





## Predictive validity of the genderqueer identity scale (GQI): Differences between genderqueer, transgender and cisgender sexual minority individuals

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### ABSTRACT

**Introduction:** The Genderqueer Identity Scale (GQI; McGuire et al., this issue) – a newly developed and validated measure – assesses genderqueer identity via four subscales: *challenging the gender binary*, the extent to which participants actively work to dismantle gender binaries in identity and expression); *social construction of gender*, or the degree to which participants interpret their gender identity as something that develops versus an innate essentialist phenomenon; *theoretical awareness of gender*, the degree of social and political intention attached to gender identity; and *gender fluidity*, or repeated shifting of gender expression across periods of time.

**Aim:** This descriptive study examined the predictive validity of the GQI and group differences in genderqueer identity with a sample of transgender, genderqueer and nonbinary spectrum, and cisgender sexual minority adults ( $N = 510$ ).

**Methods:** We hypothesized that Genderqueer Non-binary (GQNB) participants would score higher on GQI subscale scores compared to transgender participants who identify within the gender binary.

**Results:** Results from ANOVA models indicated a statistically significant difference in intra-personal subscales across sexual minority and transgender binary or genderqueer groups. For the interpersonal subscales there were differences across all three groups. Cisgender sexual minority participants reported the lowest levels on all scales, while genderqueer participants reported the highest, and transgender binary were in-between.

**Discussion:** The GQI demonstrates strong predictive validity in distinguishing binary transpersons from GQNB and cisgender sexual minority persons. Findings reveal that these three subgroups who might otherwise be similarly categorized (i.e., LGBTQ) show significant differences on challenging the binary, social construction, theoretical awareness, and gender fluidity constructs.

### KEYWORDS

Gender fluidity;  
genderqueer identity scale;  
nonbinary; transgender

Transgender is often used as an umbrella term to describe a variety of persons who identify with a different gender than the sex they were assigned at birth (Bockting, 2014). Although the word transgender represents an expansive range of gender possibilities, much of the existing research centers on a binary transgender experience in which persons seek cross-gender identification and some degree of medical intervention (Diamond, Pardo, & Butterworth, 2011). In this article, when referring to *binary* transgender identity, we are describing a spectrum of transpersons that seek cross gender identification and

a complete change in gender status (i.e., from one gender to the other; Diamond et al., 2011). Less research has focused on genderqueer, nonbinary, gender fluid, and agender persons' gender identity and development. When referring to *genderqueer* or *nonbinary*, we are describing a spectrum of individuals that claim some combination of both masculinity and femininity or neither masculinity nor femininity as a gender identity (Bockting, 2014; Diamond et al., 2011; Harrison, Grant, & Herman, 2012). Historically, genderqueer and nonbinary individuals were subsumed within the transgender umbrella, despite varying

degrees of differing gender identity and development experiences (Stryker, 2008). The aim of this article is to examine group differences between binary transgender identity and GQNB gender identities using a newly developed Genderqueer Identity Scale (GQI; McGuire, Beek, Catalpa, & Steensma, 2018).

### Expanding umbrella definitions of gender identity

Burgeoning research regarding genderqueer identities increasingly recognize that there may be valuable differences in how identities are experienced and expressed (Harrison et al., 2012; Richards et al., 2016; Wilchins, 2004). In an effort to better understand variability of gender identities within the transgender umbrella, Harrison et al. (2012) posed the question, “What is your primary gender identity today?” and provided a space for text response to the “gender not listed (GNL)” option. Participants who selected GNL and opted to write in their gender identity were more likely to be female assigned at birth, identify on the transmasculine spectrum, report a younger age, identify as White, and have higher levels of education than those who did not write in their gender. Their findings provide evidence for what others have argued: that demographic-based group differences exist within a heterogeneous transgender spectrum population (Doan, 2016; Stachowiak, 2017).

Similar to other researchers (e.g., Bockting, 2014; Diamond, et al., 2011), Harrison et al. (2012) found that written responses for gender conceptually aligned with genderqueer identity, where most respondents stated they were both, either, neither, or in-between the gender binary. Genderqueer or nonbinary participants in different studies represented a spectrum of gender identities that were both gender-variant and challenged the gender binary, identifying with labels such as nonbinary, blended, androgynous, non-gendered, gender fluid, bi-gender, trigender, third-gender, agender, greygender, or genderfuck (Bockting, 2014; Diamond et al., 2011; Harrison et al., 2012). Though most participants’ gender identities fell within the conceptual definition of a genderqueer identity spectrum, several

respondents wrote in unique gender signifiers such as, transwierd, transboi, transgrll, OtherWise, and gender blur (Harrison et al., 2012).

