of GM youth in the current study with other clinical samples, and (d) assessing test-retest reliability (see Supplemental Part I and Supplementary Table S2 in online supplemental materials). Despite evidence supporting its use, this item is only a proxy for, and not an assessment of, gender identity. In addition, it does not adequately capture many GM identities (e.g., nonbinary, genderqueer, and/or gender questioning youth; van der Miesen et al., 2018).

Treatment Satisfaction

Posttreatment satisfaction was measured using the 8-item Youth Satisfaction Questionnaire (YSQ-8; Hawley & Weisz, 2005), which asks youth to rate questions (e.g.,

“Overall, how happy are you with the help you got?”) on a 4-point Likert scale from 1 (*very unhappy*) to 4 (*very happy*). The YSQ-8 was derived from the Client Satisfaction Questionnaire (Larsen et al., 1979), a measure highly correlated with symptom reduction. The YSQ-8 has exhibited good psychometric properties previously (Hawley & Weisz, 2005; Weisz et al., 2017) and showed excellent internal consistency in the present study ($\alpha = .93$).

Youth-Therapist Alliance

Youth-therapist alliance was assessed using a 9-item version of the Therapeutic Alliance Scale for Children (TASC; Shirk & Saiz, 1992), which measures both youth-therapist bond (e.g., “I feel like my therapist was on my side and tried to help me”) and working alliance (e.g., “My therapist listened to me in deciding what to talk about in therapy”). The TASC has demonstrated robust psychometric properties in prior studies (e.g., Weisz et al., 2017), and internal consistency was good in the present study ($\alpha = .86$).

Planned Analyses

Demographics and Pretreatment Symptom Severity

Independent samples *t*-tests and χ^2 -tests explored differences in demographics and pretreatment symptom severity across GM and CG youth. As previous research reveals potential mental health disparities among GM youth by birth-assigned sex (Eisenberg et al., 2017; Newcomb et al., 2020; Price-Feeney et al., 2020), exploratory *t*-tests also probed for differences in pretreatment symptom severity by birth-assigned sex within GM ($n = 33$ birth-assigned boys, $n = 31$ birth-assigned girls) and, for comparison, CG ($n = 206$ birth-assigned boys, $n = 162$ birth-assigned girls) subsamples.

Treatment Effectiveness

Multilevel modeling (MLM; Heck et al., 2014; Singer & Willett, 2003) was employed to evaluate trajectories of change in youth's T-scores on the YSR and CBCL internalizing and externalizing problems scales from 0 to 18 months after treatment onset. Analyses were performed using the linear-mixed effects (MIXED) procedure in SPSS (Version 25.0). Full information maximum likelihood (FIML) estimation accommodated data missing at random, and Akaike information criterion (AIC) was used to determine models' goodness of fit.

Two models for each youth- and caregiver-reported outcome (i.e., YSR and CBCL internalizing and externalizing problems) were created, with repeated measures (Level 1) nested within youth (Level 2). The suitability of higher-order models was examined and deemed unnecessary (see Supplemental Part III in online supplemental materials). For all models, intercept and time (natural log of months after baseline + 1) were specified as random effects, and time, GM classification (coded as 0 = CG and 1 = GM), and their interaction were included as fixed effects. Including GM classification as a fixed effect adjusted for pretreatment differences in symptomatology. Mean-centered age, race/ethnicity, and RCT were included as covariates. The interaction between time and GM classification evaluated differences in CG and GM youth's rates of change on each outcome (i.e., whether one group improved more quickly). Post-hoc power analyses were conducted with the *powerlmm* package in R (Magnusson, 2018), using the subsample sizes of CG and GM youth and the variance in outcomes over time within participant (i.e., mean ICC), which indicated sufficient power (>80%) to detect a small to medium effect (.3).

To ascertain if symptom improvement was clinically reliable and meaningful for GM and CG youth, χ^2 -tests compared proportions of these groups who evidenced reliable MLM-predicted pre-post treatment change (using Reliable Change Index scores; Jacobson & Truax, 1991) or did

not have clinically elevated posttreatment symptomatology (i.e., YSR and CBCL internalizing and externalizing T-scores ≥ 60). Further, *t*-tests explored differences in MLM-predicted pre-post treatment change by birth-assigned sex within GM and CG subsamples.

