Effect of a Brief Social Contact Video on Transphobia and Depression-Related Stigma Among Adolescents
A Randomized Clinical Trial

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Abstract

IMPORTANCE Transphobia and stigma remain barriers to seeking mental health care for gender-diverse adolescents.

OBJECTIVE To examine the utility of brief social contact–based video interventions of transgender protagonists with depression to reduce transphobia and depression-related stigma and increase treatment-seeking intentions among adolescents in the general population.

DESIGN, SETTING, AND PARTICIPANTS During August 2021, a total of 1437 participants were recruited and randomly assigned to 1 of 4 video-based conditions in a 2:2:1:1 ratio: (1) transgender adolescent girls, (2) transgender adolescent boys, (3) cisgender adolescent girls, or (4) cisgender adolescent boys.

INTERVENTIONS In each of the approximately 110-second videos, an empowered presenter shared their personal story about coping with depression and reaching out for help.

MAIN OUTCOMES AND MEASURES The primary outcome was the score on the Attitudes Toward Transgender Men and Women (ATTMW) scale. Secondary outcomes were (1) a “gender thermometer” rating for warmth in transgender perception, (2) the Depression Stigma Scale (DSS) score, and (3) the General Health-Seeking Questionnaire (GHSQ) score.

RESULTS Of the 1437 randomized participants, 1098 (76%) completed the postintervention assessment and passed all the validity tests (mean [SD] age, 16.9 [1.2] years; 481 [44%] male; 640 [58%] White). A significant change in attitudes toward transgender youth was found within the intervention group only (mean [SD] ATTMW scores: intervention group, 34.6 [23.1] at baseline to 32.8 [24.2] after intervention; \( P < .001 \); control group, 33.5 [23.4] at baseline to 32.4 [24.1] after intervention; \( P = .01 \)). The mean (SD) total DSS scores decreased significantly across study groups (intervention: 1.3 [3.3]; control: 1.7 [3.3]; \( P < .001 \)). A significant increase in intention to seek help from a parent was found in the intervention (mean [SD] GHSQ score, 0.2 [1.1]) and control (mean [SD] GHSQ score, 0.3 [1.2]) groups (\( P < .001 \)), as was a decrease in those not wanting to seek help from anyone (mean [SD] GHSQ score: intervention, 0.2 [1.6], \( P = .009 \); control, 0.3 [1.2], \( P < .001 \))

Secondary analyses revealed significant differences in baseline ATTMW scores and intervention effects between transgender and gender-diverse and cisgender participants and between lesbian, gay, bisexual, or queer (LGBQ) and straight participants (F = 36.7, \( P < .001 \)) and heterosexual participants (F = 37.0, \( P < .001 \)). A significant difference was also found in mean (SD) transgender warmth scores from baseline to after intervention between groups (2.6° [8.3°] in the intervention group vs 0.4° [8.3°] in the control group; \( P < .001 \)).

(continued)
Abstract (continued)

CONCLUSIONS AND RELEVANCE In this randomized clinical trial, brief social contact–based videos proved efficacious in reducing transphobia and depression-related stigma and in increasing treatment-seeking intentions among adolescents in the general population. By personifying, individualizing, and providing face and voice to the experience of transgender youth, other adolescents, especially those who are cisgender and/or of a heterosexual orientation, can gain empathetic insights into the lives of their often marginalized and stigmatized fellow youth.

TRIAL REGISTRATION ClinicalTrials.gov Identifier: NCT04969003


Introduction

Transgender and gender-diverse (TGD) youth are disproportionately affected by depression, anxiety, and suicidal ideation when compared with their cisgender peers.1-5 Although gender diversity by itself is not pathological and does not require mental health treatment, mental health issues can be secondary to gender dysphoria, and TGD youth may benefit from mental health treatment and gender-affirming medical care. The prevalence of suicidal ideation among TGD youth has been reported to be almost two-thirds in some studies,6-9 with an alarming 41% suicide attempt rate. Data indicate that the proportion of youth who openly self-identify as TGD has increased substantially over the years.10,11 The most recent Centers for Disease Control and Prevention Youth Risk Behavior Survey12 reported that 1.8% of high school youth identify as transgender, and recent studies13-15 among 3441 young people have found that 90 (3%) identified as gender nonbinary.

