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## Parent/Caregiver Responses to Gender Identity Associated with HIV-Related Sexual Risk Behavior among Young Trans Women in San Francisco

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### Abstract

**Purpose:** Young trans women (YTW) carry a disproportionate burden of HIV. The developmental context of HIV risk for YTW is underexamined. The aim of this analysis was to examine whether parent/caregiver responses to gender identity were associated with engagement in HIV-related sexual risk behavior for YTW, and whether this association varied by racial/ethnic identity or age.

**Methods:** Baseline data from the SHINE study (n=300) at San Francisco Department of Public Health (2012-2014) were analyzed. Multivariable Poisson binomial regression models characterized relationships between parent/caregiver responses to gender identity and HIV-related sexual risk behaviors, adjusting for select participant demographics. Statistically significant interactions (by race/ethnicity or age) were plotted using marginal predicted probabilities of sexual risk behaviors.

**Results:** 37% of YTW engaged in any condomless anal intercourse; 12% reported income from sex work in the last month. Ever moving away from family and friends because of gender identity was associated with condomless anal intercourse (adjusted prevalence ratio, PR=1.44, 95% CI=1.08-1.92,  $P=0.01$ ) and sex work (PR=2.07, 95% CI=1.14-3.75,  $P=0.02$ ). Ever receiving poor treatment from parents/caregivers because of gender identity was associated with sex work (PR=3.47, 95% CI=1.52-7.95,  $P<0.01$ ). Greater parent/caregiver acceptance of gender identity was associated with lower adjusted prevalence of condomless anal intercourse for Hispanic/Latinx YTW.

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**Conclusion:** Negative parent/caregiver exposures related to YTW’s gender identities were associated with increased HIV-related sexual risk behaviors, while parent/caregiver acceptance of gender identity was protective against condomless anal intercourse for Hispanic/Latinx YTW. There is a need for additional studies that inform interventions for YTW focusing on parent/caregiver relationships to prevent HIV-related risk behavior.

### Keywords

young trans women; HIV risk behavior; sexual risk behavior; parents/caregivers; intersectionality

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## 1. Introduction

“Transgender woman” and “trans woman” are umbrella terms for individuals assigned a male sex at birth whose gender identities are not “man.” For the purposes of the present analysis, we will use the term “young trans women” (YTW) to refer to trans women less than 25 years of age and “Latinx” as a gender-neutral term for Latino/Latina ethnicity. Although YTW comprise a small percentage of the population [1, 2], the HIV prevalence for YTW in the U.S. is estimated to be as high as 19% or 22% [3, 4]. The HIV prevalence among adult trans women in the U.S. is about 28% [5], and in San Francisco is estimated to be 40% [6]. The substantial increase in HIV prevalence for trans women from adolescence to adulthood speaks to a critical need for interventions that reduce HIV-related risk behaviors among YTW.

Structural, social, and individual level factors underlying HIV/AIDS incidence have been identified as important targets of intervention efforts [7]. Specifically, developmental factors such as parental support, monitoring, and communication have been associated with lower engagement in sexual risk behaviors in studies of adolescents and young adults [8–10]. Parental support was also protective against engaging in HIV-related sexual risk behaviors in studies of sexual minority youth [1,4, 11]. In a review of parental influences such as connectedness, values, and reactions to sexual identity on the health of lesbian, gay, and bisexual youth aged 10 – 24 years, researchers found that parents had either a negative or positive impact on their children’s risk behaviors and health outcomes [11]. Even through young adulthood, parents and caregivers continue to influence the health behaviors of their lesbian, gay, and bisexual children [12]. A study by Ryan and colleagues found that among lesbian, gay, and bisexual young adults, those with high parental rejection during adolescence had significantly higher odds of engaging in sexual risk behavior compared to those with little or no parental rejection earlier in their development [12]. However, information about the developmental context of risk behaviors among gender minority youth is lacking [13].

YTW are susceptible to gender-based discrimination and violence from parents. Many trans women are reprimanded for expressing gender non-conformity and report being thrown out of their family home [15], which leads to a multitude of co-occurring, adverse health outcomes [1, 15] and engagement in sexual risk behavior. One qualitative study found that HIV risk behaviors are influenced by young trans women’s relationships with their parents [16]. Participants who reported regular use of condoms during sexual intercourse were more

likely to characterize the relationship with their parents as supportive. Conversely, those who reported no or inconsistent condom use during sex tended to describe their relationship with their parents as unsupportive [16].

Black or African American and Hispanic/Latinx YTW make up a majority of new HIV diagnoses among trans adolescents and young adults [14] and are raised in different familial and cultural contexts from white YTW. Religiosity is rooted within Black or African American and Hispanic/Latinx familial traditions and can shape more stringent parent/caregiver views of gender roles [15]. Moreover, the additional adversity faced by youth with intersectional identities (i.e., those who are members of gender and racial minority groups) may add to parent/caregiver concerns and lead to further rejection of nonconforming gender identities for YTW of color [15]. Familial factors unique to Black or African American and Hispanic/Latinx YTW may lead to differential engagement in HIV-related sexual risk behavior compared to white YTW, which has implications for subsequent HIV infection.

