

# Gender Abuse and Major Depression Among Transgender Women: A Prospective Study of Vulnerability and Resilience

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Recent surveys and reports have documented pervasive society-wide abuse directed at individuals who transgress conventional gender norms.<sup>1,2</sup> Gender nonconformity and indications of male-to-female transgender identity, in particular, have been associated with psychological and even physical abuse from family members, schoolmates, coworkers, mental health professionals, substance abuse treatment providers, acquaintances, strangers, and the police.<sup>3–9</sup>

A growing public awareness of gender-related abuse and publicized cases of its apparent effects on suicidality and mental health functioning, among transgender women and broader gender-nonconforming populations, have led to calls for antibullying policies in schools, gender sensitivity training for selected service providers and law enforcement personnel, and extensions and better enforcement of hate crime statutes applicable to gender nonconformity.<sup>10,11</sup>

A growing but still sparse empirical literature suggests that gender-related abuse takes a toll on the mental health of transgender persons. Aspects of victimization (including gender abuse) have been associated with emotional distress and poor mental health functioning in a variety of qualitative, cross-sectional and retrospective studies of gender-nonconforming populations.<sup>12–18</sup> Such non-prospective studies, although important, are nonetheless methodologically weak in establishing a causal connection between victimization (abuse) and mental health outcomes, and they have been criticized for using measurements of psychological distress that have low positive predictive values with diagnosed psychopathology in nonclinical populations.<sup>19–21</sup>

The current study builds on previous work by our group in an attempt to better demonstrate and understand the supposedly causal

**Objectives.** We examined the social and interpersonal context of gender abuse and its effects on *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* major depression among transgender women.

**Methods.** We conducted a 3-year prospective study (2004–2007) among 230 transgender women aged 19 to 59 years from the New York City Metropolitan Area. Statistical techniques included generalized estimating equations (logistic regression).

**Results.** We observed significant associations of psychological and physical gender abuse with major depression during follow-up. New or persistent experiences of both types of abuse were associated with 4- to 7-fold increases in the likelihood of incident major depression. Employment, transgender presentation, sex work, and hormone therapy correlated across time with psychological abuse; the latter 2 variables correlated with physical abuse. The association of psychological abuse with depression was stronger among younger than among older transgender women.

**Conclusions.** Psychological and physical gender abuse is endemic in this population and may result from occupational success and attempts to affirm gender identity. Both types of abuse have serious mental health consequences in the form of major depression. Older transgender women have apparently developed some degree of resilience to psychological gender abuse. (*Am J Public Health.* 2014;104:2191–2198. doi:10.2105/AJPH.2013.301545)

relationship between gender abuse and depression among transgender women. A previous retrospective study suggested that gender abuse may be associated across the life course with major depression,<sup>22</sup> and a subsequent prospective study (in conjunction with a broader analysis of HIV and other sexually transmitted infection seroconversion) observed an association between gender abuse and depressive symptoms across time.<sup>23</sup> The current study furthers this line of research with more rigorous methodology combined with an analysis of social and interpersonal factors that may substantively illuminate or methodologically confound the apparent relationship between gender abuse and depression in this population.

To better describe this association, and improve causal inference, we incorporated

several methodological and statistical techniques in a 3-year prospective study. We examined the overall longitudinal associations of psychological and physical gender abuse with major depression using generalized estimating equations (GEE). We statistically controlled previous lifetime history of depression, which may alter the prospectively observed associations.<sup>24</sup>

We examined alternative temporal measurements of gender abuse—partially lagged and contemporaneous—across time as predictors of major depression. Assuming that depression is more strongly associated with recently experienced abuse than with abuse in the more distant past, the contemporaneous measurements should be more strongly associated with depression than the partially lagged measurements. This reflects a model of crisis

reactions whereby initial short-term responses of emotional dysregulation, including depressive affect, are followed by long-term responses involving changes in attitudes and behavior.<sup>25,26</sup>

We examined the assumption of causal direction—that abuse causes depression and not the reverse—using cross-lagged path analysis. Abuse may cause depression, as hypothesized, but severely depressed individuals may also be characterized by lapses in interpersonal skills and communication, which may then create the conditions for verbal or even physical abuse.<sup>27</sup>

