

THE EFFECTS OF MEDICAL AND LEGAL TRANSITION ON GENDER NON-
AFFIRMATION IN A PROBABILITY SAMPLE OF U.S. TRANSGENDER AND GENDER
NON-CONFORMING ADULTS

by

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of U.S. Transgender and Gender Non-conforming Adults

Thesis directed by Assistant Professor Adam M. Lippert

ABSTRACT

As a minoritized group with a stigmatized identity, transgender people are subject to unique stressors that result in poorer overall mental health outcomes than their cisgender peers. Using the gender minority stress model as a framework, along with data from the national probability sampled TransPop survey, this study examines the relationships between medical and legal transition and gender non-affirmation. Trans non-binary individuals were found to have higher levels of non-affirmation and utilize medical and legal transition at lower rates than transgender men and transgender women. Undergoing gender-affirming surgical procedures and changing gender markers on legal documents were found, in separate models, to have significant negative associations with gender non-affirmation. This work aligns with previous studies, indicating a possible path to better mental health outcomes for transgender people through improved access to gender-affirming surgeries and legal gender marker change.

The form and content of this abstract are approved. I recommend its publication.

Approved: Adam M. Lippert

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CHAPTER I

INTRODUCTION

Transgender and gender non-conforming (TGNC) people are a minoritized, yet heterogeneous, group whose mental and physical health outcomes are worse compared to cisgender people, with higher reported rates of depression, anxiety, psychological distress, poor physical and mental health days, and suicide ideation and attempts (Adams, Hitomi, and Moody 2017; Bockting et al. 2013; Budge, Adelson, and Howard 2013; Meyer et al. 2017; Stacey, Reczek, and Spiker 2022; Su et al. 2016; Valentine and Shipherd 2018). The minority stress model explains these higher levels of poor mental health among minoritized groups as the effect of stress caused by stigma, prejudice, and discrimination. The gender minority stress model identifies stress factors that are unique to TGNC people and that are inversely related to mental and physical health (Testa et al. 2015). While all of those stress factors play an important role in overall health, this paper focuses on non-affirmation of gender identity as a distal stressor for TGNC adults.

Gender affirmation for TGNC people occurs when some aspect of their social sphere provides positive feedback about the way they present their gender. That feedback can occur through relatives and friends using their preferred name, through presenting identification that matches their gender identity, through living in a body that has been medically transformed to match their identity, or through multiple other ways. Non-affirmation occurs when others express confusion or misunderstanding about a TGNC person's gender, which leads to increased stress as they work harder to perform and explain their gender identity. This stands in stark contrast to the experiences of cisgender people, for whom gender affirmation occurs naturally through interaction with the gender norms of their culture.

Gender affirmation can be achieved through four dimensions: social, psychological, legal, and medical affirmation (Reisner, Radix, and Deutsch 2016). The consequences of gender affirmation cannot be overstated. Feeling affirmed in one's gender identity has been shown to result in higher self-esteem, lower levels of anxiety, and lower levels of depression, so understanding the effects of each dimension of affirmation could help improve health outcomes for TGNC people (Fontanari et al. 2020; Glynn et al. 2016; Tucker et al. 2018). TGNC people are not a homogenous group, though, and there is no single path to achieving the highest level of gender affirmation. The extant literature has left questions related to the benefits of specific mechanisms of gender affirmation. More research is needed to understand which mechanisms yield the highest returns on the well-being of TGNC people.

Given these research gaps, the first objective of this study is to examine differences among groups under the transgender umbrella, specifically the differences among trans men, trans women, and those who do not identify with either end of the binary. Non-binary people may not need the same dimensions of gender affirmation as trans men or trans women because they do not always feel the same need to conform to masculine or feminine norms (Galupo, Pulice-Farrow, and Pell 2021; Lane, Waljee, and Strousma 2022). I propose that gender non-binary adults have significantly different levels of non-affirmation than trans men and trans women, and that they utilize medical and legal transition options at a lower rate than trans men and trans women.

The second objective of this study is to examine the effects of medical transition treatments on gender non-affirmation for all TGNC adults. Gender-affirming hormone therapy (GAHT) and surgical treatments change aspects of the body to align more closely with gender identity. Physical gender expression is a visual cue to others, who are then less likely to

experience confusion about a TGNC person's identity. In addition, looking in the mirror each day and seeing a face and body that align with one's identity should lead to more confidence that others see and lead them to accept a TGNC person's identity. Thus, I propose that GAHT and having undergone surgical procedures will decrease non-affirmation.

The third objective of this study is to examine the effects of legal transition on gender non-affirmation. Providing proof of identification is required for many activities of daily life, and when ID contains a name and gender marker that do not match gender identity, a TGNC person may be reluctant to participate in social life, causing feelings of stigmatization and non-affirmation. Thus, I propose that changing name and gender marker on legal documents will decrease non-affirmation.

Increasing numbers of studies that quantify the lived experiences of TGNC people have been conducted over the past decade. However, most of those that currently exist have relied on non-probability sampling, which makes them difficult to generalize to the larger TGNC population. The TransPop U.S. Transgender Population Health Survey is the first to collect data from a national probability sampling of TGNC and cisgender people, allowing for a more robust generalization to the U.S. TGNC population. In this study, I use TransPop data to examine the relationships between gender-affirming surgical and hormonal treatments and experiences of non-affirmation, as well as the relationships between gender-affirming legal name change and gender marker change and experiences of non-affirmation.