This analysis was conducted to examine the developmental context of sexual risk behavior for YTW enrolled in a HIV risk and resilience study of young trans women ages 16 – 24 years in the San Francisco Bay Area. We examined the associations between parent/caregiver exposures (e.g., parent/caregiver acceptance of gender identity, poor treatment from parents/caregivers because of gender identity, and moving away from friends and family because of gender identity) and engagement in sexual risk behavior among YTW. Similar to other studies noting racial/ethnic differences in the relationship between parent/caregiver factors and sexual health outcomes [8, 10], we hypothesize that the association between parent/caregiver exposures and sexual risk behavior will be different for YTW depending on their races/ethnicities. We also hypothesize that parent/caregiver exposures will have varying associations with sexual risk outcomes by age since younger YTW are within a sensitive developmental window, requiring more parent/caregiver support as they reconcile their gender identity and experience gender-based discrimination at the same time [16]. Much work is needed to determine what, if any, influence parents/caregivers have on the sexual risk behaviors of YTW who are highly impacted by HIV.

## 2. Methods

### 2.1. Study design and procedures

Data for this project come from the SHINE study, conducted at the San Francisco Department of Public Health from 2012-2014. SHINE is the first longitudinal study of YTW ages 16-24 years living in the San Francisco Bay Area. The aim of the study was to characterize HIV risk and resilience behaviors within this community. Face-to-face surveys, administered by a research assistant fluent in Spanish and English, captured data on a number of factors, including demographics, the social environment, substance use, gender expression and sexual behaviors at baseline and at 12-month follow-up. Informed consent, available in Spanish and in English, was obtained by all participants. The Institutional Review Boards at University of California, San Francisco and University of California, Berkeley provided approval for study procedures (IRB # 12-08875).

## 2.2. Participants

Eligibility criteria for participants included: being assigned a male sex at birth and self-identifying their current gender identity as something other than a man, being 16-24 years of age, living in the San Francisco Bay Area, and speaking English or Spanish. Recruitment methods for this study are described in detail elsewhere [17]. In brief, collaborations with community-based organizations and community leaders led to the identification of 10 diverse YTW (with respect to age, cultural background, and residence) who were enrolled in the study. These YTW were then given between 3 and 5 coupons to refer eligible peers from within their social networks. Eligible peers referred from these YTW were then given between 3 and 5 coupons to refer their eligible peers, and so on. An initial sample of about 100 YTW was recruited via this respondent-driven sampling (RDS) method. Convenience sampling using primarily social network site recruitment was then used in conjunction with RDS to reach the final sample size of YTW. In total, 300 participants were enrolled in the study. Of these participants, some were excluded from analyses due to missing data (see Table 1 for the number of participants missing variables and Table 2 for final analysis sample sizes for each model).

## 2.3. Measures and variable selection

**2.3.1. Parent/caregiver exposures**—Parent/caregiver acceptance of gender identity was composed of ten questions that assessed the extent to which participants felt that their parents/caregivers supported their gender identity and expression. Items were adapted from a family acceptance scale developed by Ryan and colleagues under the guidance of LGBT youth and their families to capture their experiences with gender identity, expression, and support [18]. In the SHINE study, language from the family acceptance scale regarding sexual orientation was changed to language regarding gender identity or expression to avoid conflation of gender identity with sexual orientation. Some of the adapted items included: “Do any of your parents/caregivers ever talk about your trans or gender non-conforming identity with you?”; “Do any of your parents/caregivers support your gender expression?”; and “Have any of your parents/caregivers ever advocated for you when you were mistreated because of your identity?”. Participants could respond with “Yes” or “No” to these questions. Responses to the ten items were summed to create a composite score for parent/caregiver acceptance that ranged from 0 to 10. A higher score denoted a higher degree of parent/caregiver acceptance of gender identity.

YTW in SHINE were also asked study-generated questions such as whether they had ever moved away from friends or family because of their gender identity and if they had ever been treated poorly by parents/caregivers because of their gender identity. Responses to these items were also dichotomized.

**2.3.2. HIV-related sexual risk outcomes**—Consistent with other literature on sexual risk behaviors for trans women [3, 19, 20], condomless anal intercourse and engagement in sex work were used as the primary outcomes for this analysis.

Participants were considered as engaging in condomless anal intercourse if they fell into at least one of the following criteria: having condomless receptive anal intercourse one or more

times or having condomless insertive anal intercourse one or more times in any of the six sexual partnerships in the last six months about which they were asked. Condomless anal intercourse was coded as a binary variable (any report versus no report in the past 6 months).

Engagement in sex work was captured by participants' responses to whether or not they earned income in the month prior to their baseline survey by exchanging sex for pay. Responses were dichotomized as "Yes" or "No".

**2.3.3. Covariates**—Covariates were selected *a priori* based on literature reviews that informed the development of a directed acyclic graph (Figure A1, which can be found in the online edition of this article). Previous studies noted the role of race/ethnicity [8, 10, 21], age [8, 22], and family religiosity [1, 9, 18] in the relationship between parental factors and sexual behaviors. Participant education level was also included as a possible confounder because of its hypothesized relationship with other variables.

Racial/ethnic categories were defined according to Office of Management and Budget (OMB) standards [23]. Due to sample size constraints, race/ethnicity was re-coded into the following categories: Black or African American (non-Hispanic or Latinx), Latinx or Hispanic, Other (non-Hispanic or Latinx Asian, American Indian or Alaska Native, Pacific Islander or Native Hawaiian, multiple races, or "other" race/ethnicity), and white (non-Hispanic or Latinx). Age was a continuous variable, defined as participants' year of age at interview. Family religiosity was assessed with the following question: "How religious is your family?" and was coded as not religious, somewhat religious, and very religious. Education level was dichotomized into participants who completed up to their high school diploma or GED versus those who completed at least some college.

## 2.4. Statistical analyses

Analyses were conducted using Stata 14 software [24]. Baseline data were used for the present analysis. Variables of interest were first examined with univariable analyses. The distributions of age and parent/giver acceptance of gender identity were checked for normality. Cronbach's alpha was calculated to determine the extent to which parent/caregiver acceptance items in the scale were consistent with one another. Crude estimates were calculated for parent/caregiver exposures in relation to HIV-related risk outcomes and compared alongside adjusted estimates.

