Sampling with Sisyphus: Introducing a community-driven study designed to reach hidden sexual and gender minority populations with experiences of gender detransition

Kinnon Ross MacKinnon, Naail Khan, Katherine M. Newman, Wren Ariel Gould, Gin Marshall, Travis Salway, Annie Pullen Sansfaçon, Hannah Kia, June S.H. Lam

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Kinnon Ross MacKinnon[1, 2] MSW, PhD; Naail Khan[3] MA; Katherine M. Newman[3] MA; Wren Ariel Gould[2] MSW; Gin Marshall[1] MA; Travis Salway[4] MSW, PhD; Annie Pullen Sansfaçon[5, 6] MSW, PhD; Hannah Kia[7] MSW, PhD; June S.H. Lam[8, 9] MD, PhD

[1]School of Social Work York University Toronto CA
[2]Dalla Lana School of Public Health University of Toronto Toronto CA
[3]Department of Psychology York University Toronto CA
[4]Faculty of Health Sciences Simon Fraser University Vancouver CA
[5]School of Social work University of Montreal Montreal CA
[6]University of Stellenbosch Stellenbosch ZA
[7]School of Social Work The University of British Columbia Vancouver CA
[8]Temerty Faculty of Medicine University of Toronto Toronto CA
[9]Gender Identity Clinic Centre for Addiction and Mental Health Toronto CA

Corresponding Author:
Kinnon Ross MacKinnon MSW, PhD
School of Social Work
York University
Ross South
Toronto
CA

Abstract

Background: The myth of Sisyphus teaches about adversity and resilience in the face of challenges on the path of life. Discontinuation/detransition following an initial gender transition are emerging experiences requiring of sensitive and community-driven research in North American contexts. Yet, there are significant complexities and costs that researchers must confront to collect reliable data to better understand this emerging population, including a lack of a uniform definition.

Objective: This paper presents the sampling, survey design, and recruitment methods of a new study to guide future researchers studying detransition-related phenomena. We present a novel protocol for identifying and removing bots/scam/ineligible responses from survey datasets and share preliminary descriptive socio-demographic results of the sample. This analysis does not present gender-affirming healthcare outcomes on satisfaction/regret with gender transition.

Methods: To attract a large and heterogenous sample, 3 different study flyers in English, French, and Spanish were created. Between 12/1/2023 to 4/30/2024, flyers were distributed to > 615 sexual and gender minority (SGM) serving organizations and gender care providers in the United States and Canada, and via social media advertisements totaling more than $7400 CAD. Though many social media promotions were rejected or removed, study advertisements reached over 7.7 million accounts. Study website visitors were directed from 35 different traffic sources, with the top five being Facebook (46%), direct link (29%), Reddit (13%), Instagram (6%), and X/Twitter (3%). A systematic protocol was developed to identify scam/nonsense/ineligible responses and conduct virtual screening with select participants.

Results: Out of 1,377 completed survey responses and after applying the exclusion and screening protocol, 962 (70%) were determined to be eligible and included in the analytic dataset. The mean age of the sample was 25.9 years (median age = 24). A majority of participants were racially white, living in the US (73.5%), and assigned female at birth (78.8%). Most participants reported having a sexual minority identity, with over half the sample indicating plurisexual orientations, such as bisexual, pansexual, or queer identities. Twelve percent were straight/heterosexual. When asked about gender-diverse identities after stopping/reversing their gender transition, 33.6% considered themselves nonbinary, 43.8% reported being transgender, and 41% said they were detransitioned.

Conclusions: Despite challenges encountered during study promotion and data collection phases, a heterogenous sample of nearly 1000 eligible participants was obtained, presenting opportunities for future analyses to better understand these diverse, largely SGM experiences. This study is among the first to introduce an innovative strategy to sample a hard-to-reach, politicized, and equity-deserving group that currently lacks a consistent definition. Future analyses will prioritize characterizing and better defining discontinuation/detransition to build theoretical and care provider-orientated knowledge. Clinical Trial: Not applicable

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Keywords: Transgender, Gender-Diverse, Nonbinary, Gender Dysphoria, Detransition, LGBT

Introduction

In the past several years, detransition has garnered significant attention in the mainstream media and academic literature as an emerging socio-medical phenomenon in need of further research and care provision [1–3]. Detransition is an umbrella term inclusive of stopping, shifting, or reversing the social, legal, and/or medical interventions taken for an initial gender transition [4,5].

Transgender and gender-diverse (TGD) people may stop taking gender-related hormonal treatments for a range of reasons, and it is important to recognize that detransition is discrete from—but sometimes overlaps with—temporary or permanent discontinuation of gender-related medical care. Depending on definitions and measurement decisions, studies conducted in the US, England, Australia, and the Netherlands estimate that between 1-13.1% of TGD people experience detransition at some point in their lives [4,6,7].

Researchers, gender-affirming care guidelines, external reviews of gender care (e.g. *The Cass Review*), and TGD scholars themselves have highlighted a need for research to understand long-term outcomes following gender transition, including detransition and gender identity evolution [8–11]. Yet, several challenges can hamper efforts to produce this knowledge. Topping the list includes the stigmatization and politicization of detransition, concerns that publishing negative or unexpected results about gender transition are being weaponized against TGD populations and access to gender care, and a lack of scholarly agreement about concepts—all of which contribute to limitations in studying this issue [12].

There are also opportunities to overcome these barriers by utilizing comprehensively designed and sexual and gender minority (SGM) community-led research studies. Non-probability, online sampling offers specific strengths in researching gender-diverse populations [13], and this approach to sampling is recommended to periodically explore health and social issues affecting sexual and gender minority (Two-Spirit, lesbian, gay, bisexual, transgender, and queer; 2SLGBTQ+) populations [14]. However, there are important considerations and challenges in doing online research generally—unrelated to the politicization of gender care research. For example, online research has always presented issues with fraudulent or "impostor" responses to surveys, but this activity has surged since the COVID-19 pandemic [15]. Many research projects have been affected by bots and impostor responders, often motivated by financial incentive [16,17]. Two prior studies on detransition encountered issues with fraudulent, nonsense, or "scam" respondents during the recruitment and data collection phases [18,19]. Identifying and removing bots, scam, or ineligible responses from datasets is an emerging priority for online research.

Following from these considerations, the present paper presents a novel sampling and recruitment methodology of a study designed to explore discontinuation/detransition. Its aims are four-fold: 1) to present survey design, sampling, and recruitment decisions; 2) to illustrate comprehensive study design guidance for future researchers who are studying detransition-related phenomena or other polarized topics; 3) to highlight a protocol for identifying and excluding scam/nonsense/ineligible survey responses; and 4) to present preliminary socio-demographic study results.

The Detransition Analysis, Representation, and Exploration (DARE) study was launched in December 2023 to understand socio-demographic characteristics, SGM identities, life histories, minority stressors, and gender care encounters of individuals with experience of stopping, shifting, or reversing an initial gender transition (i.e. discontinuation/detransition). This project was designed to overcome challenges in reaching a broad and heterogeneous sample of individuals who self-identify with these experiences. The study design, sampling, and study promotion decisions were all made purposefully to reach individuals connected with—or disconnected from—gender care providers, TGD and/or 2SLGBTQ+ serving organizations, and detransitioned (detrans) online networks. These decisions were anticipated to mitigate sampling bias and limitations from past research and to include hard-to-reach disparate TGD and detrans communities with the goal of building theoretical, empirical, and practice-orientated knowledge.

Exploratory theories of detransition developed from community and clinical samples

Theories proposed to understand pathways to detransition are diverse, comprising internally driven (e.g. internal change in identity and/or medical complications), systems-level (e.g. healthcare availability and access), and external (discrimination, stigma, and lack of support for TGD identities) factors. Community and clinical samples have found reasons for detransition to include: internal changes in identity such as realizing one is not binary transgender (man or woman) but nonbinary (e.g. genderfluid or genderqueer), shifting conceptualization of one's SGM identity, or a change in political or religious beliefs; physical and mental health-related factors; complications or side effects from gender-related interventions; change of medical needs or satisfaction/dissatisfaction with treatments; difficulty accessing healthcare; and/or discrimination against and lack of support for TGD identities, [4,7,19–23]. Taken together, two primary experiences seem to occur with detransition: 1) a shift in one's internal self-conceptualization of sex, gender, and/or sexual orientation identity *after* an initial gender transition; and 2) discontinuation or reversal of *prior* gender-affirming medical, legal, and/or social interventions [4,18,19,21,22,24,25].