The stigma surrounding mental illness acts as a barrier to young people seeking care, such that reducing stigmatized perceptions among young people could enhance their likelihood to seek help or treatment.16-21 It is well known that transphobia, a form of stigma against TGD youth, may lead to social discrimination, minority stress, and internalized self-hate, creating risk factors for mental illness in this population.22 For example, transgender high school students report significantly higher rates of victimization and harassment than their cisgender peers and are more likely to feel unsafe.23 Considered through the minority stress model, transgender youth struggle with distal factors, such as discrimination, and proximal ones, such as concealment and internalized transphobia.24 Moreover, recent changes in legislation, such as bills that target gender-affirming medical care or place restrictions on bathrooms or sports for transgender youth, are increasing.25,26 Thus, TGD youth struggling with depression often face the dual stigma of marginalized gender identity and mental illness.

Social contact–based interventions are the most successful way to reduce stigma.27 Video-based social contact interventions have effectively improved attitudes toward mental illness and reduced stigma and discrimination.28,29 A previous study30 among 1183 adolescents demonstrated the efficacy of brief videos (102-113 seconds each) in decreasing depression-related stigma and increasing participants’ reported willingness to seek mental health care. Brevity has advantages, including lower cost, less resource use, and greater ease of dissemination to large audiences. Shorter videos are also better suited to younger audiences. Social contact with TGD individuals has been shown to improve attitudes and reduce transphobia, but no study to date has examined the efficacy of a brief video intervention in changing the perceptions of general-population youth toward TGD people.30-34

With these considerations in mind, we conducted a randomized clinical trial of adolescents in the general population to test the utility of a brief video-based intervention of transgender adolescent protagonists in order to reduce transgender-related stigma (transphobia) and depression-related stigma and increase treatment-seeking intentions. We hypothesized that when compared with the control condition of cisgender protagonists describing their depression and
pathways to care, the transgender protagonist interventions would result in greater reduction in transphobia and similar changes in depression-related stigma and treatment-seeking intentions.

Methods

Participants and Recruitment
We recruited 1437 evaluable participants using CloudResearch,35 a crowdsourcing platform widely used in behavioral research and with extensive experience in recruiting underrepresented groups, including minors. We included only English-speaking youth, 14 to 18 years of age, living in the US. We focused on this age range because it overlaps with the median age of onset of major depressive disorder and/or suicidal ideation. All participants reviewed an informed assent page and provided written informed consent (parental consent was waived). Participants were recruited and completed the study during August 2021. All data were deidentified. This randomized clinical trial was approved by the Yale Human Investigations Committee and followed the Consolidated Standards of Reporting Trials (CONSORT) reporting guideline. The trial protocol is available in Supplement 1.

We randomly assigned participants to 1 of 4 video conditions on a 2:2:1:1 ratio (transgender girl, transgender boy, cisgender girl, and cisgender boy) (Figure 1). For participants who self-identified as transgender or gender nonbinary (n = 131), we constrained randomization to the transgender girl or transgender boy conditions. There are 2 explanations for this decision. First, an earlier study15 showed a significant effect for the intervention groups in reducing depression-related stigma and increasing treatment-seeking intent, especially among viewers who shared demographic characteristics with the protagonist. Considering the relatively high level of depression and suicidality among TGD adolescents, randomizing those teens to 1 of the intervention groups seemed clinically justified for this high-risk population. Second, based on the previous findings15 that greater identification with the video presenter correlates with greater effect, we were interested in examining whether a transgender person watching someone who identifies similarly would show a greater decrease in stigma and increase in treatment seeking. We would not anticipate a change in transphobia among TGD adolescents exposed to cisgender protagonists. Assuming a low number of participants who would identify as TGD, we only assigned those individuals into 1 of 2 intervention groups.