We performed collinearity checks to ensure each covariate included in the final multivariable model contributed uniquely to the analysis. Multivariable Poisson binomial regression models were used to estimate prevalence ratios for the binary HIV-related sexual risk outcomes in the present study [25]. We investigated the associations of parent/caregiver acceptance of gender identity, ever moving away from family/friends because of gender identity, and poor treatment from parents/caregivers because of gender identity with engagement in condomless anal intercourse or sex work, controlling for race/ethnicity, age, family religiosity, and education level. Thus, a total of 6 multivariable models (3 parent/caregiver exposures by 2 HIV-related sexual risk behaviors) were produced. Since we conducted multiple tests of outcomes secondary to the primary study, we considered our analysis as exploratory and hypothesis-generating.

We also tested for multiplicative interaction to explore potential differences in the relationship between parent/caregiver acceptance and condomless anal intercourse for YTW by race/ethnicity or age. Interaction terms that fell under a p-value of 0.05 were included in the final models and considered statistically significant. To interpret statistically significant interaction terms, we additionally ran multivariable logistic regression models to fit plotted predicted probabilities of condomless anal intercourse or sex work at fixed levels of covariates.

Sensitivity of findings due to missing data were examined by checking for similarity of covariate, exposure, and outcome distributions for the full sample compared to the samples used in each of the six analysis models (restricted due to missing data) (Table A2, which can be found online).

### 3. Results

#### 3.1. Descriptive analyses

Baseline characteristics of the sample are in Table 1. Participants came from racially and ethnically diverse backgrounds: about 12% identified as Black or African American, 31% as Hispanic or Latinx, 36% as white, and 21% as “Other” race/ethnicity. The average age of YTW was about 21 years. Family religiosity was somewhat evenly distributed among YTW, with about a third of the sample each reporting having a very religious family, somewhat religious family, or non-religious family. Over half (54%) of the participants completed up to their high school diploma or GED.

Items within the parent/caregiver acceptance scale were consistent with one another (Cronbach’s alpha = 0.85) and therefore were added to create a composite score. Composite scores for parent/caregiver acceptance were normally-distributed with an average of 4.9 (SD = 3.0). Most (62%) YTW had ever experienced poor treatment from parents/caregivers because of their gender identity, and over a third (40%) had ever moved away from family and friends because of their gender identity.

Thirty-seven percent of YTW in the sample engaged in any condomless anal intercourse in the 6 months prior to their baseline visit. Twelve percent of YTM reported income from sex work in the last month.

#### 3.2. Multivariable results

Results for six multivariable models without interaction terms are presented in Table 2a and Table 2b. For YTW, parent/caregiver acceptance of gender identity was not significantly associated with condomless anal intercourse (adjusted prevalence ratio, PR=1.00, 95% CI=0.95-1.06,  $P=0.93$ ) or income from sex work in the last month (PR=0.94, 95% CI=0.85-1.05,  $P=0.28$ ) when adjusting for participant age, education level, race/ethnicity, and family religiosity. Poor treatment from parents/caregivers was also not significantly related to engaging in condomless anal intercourse (PR=1.08, 95% CI=0.78-1.48,  $P=0.65$ ), but it was associated with over three times the adjusted prevalence of sex work in the last month (PR=3.47, 95% CI=1.52-7.95,  $P<0.01$ ) compared to those who had not received poor treatment. YTW who had ever moved away from family and friends because of their gender

identity had a significantly higher adjusted prevalence of condomless anal intercourse (PR=1.44, 95% CI=1.08-1.92,  $P=0.01$ ) and sex work (PR=2.07, 95% CI=1.14-3.75,  $P=0.02$ ) compared to those who had not.

We also tested for a multiplicative interaction between parent/caregiver exposures and race/ethnicity and between parent/caregiver exposures and age in each of the six multivariable models. The coefficient for the interaction terms between parent/caregiver exposures and age was not statistically significant so it was not included in the final models. One interaction term produced statistical significance and was included in the final model: the interaction between Hispanic/Latinx race/ethnicity and parent/caregiver acceptance of gender identity in relation to condomless anal intercourse (adjusted logistic regression coefficient,  $-0.25$ , 95% CI= $-0.48$  to  $-0.02$ ,  $P=0.03$ ; adjusted Poisson binomial regression coefficient,  $-0.15$ , 95% CI= $-0.29$  to  $-0.01$ ,  $P=0.03$ ). The interactions between Black/African American, "Other", or white race/ethnicity and parent/caregiver acceptance of gender identity were not statistically significant.

Figure 1 shows the patterns of predicted probabilities of condomless anal intercourse in relation to the interaction between parent/caregiver acceptance of gender identity and race/ethnicity for the reference group of YTW (16 years of age, non-religious family, and less than a college education). The adjusted probabilities of condomless anal intercourse decrease for each one-unit increase in parent/caregiver acceptance of gender identity for Hispanic/Latinx YTW. The predicted probability patterns of condomless anal intercourse persist for other covariate combinations, but shift up or down depending on the combination. For example, predicted probabilities of condomless anal intercourse are higher for YTW with up to a high school education compared to those with a college education after adjusting for other covariates. See Table A1, which can be found with the online edition of this article, for predicted probabilities of various covariate combinations.

In checking for sensitivity of findings due to missing data, we found that the distributions of all variables included in our analysis were similar for participants from the total sample compared to those who were included in each analysis model. Each model comprised over 89% of the total available data (Table A2, which can be found online).