To further improve causal inference, we associated patterns of abuse within 6-month time segments with major depression during these same time segments and summarized them across all follow-up assessment points. Using a coding algorithm for the analysis of change with GEE<sup>28</sup> and our previous retrospective study of changes in abuse and depression across stages of the life course,<sup>22</sup> we coded stability and change in gender abuse across initial and later time points as “none” (no abuse at either later time), “new” (abuse at later time only), “ceased” (abuse at initial time only), or “persistent” (abuse at both time points). Using “none” as the reference group, we summarized the comparative effects of the remaining types of abuse on depression across all time segments using GEE and expressed as odds ratios. If gender abuse causes major depression, the odds ratios of new, ceased, and persistent abuse, compared with no abuse, should be greater than 1.00, and the effects of new and persistent abuse should be greater than ceased abuse. We used a control for major depression during previous time segments to better determine whether different temporal types of abuse were predictive of new episodes of depression.

Beyond such primarily methodological issues of effect size and causal inference, it is important to understand that a causal association between gender abuse and depression (if it exists) may be shaped (and perhaps obscured) by a variety of social and interpersonal factors. Transgender women are highly diverse with regard to socioeconomic and lifestyle factors, expressions of transgender identity, and demographic variables,<sup>29</sup> all of which may affect the odds of experiencing

gender abuse and depression as well as the likelihoods of these phenomena co-occurring.

Employment, income, and higher education, which are indicators of socioeconomic status, have typically been associated with lower levels of depressive symptomatology in the general population.<sup>30</sup> However, such conventional measures of success in the legitimate economy may not confer mental health benefits for gender-nonconforming individuals. Transgender women in positions of workplace authority, for example, may be exposed to verbal abuse from coworkers, which may take a toll on mental health functioning.<sup>31</sup> Involvement in the underground economy, in the form of sex work, may promote depression in different ways. Sex work, or lifestyle factors closely intertwined with it, may directly lead to depression.<sup>32</sup> Sex work may also be associated with abuse, which then causes depression.<sup>22</sup>

Because of the therapeutic effects of identity affirmation, expressions of transgender identity, broadly defined to include presentation of transgender identity to others, hormone therapy, and sex reassignment surgery, should be associated with less depression,<sup>33</sup> although some pharmacological studies have linked hormone therapy specifically with more depression.<sup>34</sup> Equally plausible is an effect mediation model whereby expressions of transgender identity increase the odds of abuse, which then increase the odds of depression.

There is some evidence that age may substantively alter the association between abuse and depression among transgender women. The recent report by the Institute of Medicine suggests that transgender persons develop some resilience to minority stress (including gender abuse) as they grow older.<sup>29</sup> This was supported empirically in our retrospective study.<sup>22</sup> Using the life chart interview,<sup>35</sup> gender abuse was strongly associated with *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* major depression<sup>36</sup> during adolescence and early adulthood, with the effects declining but generally remaining statistically significant during early middle age and beyond. The lower association between gender abuse and depression among middle-aged and older transgender women compared with adolescent and young adult transgender women suggests that older transgender women may develop coping skills

following early adulthood that partially counteract the impact of gender abuse on depression.

Guided by selectively reviewed literature, we prospectively evaluated the association between gender abuse and major depression in the context of socioeconomic and lifestyle factors (employment, education, income, and sex work), expressions of transgender identity (presentation of transgender identity to others, hormone therapy, and sex reassignment surgery) and demographic variables (age and race/ethnicity).

We examined the effects of all of these variables on gender abuse and depression across time with an evaluation of mediation effect models in which these variables affect gender abuse, which then affects depression (no a priori hypotheses). We examined age modification in the abuse–depression association under the hypothesis that abuse is more strongly associated with depression among younger than among older transgender women.

## METHODS

Transgender or gender-variant individuals were actively involved in all aspects and phases of this project, including the design of the instrument, data collection, data analysis, and dissemination of the findings.

### Selection of Study Participants

From an initial pool of 571 individuals included in the baseline component of the New York Transgender Projective, we further selected 230 for the prospective component as described here. All individuals admitted to the study were assigned as “male” at birth but subsequently did not regard themselves as “completely male” in all situations or roles (reflecting an MTF–transgender spectrum). Eligibility criteria also included age 19 years or older and the absence of psychotic ideation.