CHAPTER II

BACKGROUND AND LITERATURE REVIEW

TGNC People, Stigma, and Stress

Transgender, gender non-conforming, and gender non-binary are all terms that refer to people who do not identify with the sex they were assigned at birth. Conversely, the term “cisgender” refers to people who do identify with their sex assigned at birth. Some transgender people identify as males or trans men, some identify as females or trans women, and a third group does not identify with the gender binary and instead refer to themselves as non-binary, gender non-conforming, genderqueer, or agender. An estimated .7% to 1.6% of all U.S. adults identify as TGNC (Brown 2022; Jones 2022). Recent evidence suggests that identifying as TGNC is more common among younger Americans (5%), hinting at generational differences in gender identification and the possibility of a temporal increase in the prevalence of TGNC identification (Brown 2022). Even so, among comparable peer countries, people in the US identify with TGNC labels at a lower rate, implying that those identities are stigmatized (World Population Review n.d.).

Link and Phelan have defined stigma to exist, “when elements of labeling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them” (2001:377). Stigma has also been identified as a fundamental cause of health inequalities. A fundamental cause is one that works through multiple risk factors to influence multiple health outcomes, involves access to resources (knowledge, money, prestige, power, social connections) that can be used to minimize or avoid health issues, and its links to inequitable health outcomes are reproduced across time and place through the creation of new mechanisms when old ones are eliminated (Hatzenbuehler, Phelan, and Link 2013; Link and Phelan 1995; White Hughto,

Reisner, and Pachankis 2015). Stigma works at multiple levels and through multiple pathways. It occurs at the individual, interpersonal, and structural levels, and can work directly or indirectly to create stressors that affect health outcomes (Hatzenbuehler et al 2013; White Hughtoet al 2015).

TGNC people have repeatedly been shown to be at higher risk than their cisgender counterparts for a variety of mental health conditions. In a study of 547,727 adult college students from 2009 to 2014, TGNC people were found to have significantly higher odds of anxiety (OR=1.71), depression (OR=1.91), and panic attacks (OR=1.52) compared to cisgender women (Oswalt and Lederer 2017). A study of 767 LGBT adults in 2010 found that identifying as transgender was associated with higher odds of depression (OR=2.33) and attempted suicide (OR=2.59) compared to those who did not identify as transgender (Su et al. 2015). Another study of 43,632 adult college students during the 2016-2017 academic year found TGNC people to have significantly higher scores for depression and generalized anxiety than their cisgender peers (Borgogna et al. 2019). The implication of findings such as these is that TGNC people are exposed to additional stressors compared to the cisgender population, and that those stressors are based on having a stigmatized gender identity. Moreover, this points to the need for theoretical frameworks to understand the link between gender affirmation and mental health outcomes. The minority stress and gender minority stress models provide such a framework.

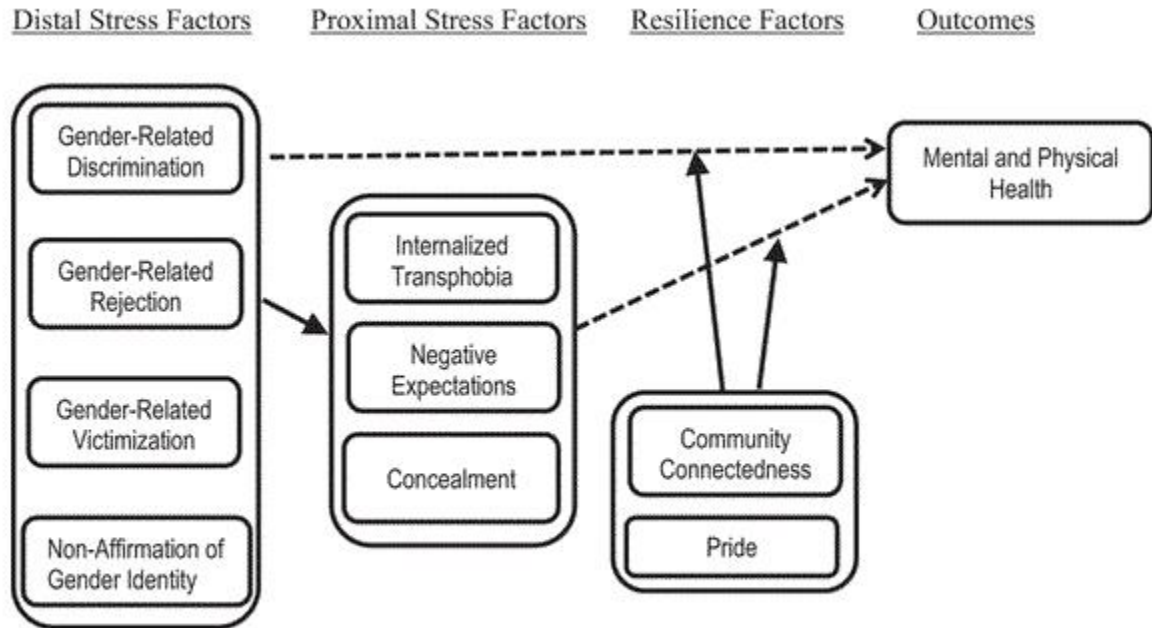
Minority Stress and Gender Minority Stress Models

The minority stress model posits that minoritized groups are exposed to unique stressors caused by conflict with dominant groups, “because dominant culture, social structures, and norms do not typically reflect those of the minority group” (Meyer 2003:675). For sexual minorities (lesbian, gay and bisexual (LGB) people), Meyer (2003) defined those stressors as

either distal, such as prejudice events, or proximal, such as expectations of rejection, identity concealment, and internalized homophobia. These stressors are negatively associated with mental health outcomes but may be mitigated by resilience factors such as coping strategies, community support, and pride in identity (Meyer 2003). Research has supported the model, with studies showing that prejudice events of victimization (violence or threat of violence) were associated with increased anxiety (Jaspal, Lopes, and Breakwell 2022), internalized homophobia was positively correlated with psychological distress (Puckett et al. 2015) and general stress (Cramer et al. 2017), and identity concealment predicted social phobia (Cohen et al. 2016). Those and other studies found that social support was negatively associated with anxiety and depression (Jaspal et al. 2022) and higher coping ability was associated with less general stress (Cramer et al. 2017). These results indicate that, although LGB people are exposed to additional stressors compared to heterosexual individuals, working to improve resilience strategies could improve mental health.