#### 4. Discussion

For young trans women in San Francisco, poor treatment from parents/caregivers because of gender identity was associated with recent sex work. Moving away from family and friends because of gender identity was associated with both condomless anal intercourse and sex work. Greater parent/caregiver acceptance of gender-identity was related to lower engagement in condomless anal intercourse for Hispanic/Latinx.

Few studies have investigated the family environments in which young trans women live and grow up [1, 15], particularly the manner in which parents/caregivers influence downstream sexual risk behaviors among their YTW children. Thus, checking for consistencies between the present analysis and other studies proves challenging. Our finding that parent/caregiver acceptance of gender identity was not related to condomless anal intercourse echoed



findings from another study among LGBT young adults [18]. However, including a statistical interaction with race/ethnicity allowed us to infer possible cultural differences in the developmental context of risk behavior for YTW, particularly for Hispanic/Latinx YTW.

HIV interventions are particularly critical for Hispanic/Latinx YTW and other YTW of color who make up a majority of new HIV infections in the trans community [14]. Parent/caregiver factors such as parent-child communication are consistently associated with lower engagement in sexual risk behaviors for Hispanic/Latinx and Black or African American youth [26]. This is the first study to examine parent/caregiver factors for Black or African American and Hispanic/Latinx YTW. While we did not observe an association for Black or African American YTW (possibly due to the small size of this group in SHINE), we did find that greater parent/caregiver acceptance of gender identity is protective against condomless anal intercourse for Hispanic/Latinx YTW. In unpacking this finding, we turn to *familismo*, which broadly defines families as the chief sources of social support and identity in Latinx culture, wherein family identity is deeply engrained in self-identity [27]. For YTW, parent/caregiver acceptance of gender identity may be an additional component of family identity and therefore key in reconciling self-identity. Unlike White YTW, Hispanic/Latinx YTW are vulnerable to racial discrimination and gender-based discrimination, both of which interact to produce higher HIV risk and burden. Thus, support of gender identity as a chief component of *familismo* for Hispanic/Latinx YTW could be additionally protective against HIV risk.

Unexplored theoretical mechanisms could underlie the null finding regarding the relationship between parent/caregiver acceptance and condomless anal intercourse for YTW of other racial/ethnic backgrounds. For example, parent/caregiver rejection may prompt some YTW to escape to a safer, accepting environment which would result in better health outcomes and less risky behaviors [15]. However, in the present study we found that moving away from parents/caregivers was associated with higher prevalence of HIV-related risk behaviors for YTW. Many young trans women are homeless and on their own as a result of familial rejection of gender identity and poor treatment from parents/caregivers [28]. With no financial ties and little to no employment options, they then turn to survival sex work to earn a living and are therefore at heightened HIV risk [29].

The results from this analysis should be interpreted with several limitations in mind. Due to the small sample, our estimates are imprecise. Secondly, since we conducted multiple tests of secondary outcomes, our results are to be interpreted within an exploratory, hypothesis-generating framework. Thirdly, there were unmeasured confounders in the SHINE study, including: family structure (i.e., parent/caregiver marital status), parent/caregiver age, parent/caregiver education level, and family social status.

Sampling characteristics of the study provided another challenge in interpreting results. Since the participants in the study were drawn from convenience and respondent-driven sampling, they may be more alike in certain aspects. Convenience sampling may have led to an over-representation of sexual risk behaviors and other adverse outcomes [1, 11]. If these sampling strategies resulted in choosing participants with similar parent/caregiver exposures as well, selection bias would have occurred, producing inflated or diminished point

estimates. These non-probability sampling techniques could also hinder generalizability of observed results. In any case, samples of YTW from urban centers such as San Francisco may not be representative of the overall YTW population.

Misclassification of condomless anal intercourse was another limitation. Characterizing condomless anal intercourse as binary may have masked the number of times the behavior actually occurred. For example, someone who reported condomless anal intercourse only once with one sexual partner would have been classified in the same risk category as someone engaging in that behavior multiple times. However, this would consequently underestimate any associations we found. Moreover, participants were only asked questions for up to six sexual partners, placing an upper limit on the frequency with which sexual behaviors could have occurred.

Overall, classifying sexual behaviors as “risky” was challenging. Our definitions of sexual risk behavior did not take into account partner HIV status or type of partner. However, those who reported condomless anal intercourse with primary partners may have been employed as sex workers, had concurrent sexual partners, or had primary partners who had other sexual partners [30, 31]. Sex work inherently defines partner type, but does not reflect partner HIV status. Conducting a sensitivity analysis comparing sexual risk outcomes with and without serodiscordant partners was not feasible due to the small number of YTW participating in the latter behavior. Due to the complexity of defining sexual risk in this context, non-differential information bias may have occurred, biasing results toward the null hypothesis that no association between parent/caregiver exposures and sexual risk outcomes exist.

These results should also be interpreted in the context of assumptions about parent/caregiver exposures that we collected. The parent/caregiver acceptance scale and parent/caregiver discrimination items may have captured underlying constructs other than the ones of interest. Specifically, we make the assumption that participants who moved away from family or friends because of gender identity did so due to unfair treatment from parents or caregivers. This could have occurred due to other circumstances, such as growing up in an unsupportive community. Future studies of discrimination from parents/caregivers should use careful language and validated scales to ensure accurate measurement of underlying constructs.

Another limitation was that the data were analyzed cross-sectionally. This made it impossible to capture trajectories of parent/caregiver factors and sexual risk behavior, which can easily fluctuate for YTW [15]. Temporality between parent/caregiver acceptance and sexual risk behaviors could not be established; however, it could be inferred in some cases (e.g., lifetime poor treatment from parents/caregivers could have occurred before engaging in condomless anal intercourse in the last 6 months or sex work in the last month).