The study participants were initially recruited by the field staff via transgender organizations in the New York City Metropolitan Area (e.g., Tri-Ess, Cross Dressers International, and the Mid-Hudson Valley Transgender Association), the Internet, newspaper advertisements, the streets, clubs, client referrals of other clients, and paid assistants from

transgender communities who worked on a day-to-day basis with the field staff.

Because a specific aim of this funded research was to identify incident cases of HIV (and other sexually transmitted infections), all of the individuals selected for the prospective component were initially HIV negative. The prospective study oversampled study participants for high-risk sexual behavior and younger age. Given the nonrandom selection of initial study participants, we did not employ data-analytic corrections for oversampling to the prospective component.

### Follow-Up Assessment Times

Because of time constraints in this project, there was variation in the number of years study participants could potentially be followed. The recruitment phase, which began in December 2004, was extended to September 2007 so that all participants could potentially be followed by our field staff for at least 12 months. In the context of these time constraints, varying numbers of the 230 study participants included in the prospective component were potentially followed across the 36-month postbaseline assessment period. The proportions of potentially available study participants who were actually interviewed by our field staff were 149 of 230 (64.8%), 171 of 230 (74.3%), 92 of 135 (68.1%), and 56 of 74 (75.7%) at 6, 12, 24, and 36 months, respectively. In the GEE analysis, we coded time as 0 (baseline), 1, 2, 4, and 6 to reflect 6-month intervals postbaseline.

### Measurements

Study participants completed face-to-face interviews in conjunction with the Life Review of Transgender Experiences (LRTE).<sup>33</sup> We ascertained changes in gender abuse, major depression, and other factors at the follow-up assessment points. The English version of the LRTE was fully translated to Spanish, and 19% (44 of 230) were interviewed in Spanish by a fluent interviewer. Study participants were compensated \$40 for completing all of the protocols associated with a given assessment period.

**Background variables.** We included age (19–59 years) as a continuous variable, with an analysis of age differences stratified as 19 through 30 years compared with 31 through 59 years. We scaled education as less

than high school, high school graduate, some college, and college graduate or higher. We measured race/ethnicity using preestablished census categories and protocols. In most of the analyses, we classified race/ethnicity as non-Hispanic White versus all other categories (non-White race/ethnicity). We measured employment at all assessment points as working full-time or part-time on any regular job (on or off the books) during the previous 6 months. We defined income as money received from all legitimate sources during the previous 6 months and scaled it at all assessment points from 4 categories, ranging from less than \$2000 to \$40 000 or more. We defined sex work at all assessment points as having received any money, drugs, or gifts in exchange for sex during the previous 6 months.

We coded presentation of transgender identity at all time points as the disclosure of gender identity or feminine dressing to 6 potential role partners (mother, father, friend, fellow student, coworker, or long-term sex partner). We computed an overall index, ranging from 0 to 12, by adding indications of identity disclosure and feminine dressing (scored separately) across the 6 relationships. We defined hormone therapy at all assessment points as having used any type of female hormone supplement during the previous 6 months. We coded sex reassignment surgery as having ever undergone any type of surgery designed to change sexual anatomy (penis or testicle removal or construction of a vagina, labia, or clitoris).

**Gender abuse.** Study participants were queried by our field staff at all assessment times about whether they were “verbally abused or harassed” (psychological abuse) and thought it was because of their gender identity or presentation. A parallel item asked about being “physically abused or beaten” (physical abuse). In accordance with coping<sup>37</sup> and microaggression<sup>38</sup> theories, we regarded subjective appraisals of verbal and physical acts of hostility and perceptions that they resulted from one’s gender nonconformity as integral to the experience (and definition) of gender abuse. We coded and modeled the 2 types of gender abuse as contemporaneous or partially lagged. Both measurements at baseline were necessarily contemporaneous. At the postbaseline assessment points, we coded contemporaneous

abuse from the same assessment point, with lagged abuse coded from the previous assessment point.

**Major depression.** We codified and assessed major depression using the Mini International Neuropsychiatric Interview (MINI Plus, English Version 5.0.0), which was designed as a brief structured interview for the major Axis I psychiatric disorders in the *DSM-IV*.<sup>39</sup> Current major depression, as assessed with the MINI, has been associated with current major depression as assessed by the Structured Clinical Interview for the *DSM-IV*<sup>40</sup> ( $\kappa = 0.84$ ; sensitivity = 0.96; specificity = 0.88). In our study, interviewers were trained to complete the MINI by L. N., a psychiatric epidemiologist with experience in the assessment of psychopathology in high-risk populations.

