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INTRODUCTION

Background:
- Non-heterosexual youth are at higher risk for alcohol and drug abuse, teen pregnancy, and depression.
- Identification of non-heterosexual, or "sexual minority" (SM) youth has been inconsistent across studies, and not well explored among ethnic minorities.
- Consensus is lacking on:
  - How to use attraction, self-labeling and gender of sex partners to identify non-heterosexuality.
  - How to measure self-labeling sexual orientation.

Purpose:
- Classify SM adolescents based on self-reported attraction, self-labeled orientation, and among males, gender of sex partners.
- Assess how SM youth differ from heterosexuals on known risk factors among an ethnic minority population.
- Explore implications of using a SM binary classification instead of independent dimensions of sexual identity in analyzing associations with known risk factors.

METHODS

Survey Methods:
- 9th grade students from 10 public, Southern California high schools.
- Randomly selected by classroom to participate in an in-class audio computer-assisted, self-administered survey.

Analysis Methods:
- Lifetime sexual experience was defined as any oral, vaginal or anal sexual activity.
- African American and Hispanic/Latino ethnicity are not mutually exclusive.
- SM and heterosexual students were compared on demographics, psychosocial variables and behaviors using Chi-square and logistic regression analyses.

SAMPLE CHARACTERISTICS

Demographics, psychosocial measures and behaviors	Total	Males	Females
	3,168	1,602 (51%)	1,565 (49%)
African American	11%	12%	10%
Hispanic/Latino	87%	85%	89%
Two-parent household	69%	71%	67%
Depressive symptoms	21%	11%	32%
Been teased/bullied	5%	5%	5%
Lifetime alcohol use	59%	59%	59%
Lifetime marijuana use	41%	43%	40%
Current boy/girlfriend	38%	34%	43%
Lifetime sexual experience	23%	30%	17%

Gender of Sexual Partners

	Males N=1,599
Neither	70%
Opposite	29%
Same	0.3%
Both	0.3%

Gender of Sexual Attraction

	Total N=3,124	Males N=1,587	Females N=1,537
Same	1%	1%	1%
Opposite	89%	95%	83%
Both	7%	2%	12%
Neither	3%	2%	5%

Self-Identified Sexual Orientation

	Total N=3,000	Males N=1,508	Females N=1,492
Heterosexual	62%	67%	57%
Mostly heterosexual	3%	2%	3%
Bisexual	6%	1%	10%
Gay or lesbian	1%	1%	1%
Other	0.2%	0.1%	0.3%
Not sure yet	6%	6%	6%
Don't understand the question	23%	23%	23%

MULTIPLE DIMENSIONS OF SEXUAL IDENTITY

MALES

Orientation		Attraction				Behavior			
		Neither	Opp.	Same	Both	Neither	Opp.	Same	Both
	Hetero	9	990	4	2	680	322	2	1
	Most. Hetero		33		1	24	10		
	Bi	1	4		16	15	5		2
	Gay/Lesbian		1	7		5		2	1
	Other	1			1	2			
	Not Sure	2	75	1	6	62	23		1
	Don't Understand	8	330	5	2	254	95	1	

Behavior					
	Neither	27	1050	12	21
	Opposite	1	457	2	4
	Same			2	1
	Both		2	1	2

FEMALES

Orientation		Attraction			
		Neither	Opp.	Same	Both
	Hetero	21	817	5	9
	Most. Hetero		31		10
	Bi	1	13	1	138
	Gay/Lesbian		3	4	1
	Other	1	1		2
	Not Sure	13	63	1	13
	Don't Understand	31	296	2	5

Key
- Consistently Heterosexual
- Consistently Gay/Lesbian/Bisexual
- Inconsistent
- Categorized as Sexual Minority

Binary Sexual minority classification:
Any same-sex attraction, non-heterosexual self-label, or same sex sexual activity

266 (8%) were categorized as SM

♂ 56 (4%)   ♀ 210 (13%)

BIVARIATE ASSOCIATIONS

%SM By Personal Characteristics

		Sexual Minority	
		N	%
Gender***	Male	56	4%
	Female	210	13%
African American	No	228	8%
	Yes	37	11%
Hispanic/Latino	No	37	9%
	Yes	228	8%
Lives in a two-parent household**	No	105	11%
	Yes	159	7%
Symptoms of Depression***	No	126	5%
	Yes	129	20%
Been teased or bullied at school***	No	237	8%
	Yes	29	19%

Percents are out of the row total: 3% of males are SM
* p<.05, ** p<.01, ***p<.0001

Risk factors by SM Status

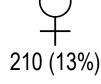|	Sexual Minority			
	No		Yes	
	N	%	N	%
Ever used alcohol***	1591	57%	211	81%
Ever used marijuana***	1075	39%	165	63%
Currently has boy/girlfriend*	895	37%	111	45%
Any sexual experience***	647	22%	88	33%

Percents are out of the column total: 81% of SM ever used alcohol.
* p<.05, ** p<.01, ***p<.0001

Further analysis of significant associations by gender showed that marijuana use, current boy/girlfriend and lifetime sexual experience were not related to SM status among males.

MULTIVARIABLE LOGISTIC REGRESSION

How do the associations between sexual minority status and outcome variables differ when considering each dimension of identity (Attraction, Orientation, Behavior) separately instead of using a binary measure of SM that combines all three?