We used several accepted methods to exclude invalid participants to ensure the quality of the collected data, as described in a previous study.15 In addition, we used 3 questions to exclude inattentive or disengaged participants, each phrased in a consistent way and requiring a single, forced answer (eg, "Please mark the third option below"). Volunteers were compensated $3.50 for their participation. We directed respondents who agreed to participate to an online data collection platform (Qualtrics).
Intervention
We used 2 brief intervention videos (114-118 seconds each), excerpted from filmed interviews with two 17-year-old transgender adolescents, 1 female (“Monica”) and 1 male (“Parker”). One of us (J.C.), a transgender woman with experience working with gender-fluid youth, helped develop the scripts and supported the actors during the rehearsal and filming sessions. These scripts aimed to reflect some of the objective realities of being transgender in a way that was true to life, while avoiding exaggeration that could further entrench gender stereotypes. For example, the youth described their difficulties of “living in the wrong body” and feeling “trapped and [as if] there was no way out.” They also explained that because of these sentiments their depression worsened and led to thoughts that life is not worth living and even of dying by suicide. Later, they discussed how sharing these intimate feelings with family and friends and subsequently receiving professional help changed their lives for the better. The control videos (102-113 seconds each), the same ones used in the previous study,15 included 2 young cisgender adolescent protagonists, 1 a female (“Ali”) and 1 a male (“Danny”), who described how they had coped with depressive symptoms and ultimately recovered through the help and support they received. The 4 video clips are available for viewing through links in eAppendix 1 in Supplement 2.

Instruments
The primary outcome was the Attitudes Toward Transgender Men and Women (ATTMW) scale, a measure of transphobic attitudes toward transgender individuals.36 We adjusted the wording of the scale to assess the attitudes toward transgender adolescents and combined the female and male subscales into a single, overarching summary scale. The scale is scored along a 7-point Likert-type range that goes from strongly disagree (score of 1) to strongly agree (score of 7). Higher scores indicate greater transphobia. The ATTMW is highly reliable and has a Cronbach α of 0.97.36

Secondary outcome measures included a “gender thermometer,”37 a tool developed to assess attitudes regarding sexual orientation and gender diversity, to gauge participants’ attitudes around gender diversity. The thermometer provides the following prompt: “Using a scale from 0 to 100, please tell us about your personal feelings toward each of the following groups of friends, teachers, or colleagues. As you do this task, think of an imaginary thermometer. The warmer or more favorable you feel toward the group, the higher the number you should give it. The colder or less favorable you feel, the lower the number. If you feel neither warm nor cold toward the group, rate it 50.” We asked respondents about their attitudes toward (1) heterosexual; (2) lesbian, gay, bisexual, and queer (LGBQ); and (3) transgender people. Higher ratings indicate warmer, closer, more favorable feelings toward the group in question, whereas lower ratings indicate colder, more distant, or negative feelings. As in the previous study,15 we assessed stigma toward depression using the Depression Stigma Scale (DSS)38 and treatment-seeking intentions using the General Help-Seeking Questionnaire (GHSQ).39

Statistical Analysis
We used Pearson χ² and 1-way analysis of variance (ANOVA) to compare demographic variables across groups. We used paired 2-tailed t tests to compare ATTMW and “temperature” mean scores at baseline and after intervention. We also used 1-way ANOVA to compare baseline differences in outcome measures across gender and sexual orientation subgroups. We then used paired t tests to compare changes between the baseline and postintervention periods across study groups. For all t tests, we used the Bonferroni correction, considering as significant only those results with P < .001. We conducted all statistical analyses using SPSS software, version 26.0 (IBM Inc).
Results

Sample Characteristics
We recruited and proportionally randomized 1437 participants, of whom 1098 (76%) completed the postintervention assessment and passed all the validity tests (mean [SD] age, 16.9 [1.2] years; 473 [43%] female; 481 [44%] male; 131 [12%] transgender or nonbinary; 183 [17%] African American or Black; 89 [8%] Asian; 261 [24%] Hispanic or Latinx; 28 [3%] American Indian or Alaska Native; 640 [58%] White; and 158 [14%] of other race or ethnicity, including 2 Middle Eastern, 126 unspecified, and 30 who preferred not to answer) (Figure 1). Demographic characteristics did not differ between those who completed the study and those who dropped out (n = 339). Study groups did not differ by gender, age, race, or ethnicity, but LGBQ participants were underrepresented in the control groups because TGD participants were preferentially randomized to the intervention groups (Table 1).