Treatment Acceptability

Bivariate correlations explored associations between treatment acceptability and symptom improvement (i.e., MLM-predicted pre-post treatment change). ANCOVA was used to examine group differences in satisfaction and youth-therapist alliance, with posttreatment scores (i.e., predicted values from MLMs) separately included as covariates to control for shared variance between symptom severity and treatment acceptability. G*Power 3.1 (Faul et al., 2007) analyses indicated sufficient power (80%) to detect medium effects ($f = .20$).

Multiple Comparisons

The potential social implications of study findings necessitated balancing Type I and Type II error risks (Vasilopoulos et al., 2016). Consistent with emerging health disparities research with GMs (e.g., Flentje et al., 2020), statistical corrections for multiple comparisons were not employed, as only two comparisons were made per informant and the use of standard significance cut-offs ($p < .05$) enhanced the likelihood of detecting meaningful differences.

Results

Demographics and Pretreatment Symptom Severity

CG and GM youth did not differ significantly in age, birth-assigned sex, race/ethnicity, or primary problem (Table 1). GM youth were evenly distributed amongst RCTs. Relative to CG youth, they endorsed significantly higher pretreatment internalizing and externalizing problems ($ps < .001$). Conversely, GM youth had significantly lower caregiver-reported internalizing ($p = .04$) and externalizing ($p = .03$) problems at pretreatment than their CG peers (Table 1). Among

CG youth, birth-assigned boys had significantly higher pretreatment caregiver-reported externalizing problems than birth-assigned girls ($p < .01$; see Supplementary Table S6 in online supplemental materials). In the GM subsample, birth-assigned boys reported greater pretreatment internalizing problems relative to birth-assigned girls ($p < .01$; see Supplementary Table S7 in online supplemental materials).

Treatment Effectiveness

Mean rates of change (see Table 2 and Figure 1) in youth-reported problems did not significantly differ across CG and GM youth. Though similar proportions of these groups demonstrated reliable change in youth-reported symptomatology, a greater proportion of GM (14.1%) than CG (3.2%) youth had clinically elevated internalizing problems at posttreatment, $\chi^2(1) = 13.8, p < .001$. Change in caregiver-reported internalizing problems did not differ across these groups. However, caregiver-reported externalizing problems improved more slowly for GM youth ($p = .03$; Table 2 and Figure 1), who were less likely than CG youth (39.1% v. 59.8%) to demonstrate reliable change on this symptom domain, $\chi^2(1) = 9.5, p = .002$. Finally, within CG and GM subsamples, treatment response did not differ by birth-assigned sex (see Supplementary Tables S6 and S7 in online supplemental materials).

Treatment Acceptability

In the GM subsample, treatment satisfaction was moderately correlated with reductions in all caregiver-reported problems ($r = .35-.47, ps < .05$), and youth-therapist alliance was moderately correlated with reductions in youth-reported internalizing problems ($r = .32, p = .02$). No other significant correlations were identified (see Supplementary Table S3 in online supplemental materials). ANCOVAs showed that GM youth ($M(SD) = 24.5(5.8)$) reported significantly lower treatment satisfaction than CG youth ($M(SD) = 26.7(5.2)$) when controlling

for posttreatment symptom severity for all youth- and caregiver-reported problems ($ps < .05$).

These differences were strongest for scale items relating to the type, content, and future relevance of treatment (see Supplementary Table S4 in online supplemental materials).

ANCOVAs using the same covariates yielded no significant differences in youth-therapist alliance between GM and CG youth.

Discussion

The present study examined the effectiveness and acceptability of ESTs for CG and GM youth pooled across four RCTs. To our knowledge, it was the first study to utilize an indicator of GM status to predict EST outcomes. Findings contribute to the extant literature by further demonstrating GM youth's risk for mental health problems, identifying potential benefits and limitations of ESTs for these youth, and highlighting their concerns about treatment satisfaction.