Stachowiak (2017) posited that genderqueer individuals *queer* binary gender categories by dis-identifying (Muñoz, 1999) with the gender binary. Meaning, genderqueer individuals construct a space of ambiguity wherein they neither assimilate within the gender binary nor strictly oppose it; rather they negotiate gender identity in a space of ambiguity using and working against dominant gender ideology (Richards et al., 2016). The expansiveness of gender identities carries a practical problem when applying a one-size-fits-all treatment protocols for gender transition (Beek, Kreukels, Cohen-Kettenis, & Steensma, 2015; Richards et al., 2016). Scholars have argued that medically changing one’s gender and living fully and passably as the other gender represents a major framework for thinking about gender transition; with less emphasis placed on social transition and the development and everyday maintenance of genderqueer identity and expression (Diamond et al., 2011; Johnson, 2016).

Historically, the medical community prevented genderqueer individuals from transition-related services because they were not considered good candidates for medical transition because they desired partial treatment, nonbinary gender expression, or gender fluidity (Diamond et al., 2011). Diamond et al. (2011) posited that transgender experience was variable and that a transsexual medical trajectory was not salient for every person of transgender experience. Unfortunately, it is only in recent years that medical clinics began providing more services for persons not seeking a binary transition, and tailoring person-centered approaches to gender transition (Doan, 2016). For example, Beek et al. (2015) found that trans persons referred to a clinic for gender dysphoria sought different treatment options. Reasons for wanting different treatments and not others included: because of the risk or concerns with medical surgery, lack of genital dysphoria, or because of the participants’ ages or non-binary gender identification. Requests for some, but not all, available treatments have sometimes been called *partial treatment* which suggests that

receiving all available treatments in the direction of a binary transition is the natural counterpoint, or *full treatment*. Doan (2016) argued that medical gatekeeping and erasure of genderqueer individuals in the medical community resulted in deeply flawed estimates of subjective gender identities within the transgender umbrella.

Previous work to expose variable and nuanced gender identities have highlighted a major gap in the current measurement tools used to capture and assess complex, subjective, and fluctuating gender identities (Dickey, Hendricks, & Bockting, 2016; Doan, 2016; Rankin & Garvey, 2015; Reisner et al., 2015). For instance, genderqueer individuals may change gender identification from day to day, or across time; they may also hold a nonbinary gender identity expression and seek varying hormone or medical treatments (Stachowiak, 2017). Numerous transgender scholars have expressed the urgent need for improved and innovative research tools to conduct research in culturally competent and meaningful ways (Dickey et al., 2016); calling for researchers to “*queer the count*” (Doan, 2016) by developing new ways to estimate precise numbers of hidden, vulnerable and silenced genderqueer subpopulations (Reisner et al., 2015). The GQI was developed as a result of this call for queering the gender count and was designed to measure multiple dimensions of gender identification based on contemporary theories about gender identity development (McGuire et al., 2018).

### Conceptual framework

In an effort to better capture the full spectrum of gender across ages and developmental stages, the GQI measures four distinct dimensions of gender identity: challenging the binary, the social construction of gender, one’s theoretical awareness or political understanding of gender, and fluid shifts in gender expression (McGuire et al., 2018). Challenging the binary assesses how persons intentionally express non-binary characteristics (Doan, 2010; Rankin & Garvey, 2015). Social construction of gender measures whether a person views gender as something that is comes from within them, or something they work to

create (McGuire, Kuvalanka, Catalpa, & Toomey, 2016; Nagoshi & Brzuzy, 2010). The theoretical awareness subscale measures a person’s theoretical and political understanding of gender and whether they engage in study or critical thought about gender as a status and institution (Nuru, 2014; Rahilly, 2015). Finally, gender fluidity gauges temporal modulation in gender expression (Bradford et al., 2018; Diamond et al., 2011; Harrison et al., 2012; Nagoshi, Brzuzy, & Terrell, 2012).