Existing theories, though, should be taken as preliminary given issues of study design and methodological limitations. For instance, disparate conceptualizations of detransition are applied in the literature, and there are issues of sampling and selection bias and potentially unreliable data collection instruments. Notable examples include analyses of medical case-notes [20,25,26], community surveys administered to TGD populations [7], and surveys administered to online detrans communities [18,22,27].

Sampling and selection bias in clinical and community-derived samples

Prior research examining detransition has been limited by sampling strategy, often due to restrictive inclusion criteria such as re-identifying with assigned gender to be counted as a detransition, or assuming that patients lost to follow-up have not detransitioned. For instance, studying detransition with clinical data (e.g. medical case notes, recruiting from healthcare clinics) carries several noteworthy limitations. North American gender clinics rarely have the resources to conduct long-term follow-up, and some TGD people emigrate, decline partaking in research studies, or transition from pediatric to adult services, which can introduce survivorship bias in clinical samples [12]. Case series studies carry risk of excluding patients who discontinue treatment and/or detransition and disconnect from care, or avoid care providers due to feeling shame or fearing judgment—experiences identified by past research [19,23,27]. Short data collection periods in clinical samples can also hinder estimating detransition prevalence and/or understanding identity evolution that—when these outcomes do occur—often happen several years after initiating gender-affirming medical interventions [5,28]. Community-derived samples obtained via organizations and social media can collect useful data about people who are no longer attached to the same care providers or the healthcare system, and who are otherwise considered hard-to-reach due to minoritization.

One notable example is the 2015 United States Transgender Survey (USTS)—a large cross-sectional non-probability community-driven study [7]. Finding that detransition among TGD adults is largely driven by external pressures such as family and social stigma, Turban et al. (2021) analyzed a subsample of the 2015 USTS dataset—17,151 TGD adults who had ever initiated a gender transition. They found that 2,242 (13.1%) responded positively to the question "Have you ever de-transitioned? In other words, have you ever gone back to living as your sex assigned at birth, at least for a while?" The survey instrument, developed by the *National Center for Transgender Equality*, favoured external factors/pressure in its pre-determined list of reasons for detransition. Participants were shown ten reasons for detransition that included external/pressure-related reasons (e.g. "pressure from a parent," "pressure from family members") and they were shown only two reasons of non-external reasons (e.g. "I realized gender transition was not for me," "not listed above (please specify)"). Study promotion and recruitment efforts comprehensively targeted 800 TGD-

serving, 2SLGBTQ+, and allied community organizations [29]. Support groups for detransitioning people were likely non-existent at the time of data collection and were thus not involved in study promotion or recruitment. Moreover, individuals with a history of gender transition who detransitioned and no longer held a TGD identity would have been excluded per USTS inclusion criteria [29]. A majority of respondents were TGD adults aged 25 and older (65.5%) and transfeminine, assigned male at birth (AMAB) (55%).

Likewise, cross-sectional community surveys administered to online detrans networks present limitations in sampling and study-related decisions that prioritize detransitioned individuals who stopped identifying as TGD or disconnected from TGD communities. Vandenbussche's (2021) survey in 2019 [30] aimed to explore the care needs of the online detrans community via the resource *Post-Trans* [31] and other online groups largely serving female detransitioners on Facebook, Instagram, X/Twitter and Reddit (r/detrans). No TGD or 2SLGBTQ+ organizations appear to have been involved in participant recruitment [22]. This survey recruited 237 participants (92% female/assigned female at birth [AFAB]). Although the survey instrument provided a question on gender/gender identity ("How do you see yourself now?; responses: "Woman", "Man", "Trans man", "Trans woman", "Female detransitioner", "Male detransitioner", "Non-binary", "Other"), no results are presented to discern whether any participants in the sample affirmed a TGD identity when they took the survey—participants are simply referred to as either "female detransitioners" or "male detransitioners". Another survey of 100 people (69% female/AFAB) who discontinued/reversed gender-related medical interventions recruited from largely online sources from December 2016-April 2017(4.5 months) via X/Twitter, Tumblr, Reddit, closed detransition groups. This survey was also circulated on professional listservs via the *American Psychological Association*, the *World Professional Association of Transgender Health* and *SEXNET* [27]. Inclusion criteria were limited to individuals who had engaged in a medical transition (social transition only experiences were excluded). And while participants in this survey could indicate a current TGD identity, only 39% reported a trans or nonbinary identity.

In comparison to the 2015 USTS survey instrument that prioritized external pressure-related reasons, detransition surveys administered by Vandenbussche and Littman seemed to favour internal, psychological, and physical health-related factors for detransition in their pre-determined lists of reasons. Though, these surveys also included structural (e.g. financial barriers) and externally driven factors, such as lack of support/discrimination. Both surveys recruited a majority female/AFAB and favoured individual-level driving factors motivating detransition. However, these studies were limited by small sample sizes and selection bias in that recruitment and inclusion criteria focused primarily on individuals who understood themselves as *detransitioners* or as having been *detransitioned* at the time of data collection—terminology that can be divisive in some TGD communities.

Also important to note is that some detrans people report rejection from TGD and/or 2SLGBTQ+ communities and organizations [22,32], meaning some of these individuals may be hidden or hard-to-reach by investigators whose networks are composed of primarily 2SLGBTQ+ contacts. Therefore, sampling and recruitment that takes a broader approach is necessary to include individuals who have detransitioned and became disconnected from SGM networks.

To overcome these sampling limitations and to understand the life experiences, minority stressors, and SGM identities of people who discontinue/detransition, we conducted a bi-national, cross-sectional study in Canada and the US. Our objective was to survey a large and heterogenous sample of between 500-1,000 participants (including detrans, TGD, and 2SLGBTQ+ people). This target sample size of > 500 was selected due to the anticipated heterogeneity of the group and requiring a large sample to explore and characterize discontinuation/detransition and their associated life and clinical experiences [33]. The study received ethical approval by York University and all

participants provided written informed consent to take the survey. Below, we illustrate a novel sampling and recruitment approach developed to collect reliable data to explore and understand broad detransition phenomena across an expansive spectrum of self-identification (e.g. transgender, nonbinary, cisgender, queer, bisexual, lesbian, detrans) and socio-demographics.

Methods

Study population

Inclusion/exclusion criteria

To qualify for the study, participants were 16 years old or older, able to fill out a survey in English, Spanish, or French, and had experienced stopping, shifting, or reversing a gender transition. Gender transition was defined as inclusive of social, legal, and/or medical transition, and it was not a requirement to have accessed gender-related medical treatments to be eligible. Recruitment and study promotional materials advertised that the study was open to anyone with a history of shifting gender identity, stopping/reversing a gender transition, and/or detransitioning for any reason, such as loss of access to gender-affirming healthcare, medical complications, misdiagnosis, discrimination/lack of support, or due to an identity change.

Sixteen was selected as the minimum age for two reasons. First, this is the legal age for providing independent informed consent to participate in research studies, as per Canadian research ethics boards. Second, we aimed to explore potential unique experiences of detransitioning in adolescence compared to adulthood. There was no maximum age limit.

Requirements for participation was not based on gender identity, instead inclusion criteria focused on having lived experience of detransition-related phenomena. Participants also had to be living in the US or Canada during the study period to be included. US was included as a geographic region of interest, in addition to Canada, due to the American political/legislative context surrounding gender-affirming healthcare restrictions [34], anti-transgender rhetoric, and because Canada is influenced by American politics and culture [35]. As it is likely that some TGD people may be forced to detransition due to reduced availability of gender-affirming healthcare and/or new legislative restrictions being placed on this care in the US, one of the DARE study flyers was designed specifically to invite participants who were forced to stop transitioning or to detransition due to loss of gender-affirming healthcare (#3, “forced detransition”; see Supplementary Materials).