GM Youth's Pretreatment Symptom Severity

In partial support of our first hypothesis, we found that GM youth endorsed more severe internalizing and externalizing problems at pretreatment relative to CG youth. These findings are consistent with a growing body of research indicating that GM youth experience inequitable rates of mental health problems (e.g., Becerra-Culqui et al., 2018; Reisner et al., 2015). Though the present study did not assess pathways to psychopathology, GM youth's relatively elevated self-reported symptomatology may be attributable to GM stressors (e.g., peer victimization; Johns et al., 2019), which have been shown to heighten expectations of future rejection and lead to negative self-beliefs (e.g., internalized transphobia; Chodzen et al., 2019) and behaviors (e.g., identity concealment; Hatzenbuehler & Pachankis, 2016). This possibility warrants attention in future research. Exploratory analyses revealed that among GM youth, birth-assigned boys

reported more severe pretreatment internalizing problems than birth-assigned girls. Though this finding mirrors two large-scale surveys (Newcomb et al., 2020; Watson et al., 2020), other studies have documented the opposite trend (Eisenberg et al., 2017; Price-Feeney et al., 2020), highlighting the need for future research that better elucidates this disparity.

Youth- Versus Caregiver-reported Pretreatment Symptomatology

Inconsistent with our first hypothesis, caregiver-reported pretreatment symptomatology was higher for CG youth. Broadly, differences in youth- and caregiver-reported concerns are common, particularly for internalizing problems, as symptoms are not always directly observable (De Los Reyes et al., 2015). However, factors predicting discrepancies in GM youth's self- and caregiver-reported internalizing and externalizing problems merit investigation. For example, GM youth disproportionately experience trauma (Eisenberg et al., 2017; Johns et al., 2019; Lowry et al., 2020), including trauma explicitly related to gender identity or expression (e.g., Murchison et al., 2019). Thus, it is possible that GM youth in the present study concealed gender-related victimization or distress from their caregivers out of fear of identity disclosure, rejection, and related sequelae (e.g., child abuse, homelessness; Grossman & D'Augelli, 2006). Accordingly, caregivers may have been less attuned to these youth's concerns, resulting in higher self- but not caregiver-reported problems. If GM youth anticipated or perceived a lack of caregiver support, this too may have contributed to their elevated self-reported symptomatology. Indeed, research consistently finds a strong and positive association between parental support and mental health in GM youth (Olson et al., 2016; Simons et al., 2013).

Treatment Effectiveness

Counter to our second hypothesis, CG and GM youth demonstrated similar rates of improvement in self-reported symptomatology; yet, GM youth were more likely to have clinically elevated internalizing problems at posttreatment. Though rates of caregiver-reported internalizing problems improved similarly across groups, externalizing symptoms improved more slowly and less reliably for GM youth. Taken together, these findings suggest that GM youth benefit from existing ESTs as much as CG youth for some, but not all, mental health concerns.

Of note, the ESTs under study share several common intervention features with those adapted for sexual minority youth, including psychoeducation, behavioral activation, coping skills, cognitive restructuring, and trauma narrative (see Hobaica et al., 2018 for a systematic review). These same elements have been proposed in frameworks for gender-affirming ESTs (Austin & Craig, 2015; Coyne et al., 2020), and pilot studies with sexual and gender minority youth suggest promising effects for subsamples of GM youth (Austin et al., 2018; Cohen, 2019). It is possible that GM youth in the present study generalized these strategies to cope with potential GM stressors. However, we did not assess GM stress exposure and thus can only speculate about factors contributing to treatment response.

Treatment Acceptability

Consistent with our third hypothesis, GM youth reported lower treatment satisfaction than their CG peers. Moreover, they viewed treatment less favorably than youth in previous EST trials on the same measure (Chorpita et al., 2017; Weisz et al., 2017). Item-level analyses indicated that GM youth were less satisfied with the kind and content of their treatment and less

likely to think it would benefit them in the future. Together with prior literature on GMs' underutilization of mental health care (Shipherd et al., 2010), this finding suggests the possibility that GM youth may be less likely to pursue similar treatment in the future due to their relatively low ratings of its content and long-term utility.

