

# Sexual Identity Discordance and Allostatic Load Among Young Adults

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# Sexual Minority Disparities

- Sexual minorities experience mental and physical health disparities compared to heterosexuals
  - **Mental distress and disorder** (Bostwick, Boyd, Hughes, & McCabe, 2010; Cochran, Sullivan, & Mays, 2003)
  - **Alcohol use** (Hatzenbuehler, Corbin, & Fromme, 2008)
  - **Tobacco use** (Blosnich, Farmer, Lee, Silenzio, & Bowen, 2014; Lee, Griffin, & Melvin, 2009)
  - **Suicide attempt** (King et al., 2008)
  - **Health screening** (Fredriksen-Goldsen, Kim, Barkan, Muraco, & Hoy-Ellis, 2013)

# Physiological Disparities

- Disparities in individual biomarkers and other physiological assessments, especially among men
  - Elevated cardiovascular risk (C-reactive protein, diastolic blood pressure, pulse rate) (Hatzenbuehler, McLaughlin, & Slopen, 2013; Hatzenbuehler, Slopen, & McLaughlin, 2014)
  - Elevated inflammation (Epstein-Barr Virus) (Everett, Rosario, McLaughlin, & Austin, 2014)

# Multi-System Dysregulation

- Little work, mixed findings (Adams, 2008; Arheart et al., 2013; Mays, Cochran, & Seeman, 2013)
- Assessment of cumulative physiological dysregulation
  - Often operationalized as “allostatic load” (AL)
  - Provides useful index to evaluate cumulative biological risk

# Minority Stress Theory

- Sexual minorities experience stressors (stigma, discrimination, violence) specific to sexual orientation
  - Increased exposure to these stressors drives increased disparity rates
- Distal (external) and proximal (internal) stressors

# Sexual Orientation

- Multidimensional
  - Identity
  - Attraction
  - Behavior

	Heterosexual identity	LGB identity
Opposite-sex only attraction/behavior	Concordant	Discordant
Same-sex attraction/behavior	Discordant	Concordant

# Research Objectives

- To determine whether allostatic load differences exist by sexual identity
- To determine whether allostatic load differences exist by identity discordance status
  - Identity-attraction discordance
  - Identity-behavior discordance

# Data and Methods

- National Longitudinal Study of Adolescent to Adult Health (Add Health), Wave IV
- Analytic sample:  $n = 10,316$ 
  - Excluded:
    - Missing any biomarkers used to construct AL
    - No sexual orientation measures
    - “Mostly heterosexual” sexual orientation identity
    - Pregnant women
    - Invalid age
    - “Other” race
    - No sample weights



# Key Variables - AL

- Biomarkers collected via dried blood spot
- Allostatic load: summative base count score (range: 0-10)
  - Cardiovascular (systolic blood pressure, pulse rate, pulse pressure)
  - Metabolic (hemoglobin A1C [Hg A1C], total cholesterol, high-density lipoprotein [HDL], waist circumference, body mass index [BMI])
  - Inflammatory (C-reactive protein [CRP], Epstein Barr viral capsid antigen [EBV])
- Operationalization of AL is not agreed upon

# Key Variables – Sexual Orientation

- Sexual Identity: “please choose the description that best fits how you think about yourself”
  - 100% heterosexual – 100% homosexual
- Romantic Attraction: “are you romantically attracted to males/females?”
- Sexual Behavior: “considering all types of sexual activity, with how many male/female partners have you ever had sex?”

# Controls

- Demographics:
  - Age, race/ethnicity, nativity, education, household income
- Lifestyle behaviors:
  - Alcohol consumption, smoking status, physical activity, sleep problems
- Medication usage:
  - Anti-diabetic, anti-hyperlipidemic, anti-inflammatory medications

# 1. Allostatic Load & Sexual Identity

**Table 2: LGB Identity and Allostatic Load, Add Health Wave IV, 2008**

	<b>Men</b>				
	Coefficient	IRR	Std. Err.	95% CI	P-Value
<b>Model 1: Gross Effects</b>					
LGB Identity	-0.042	0.959	0.106	(-0.252, 0.168)	0.69
<b>Model 2: Net Effects</b>					
LGB Identity	-0.002	0.998	0.105	(-0.209, 0.205)	0.98
	<b>Women</b>				
<b>Model 1: Gross Effects</b>					
LGB Identity	0.004	1.004	0.063	(-0.120, 0.128)	0.95
<b>Model 2: Net Effects</b>					
LGB Identity	-0.032	0.969	0.062	(-0.154, 0.091)	0.61