Derived from the minority stress model, the gender minority stress framework accounts for certain stress factors that are unique to TGNC people (Hendricks and Testa 2012). Figure 1 depicts the relationships among distal and proximal stress factors, resilience factors, and outcomes proposed by Testa et al. (2012). Distal stresses are identified as gender-related discrimination, gender-related rejection, gender-related victimization, and non-affirmation of gender identity. These factors are negatively related to mental and physical health but can also be mediated by three proximal stress factors (internalized transphobia, negative expectations, and identity concealment) which are in turn negatively related to mental and physical health. The relationships between distal stressors and health outcomes and between proximal stressors and

outcomes are moderated by resilience factors of community connectedness and pride in identity (Testa et al. 2015).



Minority stress and resilience factors in transgender and gender non-conforming people. Dashed line indicates inverse relationships.

Figure 1: Minority Stress and Resilience Model (Testa et al. 2015)

Based on this model, Testa et al. (2015) developed and validated the Gender Minority Stress and Resilience Measure (GMSR), a series of nine scales that measure each of the nine identified stressors and resilience factors. Research has supported the model, including a study of 330 TGNC adults that found a positive correlation between gender-related discrimination and psychological distress (Valente et al. 2020), a study of 1093 trans men and trans women that found enacted stigma (acts of discrimination) was positively associated with psychological distress while peer and family support and identity pride were negatively associated with psychological distress (Bockting et al. 2013), and a study of 191 trans women that found gender-related stigma (elements of gender-related discrimination and gender-related victimization) was positively associated with depression and anxiety (Yang et al. 2015). A study of 350 Brazilian

youth (ages 16-24) found that access to multiple types of gender affirmation was associated with lower levels of depression and anxiety, while taking part in gender affirming processes helped them develop pride in their TGNC identities (Fontanari et al. 2020). This indicates a need for a deeper understanding of the processes that lead to gender affirmation.

Gender affirmation

As previously mentioned, gender affirmation is considered a key buffering factor against the stressors that flow from having a marginalized gender identity. However, the path to gender affirmation may involve many different mechanisms; thus, this complex concept is in need of deeper clarification. Gender affirmation is a social process in which a person is recognized in their gender identity (Fontanari et al. 2020; King and Gamarel 2021; Reisner et al 2016; Sevelius 2013). It is an ongoing, iterative process composed of multiple dimensions. Previously, some researchers have defined three dimensions as social, legal, and medical affirmation (Breslow et al. 2021; Fontanari et al. 2020) while others have added a fourth dimension of psychological affirmation (Glynn et al. 2016; King and Gamarel 2021; Reisner et al. 2016). Social affirmation occurs through actions such as family, friends, and institutions using a TGNC person's chosen name and personal pronouns. Legal affirmation refers to being able to change names and gender markers on legal documents. Medical affirmation occurs through medical transition, such as puberty blockers for prepubescent youth and GAHT or gender confirming surgical procedures for older youth and adults. Psychological affirmation occurs when a TGNC person feels that their gender is respected, and they are able to reject internalized stigma and transphobia. Improvements in any single dimension should lead to a decrease in perceived overall gender non-affirmation, which should improve mental health outcomes. Using the language of non-affirmation found in the TransPop data, this study focuses on how medical and legal affirmation

relate to gender non-affirmation, knowing that gender non-affirmation is negatively associated to mental health. This proposed process is depicted in figure 2.

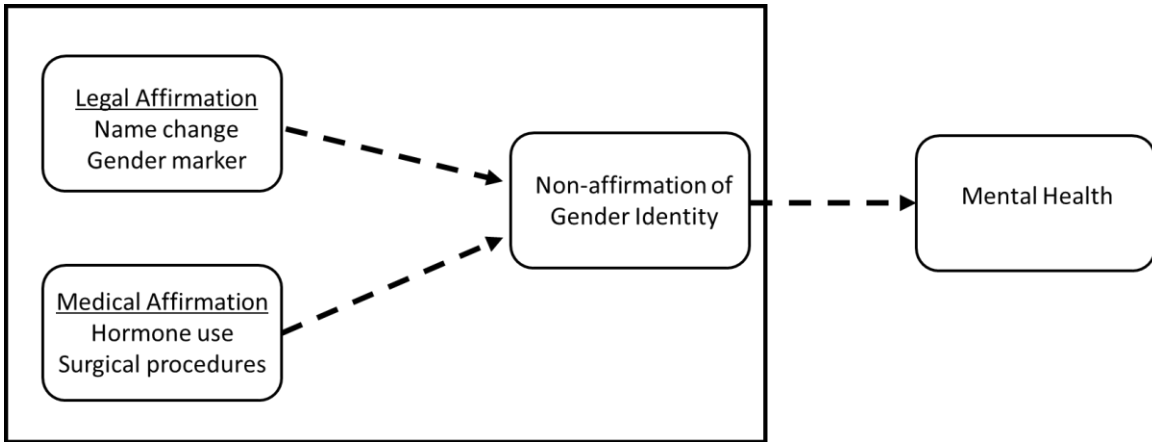


Figure 2: Proposed relationships between legal and medical affirmation and gender non-affirmation. Dashed lines indicate negative relationships.