Initial validation of the GQI and the four subscales demonstrated the initial measurement reliability and validity across transgender, sexual minority, and genderqueer samples (McGuire et al., 2018). In the current study, we aim to further validate the GQI by comparing the cisgender lesbian, gay and bisexual (LGB) participants, the transgender participants, and the genderqueer participants on each of the four subscales. Our fundamental conceptual framework suggests that all persons have a gender identity, and that there should be variability across the spectrum on each of the four subscales of gender identity throughout the entire population. By centering on queer and trans populations, we have more ability to examine differences in these nuanced components of gender identity and expression. We expect that some subscales will differentiate between trans and genderqueer participants, and others will differentiate between cisgender LGB and trans, and/or genderqueer participants.

### Methods

#### Participants and procedures

Participants were recruited for the current study via Amazon Mechanical Turk (MTurk). MTurk is a website that allows access to an integrated compensation system with a large participant pool for specialized recruitment (Buhrmester, Kwang, & Gosling, 2011). The website is useful for its demographically diverse internet-based population and its ability to yield meaningful results quickly and inexpensively.

Institutional review board approval was sought and obtained through the University of Minnesota Human Subjects Protection Program

in the USA. This project was approved as an exempt project due to the anonymous nature of the survey design.

MTurk workers participated in an online pilot study lasting ~15–45 min. Before completing the survey, participants saw our request for workers, called a Human Intelligence Task (HIT). The HIT contained information about the number of assignments, participant inclusion criteria, and compensation amount for quality data. We specified that HITs were meant for persons who self-identified within a transgender or genderqueer spectrum and we only allowed workers who have received an approval rating of over 50% for previous work. Assignments were filled within hours of launching the survey. The average time to complete the HITs was 26 min across all three data collection samples. To improve classification of respondents and data validity an introduction question screened potential participants for different identities at different administrations. This process also helped to ensure that there were enough genderqueer identified persons. Following data collection, two researchers reviewed the data for quality assurance and the MTurk workers identification numbers to ensure unique data and then paid workers 0.75 cents for their time. Less than 1% of MTurk workers' data was rejected by reviewers.

Multiple survey collections were utilized as we worked to refine a variety of measures, with different populations, yielding a final sample of 510 participants who identified as binary transgender ( $n = 255$ ), genderqueer/non-binary ( $n = 140$ ), or cisgender lesbian gay bisexual ( $n = 115$ ). Participants had opportunities to identify in multiple places for different survey administrations, as such a combination of variables was used to place individuals into a category for analyses. In order to be coded transgender, participants had to either choose a transgender identity from a list (and not choose genderqueer;  $n = 103$ ), or enroll in a study that had an elimination requirement that they be transgender to participate in the survey and chose a binary or transgender identity (male, female, trans male, trans female;  $n = 152$ ). In order to be coded genderqueer, participants had to either be enrolled in a survey section that had a sorting requirement that put genderqueer

people into one survey group and transgender into another ( $n = 101$ ), or they had to join a separate study for transgender people and then choose genderqueer when given a multiple option identity list ( $n = 39$ ). In order to be categorized as cisgender LGB, participants had to enroll in a study for LGBTQ persons and identify as cisgender, and identify their sexual orientation as something other than heterosexual ( $n = 115$ ). All of the data were collected in 2016–2017.

### Measures

The current analyses focus on the GQI and identity status transgender binary, genderqueer, or cisgender sexual minority.

Demographic questions focused on transgender or genderqueer participants' age, current gender identity, sex assigned at birth, sexual orientation, race and ethnicity, and household income. Demographic questions were included in order to compare genderqueer and transgender subpopulations along these demographics (Doan, 2016; Stachowiak, 2017). We asked forced choice as well as open-ended questions to give participants options to fully express their identities.

The GQI is a 22-item measure of genderqueer identity across multiple dimensions of gender identity and expression. Reliability statistics in this sample are acceptable for challenging the binary (five items  $\alpha = 0.82$ ), social construction of gender (six items  $\alpha = 0.67$ ), theoretical awareness of gender (six items  $\alpha = 0.81$ ), and gender-fluidity (five items  $\alpha = 0.56$ ), across transgender, genderqueer and cisgender LGB combined samples (see McGuire et al., 2018 for complete items and reliability information).