At all assessment times (referring to the previous 6 months), evaluation of major depression proceeded in the following 4 steps:

1. Diagnostic screening: respondents were asked to recall, “Were you consistently depressed or down, most of the day, every day for at least two weeks?” or “Were you less interested in most things or less able to enjoy the things you used to enjoy most of the time for at least two weeks?”
2. Diagnostic symptomatology: if either of the screens in step 1 was positive, the interviewer determined the presence of the following 7 diagnostic symptoms: appetite increase or decrease, trouble sleeping, fidgeting or restlessness, tiredness or lack of energy, a feeling of being worthless or guilty, difficulty concentrating or making decisions, or suicidal ideation.
3. Diagnostic criteria: if 3 or more of these diagnostic symptoms were present, the interviewer inquired whether the symptoms overlapped and occurred during the same time frame (*DSM-IV* symptom overlap criteria) and whether the symptoms of depression caused “significant distress or impaired the ability to function at work, socially, or in some other important way” (*DSM-IV* impairment criteria).
4. Diagnostic rule-outs: if the diagnostic criteria were met, the interviewer made further inquiries as to whether the indicated symptoms were caused by the loss of a loved one (bereavement rule-out), whether there was

a medical illness just before the symptoms began (medical rule-out), and whether drugs were taken just before the symptoms began (substance use rule-out).

Across the assessment points, we coded current major depression as positive if the indicated diagnostic symptoms were reported and the diagnostic criteria were met, with no rule-outs reported. We also assessed lifetime major depression using a lifetime module in the MINI that was linked to a revised version of the Life Chart Interview.<sup>22</sup>

### Statistical Techniques and Modeling

We analyzed most of the data using GEE<sup>41,42</sup> as implemented with Stata Release 9 (StataCorp LP, College Station, TX).<sup>43</sup> We specified logistic regression (odds ratios) (binomial family with a logit link) using an exchangeable working correlation structure. We empirically generated standard errors and 95% confidence intervals with bootstrapping.

We estimated overall longitudinal associations (odds ratios) of psychological and physical gender abuse with major depression with and without control for lifetime major depression. We sequentially analyzed stability and change in gender abuse, in conjunction with major depression, across adjacent assessment points and summarized them across all time segments using GEE. To accommodate measurements of lagged major depression, this analysis commenced at time 1 (i.e., 6 months after baseline). Associations of gender abuse and depression during times 1 and 2 included a covariate for depression from times 0 (i.e., baseline) and 1; associations between gender abuse and depression during later time segments included a covariate for depression during the immediately previous time segments.

We describe the mediation models in accordance with the causal steps approach set forth by Baron and Kenny.<sup>44</sup> We assumed that gender abuse mediated associations between the background variables and depression if (1) the background variables were associated with both gender abuse and depression and (2) the associations between background variables and depression were reduced ( $\geq 10\%$ ), with gender abuse controlled.

We analyzed effect modification in relation to age with a model that included the main

effects of gender abuse and younger age, with depression and an interaction term of gender abuse multiplied by younger age. Models with a statistically significant interaction effect ( $P \leq .05$ ) are more fully described in the Results section, with a stratified analysis of odds ratios calculated across age categories (19–30 and 31–59 years).

We examined associations between psychological gender abuse and major depression across the initial 6 months of follow-up using cross-lagged path analysis.<sup>45</sup> Data bearing on the association between physical gender abuse and depression were too sparse for this analysis. Given the dichotomous coding of both abuse and depression, we used logistic regression to estimate coefficients associated with this modeling. The technique incorporates effects of baseline abuse and depression with the same measurements at the 6-month follow-up (stability effects). The cross-lagged analysis compared (1) the effects of baseline depression on abuse at follow-up, with the stability of abuse controlled, and (2) the effects of baseline abuse on depression at follow-up, with the stability of depression controlled. The first equation reflects the presumably causal effects of depression on abuse (expected to be minimal); the second equation reflects the presumably causal effects of abuse on depression (expected to be significant).

