Gender Role Behaviors of High Affiliation and Low Self-Silencing Predict Better Adherence to Antiretroviral Therapy in Women with HIV

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Dear Editor:

SOcially prescribed gender-role behaviors for women include communion or affiliation (behaviors and characteristics that foster positive interpersonal relationships, such as empathy and warmth); self-silencing (concealing feelings to avoid conflict, loss, and protect self-esteem); and unmitigated communion (prioritizing care for others over self-care).^{1,2} Socialization experiences influence the extent to which individual women adopt gender-role behaviors, which may reflect strategies to cope with patriarchal systems that limit women's choices and punish self-advocacy.^{3,4} High self-silencing and unmitigated communion are reported more by women with HIV compared to uninfected women⁵ and predict high depression, lower quality of life, and worse health care behaviors in diverse samples.^{5,6} In contrast, affiliation often predicts positive health outcomes.⁶

We hypothesized that better antiretroviral medication adherence (ART) and HIV biomarkers (viral load and CD4 count) would relate to lower self-silencing and unmitigated communion and to higher affiliation in women with HIV. We also hypothesized that self-silencing and unmitigated communion would moderate the relationships between affiliation and health outcomes, such that higher self-silencing and unmitigated communion would minimize the health benefits of affiliation.

Participants were from the Chicago site of the Women's Interagency HIV Study (WIHS), a longitudinal cohort study of women with and at risk for HIV enrolled during three waves (1 = 1994–1995; 2 = 2001; 3 = 2010–2011). Study visits are conducted semiannually, and include a structured interview, physical and gynecologic examinations, and specimen collections, as previously described.^{7,8} The current study included a convenience sample of 100 HIV+ women ($n = 44$, wave 1, and $n = 56$, wave 2), who were recruited at a regularly scheduled WIHS visit during 2008–2012 that coincided with data collection for the current study.

Gender roles were assessed with three self-report measures demonstrating good validity and reliability with similar samples, including: (1) Silencing the Self Scale,¹ a 31-item

measure with four subscales (Care as Self Sacrifice, Divided Self, Externalized Self-Perception, and Self-Silencing); (2) Personal Attributes Questionnaire–F Scale,⁹ an eight-item scale measuring affiliation; and (3) Revised Unmitigated Communion Scale,² a nine-item scale measuring concern for others rather than the self. Sample items for scales are described in Table 1. Each measure was divided into two categories using median splits (0 = below median and 1 = scores including and above median) in order to facilitate interpretation of the analysis, comparing women who report high versus low gender roles in relation to HIV outcomes. The Silencing the Self Scale (total and subscale scores) and the Unmitigated Communion Scale were reverse scored before median split groups were created to model the effect of healthier behaviors.

To measure ART adherence, participants estimated the percentage of time they took their medication over the past 6 months, which was subsequently coded as 1 = $\geq 95\%$ adherence versus 0 = $< 95\%$ adherence or not on ART despite it being medically indicated (as evidenced by a CD4 count < 350 through 2009 or CD4 count < 500 after 2009). This self-report measure has significantly related to health outcomes in previous studies and has been shown to yield data that are consistent with objective measures.¹⁰ CD4+ cells/mm³ were categorized into CD4 ≥ 350 or < 350 and HIV-1 RNA levels into HIV-1 viral load ≤ 80 or > 80 copies/mL.

The sample averaged 45.2 years old ($SD = 8.8$ years), and the majority of the participants were African American (91%); unmarried (80%); heterosexual (89%); earned less than \$12,000 per year (69%); and had completed high school (54%). They also had a CD4 count ≥ 350 (63%); HIV-1 viral load ≤ 80 (54%); and $\geq 95\%$ adherence to ART (72%).