Medical affirmation: GAHT and surgical procedures

TGNC people have existed in all societies throughout history, but surgical procedures and GAHT to assist transition became available only beginning in the early 20th century. German physician Magnus Hirschfeld, motivated by the depression and suicide deaths of many of his homosexual patients, founded the Institute for Sexual Science in Berlin in 1919; there, he and his colleagues in surgery, psychiatry, endocrinology, gynecology, and dermatology performed gender-affirming surgeries and offered GAHT to transgender people in a safe environment (Bhinder and Upadhyaya 2021). Although the Institute was eventually destroyed by the Nazi party during its rule, the Institute’s work had spread to the U.S., where endocrinologist Harry Benjamin offered GAHT and referrals for surgery overseas to transgender patients, then in 1966, the Johns Hopkins Gender Identity Clinic became the first in the U.S. to perform gender-affirming surgeries (Bhinder and Upadhyaya 2021).

In the time since Hirschfeld's case studies of transgender individuals, researchers in the fields of psychology, medicine, and sociology have documented the associations between medical gender affirmation and mental health. A study of 206 transgender veterans found that those who were on GAHT and had undergone both chest and genital surgery had significantly lower levels of suicidal ideation than those who had neither, used GAHT only, or used GAHT and had either chest or genital surgery (Tucker et al. 2017). A review of cross-sectional and longitudinal studies between 2013 and 2018 found that TGNC people using GAHT reported lower depressive symptoms and that for those classified as middle-aged and older, there was a significant reduction in stress and anxiety (Nguyen et al. 2018). A study of 288 TGNC adults found that having undergone any surgical procedure was negatively associated with depression and anxiety while surgical procedures and GAHT were negatively associated with stress (Hughto et al. 2020).

Legal affirmation: name and gender marker change

In the U.S., legal identification is required to participate in many aspects of daily life. It is needed to obtain employment, open a bank account and apply for credit, enroll in school, access health care, and apply for social safety net programs. There is not a federal standard for name and gender marker changes, though, and in many states those changes are a burdensome, non-trivial matter. Currently, only 24 states plus Puerto Rico and Washington D.C. have name change procedures that do not require publication of a name change announcement, which can be an invasive and expensive process (MAP n.d.). Changing a gender marker can be even more invasive, with only 27 states, Puerto Rico, and Washington D.C. allowing a gender marker change on birth certificate without proof of sex reassignment surgery or a court order and only 22 states plus D.C. allowing a change on driver's licenses without provider certification (MAP

n.d.). Requiring proof of surgery, provider certification, and court orders can be difficult for TGNC people who may not have the financial or emotional means to access them or may not want/need the surgery the laws require. Additionally, only 17 states allow the gender-neutral “X” identifier, barring many non-binary people who may prefer that identity from accessing it (MAP n.d.).

The 2015 U.S. Transgender Survey found that about 30% of respondents had completed a legal name change, and only 11% had ID that reflected their correct name and gender (James et al. 2016). TGNC people whose ID does not match their gender identity have reported being verbally and physically abused (Hill et al. 2018; James et al. 2016) and experiencing higher levels of psychological distress than those who have some or all of their ID documents match their gender identity (Restar et al. 2020; Scheim, Perez-Brumer, and Bauer 2020). Coupled with obstacles to accessing institutional resources and services, the challenges stemming from legal affirmation of one’s gender identity arrive in both distal and structural forms as well as more proximal and interpersonal forms.

CHAPTER III

DATA & METHODS

Data

This study is a secondary analysis of the TransPop Survey, a transgender population health survey, conducted by a consortium of academic and non-profit institutions¹. The TransPop Survey was conducted in two phases between April 2016 and December 2018. Participants were recruited through a combination of random digit dialing and address-based sampling in a joint effort with Gallup, Inc. Potential participants were first screened for age (18+), education level (6th grade or higher), ability to complete the survey in English, and transgender status. Those who passed the screening were invited to participate in the survey. In phase 1, .12% of initial contacts were invited to participate in the study, and in phase 2, .21% of initial contacts were invited. Among those who were initially eligible, the completed survey response rate was 30.3% in phase 1 and 28.7% in phase 2 (Krueger et al. 2020). The TransPop survey authors employed single imputation by chained equations using predictive mean matching to impute missing values for personal income. The public-use version of the data set, along with TransPop documentation, was accessed through ICPSR (Meyer 2021). The data set consists of 274 TGNC adults and 1,162 cisgender adults. For this analysis, I used only the TGNC sample. I used listwise deletion to drop a total of 12 observations with missing responses for hormone usage (3), surgical procedures (3), name change (1), education (4), or relationship status (1), leaving a total sample of N = 262 for analysis.

¹ Williams Institute at UCLA School of Law, Columbia University, Harvard University, and The Fenway Institute at Fenway Health

Study Variables

The dependent variable in this study is non-affirmation of gender identity, one of the distal stress factors defined in the GMSR. It is a six-item scale used to determine the degree to which participants felt others understand their gender identity. Scale items included statements such as, “I have to repeatedly explain my gender identity to people,” and, “People don't respect my gender identity because of my appearance or body” (Testa et al. 2014). All six of the scale statements can be found in Appendix A. Respondents were instructed to choose their level of agreement with each statement from a 5-point Likert scale, ranging from “strongly disagree” to “strongly agree.” The sum of responses for all six items represents each respondent’s total non-affirmation scale score. Values range from 0, indicating the least non-affirmation, to 24, indicating the most non-affirmation. The scale has a Cronbach’s Alpha of $\alpha = .93$, which replicates the original work of scale development (Testa et al. 2015). I treat this variable as continuous for analysis.

The key independent variables were GAHT use, surgical procedures, preferred name on legal documents, and correct gender marker on legal documents. All four variables were operationalized as dichotomous. GAHT was coded as 1 for ever having used hormones and 0 for never having used them. Surgical procedures was coded as 1 if the respondent answered yes to having had at least one of four listed procedures for transgender men or one of nine listed procedures for transgender women, and 0 for having had no procedures. Name change was coded 1 for having some or all legal documents with preferred name and 0 for having no legal documents with preferred name. Gender marker was coded 1 for having some or all legal documents with correct gender marker and 0 for having no legal documents with correct gender marker.