Study exclusion criteria were: aged < 16, residing outside of Canada or the US during the data collection period, having never engaged in a social or medical transition, or inability to complete the survey in English, Spanish, or French. Because the survey was only available online, anyone without access to a computer with internet or a smartphone/tablet device also would have been unable to take the survey.

Survey instrument development and measures

The English-language survey was developed collaboratively by the full DARE study team—a multi-disciplinary group of social work and public health researchers who study the health and well-being of SGM populations. The team is a majority TGD (transfeminine and transmasculine spectrum) and/or SGM and includes one gender-affirming clinician.

The survey included a mix of non-validated and validated items and open-ended qualitative responses. Two fake condition items were included in the survey to identify potential scam responses. Previous literature suggests that including two fake conditions—“checkalism” and

"syndomitis"—is an effective way of identifying scam [36]. These two items were included in the survey and shown to all participants (e.g. "At any point while transitioning, did you develop chekalism?"; responses: "Yes", "No", "Unsure"). Most questions on the survey were optional and participants could end the survey at any time. The survey was written using neutral language designed to include and be sensitive to diverse TGD and detrans populations. For example, following detransition, some individuals feel affirmed by terms and language associated with sex over gender identity, and past qualitative studies with detrans young people illustrate that some feel they do not have a gender identity [19]. To be inclusive of all respondents, the survey posed the question "What term(s) best describe your current *gender?*" rather than asking about *gender identity*. Participants were also asked a series of questions about whether, after stopping/reversing transition, they understand themselves as transgender, nonbinary, cisgender, and/or detransitioned (responses: "Yes", "No", "Unsure"). These questions were not mutually exclusive. The survey was reviewed for language accuracy and sensitivity by one English-speaking American with experience of detransition who received a gift card valued at $150 USD ($199 CAD).

In the first phase, participants completed a comprehensive survey that, per pilot testing, was anticipated to take 35 to 60 minutes through a Qualtrics platform accessible from a dedicated website page (Qualtrics, LLC). It was programmed using skip-logics that were sensitive to individualized transition experiences reported by the participant (those who engaged in both social and a medical transition were shown the greatest number of questions; those responding "No" to initiating a medical transition were not shown questions pertaining to medical/surgical interventions). The survey examined various factors motivating detransition—inclusive of structural, social, interpersonal, familial, and health-related. The survey also included reliable, well-validated scales evaluating factors potentially associated with detransition identified by prior literature (i.e. body image, life stressors, and adverse childhood experiences) [4,20].

The DARE survey included extensive socio-demographic items and integrated measures from several prior health questionnaires delivered to SGM communities [37] and individuals who had detransitioned [7,27]. In addition to detailed socio-demographics and place of residence, the survey included questions about initial transition, including social, legal, and medical interventions, as well as interventions that were discontinued/reversed. Participants were also asked about mental and physical health experiences and disabilities that had been identified either by themselves or formally diagnosed by a healthcare professional.

Participants were presented a Likert scale comprising 21 possible reasons they had stopped/reversed an initial gender transition drawing from prior empirical studies with this population [7,19,22,24,27].The survey transparently highlighted four different thematic categories, prompting participants to indicate to what extent a cluster of various reasons contributed to their decision to stop/reverse the initial transition. Whereas Turban et al. organized reasons for detransition into "internal" and "external" reasons *post-hoc*, the DARE survey organized reasons explicitly into the following dimensions *a priori* showing participants the grouped factors as: mental health/psychological reasons (e.g. "My mental health did not improve while transitioning," "My mental health was worse while transitioning"), physical reasons (e.g. "Satisfied with the physical results of transition," "My physical health was worse while transitioning"), external reasons (e.g. "I felt discriminated against," "I did not have enough support in my life to continue transitioning," "I had trouble paying for hormones or surgery," "Legislative bans on gender care required me to stop transitioning" etc.), and social/internal reasons (e.g. "My personal definition of woman or man changed and I became more comfortable with my birth sex," "My identity changed and I no longer felt a need for medical interventions"). Unlike prior studies, participants were asked to rate these reasons using a Likert scale (i.e. "Not at all," "A little," "Somewhat," "A lot") rather than categorically ("Yes"/"No"), in order to reflect the possibility that participants may cite multi-dimensional reasons for discontinuation/detransition.

Additional scales were included to collect data on stressors such as history of adverse experiences in childhood [38] and body image [39]. Decisional regret/satisfaction with both social and medical transition was measured using the Decision Regret Scale [40] (e.g. "Please think about the decision you made about your initial social transition") as well as non-validated questions (e.g. "If you could go back in time, would you still medically transition with puberty blockers?"; responses: "Yes", "No", "Unsure").

The survey was programmed in Qualtrics. It was initially pilot tested in English by a majority of the DARE study team (n = 9), including TGD team members and one gender care provider. Then, 4 additional pilot-testers were recruited through personal and professional networks, including TGD and non-TGD detransitioned people, and one gender care provider—including AFAB and AMAB individuals. Pilot testers were asked to comment on: appropriateness and accuracy of language, the length of time to complete the survey, flow and organization of the survey, broken links, coherent ordering of questions, questions that were challenging to understand, and overall comments. These comments were reviewed and addressed by the DARE study team, who then re-tested the survey. Upon completion, the revised English survey was translated into French and Spanish. The translated French and Spanish surveys were reviewed and pilot-tested by native speakers. Pilot testers external to the team received $50 gift cards—in either USD or CAD depending on country of residence.

At any point while taking the survey, participants could access a list of mental healthcare resources for youth and/or adults. They also had the option of taking breaks from the survey or ending the survey at any point. After providing informed consent, participants were given the opportunity to enter a raffle draw for a $50 gift card. A raffle draw for a chance to win a $50 gift card was advertised on study promotional materials.

Study promotion and participant recruitment

To provide information about the study and direct prospective participants to the informed consent form and the survey, an English-language website was created. This website included a promotional video about the study and buttons to direct people to English, French, or Spanish consent forms/surveys. The website also contained information about the study funder, the study team, project objectives, and the 3 DARE study recruitment flyers.

Given controversial discourse surrounding detransition, the study promotion and recruitment materials were made intentionally broad and neutral due to narratives of detransition being polarized across some online TGD versus detrans spaces. Because the study objective was to reach heterogenous populations, inclusive of TGD, SGM and non-TGD detransitioners, we aimed to be inclusive and reach all eligible people. To reach a diverse sample, three different tailored recruitment flyers were designed (see Supplementary Materials). These flyers used a variety of language choices and colour schemes that were anticipated to attract a range of experiences. One flyer used language that focused on attracting TGD people who had experienced shifts in gender identity, and another applied TGD-coded colours (pink/blue) to attract participants who were forced to detransition due to external factors. Another flyer utilized colours (green/blue) and language choices anticipated to attract detrans populations who no longer identify as TGD (see Supplementary Materials). French and Spanish versions of these three flyers were also advertised widely across social media platforms and distributed to organizations and care providers in the US and Canada.

2SLGBTQ+ organizations and gender care providers

Direct invite e-mails were sent to 615 TGD or 2SLGBTQ+ organizations and gender care providers. These contacts were largely English or multi-lingual serving. Efforts were taken to contact organizations, gender clinics, and gender therapists who work with TGD, 2SLGBTQ+, and/or

detransitioning people. Direct e-mails disproportionately focused on English speakers, as French and Spanish are spoken by a minority of people in North America. Hence, 21 French-speaking organizations were contacted directly by email, five French-speaking organizations were contacted on LinkedIn, and the flyer was shared directly with Francophone TGD parents' groups. Nine Spanish-speaking organizations were contacted. The Spanish recruitment flyers were shared on social media by another researcher studying Spanish-speaking TGD and detrans populations.

We specifically offered to meet with and/or visit in-person five 2SLGBTQ+ youth groups in the Greater Toronto Area in order to engage in direct study promotion/recruitment and answer questions about the study. None of these organizations responded to the offer. One 2SLGBTQ+ organization in Toronto, one TGD-serving organization in British Columbia, Canada, and at least two gender clinics in the US and in Canada confirmed posting physical recruitment flyers in high-traffic areas to support recruitment efforts. There may have been additional physical posters publicized by organizational contacts without our awareness.