Attitudes Toward Transgender Men and Women
Although we found no between-group difference before and after the intervention (mean [SD] ATTMW scores of 1.8 [7.5] in the intervention group vs 1.1 [8.5] in the control group; independent t = 1.1, df = 879, P = .25), a difference was found within the intervention group only vs the control group (34.6 [23.1] at baseline to 32.8 [24.2] at after intervention [paired t = 5.3, P < .001] vs 33.5 [23.4] at baseline to 32.4 [24.1] after intervention [paired t = 2.6, P = .01]). The intervention group had significant reductions in 6 of 12 ATTMW items, and the control group in only 1 (Table 2). We found relatively low baseline mean (SD) ATTMW scores for TGD people (14.5 [5.9]) (ie, low stigmatization). One-way ANOVA showed a significant difference between mean (SD) baseline scores for boys (28.5 [27.4]), girls (17.9 [21.0]), and TGD adolescents (12.9 [7.2]; F = 36.7, P < .001).

Table 1. Demographic Characteristics of Study Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Intervention (transgender protagonist)</th>
<th>Control (cisgender protagonist)</th>
<th>Total (N = 1098)</th>
<th>Statistic</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female (n = 393)</td>
<td>Male (n = 391)</td>
<td>Female (n = 148)</td>
<td>Male (n = 166)</td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD), y</td>
<td>16.9 (1.1)</td>
<td>16.8 (1.2)</td>
<td>17.1 (1.1)</td>
<td>16.8 (1.2)</td>
<td>16.9 (1.2)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>163 (42)</td>
<td>154 (39)</td>
<td>70 (47)</td>
<td>86 (52)</td>
<td>473 (43)</td>
</tr>
<tr>
<td>Male</td>
<td>155 (39)</td>
<td>168 (43)</td>
<td>78 (53)</td>
<td>80 (48)</td>
<td>481 (44)</td>
</tr>
<tr>
<td>Nonbinary</td>
<td>45 (12)</td>
<td>46 (12)</td>
<td>NA</td>
<td>NA</td>
<td>91 (8)</td>
</tr>
<tr>
<td>Transgender</td>
<td>27 (7)</td>
<td>13 (3)</td>
<td>NA</td>
<td>NA</td>
<td>40 (4)</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>3 (1)</td>
<td>10 (3)</td>
<td>NA</td>
<td>NA</td>
<td>13 (1)</td>
</tr>
<tr>
<td>Sexual orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>222 (57)</td>
<td>219 (56)</td>
<td>107 (72)</td>
<td>114 (69)</td>
<td>662 (60)</td>
</tr>
<tr>
<td>LGBQ</td>
<td>135 (34)</td>
<td>119 (30)</td>
<td>33 (22)</td>
<td>36 (22)</td>
<td>323 (29)</td>
</tr>
<tr>
<td>I am not sure</td>
<td>30 (8)</td>
<td>38 (10)</td>
<td>7 (5)</td>
<td>12 (7)</td>
<td>87 (8)</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>6 (2)</td>
<td>15 (4)</td>
<td>1 (1)</td>
<td>4 (2)</td>
<td>26 (2)</td>
</tr>
<tr>
<td>Race and ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American or Black</td>
<td>61 (16)</td>
<td>75 (19)</td>
<td>18 (12)</td>
<td>29 (18)</td>
<td>183 (17)</td>
</tr>
<tr>
<td>Asian</td>
<td>37 (9)</td>
<td>28 (7)</td>
<td>14 (10)</td>
<td>10 (6)</td>
<td>89 (8)</td>
</tr>
<tr>
<td>Hispanic or Latinx</td>
<td>96 (24)</td>
<td>87 (22)</td>
<td>38 (26)</td>
<td>40 (22)</td>
<td>261 (24)</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>6 (2)</td>
<td>11 (3)</td>
<td>5 (3)</td>
<td>6 (4)</td>
<td>28 (3)</td>
</tr>
<tr>
<td>White</td>
<td>227 (58)</td>
<td>229 (59)</td>
<td>85 (57)</td>
<td>99 (60)</td>
<td>640 (58)</td>
</tr>
<tr>
<td>Other&lt;sup&gt;d&lt;/sup&gt;</td>
<td>62 (16)</td>
<td>48 (12)</td>
<td>26 (18)</td>
<td>22 (13)</td>
<td>158 (14)</td>
</tr>
</tbody>
</table>

Abbreviations: LGBQ, lesbian, gay, bisexual, or queer; NA, not applicable.