Transgender status was a categorical variable with three categories: trans nonbinary, trans male, and trans female. Other demographic variables include age at the time of survey as a continuous variable, race (white or non-white), marital status as a dichotomous variable (married/other legal partnership or not married), education level as a categorical variable (high school or less, some college, college degree, more than college), and personal income as a categorical variable (\$0-\$24,999, \$25,000-\$49,999, \$50,000-\$99,999, \$100,000 +).

Statistical Analysis

I first examined descriptive statistics for the full sample, and by transgender status: trans men, trans women, and trans non-binary. Statistical significance for differences among trans status groups is based on linear combination of estimators (lincom), as recommended for analysis of weighted data using Stata (StataCorp 2021; UCLA Statistical Consulting Group n.d.a). Next, I used multiple linear regression, adjusted for age, race, marital status, education, and personal income, to investigate the relationships between (1) medical affirmation (GAHT use and surgical procedures) and non-affirmation score, (2) legal affirmation (name change and gender marker change) and non-affirmation score, and (3) medical and legal affirmation (GAHT use, surgical procedures, name change, and gender marker change) and non-affirmation score. Classically, multiple linear regression assumes linear relationships between independent and dependent variables, conditional normal distribution of dependent variable, homoscedasticity, and that the sample is random (Agresti and Finlay 2014). In practice, these assumptions are checked, and a model considered the best linear unbiased estimator (BLUE), through examination of residuals (Agresti and Finlay 2014; Allison 2022; Williams, Grajales, and Kurkiewicz 2013). For this study, skewness and kurtosis of residuals, along with visual inspection of residuals histograms, showed that multiple linear regression was a satisfactory method; in addition, multicollinearity is

checked through examination of variance inflation factors (VIF) (Agresti and Finlay 2014; UCLA Statistical Consulting Group n.d.a, n.d.b). Appendix B contains skewness, kurtosis, and VIF data for all three models. All analyses were conducted using Stata/SE 17.0. I applied sampling weights included in the data set for all analyses. Gallup applied weights at each stage of the survey, with the final data set adjusted on gender, age, education, census region, race and ethnicity. Targets were based on the demographic profile of the respondents who initially qualified for the TransPop survey (Krueger et al. 2020).

CHAPTER IV

RESULTS

Table 1 summarizes the characteristics of the full study sample. The full sample had a mean age of 33.9 years and was about 58% white. On average, 56% of the sample had at least some college education and 61.5% earned less than \$25,000 per year. Medical transition rates were below 50%, with only 33.5% of the sample reporting having undergone any transition-related surgical procedures and 42.9% reporting having ever used GAHT. Legal transition was mixed, with 48.1% reporting having changed their names on some or all legal documents and 35.0% reporting having changed their gender marker on some or all legal documents.

Table 1: Characteristics of Full Sample

Characteristic	Full sample (n=262)
Mean non-affirmation score (SD)	12.75 (7.55)
GAHT use (%)	42.9
Undergone surgery (%)	33.5
Name changed on legal documents (%)	48.1
Gender marker changed on legal documents (%)	35.0
<i>Demographics</i>	
Mean age, years (SD)	33.9 (14.8)
Race (%)	
White	58.4
Non-white	41.6
Married (%)	15.1
Annual personal income (%)	
<\$25,000	61.5
\$25,000 - \$49,999	21.2
\$50,000 - \$74,999	7.8
\$75,000 - \$99,999	6.1
>=\$100,000	3.4
Education level (%)	
High school or less	43.9
Some college	31.4
4-year college degree	14.8
Over 4-year college degree	10.0

* p <.05, ** p<.01, *** p<.001

Table 2 compares the sample by transgender status. A series of lincom tests were run for each variable to check for statistically significant differences among groups. Demographically, trans women were on average older than both trans men and trans non-binary people. There was a statistically significant difference in mean age between the trans non-binary group and the trans female group ($\beta = -11.3 \pm 2.5$ years, $p = .000$) and between the trans female group and the trans male group ($\beta = 11.5 \pm 2.5$ years, $p = .000$), but no statistically significant difference between the trans non-binary and trans male groups ($\beta = 0.22 \pm 2.6$ years, $p = .931$). The majority of all three groups were white, with no statistically significant differences in race among them. Less than 20% of all three groups were married, with no statistically significant difference among them. The majority of each group earned less than \$25,000 per year, but the only significant difference in groups occurred in the \$75,000-\$99,000 category, where there was a statistically significant lower percent of trans non-binary people than trans women ($\beta = -11.6\% \pm 3.1\%$, $p = .001$). Half or more of each group had at least some college education, but there was a statistically significant higher percent of trans non-binary people than trans men with more than a 4-year college degree ($\beta = -10.2\% \pm 4.8\%$, $p = .034$).

The average non-affirmation score ranges from a low of 10.61 for trans men to a high of 17.46 for trans non-binary people. There was a statistically significant difference in mean non-affirmation score between the trans non-binary group and the trans female group ($\beta = 6.68 \pm 1.19$ points, $p = .000$) and between the trans non-binary group and the trans male group ($\beta = 6.86 \pm 1.43$ points, $p = .000$), but no statistically significant difference between the trans men and trans women groups ($\beta = 0.17 \pm 1.47$ points, $p = .906$). GAHT use was higher among trans men and trans women than among trans non-binary people. There was a statistically significant difference in GAHT use between the trans non-binary group and the trans female group ($\beta = -41.9\% \pm 8.11\%$,

p=.000) and between the trans non-binary group and the trans male group ($\beta=-36.6\% \pm 9.24\%$, p=.000), but no statistically significant difference between the trans men and trans women groups ($\beta=5.31\% \pm 9.75\%$, p = .587).