*Note:* Gross effects models report simple negative binomial regressions of LGB Identity on Allostatic Load. Net effects models include controls for key demographic variables (age, race/ethnicity, nativity, education, household income), medication usage (anti-diabetic, anti-hyperlipidemic, anti-inflammatory), and lifestyle behavior (smoking status, alcohol consumption, physical activity, sleep)

# 2. Allostatic Load & Discordance

**Table 4: Identity-Attraction Discordance and Allostatic Load, Add Health Wave IV, 2008**

	Coefficient	IRR	Std. Err.	95% CI	P-Value
<b>Men (n=5,153)</b>					
<b>Model 1: Gross Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	-0.060	0.942	0.102	(-0.262, 0.142)	0.56
Heterosexual Discordant	0.339	1.403	0.158	(0.027, 0.651)	0.03
Homosexual Discordant	0.275	1.317	0.437	(-0.590, 1.140)	0.53
<b>Model 2: Net Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	-0.022	0.978	0.100	(-0.220, 0.176)	0.83
Heterosexual Discordant	0.259	1.296	0.162	(-0.061, 0.579)	0.11
Homosexual Discordant	0.298	1.347	0.509	(-0.710, 1.305)	0.56
<b>Women (n=5,059)</b>					
<b>Model 1: Gross Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	0.004	1.004	0.064	(-0.123, 0.131)	0.95
Heterosexual Discordant	-0.506	0.603	0.247	(-0.994, -0.018)	0.04
Homosexual Discordant	-0.388	0.679	0.362	(-1.104, 0.328)	0.29
<b>Model 2: Net Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	-0.031	0.969	0.063	(-0.157, 0.094)	0.62
Heterosexual Discordant	-0.560	0.571	0.231	(-1.017, -0.104)	0.02
Homosexual Discordant	-0.465	0.628	0.373	(-1.205, 0.274)	0.22

# 2. Allostatic Load & Discordance

**Table 5: Identity-Behavior Discordance and Allostatic Load, Add Health Wave IV, 2008**

	Coefficient	IRR	Std. Err.	95% CI	P-Value
<b>Men (n=5,202)</b>					
<b>Model 1: Gross Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	-0.020	0.980	0.105	(-0.228, 0.188)	0.85
Heterosexual Discordant	-0.144	0.866	0.100	(-0.342, 0.054)	0.15
Homosexual Discordant	-0.837	0.433	0.789	(-2.398, 0.725)	0.29
<b>Model 2: Net Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	0.019	1.020	0.103	(-0.185, 0.224)	0.85
Heterosexual Discordant	-0.243	0.785	0.094	(-0.429, -0.057)	0.01
Homosexual Discordant	-0.826	0.438	0.809	(-2.426, 0.774)	0.31
<b>Women (n=5,114)</b>					
<b>Model 1: Gross Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	0.005	1.005	0.063	(-0.121, 0.130)	0.94
Heterosexual Discordant	-0.034	0.966	0.065	(-0.163, 0.095)	0.60
Homosexual Discordant	-0.042	0.959	0.280	(-0.595, 0.512)	0.88
<b>Model 2: Net Effects</b>					
Heterosexual Concordant	Reference				
Homosexual Concordant	-0.035	0.966	0.063	(-0.160, 0.091)	0.59
Heterosexual Discordant	-0.044	0.957	0.063	(-0.169, 0.081)	0.49
Homosexual Discordant	-0.029	0.971	0.261	(-0.545, 0.486)	0.91

# Discussion

- No significant differences by identity alone, but differences exist by discordance status
- Deleterious effects (elevated AL):
  - Identity-Attraction discordant men, unadjusted
- Protective effects (reduced AL):
  - Identity-Attraction discordant women, unadjusted+ adjusted
  - Identity-Behavior discordant men, adjusted

# Discussion

- Minority Stress
  - Stress from discordant identity outweighed by avoided stress from stigma?
- Gender differences
  - Gay men experience greater hostility than lesbians  
(Herek, 2000).
- Discordance: identity concealment vs. development?



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# Thank you!

- Questions?