In line with past research (e.g., Turchik et al., 2010), satisfaction was associated with caregiver-reported improvement, but only for GM youth. Treatment satisfaction may be particularly relevant to treatment effectiveness for GM youth and their caregivers, as research consistently documents barriers to, and dissatisfaction with, medical and mental health care in this population (Gridley et al., 2016; Guss et al., 2019; Heard et al., 2018). In other words, positive perceptions of treatment may be especially impactful for families who may otherwise have difficulty accessing satisfactory care.

Contrary to our third hypothesis, CG and GM youth reported similar levels of youth-therapist alliance. Whereas treatment satisfaction, as measured on the YSQ-8 (Hawley & Weisz, 2005), was primarily intervention-specific (i.e., reflecting the suitability of the treatment), youth-therapist alliance, assessed via the TASC (Shirk & Saiz, 1992), captured nonintervention-related elements, including therapists' behaviors. GM youth in the present study may have viewed therapists, but not ESTs, as gender-affirming. Indeed, GM clients who perceive their therapists as affirming report greater therapeutic alliance (Alessi et al., 2019). Notably, alliance was associated with youth-reported symptom reduction in the GM subsample, but not in the CG subsample or the full sample, which may suggest that therapeutic alliance is particularly important for treatment effectiveness in GM youth. Prior studies have shown that having a

positive relationship with a trusted adult may be especially critical to GM youth's wellbeing (see systematic review by Johns et al., 2018), as they often experience rejection from both peers and adults (Grossman & D'Augelli, 2006; Price et al., 2019).

Limitations

Our findings were novel, contributing to the small yet growing literature on GM youth's treatment outcomes. Nonetheless, methodological factors related to the use of previously collected data may limit interpretation. The use of YSR Item #110 to classify GM status has been supported by previous studies (e.g., de Graaf et al., 2018; van der Miesen et al., 2018) and was necessitated by the paucity of gender identity data collection in EST research to date (Heck et al., 2017; Valentine & Shipherd, 2018). However, this item asks youth if they "wish to be of the opposite sex" rather than if they identify with a gender different from their birth-assigned sex, the latter of which may better reflect GM identities (Turban & Ehrensaft, 2018). Furthermore, it does not encompass the spectrum of GM identities and expressions, particularly those of nonbinary and gender nonconforming youth (who identify with their birth-assigned sex but express their gender in a way that is inconsistent with societal gender norms; Turban & Ehrensaft, 2018), who may not wish to be of the opposite sex or identify as CG (van der Miesen et al., 2018). Importantly, however, we found some support for this item's reliability and validity (see Supplemental Part I in online supplemental materials). The consistency of our findings across multiple methods of GM classification (e.g., youth who only endorsed the item at pretreatment, youth who endorsed the item on two or more occasions) suggests that youth who experience a wish to be of the opposite sex, even if just for a limited period, differ significantly

from CG youth (i.e., those who consistently do not have this wish) in symptom severity, treatment satisfaction, and some treatment outcomes. This finding is consistent with growing research that encapsulates youth with a broad range of GM identities and expressions (e.g., gender questioning, gender nonconforming), all of whom face similar risks for victimization and distress (Lowry et al., 2020; Roberts et al., 2013).

Clinical Implications and Future Directions

To our knowledge, the present study is the first to find elevated self-reported symptomatology in GM youth relative to their CG peers within a sample referred for mental health treatment. While previous studies have found comparable differences in GM and CG youth's mental health problems in health care settings broadly (e.g., outpatient medical centers; Becerra-Culqui et al., 2018; Reisner et al., 2015), we are not aware of any study that has examined whether these inequities persist in youth referred to mental health treatment, who likely have more severe difficulties irrespective of gender. These findings underscore the need for effective mental health treatments for GM youth. Importantly, our results suggest that the ESTs under study may be effective in addressing many of the mental health concerns reported by GM youth and their caregivers. However, GM youth's slower rate of change in caregiver-reported externalizing problems, less clinically reliable and meaningful symptom improvement, and lower levels of treatment satisfaction highlight the potential need for enhanced treatment (e.g., improving therapists' knowledge of concerns specific to GM youth). The limitations of our GM-classification method temper our interpretation, however, and support the need for more inclusive methodologies in subsequent treatment studies. Though supported by prior research (de

Graaf et al., 2018; van der Miesen et al., 2018) and necessary in the present study, our reliance on a proxy indicator of GM status (i.e., youth's wish to be the opposite sex)—rather than an explicit assessment of gender identity—limits the generalizability of our findings.