Despite several limitations, the results from this analysis addressed research gaps. To current knowledge, this was one of few studies quantifying the relationship between parent/caregiver factors and engagement in HIV-related sexual behaviors in a diverse sample of young trans women in the San Francisco area. It is also one of the few studies to explore a

relevant protective exposure (parent/caregiver acceptance of gender identity) and the developmental context of sexual behaviors for YTW.

This analysis is a building block for subsequent research. In addition to parent/caregiver acceptance of gender identity, there could be other facets of family environments that may warrant exploration. Research with non-gender minority youth has shown that other family influences, such as “parental rule setting” [32] and parental monitoring [33] were more predictive of lower engagement in risk behavior than parental support. While the situation may be different for YTW, these previous studies demonstrate that specific parent-child domains, such as monitoring and communication, should be examined [11]. Finally, future studies should incorporate community-informed definitions of sexual risk behaviors that better capture the vulnerability of young trans women to HIV.

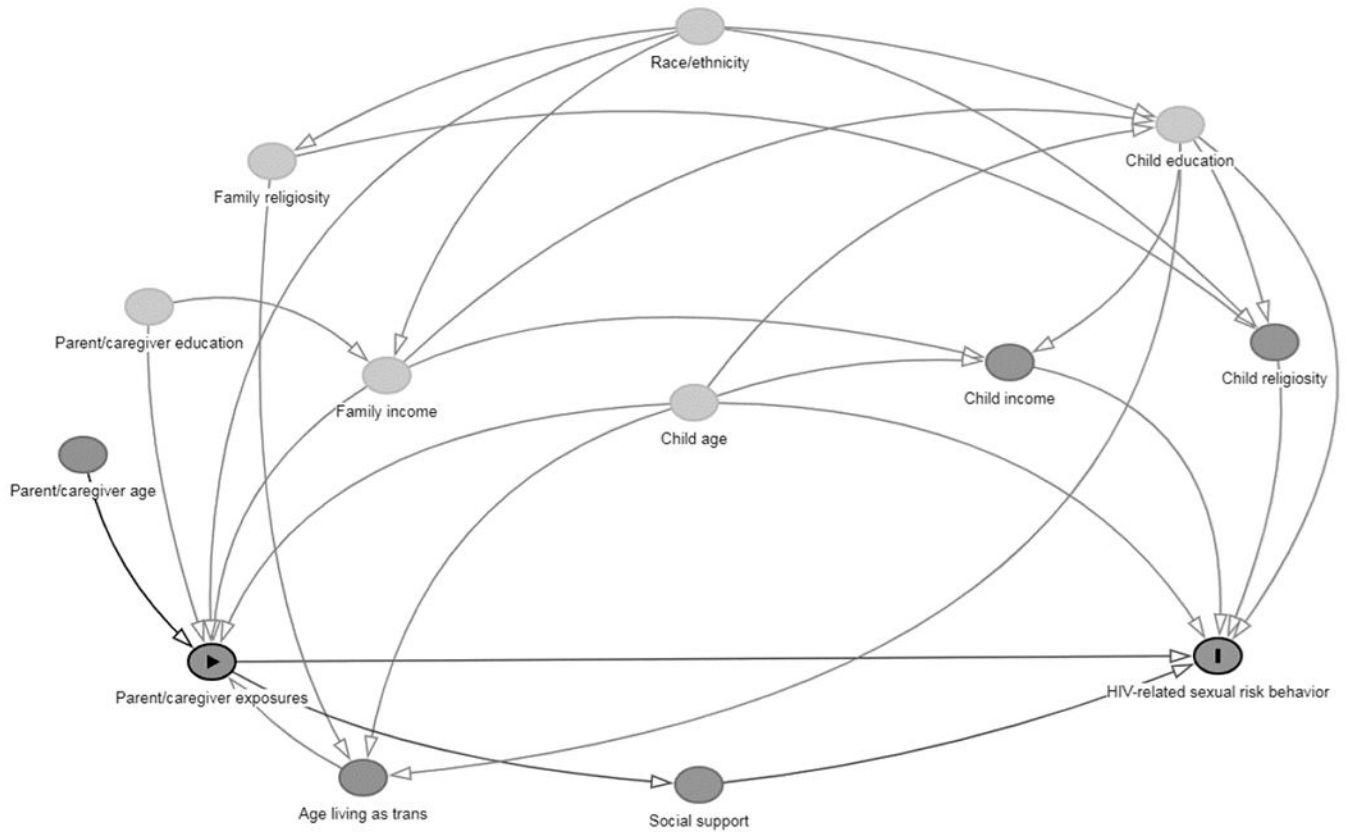
Should longitudinal analyses and/or analyses with larger samples find meaningful relationships between parent/caregiver exposures, sexual risk behavior, and race/ethnicity, this would hold important implications for HIV prevention efforts targeting YTW, such as indicating the need for parent/caregiver-based interventions that accommodate intersecting gender and racial identities. Research among Hispanic/Latinx youth has demonstrated a protective effect of parent/caregiver factors on reducing sexual risk behaviors; studies have yet to focus on the needs of trans Hispanic/Latinx youth. Many parents and caregivers of sexual minority youth are receptive in learning how to cater to their child’s unique health needs [12, 34]. If parents/caregivers are similarly open to learning about the needs of trans or gender nonconforming children, future studies could pave the way for family-based HIV interventions for young trans women.