### Data analysis plan

Data were analyzed using SPSS version 23.0 (IBM Corp., Armonk, NY). We performed independent chi-square, Pearson correlation, and descriptive analyses, and independent sample *t* tests to determine significant group differences in demographics between gender identity groups and to assess the normality of the data. Next, we conducted an analysis of variance (ANOVA) to assess group mean differences. Covariates were examined then



**Table 1.** Demographic variables by transgender binary, genderqueer, and cisgender identity.

Variable	Transgender spectrum ( <i>N</i> = 252) <i>N</i> (%)	Genderqueer spectrum ( <i>N</i> = 129) <i>N</i> (%)	Cisgender LGB ( <i>N</i> = 115) <i>N</i> (%)	$\chi^2$ (df)
Age				21.93 (10)**
18–24	32 (13%)	23 (16%)	3 (3%)	
25–34	155 (61%)	82 (59%)	69 (60%)	
35–44	52 (21%)	26 (19%)	27 (23%)	
45–54	13 (5%)	6 (4%)	12 (10%)	
55–64	3 (1%)	2 (2%)	4 (4%)	
65–74	0 (0%)	1 (1%)	0	
Race/ethnicity				16.02 (12)n.s.
White	142 (56%)	94 (67%)	71 (63%)	
Black	40 (16%)	14 (10%)	14 (12%)	
Latinx	21 (8%)	10 (7%)	11 (9%)	
American Indian	8 (3%)	9 (6%)	5 (4%)	
Asian/Pacific Islander	34 (13%)	9 (6%)	12 (11%)	
Middle Eastern	1 (1%)	0 (0%)	0 (0%)	
Multitethnic	9 (4%)	4 (2%)	0 (0%)	
Sex assigned at birth				10.65 (6)n.s.
Female	94 (37%)	71 (51%)	57 (50%)	
Male	154 (61%)	68 (49%)	57 (50%)	
Not assigned	4 (2%)	1 (1%)	0 (0%)	
Sexual orientation				193.47 (16)***
Lesbian	24 (9%)	10 (7%)	30 (26%)	
Gay	67 (26%)	17 (12%)	50 (44%)	
Bisexual	51 (20%)	29 (21%)	28 (24%)	
Queer	38 (15%)	42 (30%)	4 (4%)	
Heterosexual/straight	32 (12%)	11 (8%)	0 (0%)	
Asexual	20 (8%)	15 (11%)	3 (3%)	
Pansexual	17 (7%)	11 (8%)	0 (0%)	

Note. Total percentages may not add up to 100 because of missing cases or rounding. "Latinx" is a gender-neutral term for Latina/Latino. "SO" indicates sexual orientation. Genderqueer spectrum indicates individuals that wrote in a gender term; genderfuck, agender, greygender, and undefined. \* $p < 0.05$ . \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

dropped in the final analysis due to a lack of significance and to improve parsimony (Leech, Barrett, & Morgan, 2012). Pairwise deletion of missing data was chosen to maintain as much power as possible for the group comparisons.

## Results

Table 1 shows sample demographics for participants stratified by gender identity (transgender, genderqueer, and cisgender). The three groups did not significantly differ on ethnicity, or sex assigned at birth, but did vary significantly on sexual orientation, and age. Cisgender participants were more likely to report lesbian or gay and less likely to report queer, pansexual or heterosexual orientations. They were also slightly older. Of the total participants in the sample ( $N = 510$ ), just over half identified as White (60%), and were assigned male at birth (55%) and most reported living in the United States (U.S., 93%), with almost all remaining living in Canada, Australia or Europe. The age of participants ranged from 18 to 75, although the majority (71%) were under 34.

**Table 2.** Correlations between subscales of the Genderqueer Identity Scale (GQI;  $N = 510$ ).

	1	2	3	4
1. Challenging binary	–			
2. Social construction	0.464***	–		
3. Theoretical awareness	0.344***	0.137**	–	
4. Gender fluidity	0.466***	0.358***	0.207***	–

Note: \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

Visual inspection of histograms and normal Q–Q plots showed that the GQI subscales were normally distributed, though slightly negatively skewed. We used ANOVA to examine mean differences across the three groups, with post hoc analyses to compare specific group means.

Prior to conducting the ANOVA, we ran Pearson correlations and examined the subscale mean scores and standard deviations to test whether the dependent variables were correlated with each other (Martin & Bridgmon, 2012). All subscales were significantly correlated with each other, as expected (see Table 2).

Mean comparisons showed that genderqueer participants tended to score higher (i.e., more genderqueer) than transgender participants on the two scales that measured *expression* of genderqueer identity (challenge the binary and

**Table 3.** Mean scores and standard deviations of Genderqueer Identity Scale (GQI) subscale variables for transgender binary, genderqueer, and cisgender individuals ( $N = 510$ ).