Webinar

Toward the end of the data collection phase in April 2024, we invited American and Canadian stakeholders from 2SLGBTQ+ organizations, gender clinics, and TGD and detrans people within our networks to a webinar presenting preliminary data to aid in further recruitment. Eighty-three people registered for the event and 38 attended. The webinar presented the objectives and methodology of the study, preliminary results, and ended with a direct ask for support with study promotion and participant recruitment.

Former 2SLGBTQ+ research participants

Participants from prior team research studies who had consented to being contacted for future research opportunities were e-mailed information and recruitment materials about the DARE study. These were largely Canadian former participants of two different studies relating to 2SLGBTQ+ affirmation (N = 1181) and detransition and identity fluidity (N = 27). A majority were Anglophone and sent English recruitment materials while ~194 were Francophone and sent French recruitment materials.

Paid and unpaid social media advertisements

Between December 2023-April 2024, flyers in all three languages were widely dispersed online via paid and unpaid social media posts and advertisements across TikTok, Instagram/Facebook, Tumblr, X/Twitter, Reddit, Discord, and Grindr. Where possible, we also advertised in English-speaking private groups on social networking sites for TGD and detrans people, as well as parents of TGD youth. Of note, the DARE study principal investigator maintains a TikTok account that discusses TGD and detrans research with > 29,000 followers, many of whom are likely 2SLGBTQ+. To enhance engagement and promote the study using audio-visuals, several TikTok videos about the study, as well as YouTube videos, were produced and shared online. TikTok itself has a powerful algorithm that is able to reach large numbers of people, particularly in the US, and is recognized as a useful platform in community-engaged TGD and gender care knowledge sharing [41].

Excluding scam and ineligible survey responses

To remove bots, scam, and otherwise ineligible responses from the dataset, an exclusion protocol was developed using guidelines and recommendations from previous studies. This included conducting video screenings of participants flagged as bots/scam/nonsense. First, any responses that came from an IP address with multiple completed surveys were removed [42], as well as any

responses that originated from outside the US or Canada (per IP address, geolocation). Next, to remove any bots, we followed the guidelines suggested by Google and Qualtrics developers and excluded any responses with a reCAPTCHA score less than 0.5 [43]. Then, any respondents who indicated that they had not socially transitioned nor medically transitioned were also removed, as they were deemed ineligible based on study inclusion/exclusion. We further flagged potential scam responses based on nonsense or incoherent answers, as advised by Pullen Sansfaçon et al [44]. Participants who indicated "Yes" to having either of the fake conditions, "chekalism" or "syndomitis," were also excluded. Additionally, we left out those who reported no discordance between past and current gender, as well as participants who responded as having male/female on their original birth certificate and indicating they took testosterone/estrogen, respectively, as part of their initial transition (e.g. a female/AFAB person who reported taking estrogen for an initial medical transition and vice-versa). Survey responses with a completion time of <12 minutes were also removed given the anticipated time to completion was ~35-45 minutes.

Participants identified as potentially scam or ineligible for the study who had consented to being contacted were invited to complete a screening interview to verify their identities and survey responses over Zoom. In instances where the research team could validate their eligibility for the study and accuracy of the survey responses, their survey was re-added to the dataset. As part of the screening, interview participants were required to turn on their cameras for identification at the beginning of the interview, per guidelines suggested by previous literature [15,44]. An audio recording of each screening interview was taken. For the screening interview, only questions that would be easy for valid participants to answer were included. Scam interviewers were also asked to document other cues of scam such as poor or unusual audio quality/sounds, as well as vague and brief responses [44]. The following six questions were asked in the screening interview:

1. Can you please confirm your age?
2. Can you please confirm the country, province/state, and city you are currently living in?
3. Can you please tell us the country, province/state, and city you were in when you accessed the survey?
4. Can you please confirm what term(s) best describe your current gender?
5. For your initial transition, did you socially transition, and if so, in which year?
6. Could you please describe the main reason(s) you detransitioned?

Participants who could not answer these questions or gave different answers compared to their survey responses were excluded. During the process of screening potential scam responses, team member had participants select an interview time via the Calendly website. This allowed the interviewer to confirm the participant's email address as well as the time zone. This process was also repeated for four gift card raffle winners.

Removed from the analytic sample were all potential scam/ineligible respondents flagged by this protocol who did not consent to being contacted by the research team, did not provide a follow-up e-mail, or did not respond to an invitation to complete the Zoom interview. There were two reoccurring oddities observed during the screening process: first, Calendly showed an unexpected number of sign-ups from the West African time zone (WAT); second, there were several signups for screening from email addresses that we had not personally contacted. This suggests our e-mail about the screening process had been shared with additional individuals who had never taken the DARE survey.

Results

To reach divergent communities and social networks living in the US and Canada, we widely distributed three different study flyers in English, French, and Spanish between December 1, 2023,

and May 1, 2024, via direct e-mails and social media platforms. Paid and unpaid advertising on social media comprised a primary recruitment strategy which began December 13, 2023, and ended May 1, 2024. Paid advertisements totaling $7,494.81 CAD were promoted on five different platforms which targeted over 40 unique groups and networks (see Table 1 and Supplementary Materials).

According to data provided by each social media platform, paid and unpaid study advertisements reached over 7.7 million accounts (Table 2). While there was effort to equally promote all study posters in three languages, discrepancies arose as some posts seemed to receive more positive and/or negative attention and engagement, which likely affected engagement levels and overall promotion and views. Analytics data derived from TikTok indicated that Flyer #3 ("forced detransition") received a higher level of shares between users and "likes," which may have amplified its views/impressions (see Supplementary Materials). Thirty different Reddit subreddits were targeted during the study promotion period via paid advertisements totaling $2,166.34 CAD and/or unpaid posts made by our study team or other users (see Table 1 and Supplementary Materials). Meta platforms (Instagram/Facebook) were also frequently reported as a referral source, with 8 private Facebook groups targeted and advertising expenses totaling $2,808.18 CAD. Tumblr and Discord groups were additional social networking sites where study promotion occurred (see Supplementary Materials). Paid advertisements were initiated on Grindr in December 2023 but were abandoned after ~1 month due to high advertising costs and yielding few respondents (0.09%).

Table 1. Paid advertisements, per platform

December 13, 2023 - April 25, 2024		Currency - CAD
Grindr (USD converted to CAD)		$1,028.60
Meta (Instagram/Facebook)		$2,808.18
Reddit		$2,166.34
TikTok		$659.40
Tumblr (USD converted to CAD)		$832.29
X/Twitter (No Paid Advertising Accepted)		$0.00
	Totals	**$7,494.81**

Table 2. Social media impressions/views

Social Media Platform	Impressions	Views	Likes	Total Impressions, Views & Likes
Facebook			43	
Instagram	5,725,940		1,447	
Reddit – Account #1	235,772	-	-	
Reddit – Account #2 (DARE)	1,352,388	-	-	
TikTok	51,765	51765	2,041	
Tumblr			677	
Tumblr Blaze Ads	245,690		1,021	
X/Twitter		102,124	375	
YouTube	5611	541	18	
Discord	-	-	-	
Totals	**7,617,166**	**154,430**	**5,622**	**7,777,218**

Challenges and controversies during recruitment and data collection

The DARE study was successful in reaching diverse and disparate online networks and was therefore discussed, promoted, and/or commented on by people of various socio-demographics who shared divergent political perspectives and expectations about the study itself. These activities may have driven awareness about the study, notified more eligible people, and/or biased various online communities' perception of the DARE study objectives (e.g. negative or positive). For example, one Tumblr post encouraged partaking in the study but noted that, because the principal investigator's past detransition research included nonbinary people, he "has an agenda" [45]. On Reddit, posts in LGBT and TGD subreddits introduced the DARE study as triggering feelings of "disgust" (r/LGBT) [46] or specifically encouraged TGD people who detransitioned/retransitioned without regret to partake because "anti-trans grifters are trying to skew results of this study…" (r/MTF) [47]. In private TGD or detrans-focused groups on Facebook, there were occasional questions about the study or reluctance to post recruitment flyers. A few times, Facebook group moderators removed posts about the DARE study; however, in most cases, after answering questions and emphasizing the