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### **Appendix**



**Figure A1.** Directed acyclic graph of the hypothesized relationship between parent/caregiver acceptance of gender identity and sexual risk behavior, SHINE Study, San Francisco, CA, 2012-2014  
 Note: Generated with the DAGitty tool [35]

**Table A1.**

Adjusted predicted probabilities of condomless anal intercourse and 95% confidence intervals for various covariate combinations with an interaction between parent/caregiver acceptance of gender identity and race/ethnicity, SHINE Study, San Francisco, CA, 2012-2014

Combinations of characteristics	Parent/caregiver acceptance of gender identity score of 2				Parent/caregiver acceptance of gender identity score of 5				Parent/caregiver acceptance of gender identity score of 8			
	Black or African American	Hispanic or Latinx	Other race or ethnicity	White	Black or African American	Hispanic or Latinx	Other race or ethnicity	White	Black or African American	Hispanic or Latinx	Other race or ethnicity	White
18 years of age												
Non-religious families	0.44 (0.20-0.68)	0.44 (0.23-0.65)	0.34 (0.14-0.53)	0.19 (0.05-0.34)	0.41 (0.20-0.61)	0.35 (0.19-0.51)	0.39 (0.20-0.57)	0.26 (0.10-0.41)	0.38 (0.12-0.64)	0.26 (0.09-0.43)	0.44 (0.19-0.68)	0.33 (0.12-0.53)
21 years of age												
Non-religious family	0.57 (0.34-0.80)	0.58 (0.39-0.78)	0.47 (0.28-0.65)	0.29 (0.13-0.46)	0.54 (0.35-0.73)	0.48 (0.33-0.63)	0.52 (0.35-0.69)	0.37 (0.21-0.53)	0.51 (0.25-0.77)	0.38 (0.19-0.57)	0.57 (0.34-0.81)	0.46 (0.23-0.68)
24 years of age												
Non-religious families	0.70 (0.47-0.92)	0.70 (0.51-0.89)	0.60 (0.40-0.81)	0.42 (0.21-0.62)	0.67 (0.47-0.87)	0.61 (0.43-0.79)	0.65 (0.46-0.84)	0.51 (0.30-0.71)	0.64 (0.39-0.90)	0.51 (0.28-0.74)	0.70 (0.47-0.93)	0.59 (0.34-0.84)
18 years of age												
Somewhat religious families	0.47 (0.22-0.72)	0.48 (0.25-0.70)	0.37 (0.16-0.57)	0.22 (0.06-0.37)	0.44 (0.25-0.64)	0.38 (0.22-0.53)	0.42 (0.23-0.61)	0.28 (0.13-0.43)	0.41 (0.17-0.65)	0.29 (0.13-0.44)	0.47 (0.22-0.72)	0.36 (0.17-0.55)
18 years of age												
Very religious families	0.31 (0.08-0.54)	0.31 (0.11-0.51)	0.22 (0.06-0.39)	0.12 (0.02-0.23)	0.28 (0.10-0.47)	0.23 (0.10-0.36)	0.26 (0.11-0.42)	0.16 (0.06-0.27)	0.26 (0.04-0.47)	0.17 (0.05-0.28)	0.31 (0.09-0.52)	0.22 (0.08-0.35)
18 years of age												
Non-religious families	0.31 (0.06-0.56)	0.32 (0.10-0.53)	0.23 (0.05-0.41)	0.12 (0.00-0.24)	0.29 (0.06-0.51)	0.24 (0.07-0.40)	0.27 (0.08-0.46)	0.17 (0.03-0.30)	0.26 (0.01-0.52)	0.17 (0.01-0.33)	0.31 (0.06-0.56)	0.22 (0.04-0.40)
Some college and beyond												

Table A2.

Comparison of observed characteristics between the total number of participants in the SHINE study and those retained in each of the six analysis models, SHINE Study, San Francisco, CA, 2012-2014

	Full sample		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	No.	(%) <sup>b</sup>	No.	(%) <sup>a</sup>	No.	(%) <sup>a</sup>	No.	(%) <sup>a</sup>	No.	(%) <sup>a</sup>	No.	(%) <sup>a</sup>	No.	(%) <sup>a</sup>
<i>Total</i>	300	(100.00) <sup>b</sup>	272	(90.67) <sup>b</sup>	284	(94.67) <sup>b</sup>	285	(95.00) <sup>b</sup>	268	(89.33) <sup>b</sup>	281	(93.67) <sup>b</sup>	282	(94.00) <sup>b</sup>
<i>Demographics</i>														
Age, Mean (SD)	21.23	(2.17)	21.18	(2.22)	21.20	(2.21)	21.20	(2.21)	21.21	(2.20)	21.23	(2.18)	21.24	(2.18)
Race/ethnicity														
Black or African American	36	(12.00)	35	(12.87)	36	(12.68)	36	(12.63)	32	(11.94)	33	(11.74)	33	(11.70)
Hispanic or Latinx	93	(31.00)	87	(31.99)	89	(31.34)	89	(31.23)	87	(32.46)	90	(32.03)	90	(31.91)
Other	64	(21.33)	59	(21.69)	59	(20.77)	60	(21.05)	57	(21.27)	57	(20.28)	58	(20.57)
White	107	(35.67)	91	(33.46)	100	(35.21)	100	(35.09)	92	(34.33)	101	(35.94)	101	(35.82)
<i>Highest level of education completed</i>														
Some college and beyond	138	(46.00)	122	(44.85)	130	(45.77)	131	(45.96)	124	(46.27)	132	(46.98)	133	(47.16)
High school/GED or less	162	(54.00)	150	(55.15)	154	(54.23)	154	(54.04)	144	(53.73)	149	(53.02)	149	(52.84)
<i>Degree to which participant's family is religious</i>														
Very religious	101	(33.67)	94	(34.56)	97	(34.15)	97	(34.04)	95	(35.45)	99	(35.23)	99	(35.11)
Somewhat religious	103	(34.33)	93	(34.19)	98	(34.51)	98	(34.39)	89	(33.21)	94	(33.45)	94	(33.33)
Not very or not at all religious	94	(31.33)	85	(31.25)	89	(31.34)	90	(31.58)	84	(31.34)	88	(31.32)	89	(31.56)
<i>Parent/caregiver exposures</i>														
Parent/caregiver acceptance of gender identity, Mean (SD)	4.90	(3.00)	4.92	(3.00)	4.95	(3.00)	4.93	(2.98)	4.91	(2.98)	4.93	(2.97)	4.91	(2.98)
Poor treatment from parents/caregivers because of gender identity, lifetime	185	(61.67)	173	(63.60)	176	(61.97)	176	(61.75)	169	(63.06)	173	(61.57)	173	(61.35)
Ever moved away from family and friends because of gender identity	121	(40.33)	111	(40.81)	111	(39.08)	112	(39.30)	111	(41.42)	112	(39.86)	113	(40.07)
<i>HIV-related sexual risk behaviors</i>														
Condomless anal intercourse, last 6 months	112	(37.33)	104	(38.24)	109	(38.38)	109	(38.25)	101	(37.69)	106	(37.72)	106	(37.59)
Income from sex work, last month	37	(12.33)	36	(13.24)	36	(12.68)	36	(12.63)	36	(13.43)	37	(13.17)	37	(13.12)