Table 2: Sample Characteristics by Transgender Status

Characteristic	Trans men (FTM) n=74	Trans women (MTF) n=117	Trans non- binary n=71
Mean non-affirmation score (SD)	10.61 (7.77)	10.78 (7.56)	17.46 (4.80)***
GAHT use (%)	51.9	57.3	15.3***
Undergone surgery (%)	33.4	45.6	18.1**
Name changed on legal documents (%)	50.3	52.7	39.9
Gender marker changed on legal documents (%)	42.0	51.6	6.6***
<i>Demographics</i>			
Mean age, years (SD)	29.3 (13.0)	40.8 (16.1)	29.5 (11.4)***
Race (%)			
White	56.8	60.8	57.0
Non-white	43.2	39.2	43.0
Married (%)	11.2	19.5	13.3
Annual personal income (%)			
<\$25,000	67.4	56.6	62.0
\$25,000 - \$49,999	17.4	21.9	24.2
\$50,000 - \$74,999	8.2	6.4	9.2
\$75,000 - \$99,999	4.9	11.2	0.6*
>=\$100,000	2.1	3.9	4.0
Education level (%)			
High school or less	51.7	41.8	38.6
Some college	32.0	34.6	26.7
4-year college degree	11.1	14.2	19.3
Over 4-year college degree	5.2	9.4	15.4*

* p <.05, ** p<.01, *** p<.001; all tests for significance through linear combination of estimators (lincom)

Surgical procedures were also higher among trans men and trans women than among trans non-binary people. There was a statistically significant difference in surgical procedures between the trans non-binary group and the trans female group ($\beta=-27.5\% \pm 8.26\%$, p=.002), but not between the trans non-binary group and the trans male group ($\beta=-15.3\% \pm 8.77\%$, p=.082) or between the trans men and trans women groups ($\beta=12.2\% \pm 9.23\%$, p = .186). Name change on

legal documents was slightly higher among trans men and trans women than among trans non-binary people, but the differences were not statistically significant. Finally, gender marker change on legal documents occurred more among the trans men and trans women groups than the trans non-binary group. There was a statistically significant difference in percent who had their gender marker changed between the trans non-binary group and the trans female group ($\beta = 45.0\% \pm 7.31\%$, $p = .000$) and between the trans non-binary group and the trans male group ($\beta = 35.4\% \pm 8.29\%$, $p = .000$), but no statistically significant difference between the trans men and trans women groups ($\beta = 9.57\% \pm 9.69\%$, $p = .324$).

Table 3 presents the results of the regression analyses, reported as coefficients and 95% confidence intervals. Holding all other variables constant, model 1 found both surgical procedures to be a statistically significant factors in reducing non-affirmation score, with having had any surgical procedures corresponding to a 3.51 point ($p = .005$) reduction. Trans status was also significant. Trans men have a 3.03 point ($p = .024$) lower non-affirmation score than trans non-binary people, and trans women have a 5.25 point ($p = .000$) lower score than trans non-binary people, controlling for all other variables. Age and having a college degree were also statistically significant variable, with each additional year of age associated with a .12 point ($p = .001$) reduction in non-affirmation score and compared to those with high school or less education, people with a 4-year college degree have a 2.63 point ($p = .043$) higher score.

In model 2, name change was not significant, but gender marker change was, corresponding to a drop of 4.34 points ($p = .003$) in non-affirmation score. Trans status was also significant in this model. On average, trans men have a 3.47 point ($p = .006$) lower non-affirmation score than trans non-binary people, and trans women have a 4.99 point ($p = .000$) lower score than trans non-binary people, controlling for all other variables. Age was also

significant in this model, with each additional year of age associated with a .08 point (p=.030) reduction in non-affirmation score.

Table 3. Weighted linear regression results predicting non-affirmation scores (N=262)

	Model 1 Medical Affirmation	Model 2 Legal Affirmation	Model 3 Medical and Legal Affirmation
GAHT use	-2.07 (-4.63, 0.49)		-2.45 (-5.19, 0.29)
Surgical procedures	-3.51 (-5.95, -1.07) **		-1.46 (-4.12, 1.20)
Name change		-1.76 (-3.92, 0.40)	-1.66 (-3.81, 0.49)
Gender marker change		-4.34 (-7.19, -1.50) **	-2.87 (-5.82, 0.07)
Trans status			
Non-binary	---	---	---
Male	-3.03 (-5.67, -.40)*	-3.47 (-5.91, -1.02)**	-2.71 (-5.25, -.18)*
Female	-5.25 (-7.56, -2.94)***	-4.99 (-7.44, -2.54)***	-4.44 (-6.80, -2.09)***
Age	-0.12 (-0.19, -0.05) **	-0.08 (-0.15, -.01)*	-0.07 (-0.14, 0.00)*
Race			
White	0.66 (-1.28, 2.60)	0.51 (-1.49, 2.51)	0.60 (-1.29, 2.49)
Married	-1.75 (-4.47, 0.97)	-1.03 (-3.54, 1.47)	-1.69 (-4.32, 0.93)
Annual personal income			
<\$25,000	---	---	---
\$25,000 - \$49,999	-0.28 (-2.54, 1.99)	0.15 (-2.14, 2.44)	0.36 (-1.850, 2.57)
\$50,000 - \$74,999	-2.58 (-5.57, 0.40)	-2.38 (-5.38, 0.63)	-2.06 (-4.88, 0.75)
\$75,000 - \$99,999	-2.52 (-6.21, 1.18)	-0.95 (-4.26, 2.36)	-1.57 (-4.87, 1.73)
>=\$100,000	-1.52 (-5.19, 2.16)	-0.87 (-3.93, 2.18)	-1.32 (-4.48, 1.84)
Education			
High school or less	---	---	---
Some college	-0.21 (-2.34, 1.93)	0.35 (-1.96, 2.65)	0.58 (-1.54, 2.70)
4-year college degree	2.63 (0.79, 5.19) *	1.85 (-0.68, 4.38)	2.61 (0.15, 5.07)*
Over 4-year college degree	1.09 (-1.56, 3.74)	0.37 (-2.11, 2.85)	1.31 (-1.09, 3.72)
<i>R</i> ²	.3728	.3811	.4130

* p <.05, ** p<.01, *** p<.001

For model 3, which tested all four variables of medical and legal affirmation, none of the four were significant. Controlling for all other variables, trans status was significant, with trans men having a 2.71 point (p=.036) lower non-affirmation score than trans non-binary people, and trans women having a 4.44 point (p=.000) lower score than trans non-binary people. Age and having a college degree were again also statistically significant variable, with each additional year of age associated with a .07 point (p=.041) reduction in non-affirmation score and compared

to those with high school or less education, people with a 4-year college degree have a 2.61 point ($p=.038$) higher score.