<sup>a</sup> Data are presented as number (percentage) of study participants unless otherwise indicated.

<sup>b</sup> One-way analysis of variance.

<sup>c</sup> Pearson χ² test.

<sup>d</sup> Other includes 126 with unspecified race, 30 who preferred not to answer, and 2 of Middle Eastern race.
One-way ANOVA also showed a differential baseline pattern between heterosexual (27.9 [27.3]) and LGBQ adolescents (12.4 [11.9]; F = 37.0, P < .001).

Independent t tests showed a significant difference between the changes in “gender temperature” mean (SD) scores from baseline to after intervention in the intervention vs control groups (2.6° [13.1°] vs 0.4° [8.3°]; t = 3.2, P < .001). Paired t tests showed a significant difference in the intervention groups only (70.5° [32.3°] at baseline to 73.0° [32.0°] after intervention, P = .91, Cohen d = 0.20 in the intervention group vs 69.3° [32.8°] at baseline to 69.8° [32.4°] after intervention, P = .36, in the control group). One-way ANOVA showed a significant difference between mean (SD) baseline “gender temperature” ratings between boys (54.6° [34.7°]), girls (78.4° [26.9°]), and TGD adolescents (91.0° [15.5°]; F = 92.4, P < .001) (Figure 2A). One-way ANOVA also showed a differential response pattern in baseline “gender temperature” ratings between heterosexual (58.6° [34.8°]) and LGBQ (87.3° [19.0°]; F = 57.4, P < .001) participants (Figure 2B). Independent t tests showed a significant difference in the change from baseline to after intervention between the heterosexual (3.7° [16.4°]) and LGBQ (1.2° [5.9°]; F = 36.4, P < .001, Cohen d = 0.19).

Table 2. Comparison Between Video Intervention and Control Group Scores on the Attitudes Toward Transgender Men and Women Scale (ATTMW) Among Cisgender Participants

<table>
<thead>
<tr>
<th>Attitude toward transgender adolescents</th>
<th>Intervention (transgender protagonist) (n = 640)</th>
<th>Control (cisgender protagonist) (n = 314)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>Baseline Post t P value</td>
<td>Baseline Post t P value</td>
</tr>
<tr>
<td>1. Will never really be women/men</td>
<td>3.0 (2.1) 2.8 (2.1) 3.1 &lt;.001</td>
<td>3.0 (2.2) 2.9 (2.1) 1.3 .18</td>
</tr>
<tr>
<td>2. Are not really females/male</td>
<td>3.0 (2.1) 2.9 (2.2) 2.6 .011</td>
<td>2.9 (2.1) 2.9 (2.1) 0.4 .68</td>
</tr>
<tr>
<td>3. Will only be able to look like women/men, but not like women/men</td>
<td>3.0 (2.1) 2.8 (2.1) 3.2 &lt;.001</td>
<td>3.0 (2.1) 3.0 (2.1) 0.8 .40</td>
</tr>
<tr>
<td>4. Are unable to accept who they really are</td>
<td>3.0 (2.1) 2.9 (2.1) 1.8 .07</td>
<td>3.0 (2.1) 2.9 (2.0) 2.2 .03</td>
</tr>
<tr>
<td>5. Are trying to be someone they're not</td>
<td>2.9 (2.1) 2.8 (2.1) 2.2 .03</td>
<td>2.9 (2.2) 2.9 (2.1) 0.1 .91</td>
</tr>
<tr>
<td>6. Are denying their DNA</td>
<td>3.3 (2.2) 3.1 (2.2) 2.9 .003</td>
<td>3.3 (2.2) 3.1 (2.2) 2.9 .004</td>
</tr>
<tr>
<td>7. Cannot just “identify” as females/male</td>
<td>3.0 (2.1) 2.9 (2.1) 2.3 .019</td>
<td>3.1 (2.2) 2.9 (2.1) 2.9 .005</td>
</tr>
<tr>
<td>8. Are unnatural</td>
<td>3.1 (2.2) 2.9 (2.1) 3.1 &lt;.001</td>
<td>2.9 (2.1) 2.9 (2.1) 0.1 .91</td>
</tr>
<tr>
<td>9. Don't really understand what it means to be a female/male</td>
<td>3.0 (2.0) 3.0 (2.1) 0.1 .97</td>
<td>2.9 (2.0) 2.9 (2.1) 0.6 .50</td>
</tr>
<tr>
<td>10. Only think they are females/male</td>
<td>3.3 (2.0) 3.0 (2.1) 4.8 &lt;.001</td>
<td>3.1 (1.9) 3.0 (2.0) 2.4 .02</td>
</tr>
<tr>
<td>11. Are defyng nature</td>
<td>3.2 (2.1) 3.0 (2.1) 3.8 &lt;.001</td>
<td>3.1 (2.0) 3.0 (2.0) 1.6 .11</td>
</tr>
<tr>
<td>12. There is something unique about being a woman/man that transgender adolescents can never experience</td>
<td>3.7 (2.1) 3.3 (2.1) 6.9 &lt;.001</td>
<td>3.5 (2.1) 3.3 (2.1) 3.4 &lt;.001</td>
</tr>
<tr>
<td>Total scores</td>
<td>37.3 (21.8) 35.4 (23.3) 5.3 &lt;.001</td>
<td>36.7 (22.0) 35.5 (23.0) 2.6 .01</td>
</tr>
</tbody>
</table>