## RESULTS

We compared the subsets of study participants followed at years 1, 2, and 3 with those not so followed with regard to baseline measurements of background variables, gender abuse, and depression. Two of these correlations were statistically significant: age with study completion at years 1 ( $r = 0.15$ ;  $P \leq .05$ ) and 3 ( $r = 0.16$ ;  $P \leq .05$ ).

### Study Participants

Study participants ( $n = 230$ ) were aged 19 to 59 years (mean = 34.0), with 43.5% aged 19 to 29, 23.8% aged 30 to 39, 17.9% aged 40 to 49, and 14.8% aged 50 to 59. Race/ethnicity was 35.2% non-Hispanic White, 35.7% Hispanic, 17.4% non-Hispanic Black, and 11.7% Other. Most (58.9%) were attracted to men only; 25.4% were attracted to women only, 13.8% to men and women, and 1.8% to neither men nor women.

Education ranged from 24.8% who were not high school graduates to 20.4% who were college graduates or higher. About two thirds (67.9%) reported lifetime hormone therapy and 7.0% indicated previous sex reassignment surgery.

### Prevalence and Incidence of Gender Abuse and Major Depression

At baseline, 27.8% reported major depression during the previous 6 months, with a yearly incidence during follow-up of 15.9% (49 episodes per 309 person years). At baseline, 53.0% indicated psychological gender abuse during the previous 6 months, with a yearly incidence during follow-up of 40.8% (126 episodes per 309 person years). At baseline, 10.0% indicated physical gender abuse during the previous 6 months, with a yearly incidence during follow-up of 9.7% (30 episodes per 309 person years).

### Aspects of Gender Abuse as Predictors of Major Depression

We observed contemporaneous longitudinal associations of psychological (odds ratio [OR] = 6.24; 95% confidence interval [CI] = 4.34, 8.95) and physical (OR = 3.74; 95% CI = 2.09, 6.66) gender abuse and major depression. These effects were little changed (OR = 6.01 and 3.59) with lifetime major depression included as a covariate (data not shown). Lagged longitudinal associations of psychological (OR = 2.35; 95% CI = 1.57, 3.53) and physical (OR = 1.96; 95% CI = 1.12, 3.49) abuse with major depression were significantly less than the corresponding contemporaneous associations.

Across multiple time segments, compared with no abuse, new (OR = 5.09) and persistent (OR = 5.67) reports of psychological gender abuse were associated with major depression. The association of ceased abuse with depression, as predicted, was less strong and not significant statistically (OR = 1.12). This pattern of effects was little altered with a control for lagged major depression (Table 1).

Across multiple time segments, compared with no abuse, new (OR = 6.08) and persistent (OR = 10.81) experiences of gender abuse were also associated with major depression. Ceased abuse was also associated with major depression (OR = 2.66), but this effect was comparatively small. This pattern of effects was

**TABLE 1—Longitudinal Change Modeling of Psychological and Physical Gender Abuse With Major Depression Among Transgender Women: New York City Metropolitan Area, 2004–2007**

Variables	Major Depression, OR (95% CI)	
	Uncontrolled	Lagged Depression Controlled
<b>Psychological gender abuse</b>		
None (Ref)	1.00	1.00
New	5.09 (2.11, 12.25)	4.48 (1.83, 10.98)
Ceased	1.12 (0.51, 2.44)	0.66 (0.31, 1.41)
Persistent	5.67 (2.63, 12.25)	6.07 (2.83, 13.01)
<b>Physical gender abuse</b>		
None (Ref)	1.00	1.00
New	6.08 (2.68, 13.78)	5.59 (2.21, 14.09)
Ceased	2.66 (1.40, 5.04)	1.78 (0.83, 3.81)
Persistent	10.81 (2.85, 21.15)	7.04 (3.47, 14.29)

Note. CI = confidence interval; OR = odds ratio. The baseline is time 0 and  $n = 230$ , with model alterations and reductions across time points. ORs were estimated with generalized estimating equations (logistic regression link). Temporal patterns of abuse across time points were as follows: no initial or later abuse (Ref); later abuse only (new); earlier abuse only (ceased); initial and later abuse (persistent).

marginally reduced with a control for lagged major depression.