Variables	Transgender binary ( $n = 255$ )		Genderqueer ( $n = 140$ )		Cisgender sexual minority ( $n = 115$ )		Univariate	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (2507)	<i>p</i>
Challenging binary <sup>c</sup>	1.88 <sup>a</sup>	0.99	2.47 <sup>b</sup>	0.75	1.25 <sup>c</sup>	1.10	50.62	<0.001
Social construction <sup>c</sup>	1.83 <sup>a</sup>	0.67	1.95 <sup>a</sup>	0.63	1.37 <sup>b</sup>	0.89	23.10	<0.001
Theoretical awareness	2.54 <sup>a</sup>	0.78	2.67 <sup>a</sup>	0.80	2.26 <sup>b</sup>	0.96	8.04	<0.001
Gender fluidity <sup>c</sup>	1.86 <sup>a</sup>	0.65	2.39 <sup>b</sup>	0.62	1.45 <sup>c</sup>	0.77	64.30	<0.001

Note: Superscripts denote post hoc sub-group differences at the  $p < 0.05$  level.

fluidity), but not on the *intra-psychic* scales of social construction and theoretical awareness. Cisgender LGB participants however, scored lower (i.e., less genderqueer) than both transgender and genderqueer participants on all four scales (see Table 3).

## Discussion

This descriptive study examined the construct and predictive validity of the newly developed GQI by testing whether the GQI has the ability to discern group differences among binary transgender, genderqueer and cisgender sexual minority persons. Results showed that the GQI does distinguish binary trans persons from genderqueer trans persons for the two subscales that focus most on external indicators of genderqueer expression, or interpersonal communication of non-binary status (dressing with non-binary characteristics, preferring to confuse others, shifting expression from day to day). Regarding internal identity, binary transgender and genderqueer persons reported relatively strong theoretical awareness of gender constructs as well as a stronger propensity to have spent time working on their gender identity, whereas cisgender sexual minority persons were lower on both of those constructs. Continuing studies might seek to examine cisgender, heterosexual persons, as well as those with feminist ideology or political beliefs on these intrapersonal genderqueer identity constructs in order to establish the full spectrum.

GQI subscales examine distinct components of gender identity including challenging the gender binary, beliefs about the social construction versus essentialist nature of one's gender, theoretical awareness of gender, and the extent to which an individual's gender is fluid (McGuire et al.,

2018). In line with previous scholarship, the results provided evidence for the idea that transgender and genderqueer populations have varying experiences with gender identity, development, and expression (Diamond et al., 2011; Nagoshi & Bruzuzy, 2010). This study establishes baseline distinctions among three groups with differing gender profiles on each of the four subscales. Genderqueer individuals were highest, with high scores on all four subscales. Transgender binary individuals were high on intrapersonal scales (theory and social construction), but less so on interpersonal scales (challenging the binary and fluidity). And finally, cisgender LGB persons were in the mid-range on all of the scales, suggesting that this group was attending to issues of gender nonconformity in identity somewhat, however definitely at a lower level than transgender or genderqueer identified persons. Continuing studies across different populations, and with people across time will help to further elucidate the utility of the various sub-constructs. The differential levels across groups begin to establish some basic predictive validity for the construct and subscales. Furthermore, this finding supports measuring gender identity through multiple sub-constructs that go beyond an individual's stated identification as a way to capture the nuances of gender identity for genderqueer and nonbinary persons.

Consistent with the research hypothesis, genderqueer spectrum participants had a significantly higher mean score on the challenging the binary and gender fluidity subscales. The group differences were significant and sizeable at 70%–90% of a standard deviation. Both of these subscales specifically address components of gender identity that are conceptually distinct for genderqueer and nonbinary persons from transgender persons. A

person who identifies as genderqueer ought to be on average more likely to endorse a nonbinary gender expression and a gender expression with greater fluidity across time than a transgender binary person. Gender fluidity gauged the stability or fixedness of gender identity through changes in gender identity and expression over time, from day to day, context to context or across different developmental stages (Harrison et al., 2012; Richards et al., 2016). Importantly, one must necessarily embrace a genderqueer conceptualization of gender identity to express fluidity, although it is not necessary to be genderfluid to embrace a genderqueer identity. A genderqueer person may have a stable gender identity over time or may fluctuate their gender identity across varying temporal dimensions (Diamond et al., 2011; McGuire et al., 2018). Results showed that transgender persons were less likely to endorse gender fluidity, reinforcing the stability and affirmation of one's authentic gender identity for transgender persons, whereas for genderqueer participants, the instability may be precisely the aspect of gender that feels most authentic.