a Item ratings ranged from 1 (strongly disagree) to 7 (strongly agree) on a Likert-type scale, with higher scores indicating higher stigma. Cohen d effect sizes ranged from 0.13 to 0.27.
b Paired t test.

Figure 2. Comparison of Baseline and Postintervention Scores on Personal Feelings Toward Transgender People After Social-Contact Video Intervention

A higher score indicates improvement in stigmatizing attitudes and warmer feeling toward transgender people. Error bars indicate standard error of the mean. The Cohen d effect sizes ranged from 0.22 to 0.25. LGBQ indicates lesbian, gay, bisexual, and queer; TGD, transgender and gender diverse.
Depression Stigma Scale

As hypothesized, all study groups demonstrated a significant change between preintervention and postintervention DSS scores, and univariate ANOVA showed no between-group differences. Table 3 presents the 9 DSS item mean scores and compares baseline and postintervention ratings between the intervention (n = 784) and control (n = 314) groups. The mean (SD) DSS total scores decreased significantly across study groups (intervention: 1.3 [3.3]; control: 1.7 [3.3]; paired t = 9.4, P < .001; Cohen d = 0.38). We found significant reductions in the same 4 (of 9) items across study groups: weak (1.8 [1.1] to 1.7 [1.1], t = 3.7, P < .001 in the intervention group vs 1.9 [1.2] to 1.7 [1.1], t = 4.7, P < .001 in the control group), dangerous (2.2 [1.1] to 1.9 [1.1], t = 6.9, P < .001 in the intervention group to 2.3 [1.1] to 1.9 [1.1], t = 7.6, P < .001 in the control group), unpredictable (2.9 [1.2] vs 2.6 [1.2], t = 8.8, P < .001 in the intervention group vs 2.9 [1.1] to 2.5 [1.2], t = 6.7, P < .001 in the control group), and wouldn’t tell (3.0 [1.3] to 2.5 [1.3], t = 9.4, P < .001 in the intervention group vs 3.0 [1.3] to 2.5 [1.3], t = 7.4, P < .001 in the control group).

General Help-Seeking Questionnaire

We found a significant increase in intention to seek help from a parent in the intervention (mean [SD] GHSQ score, 0.2 [1.1]) and control (mean [SD] GHSQ score, 0.3 [1.2]) groups (paired t = 3.5, P < .001) and a decrease in those not wanting to seek help from anyone (mean [SD] GHSQ score, 0.2 [1.6], t = 2.6, P = .009 in the invention group vs 0.3 [1.2], t = 3.9, P < .001 in the control group) (eAppendix 2 in Supplement 2).