In conjunction with the cross-lagged analysis, psychological gender abuse at the 6-month assessment point was predicted from psychological gender abuse at baseline ( $b = 1.81$ ;  $SE = 0.36$ ;  $OR = 6.11$ ;  $95\% CI = 1.24, 15.09$ ; stability effect) but not from major depression at baseline, suggesting no cross-lagged causal effect of depression on abuse. Major depression at the 6-month assessment point was predicted from major depression at baseline ( $b = 1.80$ ;  $SE = 0.47$ ;  $OR = 6.05$ ;  $95\% CI = 1.68, 14.68$ ; stability effect) and from psychological gender abuse at baseline ( $b = 0.65$ ;  $SE = 0.49$ ;  $OR = 1.99$ ;  $P < .05$ ;  $95\% CI = 1.20, 11.48$ ), suggesting a cross-lagged causal effect of abuse on depression.

### Background Variables as Predictors of Gender Abuse

In a longitudinal GEE modeling, education ( $OR = 1.28$ ), employment ( $OR = 4.79$ ), income ( $OR = 2.00$ ), sex work ( $OR = 5.31$ ), transgender presentation ( $OR = 1.38$ ), and hormone therapy ( $OR = 6.35$ ) were associated with psychological gender abuse (Table 2). In a multivariate model containing all of these variables, employment ( $OR = 1.85$ ), sex work ( $OR = 3.90$ ), transgender presentation ( $OR =$

1.20), and hormone therapy ( $OR = 2.43$ ) remained statistically significant.

Younger age ( $OR = 0.96$ ), non-White race/ethnicity ( $OR = 3.85$ ), sex work ( $OR = 10.37$ ), transgender presentation ( $OR = 1.20$ ), and hormone therapy ( $OR = 5.20$ ) were associated with physical gender abuse during follow-up. In a multivariate model containing all of these variables, sex work ( $OR = 4.87$ ) and hormone therapy ( $OR = 3.27$ ) remained statistically significant.

### Background Variables as Predictors of Depression

In a longitudinal GEE modeling, employment ( $OR = 2.48$ ), income ( $OR = 1.25$ ), sex work ( $OR = 3.86$ ), transgender presentation ( $OR = 1.23$ ), and hormone therapy ( $OR = 3.12$ ) were associated with depression during follow-up (Table 3). In a multivariate model containing all of these variables, employment ( $OR = 2.02$ ), sex work ( $OR = 2.50$ ), transgender presentation ( $OR = 1.11$ ), and hormone therapy ( $OR = 1.87$ ) remained statistically significant.

Because employment, sex work, transgender presentation, and hormone therapy were associated with both gender abuse and depression, we conducted additional analyses to test whether the associations among these

background variables and depression were altered with gender abuse controlled (causal steps mediation criteria).

With both aspects of gender abuse included as covariates, the odds ratio between employment and major depression was 1.41 ( $95\% CI = 0.89, 2.23$ ; 40% lower than the bivariate odds ratio). With gender abuse controlled, the odds ratio between sex work and depression was 2.16 ( $95\% CI = 1.20, 3.91$ ; 40% lower than the bivariate association). With gender abuse controlled, the association between transgender presentation and depression was 0.99 ( $95\% CI = 0.89, 1.25$ ; 20% lower than the bivariate association). With abuse controlled, the odds ratio between hormone therapy and depression was 1.74 ( $95\% CI = 1.09, 2.78$ ; 45% lower than the bivariate association). These data are consistent with effect mediation whereby background variables (employment, sex work, transgender presentation, and hormone therapy) lead to abuse, which then leads to major depression.

### Age as an Effect Modifier in the Association of Abuse With Depression

With main effects of younger age and physical gender abuse included, the interaction term of younger age multiplied by physical abuse was not statistically significant. The corresponding interaction term of younger age by psychological abuse was statistically significant ( $OR$  for interaction term = 3.41;  $SE = 1.41$ ;  $P = .003$ ;  $95\% CI = 1.52, 7.67$ ). The odds ratio of psychological gender abuse with major depression among younger transgender women (aged 19–30 years) was 9.77 ( $95\% CI = 5.56, 17.15$ ); the corresponding odds ratio among older transgender women (aged 31–59 years) was 3.25 ( $95\% CI = 1.94, 5.45$ ).