Indeed, future RCTs would be strengthened by including youth with diverse gender identities and administering validated assessments of gender identity (e.g., using a two-step method assessing birth-assigned sex and current gender identity; Tate et al., 2013). Such research may elucidate issues of treatment generalizability and fit for GM youth. Further, to assess stress exposure, this work might include measures specific to GM stressors and stress processes (e.g., the Gender Minority Stress and Resilience scale; Testa et al., 2015; the Transgender Identity Survey; Bockting et al., 2020).

An enhanced understanding of facilitators to treatment acceptability for GM youth may shed light on methods for improving treatment for this population. Future research would benefit from more comprehensive measures of treatment acceptability administered at multiple timepoints. Qualitative studies of GM youth's perceptions of intervention- and provider-specific factors influencing treatment satisfaction might also provide a framework for enhancing EST acceptability.

Though our findings support the potential utility of tailoring ESTs for GM youth, cultural adaptations often require ample time and resources (Heim & Khort, 2019). Given the serious mental health problems GM youth disproportionately experience (Becerra-Culqui et al., 2018), access to effective and acceptable care is urgently needed (Institute of Medicine, 2011; Pachankis, 2018). Accordingly, we believe that large-scale efforts to enhance therapists'

competencies in gender-affirming care should be the next step in reducing these inequities.

Indeed, GM youth have identified therapists' lack of training as a key barrier to care (Gridley et al., 2016), and emerging provider-training interventions have been shown to improve therapists' knowledge about and attitudes toward GM clients (Lelutiu-Weinberger & Pachankis, 2017). As such, we argue that scalable provider-training interventions should be tailored to address concerns specific to GM youth, and then tested and disseminated widely.

Conclusions

Our findings suggest that GM youth report relatively high symptom severity before treatment, but that they may partially benefit from existing ESTs. To confirm and build on these findings, future researchers should routinely collect gender identity data when conducting RCTs of ESTs. If GM youth continue to demonstrate slower and less reliable treatment response on some outcomes, exhibit clinically elevated symptomatology following treatment, or report relatively low treatment satisfaction, adaptations to ESTs and systematic efforts to train therapists in gender-affirming care might ameliorate these concerns, potentially increasing treatment benefits.

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Table 1*Demographic Characteristics and Pretreatment Symptomatology by GM Classification*