Four logistic regression models were run on each outcome. All models were stratified by gender.
- Categorical variables for attraction and orientation were modeled together, and also separately to better understand how the dimensions relate to each other, and the outcome variables.
- Gender of sex partners contributed few additional observations so was not considered as a predictor.
- Due to the small number reporting Bi/Gay/Lesbian/Other, particularly among males, these groups had to be combined for modeling purposes.
- Wald tests were used to assess the significance of each categorical variable. When significant, we examined which groups differed from the reference group.

MODEL RESULTS: OR (95%CI) for females only shown

Outcome Measure	Model 1 (Binary SM)		Model 2 (Attraction & Orientation)	Model 3 (Attraction Only) Ref: Opposite	Model 4 (Orientation only) Ref: Heterosexual
Depressive Symptoms	2.9 (2.2,4.0)	Attraction	p=.0538 Neither: 0.43 (0.2,0.9)	p<.0001 Neither: 0.48 (0.3,0.9) Both: 2.8 (2.0,3.9)	-
		Orientation	p=.0032 MostlyH: 2.9 (1.5,5.6) G/B/O: 2.1 (1.1,3.8)	-	p<.0001 MostlyH: 3.0 (1.6,5.7) G/B/O: 2.9 (2.0,4.1)
Been Teased / Bullied at School	2.6 (1.3,3.9)		Inconclusive for both genders due to sample size of Mostly heterosexual/Gay/Bi/Other youth who have been teased or bullied		
Lifetime Alcohol Use	3.8 (2.6,5.6)	Attraction	p=.0002 Neither: 0.4 (0.2, 0.6) Both: 2.2 (1.2,4.3)	p<.0001 Neither: 0.4 (0.2,0.6) Both: 3.7 (2.4,5.7)	-
		Orientation	p=.2963	-	p<.0001 G/B/O: 3.8 (2.5,6.0)
Lifetime Marijuana Use	4.2 (3.0,5.8)	Attraction	p=.0002 Neither: 0.3 (0.1,0.6) Both: 2.3 (1.3,4.1)	p<.0001 Neither: 0.3 (0.1,0.6) Both: 4.0 (2.8,5.7)	-
		Orientation	p=.0405 G/B/O: 2.2 (1.2,4.2)	-	p<.0001 G/B/O: 4.5 (3.1,6.6)
Current Boy / Girlfriend	1.3 (0.9, 1.7)	Attraction	p=.0595 Neither: 0.5 (0.3,1.0)	p=.2295	-
		Orientation	p=.2818	-	p=.3230
Lifetime Sexual Experience	2.8 (2.0,3.9)	Attraction	p=.0128 Neither: 0.1 (0.01,0.6) Both: 2.0 (1.0,3.8)	p<.0001 Neither: 0.1 (0.01, 0.6) Both: 2.8 (2.0,4.0)	-
		Orientation	p=.0082 MostlyH: 3.6 (1.8,7.3)	-	p<.0001 MostlyH: 4.2 (2.2,8.3) G/B/O: 2.6 (1.8,3.9)

All models controlled for age, ethnicity and two parent household.

Key: Overall Wald Test   Groups different from reference:

FINDINGS

General:
- 23% of the overall sample did not understand the sexual orientation question.
- More youth identified as having a same sex attraction than identified with gay/lesbian as an orientation.
- Females were more likely to be categorized as SM (mostly bisexual) than males.

Model:
- Among males, the binary classification for SM was only significant for depression (p<.0001), bullying (p<.0001), and lifetime alcohol use (p=.06, marginal).
  → For males, attraction explained more variance in outcomes than orientation.
- Modeling the individual dimensions revealed a finer level of detail than could be seen with the binary classification. The binary classification obscures the difference between those who identify as bisexual versus gay or lesbian, or heterosexual and mostly heterosexual, and also does not account for youth who are still pre-sexual.
  → For example, SM is associated with increased odds of depression (Model 1). Model 2 shows that no sexual attraction is associated with decreased odds of depression. Model 3 shows that bisexuals are at particular risk for depression.

IMPLICATIONS

- 9th grade represents a point time in time for adolescents where there is a wide spectrum of sexual development; many 9th graders are still pre-sexual and thus may not have had the opportunity to fully explore all dimensions of their sexual identity.
- Researchers may consider including an "I don't understand" response option to questions regarding sexual orientation: may aid in understanding the implications of a portion of the sample mislabeling themselves due to confusion.
- Dichotomizing sexual identity may be misleading; attraction and orientation are different aspects of sexual identity and may provide unique information. Researchers may also consider including a question about attraction in addition to orientation to better identify SM youth.
- In any model that looks at SM status, it is important to see how the dimensions coexist. One is not a replacement for the other.
- Findings confirm the association between SM status and known risk factors within our population. However some associations seen in the overall sample were not found for the male subset.
- Further exploration of the best way to identify sexual minority youth is still needed.

LIMITATIONS

- Cross-sectional study design does not allow for causal inferences to be made or the directionality of associations to be determined.
- Females were not asked about the gender of their sexual partners.
- The sample size for SM youth was small, which resulted in having to combine gay/lesbian and bisexual into one category, which is not advisable based on previous research.
- Findings from this sample may not generalize to the greater population.