# Demographics

**Table 1: Weighted Sexual Identity and Gender-Stratified Distributions of Demographic and Medication Usage Variables, Add Health Wave IV, 2008**

	Men			Women		
	Gay or bisexual (n=178) 3.42%	Heterosexual (n=5024) 96.58%	P-value*	Lesbian or bisexual (n=273) 5.34%	Heterosexual (n=4841) 94.66%	P-value*
<b>Age (mean)</b>	28.91	28.93	0.88	28.41	28.81	<0.01
<b>Race/Ethnicity (%)</b>			0.05			0.33
NH White	65.9	70.2		69.8	67.7	
NH Black	9.2	14.7		16.6	16.9	
Hispanic	20.3	11.6		12.4	12.0	
NH Asian	4.6	3.5		1.1	3.4	
<b>Nativity (Born a US Citizen) (%)</b>			0.28			0.10
Yes	93.3	95.8		97.8	95.6	
No	6.7	4.2		2.2	4.4	
<b>Education (%)</b>			0.04			<0.01
Less than HS	7.6	10.5		13.8	7.4	
HS/GED	17.1	31.2		28.3	24.0	
Some College	35.0	32.7		37.0	35.3	
4 Year College	24.3	16.8		14.9	20.4	
More than College	15.8	8.9		6.0	12.9	
<b>Household income (%)</b>			0.85			<0.01
Less than \$24,999	16.8	15.3		34.6	19.9	
\$25,000 - \$49,999	27.2	31.5		32.9	31.5	
\$50,000 - \$74,999	26.2	23.6		16.1	23.4	
\$75,000 +	29.9	29.7		16.4	25.2	

Note: Table presents weighted means and percentages. t-tests were performed to calculate p-values for continuous variables, and chi-square tests were performed to calculate p-values for categorical variables.

# Lifestyle

**Table 1: Weighted Sexual Identity and Gender-Stratified Distributions of Demographic and Medication Usage Variables, Add Health Wave IV, 2008**

	Men			Women		
	Gay or bisexual (n=178) 3.42%	Heterosexual (n=5024) 96.58%	P-value*	Lesbian or bisexual (n=273) 5.34%	Heterosexual (n=4841) 94.66%	P-value*
<b>Allostatic Load (mean, range = 0-9)</b>	1.83	1.91	0.69	1.99	1.99	0.95
<b>Medication Usage (%)</b>						
Anti-Diabetic Medication Use	0.4	0.9	0.45	0.4	1.7	<0.01
Anti-Hyperlipidemic Medication Use	0.2	0.9	0.09	0.5	0.6	0.78
Anti-Inflammatory Medication Use	32.5	25.9	0.13	42.2	33.9	0.03
<b>Healthy Index (mean, range = 0-4)</b>	2.5	2.5	0.68	2.3	2.3	0.82

*Note:* Table presents weighted means and percentages. t-tests were performed to calculate p-values for continuous variables, and chi-square tests were performed to calculate p-values for categorical variables.

# Identity Discordance Distributions

**Table 3: Weighted Gender-Stratified Identity Discordance Distributions, Add Health Wave IV, 2008**

	Total	Men	Women	P-Value*
<b>Identity-Attraction, n (%), n=10,212</b>				<b>&lt;0.01</b>
Heterosexual Concordant	11,854 (95.2)	6,187 (96.3)	5,667 (93.9)	
Homosexual Concordant	505 (3.9)	212 (2.8)	293 (5.2)	
Heterosexual Discordant	88 (0.8)	49 (0.8)	39 (0.8)	
Homosexual Discordant	20 (0.1)	10 (0.2)	10 (0.1)	
<b>Identity-Behavior, n (%), n=10,316</b>				<b>&lt;0.01</b>
Heterosexual Concordant	11,541 (91.8)	6,095 (93.9)	5,446 (89.2)	
Homosexual Concordant	492 (3.8)	212 (2.8)	280 (5.0)	
Heterosexual Discordant	527 (4.2)	205 (3.2)	322 (5.5)	
Homosexual Discordant	38 (0.2)	11 (0.1)	27 (0.3)	

*Note:* Heterosexual Concordance = straight identity, opposite sex-only attraction/behavior; Homosexual Concordance = LGB identity, same or both-sex attraction/behavior; Heterosexual Discordance = straight identity, same or both-sex attraction/behavior; Homosexual Discordance = LGB identity, opposite sex-only attraction/behavior

\* Table presents weighted percentages. Chi-square tests were performed to calculate p-values.