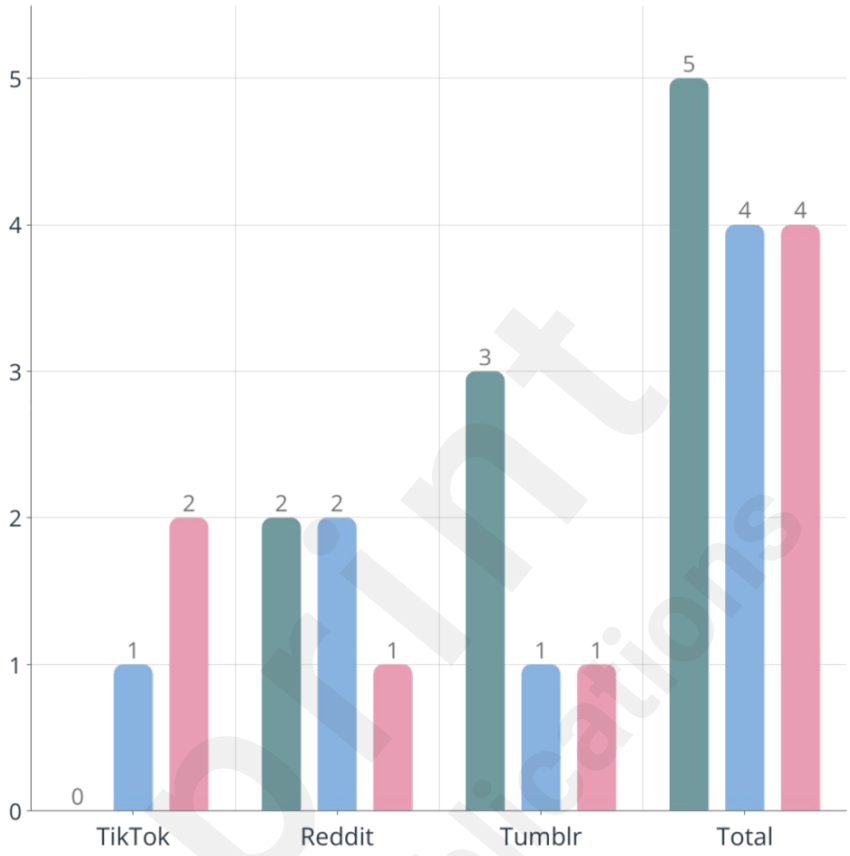
study's goal of building care and support, moderators reversed the decision.

Several barriers to study promotion and data collection were encountered with paid social media advertising campaigns. Some study promotion campaigns were outright rejected or removed after a short period of advertising by Reddit, Tumblr, and X/Twitter (see Figure 1). After three weeks of paid advertising for Flyer #1 and #2 via a verified professional account by the study's principal investigator, Reddit removed both campaigns, citing that advertisements fell into a restricted policy for promoting "Health and Wellness" which required special approval [48]. Reddit Advertising was contacted for support in having the ads approved several times, but these e-mail communications were unaddressed and ultimately unsuccessful. Using a different Reddit user account later, the three posters (in all three languages) were successfully promoted via paid ad campaigns for approximately four weeks. But again, all three posters were eventually removed, with Reddit Advertising citing a violation of "style" policies.

Similar issues occasionally occurred on other platforms. Tumblr rejected several requests for paid "blaze" advertising campaigns. On two occasions, TikTok either rejected the application for paid promotion (for Flyer #2 and Flyer #3) or discontinued promoting a video after accepting payment. TikTok also temporarily suspended the principal investigator's account following the purchase of a paid promotion for the study promotion. Meta (Instagram/Facebook) did not remove or reject any paid advertising, to our knowledge, for any of the flyers. Despite many emails, X/Twitter never approved any of the DARE advertising campaigns or responded to efforts to purchase promotions for recruitment.

According to TikTok analytics, the application's algorithm promoted Flyer #3 ("forced detransition") to a greater degree than the other two (see Supplement #2, TikTok advertisements). This may be explained by Flyer #3 receiving more "likes" and shares among users, which can contribute to more engagement and the algorithm pushing that specific video to be viewed by more users, which is a feature of the TikTok algorithm [41].

Figure 1. Rejected or removed paid advertisements



Website traffic, completed surveys, and participant self-report about study promotion sources

The study website had 12,272 unique visitors from 12/1/2023 to 4/30/2024 from 78 countries. To access the website, 91% of visitors used a mobile phone, 8% used a computer desktop, and 1% used a tablet. Ninety-three percent of visitors were from Canada and the US, with a majority of website traffic coming from the US (62%). The visitors came from 35 different traffic sources, the top five being Facebook (46%), direct link (29%), Reddit (13%), Instagram (6%), and X/Twitter (3%). This website traffic data contrasted with participants' self-report (see Figure 2). For example, from survey data, Tumblr followed by Reddit were the most frequently reported platform participants indicated learning about the study. Of note, Tumblr was not a pre-determined survey item but was a common write-in "Other" response. Approximately 8% reported a direct e-mail referral source (e.g. from a researcher or care provider). Participants completed surveys in the following languages: English (n = 1,351), Spanish (n = 5), and French (n = 18).

Out of 1,377 completed survey responses and after applying the exclusion protocol, 962 (70%) were determined to be eligible and included in the analytic dataset. Figure 3 (Sankey diagram)

and Table 3 highlight this process including rationale for and number of exclusions.

Figure 2. Breakdown of self-reported referral source

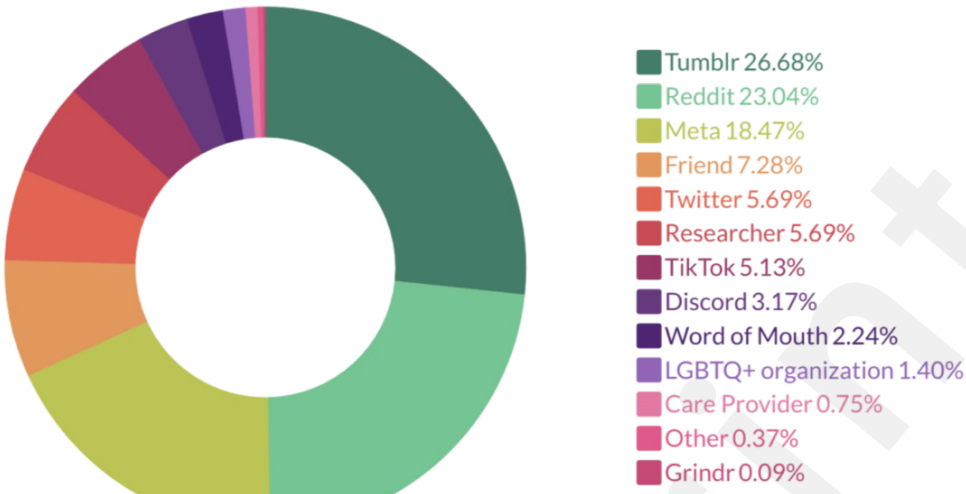


Figure 3. Sankey diagram of the number of survey responses removed for each criterion