Our results also indicated small (around 20% of a standard deviation) but statistically reliable differences in participants' social construction of gender. The social construction subscale taps into contemporary discourse schisms about gender identity which define gender identity as something that is either socially constructed or something that emanates from within and is biologically determined (Serano, 2007). The mere existence of trans people contests the idea that gender is purely socially constructed because trans people are routinely policed and socialized away from gender nonconformity throughout their lifespan (Kane, 2006; Rahilly, 2015; Serano, 2007). Genderqueer participants endorsed a moderately higher mean score than their transgender spectrum counterparts, although both scores were low, supporting the idea that genderqueer and transgender participants may perceive their gender as predominately essential and innate. However, genderqueer participants are more likely to endorse social construction as an influencing force than transgender persons. Interestingly, cisgender sexual minority persons had the lowest scores, suggesting the most

essentialist beliefs, with the least perception of socially constructed influences. Continuing research can further disentangle the perceived role than individuals have for how much gender emanates from within the self, versus how much one works to create or perform a desired gender.

All groups endorsed theoretical awareness of gender identity, and the transgender and genderqueer groups were not different from one another, whereas sexual minority groups were lower. Theoretical awareness measures a dimension of identity that aligns with gender literacy, and involves raising consciousness about the ways personal gender identities intersect with structural systems of power (Nuru, 2014). An individual can be theoretically aware of gender concepts, even if they themselves are not transgender or gender nonconforming. As such, theoretical awareness captures elements of gender that exist predominantly internally, and may be less tied to physical expression of masculine and feminine traits. Queer theory and gender theory examine the ways systems work to institutionalize and legitimate certain gender identities and expressions over others (Butler, 2006; Wilchins, 2004). Thus, a theoretical awareness of gender identity suggests a critical understanding of power, privilege, and normativity in the context of gender identity and expression.

This study has argued that conceptual and subjective differences exist between transgender persons who subscribe to and seek identification within the gender binary (i.e., transitioning from one gender to another) and genderqueer persons who may transgress conventional gender identity beliefs or expressions as well as cisgender identified sexual minority persons. We found that all three samples reported in the mid-range of the scale on theoretical awareness of gender identity, revealing capacity to examine political and theoretical aspects of gender (with cisgender LGB persons being slightly lower). Likewise, all samples reported neutral to low social construction, suggesting a mix of personal essentialist and social constructionist beliefs, again with cisgender LGB persons being more essentialist than the others. It may also be true, however, that binary trans persons are more likely to endorse an essentialist understanding of gender, such that they

experience gender as emanating from within regardless of socialization efforts (Serano, 2007). Further, binary trans persons report less endorsement that their gender identity challenges the gender binary or is fluid in any way. These two scales were less highly correlated with each other and with the interpersonal scales, suggesting they tap distinct elements of genderqueer identity. Because they distinguish LGB from trans and genderqueer persons, they may be more sensitive at low thresholds of genderqueerness, and less sensitive among trans and genderqueer identified persons. The interpersonal measures were moderately correlated with each other, and distinguished transgender from genderqueer persons, suggesting they may be more sensitive at the higher end of the genderqueer spectrum. Continuing studies, with broader samples, and samples large enough to conduct item response analyses can help to further disentangle the issues of sensitivity and specificity.

Despite the innovations and strengths of this study there are notable limitations. We employed emergent technology to recruit disparate, hidden and vulnerable gender-variant populations; finding important differences across those samples, suggesting the relevance of disaggregating the transgender umbrella population in future research. The MTurk sampling strategy proved to be extremely effective. However, there are challenges to controlling the variables, enforcing recruitment parameters, and ensuring generalizability. The capacity of MTurk to anonymously sample a large swath of the country or world significantly limits generalizability due to the heterogeneity and anonymity of the sample. Further, MTurk workers may represent a specific population of transgender and genderqueer individuals with consistent access to the Internet and the ability to pass MTurk background checks. Each of the four waves of data were collected within a 12-month period, and each had slightly different selection parameters. This can affect the quality of the data, as well as which workers are approved to take a survey. With each wave of data collection, our strategies of data management improved, thus reducing the numbers of lost surveys due to problem responses.