Table 1 presents descriptive statistics and Cronbach's alphas. Multiple logistic regressions were used to investigate relationships between the three dichotomized gender role total scales and viral load, CD4 count, and ART adherence, while controlling for covariates as listed in Table 2. Covariates were entered in block 1 and the three gender role scales in block 2, with the three outcomes tested in independent regressions. Results showed that women reporting

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TABLE 1. MEANS, MEDIANS, STANDARD DEVIATIONS, AND CRONBACH'S ALPHAS FOR GENDER ROLE MEASURES

Variable	<i>M</i>	<i>SD</i>	Minimum-maximum	Median	Cronbach's alpha
PAQ-F Scale ^a	22.86	6.08	4–32	24	0.81
STSS Total Score ^b	80.26	21.39	35–138	81	0.90
STSS Care as Self-Sacrifice	24.20	5.91	10–39	24	0.55 ^d
STSS Divided Self	17.59	6.41	7–35	17	0.79
STSS Externalized Self	15.85	6.09	6–30	16	0.82
STSS Silencing the Self	22.64	7.08	9–42	23	0.75
Unmitigated Communion ^c	28.85	5.53	17–41	29	0.55 ^e

^aPAQ-F, Personal Attributes Questionnaire–Femininity Scale (Affiliation); items include self-descriptors such as: “kind,” “helpful to others,” “warm in relations with others,” and “aware of feelings of others”.

^bSTSS, Silencing the Self Scale; 4 subscales: Care as Self-Sacrifice (e.g., “Caring means putting the other person’s needs in front of my own”); Divided Self (e.g., “Often I look happy enough on the outside, but inwardly I feel angry and rebellious”); Externalized Self-Perception (e.g., “I tend to judge myself by how I think other people see me”) and Silencing the Self (e.g., “I don’t speak my feelings in an intimate relationship when I know they will cause disagreement”).

^c“Revised Unmitigated Communion Scale; sample items = I *always* place the needs of others above my own” and “For me to be happy, I need others to be happy.”

^dThe relatively lower reliability of the Care as Self-Sacrifice scale is consistent with previous studies.¹

^eWhen the item with the lowest factor loading was eliminated from the Revised Unmitigated Communion scale, the Cronbach’s alpha increased to 0.72. However, eliminating this item from the scale did not change the significance of the results, so the original scale was retained for use in all analyses.

higher affiliation were significantly more likely to have CD4 counts ≥ 350 ($OR = 1.91$, 95% $CI = 1.16$ – 3.14); to be $\geq 95\%$ adherent to ART ($OR = 1.85$, 95% $CI = 1.04$ – 3.32); and were significantly less likely to have HIV-1 viral load > 80 copies/mL ($OR = 0.53$; 95% $CI = 0.33$ – 0.89). Women reporting lower self-silencing were significantly more likely to be adherent to ART ($OR = 1.77$, 95% $CI = 1.02$ – 3.06) (Table 2).

To investigate our moderation hypotheses, two-way dummy interaction terms were created by multiplying affiliation with unmitigated communion and self-silencing total and subscale scores. Multiple logistic regressions included variables entered as follows: covariates in block 1, affiliation and one of the unmitigated communion or self-silencing scales or subscales in block 2, and the relevant dummy interaction term in block 3. Outcomes were tested in independent regressions. The interaction between the self-silencing subscale (which measures inhibiting self-expression in relationships)

and affiliation significantly predicted viral load ($B = -0.59$, Wald = 4.56, $p = 0.03$, $OR = 0.55$, 95% $CI = 0.32$ – 0.95). Follow-up logistic regressions (analyzing affiliation as a predictor of viral load separately for the low and high self-silencing groups) indicated that higher affiliation significantly predicted lower viral load for women reporting lower self-silencing, ($B = -1.25$, $p = 0.03$, $OR = 0.29$, 95% $CI = 0.11$ – 0.73); but not for women reporting higher self-silencing ($B = -0.20$; $p = 0.61$, $OR = 0.82$, 95% $CI = 0.38$ – 1.76).