Notes: Model 1 is a multivariable analysis of parent/caregiver acceptance of gender identity in relation to condomless anal intercourse; Model 2 is a multivariable analysis of poor treatment by parents/caregivers because of gender identity in relation to condomless anal intercourse; Model 3 is a multivariable analysis of moving away from family and friends because of gender identity in relation to

condomless anal intercourse; Model 4 is a multivariable analysis of parent/caregiver acceptance of gender identity in relation to sex work; Model 5 is a multivariable analysis of poor treatment by parents/caregivers because of gender identity in relation to sex work; Model 6 is a multivariable analysis of moving away from family and friends because of gender identity in relation to sex work

<sup>a</sup>Percentages column-calculated out of total number of participants retained in each model: Model 1 (n = 272), Model 2 (n = 284), Model 3 (n = 285), Model 4 (n = 268), Model 5 (n = 281), or Model 6 (n = 282)

<sup>b</sup>Percentages calculated out of total number of participants in SHINE (n = 300)

## Abbreviations:

YTW young trans women

## 5. References

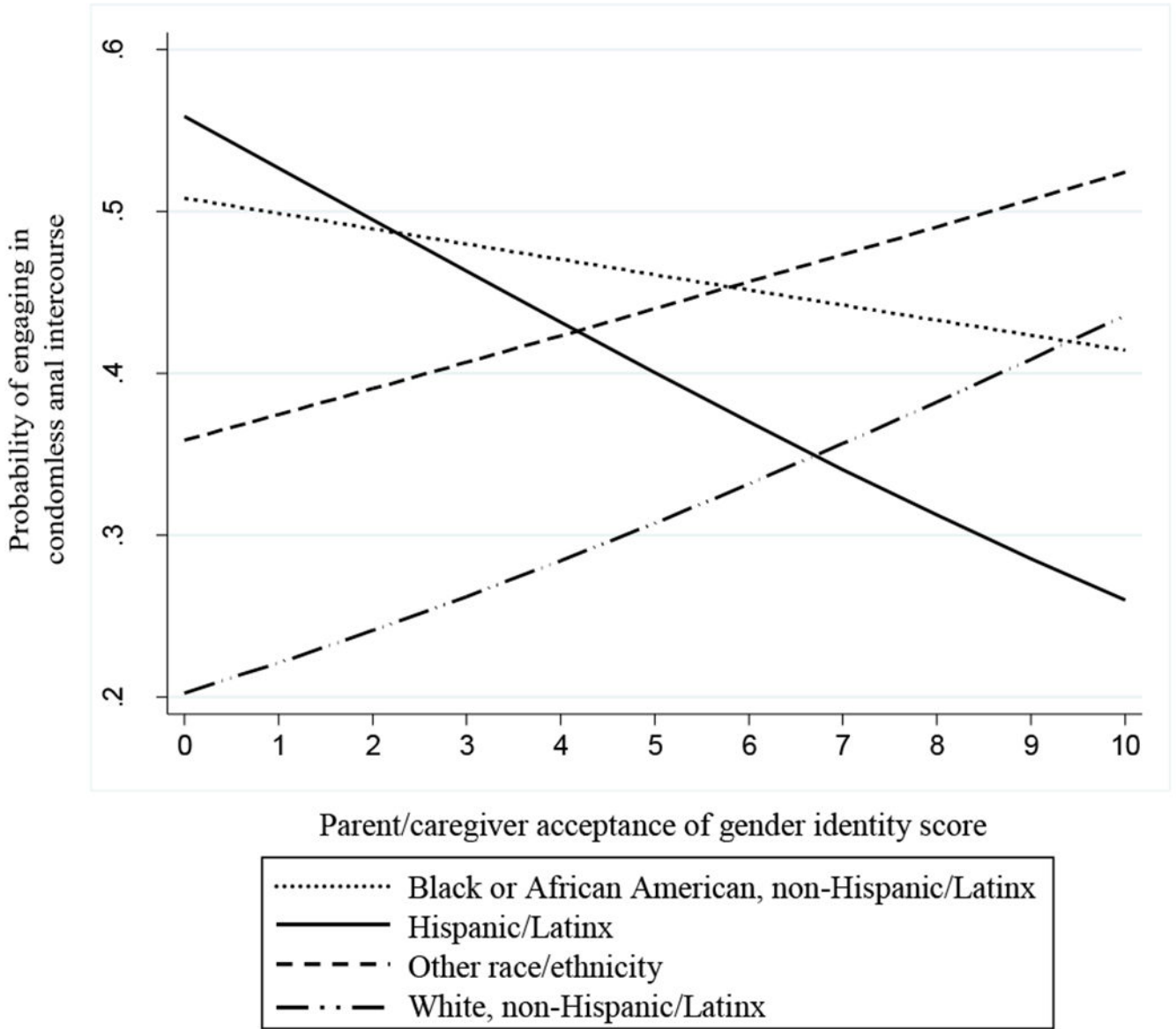
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### Implications and Contribution