Table 3 also shows R^2 values for each model. Model 2 may be considered slightly better than model 1, with 38.11% of the variability in non-affirmation score being accounted for by model 2 and 37.28% of the variability in non-affirmation score being accounted for by model 1. Model 3 has a higher R^2 than either model 1 or model 2, as expected, because adding additional variables to a linear regression model results in a higher R^2 (Agresti and Finlay 2014:442).

Regression models were also run to check for significance of GAHT use, surgical procedures, name change, and gender marker change separately. Those models indicated that all of the four items were significant, controlling for trans status, age, race, marital status, education level, and personal income. Those results can be found in Appendix C.

CHAPTER V

DISCUSSION

Transgender and gender non-conforming (TGNC) people are a minoritized group that suffers from disproportionate mental health challenges relative to their cisgender peers, experiencing higher levels of anxiety, depression, suicide ideation and attempts, and psychological distress (Borgogna et al. 2019; Oswalt and Lederer 2017; Su et al. 2015). Recent evidence suggests that identifying as TGNC is becoming more common (Brown 2022), pointing to a need to better understand the proximal and distal stressors that predispose TGNC people to mental and emotional suffering. Drawing on the minority and gender minority stress models and the gender affirmation model, this study set out to accomplish the following aims: (1) ascertain differences in non-affirmation among trans men, trans women, and trans non-binary adults, (2) examine the relationship between medical affirmation and gender non-affirmation, and (3) examine the relationship between legal affirmation and gender non-affirmation. The findings point to several mechanisms of gender affirmation that may be beneficial to TGNC persons.

First, as expected, there were significant differences between transgender people who identify with a binary (trans men and trans women) and those who are non-binary. The average non-affirmation score was significantly higher for the non-binary group than either the trans men or trans women groups. They also used medical transition and legal gender marker change at a significantly lower rate than trans men and trans women. This adds to previous studies which have found that non-binary individuals pursue medical transition procedures at lower rates (Galupo, Pulice-Farrow, and Pell 2021; Nieder, Eyssel, and Kohler 2020), which may be due to feeling less discomfort in their natal bodies than trans men or trans women. The lower use of gender marker change among non-binary people may reflect the unavailability of using a gender-

neutral marker in the majority of the U.S. (MAP n.d.). Overall, it may be that this group receives more benefit from social or psychological gender affirmation.

The evidence in this study suggests that, for trans men and trans women, when examining both forms of medical affirmation, undergoing surgical procedures is positively associated with gender affirmation. When examining both forms of legal affirmation for trans men and trans women, gender marker change is positively associated with gender affirmation. These results add to the existing studies that find that both medical interventions (Nguyen et al. 2018; Rowniak, Bolt, and Sharifi 2019; Sevelius et al. 2021; Tucker et al. 2018) and changing legal documents to reflect gender identity (Restar et al. 2020; Scheim, Perez-Brumer, and Bauer 2020) are associated with positive mental health outcomes for TGNC adults. Additional factors not included in this analysis could help explain why GAHT and legal name change were significant by themselves (appendix C), but not in combination with surgical procedures or gender marker changes.

CHAPTER VI

LIMITATIONS

One limitation of this study is the cross-sectional nature of the data; it provides only a snapshot of TGNC experience, and thus cannot be used to claim causality. A longitudinal study would provide more detailed information about how experiences of non-affirmation change between pre-transition and post-transition, as well as how non-affirmation changes over the life course. Another limitation is the small sample size. The sample size of $n=262$ is acceptable for the analysis of effects of medical and legal transitions on non-affirmation for the full sample and for the three groups of trans men, trans women, and trans non-binary. However, given the significant differences noted between the trans non-binary group and the trans men and trans women groups, more in-depth analysis on the subgroups non-binary assigned female at birth, and non-binary assigned male at birth would be informative. That seems ill-advised when those subgroups consist of samples as small as $n=15$.

While perhaps not a limitation, I think it is worth noting that multiple linear regression may not be the best method of modeling this data. Future work could consider creating categories for non-affirmation, rather than using it as a quasi-continuous variable, and analyzing the data with an ordered logit model. Given the rich data in the TransPop data set and the numerous stressors and resilience factors identified by the gender minority stress model, structural equation modeling might produce a more nuanced understanding of the relationships in the model.

CHAPTER VII

CONCLUSION

TGNC people find gender affirmation through multiple dimensions. By quantifying the effects of those dimensions, we can develop best practices to help guide transition treatment for TGNC people. Decreasing non-affirmation should then lead to better health outcomes, benefitting the TGNC population directly and reducing some of the burden on physical and mental health services. This study has focused on medical transition treatments and legal transition, but further work is needed to quantify the psychological and social dimensions of gender affirmation, as well as their interactions. Medical, social, and legal affirmation do not occur independently of each other and are likely tied to psychological affirmation. Using the TransPop data set to explore these relationships will provide probability-based results that can be used to verify or refute the results of other studies that have relied on convenience sampling.