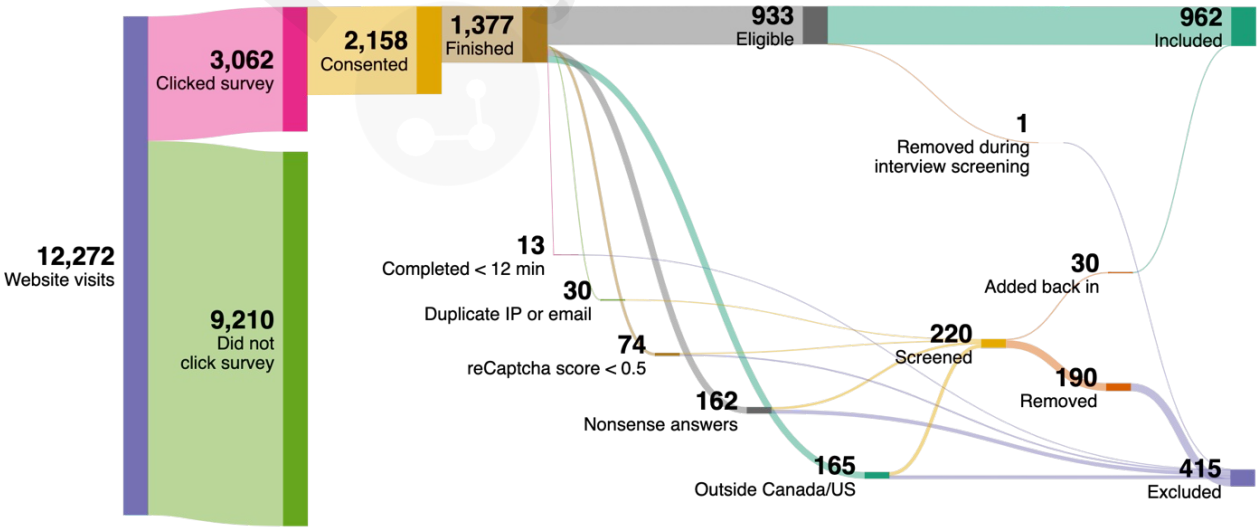


Table 3. Total exclusions before Zoom screenings. Exclusion criteria were applied in the order listed in the table.

Exclusion criteria	Number excluded
Survey completed outside of USA/Canada	165
reCAPTCHA score < 0.5	74
Ineligible/Nonsense Answers	162
Completion of the survey in < 12 minutes	13
Duplicated "Identity" (Duplicate email/IP address)	30

Geographic distribution and socio-demographics of the analytic sample

After exclusions, 962 eligible participants were included in the analytic dataset. The sample was homogenous in terms of race and birth-assigned sex with a large majority reporting being White/ European-descent, SGM, and AFAB (see Tables 4, 5, and 6).

Table 4. Self-identified racial/ethnic background. Participants could choose multiple options.

Response	Count	**Percentage of Sample** (n = 955; 7 participants skipped question)
White Canadian or White American	746	78.12
White European (e.g., England, Greece, Sweden, Russia)	194	20.31
Jewish	98	10.26
Indigenous (e.g., First Nations, Métis, Inuit, Native American)	78	8.17
Latin American (e.g., Argentina, Mexico, Nicaragua)	71	7.43
Black Canadian or African-American	36	3.77
East Asian (e.g., China, Japan, Korea, Taiwan)	36	3.77
Middle Eastern (e.g., Egypt, Iran, Israel, Saudi Arabia)	26	2.72
South East Asian (e.g., Vietnam, Malaysia, Philippines)	15	1.57
Black Caribbean (e.g., Jamaica, Haiti)	13	1.36
Black African (e.g., Ghana, Kenya, Somalia)	12	1.26
South Asian (e.g., India, Sri Lanka, Pakistan)	4	0.42
Indo-Caribbean (e.g., Guyanese with origins in India)	2	0.21
Pacific Islander/Polynesian	2	0.21

Central Asian	1	0.10
Romany	1	0.10

Table 5. Sexual Orientation Identity. Participants could choose multiple options.

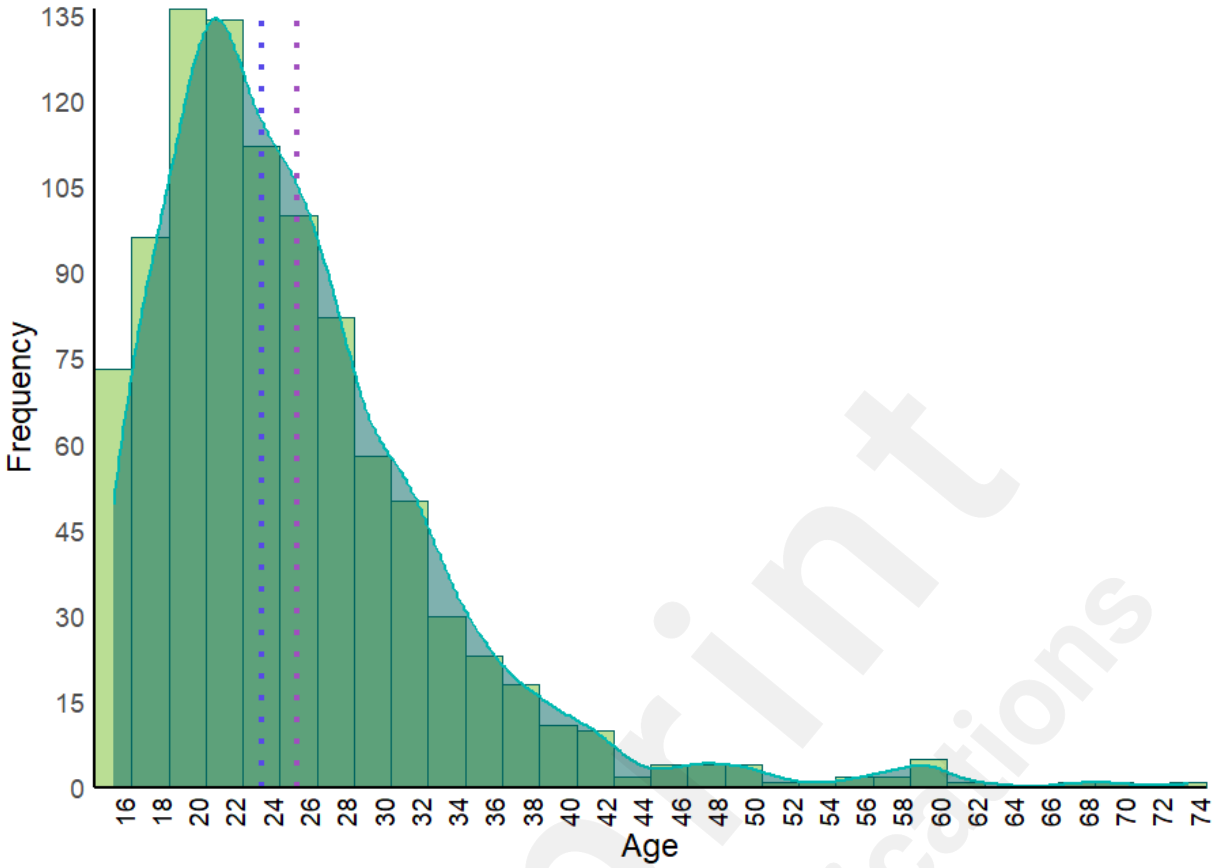
Sexual Orientation Identity	Count	Percentage of Sample (n = 960; 2 participants skipped question)
Bisexual	429	44.69
Queer	277	28.85
Lesbian/homosexual	257	26.77
Pansexual	117	12.19
Straight or Heterosexual	109	11.35
Asexual	102	10.62
Gay/homosexual	95	9.90
Not sure or questioning	75	7.81
Two-Spirit	10	1.04

Table 6. Sex registered on original birth certificate.