## DISCUSSION

The 6-month prevalence (28%) and 12-month incidence (16%) of major depression observed in this study of transgender women were at least 5 times higher than the corresponding estimates in the general population.<sup>46,47</sup> The 6-month prevalences of psychological and physical gender abuse at baseline (53% and 10%) were similar to those in previous reports of abuse among

**TABLE 2—Background Variables Associated With Psychological and Physical Gender Abuse Among Transgender Women: New York City Metropolitan Area, 2004–2007**

Variables	Gender Abuse, OR (95% CI)	
	Psychological	Physical
<b>Bivariate</b>		
Age	1.00 (0.99, 1.02)	0.96 (0.94, 0.99)
Non-White race/ethnicity	0.96 (0.66, 1.40)	3.85 (1.40, 10.86)
Education	1.28 (1.03, 1.47)	0.78 (0.59, 1.04)
Employment	4.79 (3.71, 6.18)	1.64 (0.97, 2.77)
Income	2.00 (1.25, 2.27)	1.01 (0.83, 1.04)
Sex work	5.31 (3.55, 7.95)	10.37 (5.99, 17.96)
Transgender presentation	1.38 (1.31, 1.46)	1.20 (1.14, 1.27)
Hormone therapy	6.35 (4.48, 9.00)	5.20 (2.67, 10.11)
Sexual reassignment surgery	1.40 (0.65, 3.01)	1.56 (0.48, 5.01)
<b>Multivariate</b>		
Age		0.96 (0.93, 1.01)
Non-White race/ethnicity		1.53 (0.46, 5.03)
Education	1.15 (0.87, 1.51)	
Employment	1.85 (1.05, 3.27)	
Income	1.29 (0.98, 1.71)	
Sex work	3.90 (2.56, 5.96)	4.87 (2.39, 9.92)
Transgender presentation	1.20 (1.10, 1.30)	1.04 (0.91, 1.18)
Hormone therapy	2.43 (1.60, 3.71)	3.27 (1.33, 8.04)

Note. CI = confidence interval; OR = odds ratio. The baseline is time 0 and  $n = 230$ , with reductions across assessment points. Odds ratios were estimated with generalized estimating equations (logistic regression link). Variables significant ( $P \leq .05$ ) in the bivariate analysis were entered into the multivariate analysis.

transgender women.<sup>1–9</sup> The yearly incidence of psychological and physical gender abuse (41% and 10%) document ongoing issues with gender abuse by almost one half of this population.

The longitudinal contemporaneous associations of psychological (OR = 6.24) and physical (OR = 3.74) gender abuse with major depression were moderately strong.<sup>48</sup> The

**TABLE 3—Background Variables Associated With Major Depression Among Transgender Women During Follow-Up: New York City Metropolitan Area, 2004–2007**

Variables	Major Depression, OR (95% CI)	
	Bivariate	Multivariate
Age	99 (0.97, 1.01)	
Education	1.05 (0.88, 1.24)	
Non-White race/ethnicity	1.17 (0.73, 1.84)	
Employment	2.48 (1.58, 3.89)	2.02 (1.12, 3.65)
Income	1.25 (1.06, 1.45)	1.85 (0.65, 1.14)
Sex work	3.86 (2.58, 5.77)	2.50 (1.58, 3.94)
Transgender presentation	1.23 (1.16, 1.31)	1.11 (1.02, 1.20)
Hormone therapy	3.12 (2.06, 4.79)	1.87 (1.18, 2.96)
Sexual reassignment surgery	1.19 (0.53, 2.69)	

Note. CI = confidence interval; OR = odds ratio. The baseline is time 0 and  $n = 230$ , with reductions across assessment points. Odds ratios were estimated with generalized estimating equations (logistic regression link). Variables significant ( $P \leq .05$ ) in the bivariate analysis were entered into the multivariate analysis.

stronger effect of psychological abuse (compared with physical abuse) on depression, although perhaps counterintuitive, is consistent with findings in some previous studies.<sup>49</sup> Psychological (verbal) abuse in its various forms may be symbolic and abstract, but according to some writers it is precisely those characteristics that render it difficult to neutralize psychologically.<sup>50,51</sup>