Discussion

In this randomized clinical trial, we tested the efficacy of 2 brief social contact–based video interventions that featured 2 transgender adolescents aiming to reduce transphobia and depression-related stigma and to increase treatment-seeking intentions among 1098 adolescents in the general population. As hypothesized, these approximately 110-second videos had a significantly greater effect on lowering transphobia compared with 2 comparable videos that featured cisgender adolescents and a similar effect in changing depression-related stigma and treatment-seeking intentions. The latter finding is a replication of a previous study15 among 1183 adolescents. Each of the 4 videos provided direct and personal exposure to the struggles and difficulties of a transgender or cisgender protagonist, who presented as a potential peer. Consistent with previous studies13-15

<table>
<thead>
<tr>
<th>Attitude toward depression</th>
<th>Intervention (transgender protagonist) (n = 784)</th>
<th>Control (cisgender protagonist) (n = 314)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td></td>
<td>Baseline</td>
<td>Post</td>
</tr>
<tr>
<td>1. People with depression could snap out of it if they wanted</td>
<td>1.7 (1.1)</td>
<td>1.7 (1.1)</td>
</tr>
<tr>
<td>2. Depression is a sign of personal weakness</td>
<td>1.8 (1.1)</td>
<td>1.7 (1.1)</td>
</tr>
<tr>
<td>3. Depression is not a real medical illness</td>
<td>1.4 (0.9)</td>
<td>1.4 (0.8)</td>
</tr>
<tr>
<td>4. People with depression are dangerous</td>
<td>2.2 (1.1)</td>
<td>1.9 (1.1)</td>
</tr>
<tr>
<td>5. It is best to avoid people with depression, so you don’t become depressed yourself</td>
<td>1.6 (0.9)</td>
<td>1.5 (0.9)</td>
</tr>
<tr>
<td>6. People with depression are unpredictable</td>
<td>2.9 (1.2)</td>
<td>2.6 (1.2)</td>
</tr>
<tr>
<td>7. If I had depression, I would not tell anyone</td>
<td>3.0 (1.3)</td>
<td>2.6 (1.3)</td>
</tr>
<tr>
<td>8. I would not employ someone if I knew they had been depressed</td>
<td>1.6 (1.0)</td>
<td>1.5 (0.9)</td>
</tr>
<tr>
<td>9. I would not vote for a politician if I knew they had been depressed</td>
<td>1.7 (1.0)</td>
<td>1.7 (1.0)</td>
</tr>
<tr>
<td>Total scores</td>
<td>17.8 (5.5)</td>
<td>16.5 (6.2)</td>
</tr>
</tbody>
</table>

a Item ratings ranged from 1 (strongly disagree) to 5 (strongly agree) on a Likert-type scale, with higher scores indicating higher stigma. Cohen d effect sizes ranged from 0.13 to 0.53.
b Paired t test.
conducted among young adults, this randomized clinical trial showed the effectiveness of a brief contact-based video intervention in changing stigmatized perceptions and attitudes among adolescents in the general population. Our data show the effect of an empowered presenter with personal lived experience, seen as a potential peer, and with emotional characteristics that resonate with the audience. Their brief video depictions disconfirmed stereotypes by balancing difficulties with messages of hope.40

A previous study41 of interventions to reduce transphobia have a variety of contexts, as specifically designed to create changes at the structural, interpersonal, or individual levels. Existing studies on social contact-based interventions are scarce42 and have included transgender speaker panels,22 game-based interventions,43 and film-based interventions to improve parents’ responses to their LGBTQ children.44 Brief social contact interventions may better suit younger audiences who are used to consuming knowledge through social media platforms (for example, Instagram and TikTok limit the length of uploaded videos to 1 minute). In addition, we can anticipate the scalability and replicability of the brief video intervention approach given low production costs and ease of adjusting underlying scripts, target populations, and specific goals.

Our findings regarding baseline differences across gender and sexual orientation in attitudes toward transgender youth are consistent with previous studies.32,45-47 However, in secondary, post hoc analyses, we found that the intervention had the greatest effect among male and/or heterosexual adolescents and the smallest effect among participants who self-identified as TGD and/or LGBQ. This finding contradicts previous data,13,48 which showed a positive correlation between the intervention effect and the level of identification with the video protagonist. One possible explanation for this unexpected finding lies within the differences at baseline: men and/or heterosexual participants had a higher rate of stigma at baseline, and TGD and/or LGBQ participants had more favorable attitudes, introducing a possible ceiling effect that limited further improvement.