Pretreatment characteristics	CG youth (<i>n</i> = 368)	GM youth (<i>n</i> = 64)	<i>t</i> / χ^2 (<i>df</i>)	ES 95% CI
Age	<i>M</i> (<i>SD</i>) = 10.6(2.2)	<i>M</i> (<i>SD</i>) = 10.7(2.3)	<i>t</i> (430) = .28	
Birth-assigned sex			χ^2 (1) = .43	
Female	44.0% (<i>n</i> = 162)	48.4% (<i>n</i> = 31)		
Male	56.0% (<i>n</i> = 206)	51.6% (<i>n</i> = 33)		
Race/ethnicity			χ^2 (5) = .72	
White	55.7% (<i>n</i> = 205)	51.6% (<i>n</i> = 33)		
Black	14.4% (<i>n</i> = 53)	15.6% (<i>n</i> = 10)		
Latinx	11.7% (<i>n</i> = 43)	10.9% (<i>n</i> = 7)		
Asian	1.1% (<i>n</i> = 4)	1.6% (<i>n</i> = 1)		
Multiracial	15.5% (<i>n</i> = 57)	18.7% (<i>n</i> = 12)		
Other	1.6% (<i>n</i> = 6)	1.6% (<i>n</i> = 1)		
Primary problem			χ^2 (3) = 4.50	
Anxiety	22.3% (<i>n</i> = 82)	26.5% (<i>n</i> = 17)		
Depression	34.8% (<i>n</i> = 128)	21.9% (<i>n</i> = 14)		
Conduct	39.1% (<i>n</i> = 144)	45.3% (<i>n</i> = 29)		
Trauma	3.8% (<i>n</i> = 14)	6.3% (<i>n</i> = 4)		
YSR				
Internalizing	<i>M</i> (<i>SD</i>) = 56.1(10.8)	<i>M</i> (<i>SD</i>) = 62.5(9.3)	<i>t</i> (430) = -4.43***	.64 [-9.20, -3.55]
Externalizing	<i>M</i> (<i>SD</i>) = 52.1(10.8)	<i>M</i> (<i>SD</i>) = 56.9(10.1)	<i>t</i> (430) = -3.34***	.46 [-7.69, -1.99]
CBCL				
Internalizing	<i>M</i> (<i>SD</i>) = 66.4(8.2)	<i>M</i> (<i>SD</i>) = 63.6(10.5)	<i>t</i> (77.1) = 2.07*	.30 [0.11, 5.60]
Externalizing	<i>M</i> (<i>SD</i>) = 64.8(9.4)	<i>M</i> (<i>SD</i>) = 62.0(10.1)	<i>t</i> (430) = 2.14*	.29 [0.23, 5.28]

Note. At pretreatment, youth-reported problems were significantly higher for GM youth, whereas caregiver-reported problems were higher for CG youth. Effect sizes are reported as Cohen's *d*.

p* < .05. **p* < .001.

Table 2*Trajectories of Change in Youth- and Caregiver-Reported Problems*

	Youth Self-Report (YSR)					Child Behavior Checklist (CBCL)				
	CG v. GM youth					CG v. GM youth				
Problems scale	Estimates	SE	ES	95% CI		Estimates	SE	ES	95% CI	
Internalizing	-4.68 v. -4.71	.61	.01	[-1.22, 1.17]		-4.17 v. -3.25	.49	.32	[-0.05, 1.89]	
Externalizing	-2.61 v. -2.75	.51	.07	[-1.13, .87]		-3.03 v. -2.02*	.47	.40	[0.09, 1.93]	

Note. GM youth showed slower improvement in caregiver-reported externalizing problems relative to CG youth ($p = .03$). Effect sizes were calculated by dividing the difference in rates of change between groups by the square root of the overall time slope variance (Weisz et al., 2012).

* $p < .05$.

Figure 1*Change in Caregiver-Reported Problems* *Change in Youth-Reported Problems*

Note. GM youth's caregiver-reported externalizing problems improved more slowly than those of CG youth ($p = .03$). Ln (Time) represents ln (months since baseline + 1).

* $p < .05$.

Appendix

Data Transparency Narrative

Data analyzed in the present study were collected across four previously completed randomized controlled trials (RCTs) of a modular empirically-supported treatment (EST). Primary results of these RCTs have been published in five prior manuscripts. MS 1 examined the effectiveness of this modular EST in comparison to standard ESTs and usual care on weekly nomothetic and idiographic measures of youth- and caregiver-reported mental health problems. MS 2 evaluated long-term outcomes from this RCT using comprehensive quarterly measures of youth- and caregiver-reported internalizing and externalizing symptomatology. MS 3 reported findings from a subsequent RCT comparing this modular EST to usual care via the aforementioned weekly and quarterly measures. Finally, MS 4 and MS 5 described results from two separate RCTs of this modular EST—when delivered by therapists receiving varying levels of supervision and consultation, respectively—on these same measures. The present study similarly assessed treatment effectiveness on comprehensive measures of youth- and caregiver-reported internalizing and externalizing symptomatology. However, it was novel in its (a) use of a proxy indicator of gender identity to classify cisgender and gender minority youth and (b) examination of treatment effects and acceptability for these groups.