Response	Count	Percentage of Sample (n = 958; 4 participants skipped question)
Female	755	78.81
Male	203	21.19

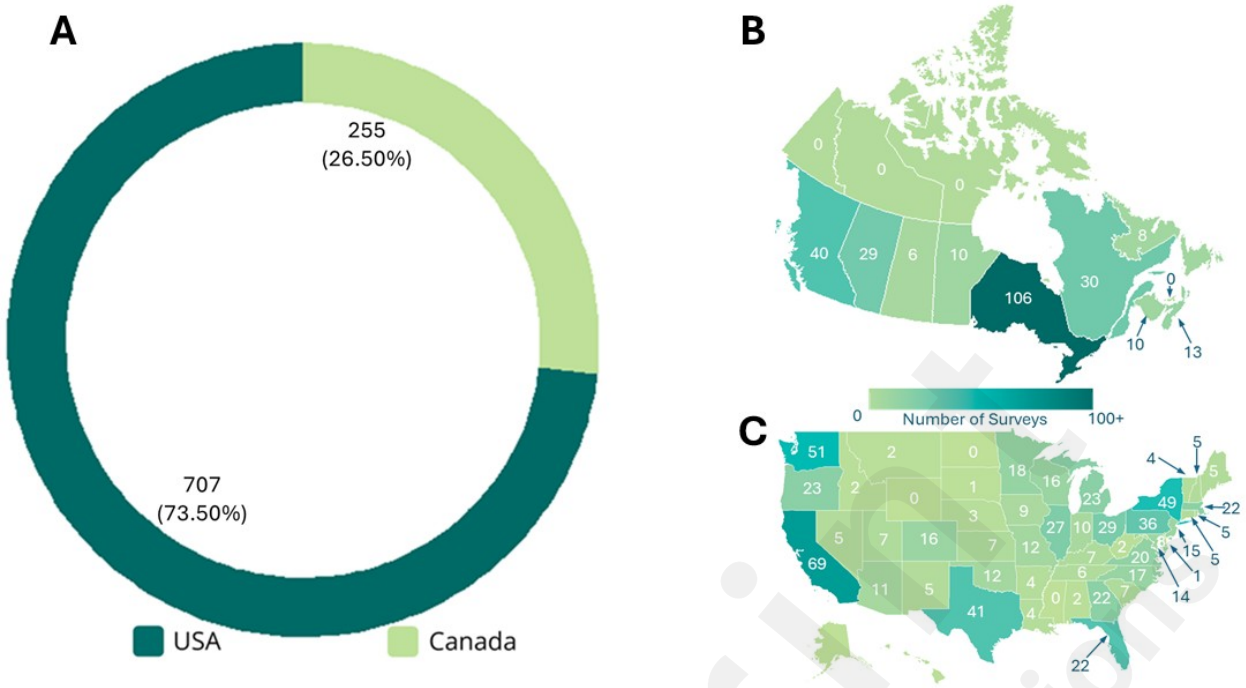
Participants were diverse in terms of age distribution, gender-diverse identities (TGD, detransitioned, and cisgender), and sexual orientation identities. As shown by Figure 4, the mean age of the sample was 26, with ages ranging between 16 and 74.

Figure 4. Age distribution of the entire sample, N = 962, M = 25.92, SD = 7.88, Median = 24.



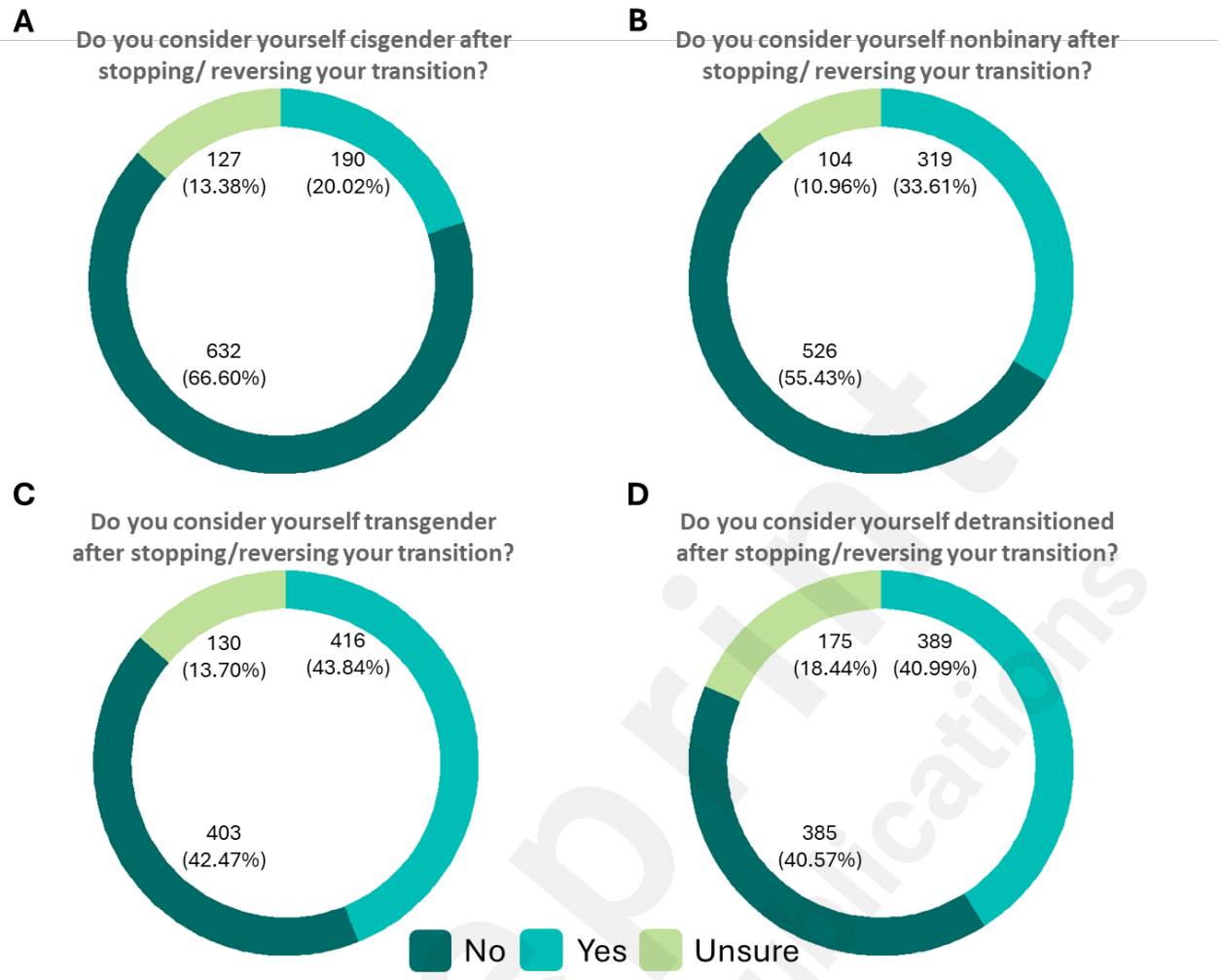
A majority were living in the US (73.5%) and the geographic distribution of the sample was fairly representative, with participants living across most regions of the US states and Canadian provinces, as shown by Figure 5. However, there were a few states/provinces with no participants, such as the Northern territories of Canada, Prince Edward Island, Alaska, North Dakota, Wyoming, and Mississippi.

Figure 5. Geographic distribution of sample.
A) Pie chart illustrating the proportions and number of responses from participants living in Canada and the USA.
B) Number of responses from each province in Canada.
C) Number of responses from each state in the USA. *Note:* 1 Participant from Washington, DC was included in the count for Virginia and 1 Participant was living in Puerto Rico (not included in the image).



Participants could choose more than one sexual orientation identity response and an overwhelming majority were sexual minorities (see Table 5), with over half reporting plurisexual orientations such as being bisexual, pansexual, and/or queer. “Lesbian/homosexual” identity was reported by over a quarter of respondents (n = 257). Ten participants reported being Two-Spirit and 10.6% indicated asexual-spectrum identities (n = 102). Twelve percent indicated being straight/heterosexual. When asked if they consider themselves to be transgender, nonbinary, detransitioned, and/or cisgender after stopping/reversing transition (see Figure 6), 33% indicated being nonbinary, 44% transgender, and 41% detransitioned. Only 20% reported considering themselves cisgender. Between 11-18.5% indicated being “unsure” to questions about TGD, cisgender, and detransitioned self-identification. Participants could select “Yes” to more than one option.

Figure 6: Self-identify as TGD, cisgender, and/or detransitioned. Participants could select Yes to more than one option.