Negative parent/caregiver responses to gender identity are associated with increased engagement in sexual risk behavior for young trans women (YTW); positive responses are protective for Hispanic/Latinx YTW. These findings provide preliminary evidence that parent/caregiver responses to YTW's gender identities may influence HIV risk behavior.



**Figure 1.** Adjusted predicted probabilities of condomless anal intercourse for young trans women by parent/caregiver acceptance score and participant age, SHINE Study, San Francisco, CA, 2012-2014  
Note: predicted probabilities were calculated for fixed covariate values (16 years of age, non-religious families, and HS/GED or less).

**Table 1.**

Baseline characteristics of young trans women in the SHINE Study, San Francisco, CA, 2012-2014 (n =300)

	No.	(%) <sup>a</sup>
<i>Total</i>	300	(100.00)
<i>Demographics</i>		
Age, Mean (SD)	21.23	(2.17)
Race/ethnicity		
Black or African American	36	(12.00)
Hispanic or Latinx	93	(31.00)
Other <sup>b</sup>	64	(21.33)
White	107	(35.67)
Highest level of education completed		
Some college and beyond	138	(54.00)
High school/GED or less	162	(46.00)
Degree to which participant's family is religious <sup>c</sup>		
Very religious	101	(33.67)
Somewhat religious	103	(34.33)
Not very or not at all religious	94	(31.33)
<i>Parent/caregiver exposures</i>		
Parent/caregiver acceptance of gender identity, <sup>d</sup> Mean (SD)	4.90	3.00
Poor treatment from parents/caregivers because of gender identity, lifetime <sup>e</sup>	185	(61.67)
Ever moved away from family and friends because of gender identity <sup>f</sup>	121	(40.33)
<i>HIV-related sexual risk behaviors</i>		
Condomless anal intercourse, last 6 months <sup>g</sup>	112	(37.33)
Income from sex work, last month <sup>h</sup>	37	(12.33)

<sup>a</sup>Percentages calculated out of total participants in the SHINE study (n = 300)

<sup>b</sup>“Other” race/ethnicity includes non-Hispanic/Latinx Asian (n = 18), American Indian or Alaska Native (n = 1), Pacific Islander or Native Hawaiian (n = 4), multiple races (n = 28), or participants who marked “other” (n = 13)

<sup>c</sup>Two participants are missing data for this variable, so percentages do not sum to 100.00%

<sup>d</sup>Seventeen participants are missing data for this variable

<sup>e</sup>Four participants are missing data for this variable

<sup>f</sup>Three participants are missing data for this variable

<sup>g</sup>Ten participants are missing data for this variable

<sup>h</sup>Thirteen participants are missing data for this variable

Crude and adjusted risk ratios of condomless anal intercourse by parent/caregiver exposures, SHINE Study, San Francisco, CA, 2012-2014

**Table 2a.**

	Condomless anal intercourse, last 6 months							
	cPR	95% CI	P-value	MV Model	aPR	95% CI	P-value	n
Parent/caregiver acceptance of gender identity	0.99	(0.94-1.04)	0.65	1	1.00	(0.95-1.06)	0.93	272
Ever received poor treatment from parents/caregivers because of gender identity	1.10	(0.81-1.50)	0.54	2	1.08	(0.78-1.48)	0.65	284
Ever moved away from family and friends because of gender identity	1.52	(1.13-2.03)	<0.01	3	1.44	(1.08-1.92)	0.01	285

Notes: cPR, crude prevalence ratio; aPR, prevalence ratio adjusting for race/ethnicity, age, education level, and family religiosity; CI, confidence interval; MV model, multivariable model number; n, sample size for bivariable and multivariable models after excluding missing data

Crude and adjusted risk ratios of sex work in the last month by parent/caregiver exposures, SHINE Study, San Francisco, CA, 2012-2014

**Table 2b.**

	Income from sex work, last month							
	cPR	95% CI	P-value	MV Model	aPR	95% CI	P-value	n
Parent/caregiver acceptance of gender identity	0.94	(0.85-1.03)	0.17	4	0.94	(0.85-1.05)	0.28	268
Ever received poor treatment from parents/caregivers because of gender identity	3.23	(1.39-7.49)	<0.01	5	3.47	(1.52-7.95)	<0.01	281
Ever moved away from family and friends because of gender identity	1.96	(1.07-3.60)	0.03	6	2.07	(1.14-3.75)	0.02	282

Notes: cPR, crude prevalence ratio; aPR, prevalence ratio adjusting for race/ethnicity, age, education level, and family religiosity; CI, confidence interval; MV model, multivariable model number; n, sample size for bivariable and multivariable models after excluding missing data