We employed several strategies to mitigate uncertainty about participants' identity and jokester self-reports (see Fan et al., 2006; Fish and Russell, 2018). Yet, the novelty of the recruitment method left room for mistakes. For example, the first pilot sample collected was open to MTurk workers throughout the world. Amazon inspects and ensures workers' identities through their platform, therefore we included the international sample. However, in the subsequent pilot studies we employed more stringent MTurk qualifications, narrowing to a U.S. sample of transgender and genderqueer spectrum identified adults with a 50% approval rating for previous work.

We ensured the participants met specific inclusion criteria through an introductory question after consent, which asked participants to choose one gender identity. If they chose an option that was not the target gender identity, they were skipped at the end. The PI received <10 emails from potential participants who felt they should have been included in the questionnaire. Thus, the screening procedure employed and the arbitrary boundaries we placed on gender point to the limitations of having one, two, or three demographic questions intended to measure nuanced gender subjectivity (Dickey et al., 2016; Reisner et al., 2015).

Dickey et al. (2016) have argued the need to develop, implement, and evaluate health interventions aimed at reducing the minority stress and negative social experiences among transgender persons to improve their well-being and life satisfaction. A major element of accomplishing this goal is the capacity to recruit and measure gender minority populations. However, surveillance systems have historically not included questions that enable gender minority respondents to identify which has contributed to a legacy of transgender and genderqueer erasure in health data (Reisner et al., 2015). Further, because genderqueer individuals were historically limited from care in medical institutions for care, our understanding of their health and well-being is severely lacking (Diamond et al., 2011; Doan, 2016; Harrison et al., 2012). This study echoes the sentiments of previous scholars who have argued an urgent need for culturally competent transgender-related research (Dickey et al., 2016; Rankin & Garvey, 2015; Reisner et al., 2015).



## Disclosure statement

The authors declare they have no conflicts of interest.