Taken together, these findings have several implications. The first and more clinically relevant is that short videos hold promise as interventions that can have a substantial public health effect. The findings from this report corroborate those from our earlier studies:13-15 Brief social-based video intervention reduces depression-related stigma and increases treatment-seeking intentions. The second implication is regarding the interventions specifically tailored to transgender youth. By personifying, individualizing, and providing face and voice to the experience of transgender youth, other adolescents, especially those of cisgender and/or heterosexual orientation groups, can gain empathetic insights into the lives of their often marginalized and stigmatized peers.49,50 Third, these interventions can be used for educational purposes in general, specifically in training health care professionals. A previous study51 has shown that didactic information is insufficient to improve medical students’ perspectives toward transgender people.

Limitations
Our study has several limitations. First, results on the ATTMW, our primary outcome measure, were equivocal, with strong within-group findings (intervention greater than control) but no between-group difference (intervention equal to control). “Gender temperature” ratings, measuring a similar construct, were significant both within and between groups. This unexpected finding may be due to possible confounding between depressive symptoms and protagonists’ descriptions of their earlier gender dysphoria. Future studies would benefit from disambiguating these 2 factors because they each have a strong emotional pull on participants and may have obscured findings. Second, findings may be limited to CloudResearch participants, who may not be fully representative of the general population. Fifty-eight percent of participants described their race as White, 14% as African American, and 8% as Asian, and 24% reported Hispanic ethnicity, slightly diverging from the US population’s distribution. Third, we did not use standard criterion to collect gender identity. Current guidelines suggest the 2-step method, in which the first question addresses the participant’s sex assigned at birth and the second their gender identity. Fourth, by randomly assigning transgender or nonbinary individuals to only 2 of the 4 intervention videos, we may have obscured response
patterns unique to this sizable fraction of our sample (12%). Fifth, our study included only 2 time points and did not evaluate longer-term effects. However, we are not aware of any such studies with underage participants. Sixth, we only assessed attitudes, the reporting of which is subject to social desirability and may not be indicative of actual behavior. However, a meta-analysis of the experimental evidence available by 2006 showed that change in attitudes does in fact lead to behavioral change.

Conclusions

In this randomized clinical trial, a brief contact-based video intervention effectively reduced reported attitudes of transphobia, particularly among cisgender and/or heterosexual youth. It also reduced depression-related stigma and increased treatment-seeking intentions among adolescents in the general population. This simple, easy-to-disseminate online intervention may have the added potential of improving access to treatment specifically among TGD adolescents with depression or suicidal thoughts. Future studies should explore whether and how to tailor brief contact-based interventions to specific populations and to emerging online platforms for content dissemination.

ARTICLE INFORMATION

Accepted for Publication: December 23, 2021.

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Author Contributions: Drs Amsalem and Martin had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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Obtained funding: Martin.
Administrative, technical, or material support: All authors.
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Conflict of Interest Disclosures: Mr Halloran reported receiving grants from Yale School of Medicine Medical Student Research Fellowship outside the submitted work. No other disclosures were reported.

Funding/Support: This study was supported by the Riva Ariella Ritvo Endowment at the Yale School of Medicine and by grant R25 MH077823 (Research Education for Future Physician-Scientists in Child Psychiatry) from the National Institute of Mental Health.

Role of the Funder/Sponsor: The funding sources had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Data Sharing Statement: See Supplement 3.
Additional Contributions: We thank the 4 adolescents who participated in the videos and contributed to stigma reduction and treatment-seeking among youth.

REFERENCES


SUPPLEMENT 1.
Trial Protocol

SUPPLEMENT 2.
eAppendix 1. Links to Four Video Conditions
eAppendix 2. Comparison Between Baseline and Postintervention Scores (n=1,009) on the General Help-Seeking Questionnaire (GHSQ)

SUPPLEMENT 3.
Data Sharing Statement