These results corroborate other literature on the health benefits of affiliation.⁶ Higher affiliation was associated with a higher likelihood of $\geq 95\%$ ART adherence and CD4 counts ≥ 350 , and women who reported higher affiliation were also more likely to have HIV-1 viral load ≤ 80 copies/mL if they reported lower self-silencing, but not if they reported higher self-silencing. Moreover, lower self-silencing

TABLE 2. MULTIPLE LOGISTIC REGRESSION RESULTS^a

Outcome variable	Predictor variable	<i>B</i>	Wald	<i>p</i>	EXP(<i>B</i>) (95% confidence interval)
ART adherence $\geq 95\%$	STSS Total ^b	0.57	4.12	0.04	1.77 (1.02–3.06)
	RUCS ^c	0.47	2.86	0.09	1.58 (0.93–2.69)
	PAQ-F Scale ^d	0.62	4.31	0.04	1.85 (1.04–3.32)
CD4 ≥ 350	STSS Total	0.33	1.92	0.17	1.40 (0.87–2.24)
	RUCS	0.21	0.76	0.39	1.23 (0.77–1.95)
	PAQ-F Scale	0.65	6.55	0.01	1.91 (1.16–3.14)
Viral load > 80 copies/mL	STSS Total	−0.19	0.60	0.44	0.83 (0.51–1.33)
	RUCS	0.03	0.01	0.91	1.03 (0.64–1.65)
	PAQ-F Scale	−0.62	5.85	0.02	0.53 (0.33–0.89)

^aCovariates in all models were enrollment wave, self-reports of income ($< \$6,000$, $\$6,000$ – $12,000$ and $> \$12,000$ per year), age, race (African American or other), education (no schooling, less than sixth grade education, grades 6–11, completed high school, some college, completed college, some graduate school), history of substance abuse (never/ever, including hazardous drinking based on the National Institute on Alcohol Abuse and Alcohol criteria, or use of intravenous drugs, crack, cocaine, and heroin), and any sexual abuse, physical abuse or domestic coercion since the last visit (categorized as yes/no).

^bSTSS, Silencing the Self Total Scale.

^cRUCS, Revised Unmitigated Communion Scale.

^dPAQ-F, Personality Attributes Questionnaire—Femininity Scale (measuring communion/affiliation).

was associated with a higher likelihood of $\geq 95\%$ ART adherence. Higher self-silencing may negatively affect the communication skills necessary for good working relationships with physicians and sexual partners and may also interfere with self-care behaviors such as maintaining treatment regimens and managing medical appointments. Other types of social inhibition or silencing (e.g., men who have sex with men and conceal their sexual orientation) have also been found to relate to HIV viremia.¹¹ Unmitigated communion did not significantly relate to outcomes, perhaps because the scale does not focus on close relationships.

Limitations of the current study include the cross-sectional design, which does not permit tests of causality (i.e., worse biomarkers may possibly lead to increased self-silencing and lower affiliation because women are afraid of the rejection that often accompanies HIV disclosure);¹² the use of self-report measures to assess gender roles and ART adherence; the relatively small sample size; and the limited generalizability to ethnic groups other than African Americans. Further, median splits for gender role measures may limit power to detect significance. Despite limitations, the current study suggests that higher affiliation and lower self-silencing are associated with better adherence to antiretroviral therapy. Further investigation of these relationships may help to design interventions emphasizing gender role behaviors of affiliation, self-care, and self-advocacy to potentially improve adherence and health for women with HIV.

Acknowledgments

Data in this article were collected by the Chicago site of the Women's Interagency HIV study (WIHS) which is funded by the National Institute of Allergy and Infectious Diseases Grant U01-AI-34994 (PI, Dr. Mardge Cohen) and co-funded by the National Cancer Institute and National Institute of Drug Abuse. Kathleen Weber is also funded in part by P30-AI 082151, and Sannisha Dale is funded by F31-MH 095510. The contents of this publication are solely the responsibility of the authors and do not necessarily represent the views of the National Institutes of Health. These funding sources had no role in study design, data collection and analysis, decision to publish, or preparation of the article.

We would like to thank the WIHS participants and WIHS staff, especially Sally Urwin, Cheryl Watson, and Karlene Schowalter, who collected and managed data.

Author Disclosure Statement

No competing financial interests exist.

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