The longitudinal lagged associations of psychological (OR = 2.35) and physical (OR = 1.96) gender abuse with depression were 60% and 45% less, respectively, than the corresponding contemporaneous associations. These data suggest that transgender women partially adapt emotionally to gender abuse with the passage of time. These data are also consistent with theory suggesting that short-term reactions to verbal abuse are primarily emotional (including depressed affect), followed by longer-term reactions that are more attitudinal or behavioral.<sup>25,26</sup>

The more detailed analysis incorporating temporal types of abuse with depression over time showed the predicted pattern: compared with no abuse, all types of abuse increased the risk of depression, and the effects of new and persistent abuse were greater than the effects of ceased abuse (Table 1). In contrast to the primary role played by psychological abuse in the overall effect models, these data suggest that the new and persistent experiences of physical gender abuse are more depressogenic than new or persistent experiences of psychological gender abuse. The association of persistent physical abuse with depression was particularly strong (OR = 10.81). Transgender women in social situations or relationships involving ongoing physical abuse are likely to be suffering from major depression.

The predicted pattern of effects between temporal types of gender abuse and depression was maintained with lagged major depression controlled statistically (with the effects somewhat reduced). This suggests that new and persistent experiences of psychological and physical gender abuse are associated with incident major depression. Further bolstering causal inference, a cross-lagged path analysis, conducted between times 0 and 1, showed that psychological gender abuse led to major depression, but major depression did not lead to psychological gender abuse.

Although nonexperimental research, including longitudinal studies, at best “provide a valid platform for (causal) inference,”<sup>52(p462)</sup> the findings of this study (within the limits of a nonexperimental design) consistently suggested that psychological and physical gender abuse among transgender women cause serious psychiatric morbidity in the form of major depression, with statistical evidence suggesting a causal link between both forms of abuse and new episodes of depression.

A conclusion of vulnerability to psychological and physical gender abuse should be amended in one important specific respect: transgender women appear to develop an improved capacity to cope with psychological, but not physical, gender abuse as they grow older. In this study, the association between psychological gender abuse and major depression was approximately 3 times higher among younger transgender women (aged 19–30 years) than among older transgender women (aged 31–59 years). The reasons for better resilience to psychological but not physical gender abuse in the older cohort are unknown and should be further studied.

A broader perspective on the association between gender abuse and depression in this population was provided by an analysis of the effects of various background factors on abuse and depression. Employment, transgender presentation, hormone therapy, and sex work predicted psychological abuse, with the latter 2 variables predicting physical abuse. These findings pertaining to the interpersonal and social context of gender abuse underscore the pervasiveness and toxic effects of abuse in the lives and life decisions of transgender women. Success in the legitimate economy, defined by employment, may be obtained at the cost of increased exposure to psychological abuse. Involvement in the illegitimate economy (sex work) may result in both psychological and physical abuse as well as depression. The lives of transgender women are seemingly complicated by the fact that earning an economic livelihood, legally or illegally, presents the prospects of exposure to gender abuse and perhaps depression. Affirmation of gender identity by hormone therapy predicted both psychological and physical gender abuse, which, in turn, predicted depression. The lives

of transgender women may be further complicated by the fact that an expression of gender identity via hormone therapy presents the prospects of exposure to gender abuse and, ultimately, depression.

The findings of this research should be evaluated with the study’s limitations in mind. The sample was not randomly obtained, significant numbers of study participants were not followed across all assessment points, and the measurements of gender abuse did not specify the victim’s relationship to the abusers or the severity and duration of the abuse.

The findings nonetheless have significant implications for future research, mental health counseling, and social policy. Given the moderately strong and robust overall associations between gender abuse and major depression, future studies of mental health among transgender women should measure and incorporate aspects of gender abuse in the analysis; mental health professionals working with this population should routinely screen for recent experiences of gender abuse and fully examine its potential effects on depression; and transgender advocates should press for antibullying policies and broadly applied and improved gender sensitivity training, and they should continue to lobby for better enforcement of hate crime statutes. ■

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#### Contributors

L. Nuttbrock had primary responsibility for the overall scientific integrity of the project. The 6 coauthors were significantly involved in conceptualizing the research, carrying out the project on a daily basis, and writing the findings. All authors, some of whom are gender variant, were involved in all aspects of the project.

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All research protocols were approved and monitored by the institutional review board of the National Development and Research Institutes.

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