We can also seek to influence policy with these data-based results rather than with fear of the unknown and misunderstood. This is especially important in a time when politically conservative state legislatures across the United States are enacting laws that target TGNC people by making it illegal for families to seek gender-affirming medical treatments for TGNC youth, making it difficult or impossible for all TGNC people to access legal name and gender marker changes, and denying TGNC people social affirmation with laws that allow others to misgender and refuse to use their chosen names in the name of religious freedom. These discriminatory laws are a form of structural stigma that add to the stress TGNC people face.

People under 18 are not represented in the TransPop data set, so I cannot assert that the results of this study apply directly to them. However, 9 participants reported having started GAHT between the ages of 13 and 17. Further work is needed to determine if there are

significant relationships among the age GAHT was started, age at time of survey, and non-affirmation before a conclusion can be drawn about TGNC people under age 18. In addition, although studies involving TGNC children are difficult and require careful attention to safety and privacy, further work should be done to determine the effects of puberty blockers, a common treatment prescribed for pre-pubescent TGNC children, on gender affirmation.

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APPENDIX A

GMSR Non-affirmation of Gender Identity Scale

Response options: 5-point scale from *strongly disagree* to *strongly agree*

1. I have to repeatedly explain my gender identity to people or correct the pronouns people use.
2. I have difficulty being perceived as my gender.
3. I have to work hard for people to see my gender accurately.
4. I have to be “hypermasculine” or “hyperfeminine” in order for people to accept my gender.
5. People don’t respect my gender identity because of my appearance or body.
6. People don’t understand me because they don’t see my gender as I do.

(Testa et al. 2014)

APPENDIX B

Model Diagnostics

	Model 1	Model 2	Model 3
	Residuals	Residuals	Residuals
Skewness	0.057	0.291	0.206
Kurtosis	3.03	3.01	3.29

Variable	VIF		
	Model 1	Model 2	Model 3
surgery	1.67	--	1.72
gaht	1.6	--	1.72
name	--	2	2
gen_marker	--	2.38	2.65
trans			
	2	1.87	1.89
	3	1.65	1.68
age	1.47	1.63	1.66
white	1.12	1.08	1.12
married	1.27	1.26	1.3
pers_inc			
	1	1.15	1.16
	2	1.13	1.13
	3	1.21	1.22
	4	1.14	1.15
educ1			
	2	1.25	1.32
	3	1.28	1.24
	4	1.35	1.32
Mean VIF	1.37	1.46	1.54

APPENDIX C

Additional Regression Models

Weighted linear regression results predicting non-affirmation scores (N=262)

	No Affirming Changes	GAHT Use	Surgical Procedures	Name Change	Gender Marker Change
GAHT use		-3.74 (-5.94,-1.54)**			
Surgical procedures			-4.54 (-6.59,-2.50)***		
Name change				-4.00 (-5.93,-2.08)***	
Gender marker change					-5.53 (-7.98, -3.08)***
Trans status					
Non-binary	---	---	---	---	---
Male	-4.74 (-7.21, -2.28)***	-3.11 (-5.85, -.37)*	-3.70 (-6.11,-1.29)**	-4.85 (-7.15,-2.55)***	-3.06 (-5.57, -0.55)*
Female	-6.83 (-9.32, -4.34)***	-5.28 (-7.68,-2.88)***	-5.90 (-8.20,-3.60)***	-6.33 (-8.70,-3.97)***	-4.76 (-7.30, -2.23)***
Age	-0.15 (-0.23, -0.08)***	-0.14 (-0.21,-0.07)***	-0.11 (-0.18, -.05)**	-0.10 (-0.17,-0.03)**	-0.08 (-0.16, -0.01)*
Race					
White	0.57 (-1.56, 2.70)	1.01 (-1.02,3.05)	0.36 (-1.59, 2.32)	0.62 (-1.42,2.66)	0.46 (-1.55, 2.48)
Married	-0.79 (-3.40, 1.82)	-1.46 (-4.17, 1.24)	-1.55 (-4.23, 1.14)	-1.35 (-3.90,1.20)	-0.79 (-3.32, 1.75)
Annual personal income					
<\$25,000	---	---	---	---	---
\$25,000 - \$49,999	-1.00 (-3.51, 1.50)	-0.34 (-2.67, 1.99)	-0.54 (-2.85, 1.78)	-0.27 (-2.60, 2.06)	0.06 (-2.30, 2.41)
\$50,000 - \$74,999	-3.41 (-6.91, 0.09)	-2.84 (-6.05, 0.38)	-2.75 (-5.79, 0.29)	-2.71 (-6.06, 0.65)	-2.49 (-5.52, 0.54)
\$75,000 - \$99,999	-1.96 (-5.65, 1.74)	-2.44 (-6.09, 1.22)	-2.33 (-6.01, 1.35)	-1.06 (-4.41, 2.29)	-1.18 (-4.59, 2.23)
>=\$100,000	-1.00 (-5.41, 3.42)	-1.34 (-5.14, 2.45)	-1.42 (-5.24, 2.40)	-1.34 (-4.84, 2.17)	-0.65 (-3.73, 2.43)
Education					
High school or less	---	---	---	---	---
Some college	-0.96 (-3.42, 1.50)	-0.44 (-2.73, 1.85)	-0.36 (-2.52, 1.81)	0.23 (-2.07, 2.54)	0.04 (-2.25, 2.32)
4-year college degree	1.41 (-1.34, 4.16)	2.24 (-0.32, 4.81)	2.39 (-0.27, 5.06)	1.82 (-0.71, 4.34)	1.74 (-0.85, 4.34)
Over 4-year college degree	-0.52 (-3.41, 2.36)	0.33 (-2.42, 3.08)	0.95 (-1.73, 3.62)	0.42 (-2.41, 3.25)	0.09 (-2.32, 2.50)
R^2	.2953	.3426	.3617	.3493	.3743

* p <.05, ** p<.01, *** p<.001

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