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## References

- Beek, T. F., Kreukels, B. P. C., Cohen-Kettenis, P. T., & Steensma, T. D. (2015). Partial treatment requests and underlying motives of applicants for gender affirming interventions. *Journal of Sexual Medicine*, 12(11), 2201–2205. doi:10.1111/jsm.13033
- Bockting, W. O. (2014). Transgender identity development. In D. L. Tolman & L. Diamond (Eds.), *APA Handbook of Sexuality and Psychology, Vol. 1: Person-Based Approaches*. (pp. 739–758). Washington, DC: American Psychological Association. doi:10.1037/14193-024
- Bradford, N. J., Rider, G. N., Catalpa, J. M., Morrow, Q. J., Berg, D. R., Spencer, K. G., & McGuire, J. K. (2018). Creating gender: A thematic analysis of genderqueer narratives. *International Journal of Transgenderism, Advance Online Publication*, 1. doi:10.1080/15532739.2018.14.74516
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6(1), 3–5. doi:10.1177/1745691610393980
- Butler, J. (2006). *Gender trouble: feminism and the subversion of identity*. New York, NY: Routledge.
- Diamond, L. M., Pardo, S. T., & Butterworth, M. R. (2011). Transgender experience and identity. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of Identity Theory and Research* (pp. 629–647). New York, NY: Springer.
- Dickey, L. M., Hendricks, M. L., & Bockting, W. O. (2016). Innovations in research with transgender and gender nonconforming people and their communities. *Psychology of Sexual Orientation and Gender Diversity*, 3(2), 187–194. doi:10.1037/sgd0000158
- Doan, P. L. (2010). The tyranny of gendered spaces – Reflections from beyond the gender dichotomy. *Gender, Place & Culture*, 17(5), 635–654. doi:10.1080/0966369X.2010.503121
- Doan, P. L. (2016). To count or not to count: Queering measurement and the transgender community. *WSQ: Women's Studies Quarterly*, 44(3–4), 89–110. doi:10.1353/ws.2016.0037
- Fan, X., Miller, B. C., Park, K.-E., Winward, B. W., Christensen, M., Grotevant, H. D., & Tai, R. H. (2006). An exploratory study about inaccuracy and invalidity in adolescent self-report surveys. *Field Methods*, 18(3), 223–244. doi:10.1177/152822X06289161
- Fish, J. N., & Russell, S. T. (2018). Have mischievous responders misidentified sexual minority youth disparities in the national longitudinal study of adolescent to adult health? *Archives of Sexual Behavior*, 47(4), 1053–1067.
- Harrison, J., Grant, J., & Herman, J. L. (2012). A gender not listed here: Genderqueers, gender rebels, and otherwise in the LGBTQ. *Policy Journal at the Harvard Kennedy School*, 2(1), 13–24.
- Johnson, A. H. (2016). Transnormativity: A new concept and its validation through documentary film about transgender men. *Sociological Inquiry*, 86(4), 465–491. doi:10.1111/soin.12127
- Kane, E. W. (2006). “No way my boys are going to be like that!”: Parents' responses to children's gender nonconformity. *Gender & Society*, 20(2), 149–176. doi:10.1177/0891243205284276
- Leech, N. L., Barrett, K. C., & Morgan, G. A. (2012). Multivariate analysis of variance (MANOVA) and canonical correlation. In *IBM SPSS for Intermediate Statistics: Use and Interpretation* (4th ed., pp. 194–222). Oxfordshire, United Kingdom: Taylor and Francis.
- Martin, W. E., & Bridgmon, K. D. (2012). *Quantitative and statistical research methods: From hypothesis to results*. San Francisco, CA: Jossey-Bass.
- McGuire, J. K., Beek, T. F., Catalpa, J. M., & Steensma, T. D. (2018). The Genderqueer Identity (GQI) Scale: Measurement and validation of four distinct subscales with trans and LGBQ clinical and community samples in two countries. *International Journal of Transgenderism, Advance Online Publication*, 1. doi:10.1080/15532739.2018.1460735.
- McGuire, J. K., Kivalanka, K. A., Catalpa, J. M., & Toomey, R. B. (2016). Transfamily theory: How the presence of trans\* family members informs gender development in families. *Journal of Family Theory & Review*, 8(1), 60–73. doi:10.1111/jftr.12125
- Muñoz, J. E. (1999). Disidentifications: Queers of Color and the Performance of Politics. *Cultural Studies of the Americas, Volume 2*. doi:queer theory
- Nagoshi, J. L., & Brzuzy, S. (2010). Transgender theory: Embodying research and practice. *Affilia*, 25(4), 431–443. doi:10.1177/0886109910384068
- Nagoshi, J. L., Brzuzy, S., & Terrell, H. K. (2012). Deconstructing the complex perceptions of gender roles, gender identity, and sexual orientation among transgender individuals. *Feminism & Psychology*, 22(4), 405–422. doi:10.1177/0959353512461929
- Nuru, A. K. (2014). Between layers: Understanding the communicative negotiation of conflicting identities by transgender individuals. *Communication Studies*, 65(3), 281–297. doi:10.1080/10510974.2013.833527
- Rahilly, E. P. (2015). The gender binary meets the gender-variant child: Parents' negotiations with childhood gender variance. *Gender & Society*, 29(3), 338–361. doi:10.1177/0891243214563069
- Rankin, S. S., & Garvey, J. C. (2015). Identifying, quantifying, and operationalizing queer-spectrum and trans-spectrum students: Assessment and research in student

- affairs. *New Directions for Student Services*, 2015(152), 73–84. doi:10.1002/ss
- Reisner, S. L., Conron, K. J., Scout, B., K., Herman, J. L., Lombardi, E., . . . , Matthews, A. K. (2015). “Counting” transgender and gender-nonconforming adults in health research: Recommendations from the gender identity in US surveillance group. *Transgender Studies Quarterly*, 2(1), 34–57. doi:10.1215/23289252-2848877
- Richards, C., Bouman, W. P., Seal, L., Barker, M. J., Nieder, T. O., & T’Sjoen, G. (2016). Non-binary or genderqueer genders. *International Review of Psychiatry*, 28(1), 95–102. doi:10.3109/09540261.2015.1106446
- Serano, J. (2007). *Whipping Girl: A transsexual women on sexism and the scapegoating of femininity*. Berkeley, CA: Seal Press.
- Stachowiak, D. M. (2017). Queering it up, strutting our threads, and baring our souls: Genderqueer individuals negotiating social and felt sense of gender. *Journal of Gender Studies*, 26(5), 532–543. doi:10.1080/09589236.2016.1150817
- Stryker, S. (2008). Transgender history, homonormativity, and disciplinarity. *Radical History Review*, 2008(100), 145–157. doi:10.1215/01636545-2007-026
- Wilchins, R. A. (2004). *Queer theory, gender theory: An instant primer*. Los Angeles, CA: Alyson Books.