Discussion

The DARE study attracted a large and diverse North American sample of SGM individuals with experience of discontinuation of gender-related medical care and/or detransitioning. To obtain this non-probability sample, over 1,800 organizations, care providers, and former research participants living in the US or Canada were individually e-mailed information about the study. Paid study promotions totaling over $7,400 CAD via popular social media platforms and social networking sites comprised a major advertising and recruitment strategy, reaching over 7.7 million accounts. These efforts attracted more than 12,000 visits to our study website, with over 2,000 people initiating the DARE survey and 1,374 completing the survey. Compared to other platforms, study promotions on Meta (Instagram/Facebook) encountered less barriers to advertising and was among a top study website referral source, a finding consistent with a prior SGM online survey [14]. After detecting and removing bots/scam/nonsense responses, the analytic sample was 962. In light of these results, we discuss and reflect on the challenges and opportunities of this community-driven study, and the strengths and limitations of our novel approach.

Study promotion and recruitment with hard-to-reach TGD/SGM/detrans populations

The DARE study encountered both support and challenges in the study promotion and data collection phase, as reflected by public posts on Reddit, Tumblr, and barriers in advertisements.

Given the prominence of anti-transgender rhetoric and politicization of detransition by right-wing actors [49], people who have detransitioned may be reluctant to partake in studies designed to examine their experiences due to fears of nefarious actors. This may explain some of the discussion about the study in r/LGBT and r/MTF subreddits. For similar reasons, and despite a large majority of people with experiences of detransition being SGM, many 2SLGBTQ+ organizations and gender clinics may feel unable to show outward support for detransition research/study promotion [50]. This may be why only a minority of participants (n = 15; ~2%) reported these referral sources. This may also be due to some detrans people disconnecting from 2SLGBTQ+ communities or gender clinics, or concealing detransition, which has been identified by previous research [23,32]. A recent study found that gender identity fluid people are likelier to avoid healthcare than gender identity consistent TGD individuals [51]. These challenges were proactively anticipated when designing the study, which was one rationale for social media advertising and promoting multiple study flyers—particularly Flyer #2 (stopping transition/identity shift) and Flyer #3 ("forced detransition"). However, it is possible that even including the term detransition and studying these experiences created apprehension. On the other hand, SGM researchers should note that entirely avoiding using the word detransition in favour of alternative, euphemistic terminology risks alienating detransitioners who may avoid studies that abstain from this terminology [12]. Due to polarization, particularly within both TGD and detrans community networks, there can be mistrust of researchers. Language choices and advertising design that prioritizes one detransition experience over another may inherently create selection bias. Using multiple, relatively neutral flyers tailored to include disparate experiences is one solution that appeared to successfully attract heterogenous identities in the DARE study.

That said, evenly distributing these flyers via paid advertisements was difficult, with 13 total rejections/removals of the 3 flyers (on Reddit, Tumblr, TikTok, X/Twitter) and disparities in views/likes/engagement. This may have been because the DARE study ads were reported by other users due to misunderstanding the study objectives, the politicized/controversial nature of the topic, or fears of political instrumentalization. TikTok, for instance, is known to suppress or "shadow ban" some 2SLGBTQ+ content [41]. Due to logistical barriers, TikTok was not prioritized as a main study recruitment platform, which is reflected by our results. X/Twitter, TikTok, and Reddit advertising seemed to pose more significant barriers to obtaining paid ads, in comparison to Tumblr and Meta/Instagram. Overall, though, study ads were posted to major platforms with great success, as demonstrated by over 80% of participants reporting learning about the study from at least one of these sources. Notably, per website traffic data, Facebook (46%) and direct link (29%), were the most frequent traffic sources directing people to the study website. On Reddit, the study was advertised via paid or unpaid methods across 30 different subreddits (TGD, 2SLGBTQ+, detrans, and generalist).

Bot/scam/nonsense detection and exclusion criteria: Lessons for researchers

Potentially amplified by the $50 gift card raffle incentive, the study attracted many suspected scam and ineligible/nonsense survey responses. Given that nearly a quarter of completed surveys were determined ineligible, our results on identifying and excluding scam/nonsense surveys offer important lessons to other researchers relying on internet-based sampling. Early in the data collection phase, we realized that many of the completed survey responses seemed suspicious, so we created a protocol to identify and remove these responses from the dataset (described in the Methods section). Making these methodological adjustments required a protocol amendment and research ethics board approval. Completing the scam screening e-mail and virtual video interview process itself was time and resource depleting. Despite these additional costs to the project, the Zoom screening process enabled confirming that, out of 221 responses flagged as suspicious, 30 were valid respondents and could be re-added to the dataset. Lower resourced projects may decide to exclude all suspicious responses, given the relatively low odds of identifying eligible respondents. Conversely, the protocol

could risk excluding individuals who were indeed eligible but who misread questions or incorrectly filled out parts of the survey, for example by accidentally indicating "yes" to a fake disorder question. We encourage other researchers to review and build from our approach to enhance rigour and reliability, as recent surges in scam activity indeed pose a threat to knowledge produced via samples obtained online. Furthermore, the process of conducting Zoom scam screening revealed potentially organized activities. It is also important to recognize that our scam detection protocol is imperfect and may have missed some ineligible/scam respondents, so conducting follow-up with additional participants who provided an e-mail and consented to be contacted would provide opportunity for further verification of authenticity.

Sample demographics and geography

The final sample of 962 was highly heterogenous in terms of SGM identities, geography, age, and other socio-demographic variables. Although the sample was a large majority white and AFAB (79%), this is broadly reflective of the general TGD adolescent and young adult population diagnosed with gender dysphoria and/or socially and/or medically transitioning in North America [52,53]. Per Canadian gender clinic and community samples, ~80% of TGD adolescents and young adults are estimated to be transmasculine/AFAB [54,55]. While there was a wide age range (16-74) in the present study, a majority were young adults with a mean age of 26 years. These sex and age demographics extend prior community-derived samples of people with experience of discontinuation/detransition in recent years [12]. Another Canadian/US study that examined TGD gender-affirming medical treatment discontinuation found those who stopped/reversed treatment were a mean age of 22. This sample was a maximum age of 29, though, which may explain the difference.

Interestingly, ~11% of the study sample was living in Ontario, Canada. While Ontario is the most populated province in Canada, with 15.6 million residents [56]—of which over 39,000 are TGD people aged 15+ [57] —this is still disproportionate representation in comparison to many American states (e.g. California). There are a few possible explanations for this finding. First, much of the in-person study promotion and posting of physical flyers occurred at Ontario-based gender clinics and 2SLGBTQ+ support spaces. In addition, a majority of the study team members have extensive 2SLGBTQ+ professional and social networks in Ontario. Another interpretation is that social media promotion was largely based out of Toronto/Southern Ontario, and so algorithms could have prioritized sharing content and advertisements locally and through our team's existing social media networks (e.g. TikTok and Instagram). Alternatively, a third explanation is that, in comparison to other American/Canadian regions, one Toronto-based child gender clinic was among the first in the world to begin referring children/adolescents for pubertal suppressing medications and medical transition since the early 2000s [58]. It is plausible that some of those individuals may have discontinued/detransitioned as adults and participated in the study. Regions with wider access to gender-affirming healthcare may also see greater distribution of these experiences because areas that are hostile toward gender diversity and/or have poor access to gender-affirming healthcare have lower access to transitioning generally. As more people elect to transition, the absolute numbers of people detransitioning will likely mirror this prevalence increase [12].

Conclusion

Currently, there is no mutually agreed upon or uniform conceptualization for discontinuation/ detransition, with some studies using either very narrow or more expansive definitions. In the last few years, many studies examining discontinuation of gender-affirming medical treatments, detransition, and gender identity fluidity have been published, and the current study extends this literature [6,59–62]. Given its community-driven design and large heterogenous sample, the DARE study is well-positioned to explore new questions about discontinuation/detransition experiences,

including associations with sex/gender, age, race/ethnicity, minority stressors, healthcare access, and other life experiences. Due to heterogeneity within the sample and success with including a diversity of TGD, 2SLGBTQ+, and detrans participants who all self-identify with aspects of detransition-related experiences, clustering methods that enable identification of subgroups with similar traits could be one approach to explore discrete experiences under a broad *detransition umbrella*. As theoretical writing about detrans now appears in major science publications such as *Nature* [63], future analyses of the DARE dataset can support development of robust and empirically-rich characterization of this understudied SGM experience.

Acknowledgement

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Conflicts of Interest

The authors have no conflicts of interest to disclose.

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Supplementary Files

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