



Exploration of Challenges Faced by Peer Educators *in the Implementation of Health Promotion Activities at the Institutions of Higher Learning*

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ABSTRACT. This is a commentary on “Same-sex Marriage and Common Mental Health Diagnoses: A Sibling Comparison and Adoption Approach” by Xu, Rahman, Hiyoshi, and Montgomery. It considers the advantages and disadvantages of the study design and the contribution the study makes to the scientific literature. Discussed are issues of phenotype accuracy especially with respect to sexual orientation and other potential confounds, and some comments on common misunderstandings of the meaning and implications of findings of genetic correlations to human behavior.

INTRODUCTION

The developmental pathways for human sexuality and individual variation in

sexual orientation are complex and not well understood. The same is true for mental health. Most scientists acknowledge that multiple interacting factors, including biology, psychology, and socio-cultural factors contribute to shaping human behavior and identity. Genetic and genomic studies help increase our understanding of the biological processes that interact with environmental factors to influence development. Yet, the meaning and implications of studies finding genetic correlates of human behavioral traits are often mischaracterized and misunderstood.

Xu, Rahman, Hiyoshi, and Montgomery have undertaken an extensive and impressive set of analyses using a very large population-based birth cohort study of archival and public records databases in Sweden. Their aim was to assess whether shared genetic and environmental familial factors account for an association between same-sex marriage (as a proxy for non- heterosexual sexual orientation) and mental health problems (i.e., depression, substance abuse, & committed or attempted suicide). Comparing unrelated people to findings from full same-sex siblings, they reported that some of the variance in mental health disparities between those in same-sex marriages and those in opposite-sex marriages was accounted for by shared familial confounding (genetic and environmental). Even controlling for this confound, the risk ratio remained higher for those in same-sex marriages. An analysis comparing female–female adoptive siblings found a statistically significant genetic correlation only between same-sex marriage and depression, indicating that shared genetic factors partially account for the association between same-sex marriage and risk of depression. Male–male adoptive sibling comparisons were not possible due to small subsample sizes.

The authors conclude that overall unmeasured factors may influence the association of mental health disparities with sexual orientation and that only a small proportion of the association can be attributed to shared familial confounding between mental health problems and sexual orientation. Importantly, they point out that minority stress and “common cause” explanations of the association between mental health problems and sexual orientation are not mutually exclusive. They suggest that future research could include multivariate genetic analysis of theorized minority stressors, biological pathways, and other variables such as personality traits and gender non-conformity.

All methods have pros and cons. Advantages of using such cohort databases include the large number of cases available for analyses, the long period of data reporting, and not relying on self-report data. Disadvantages include that researchers must work within the limitations of the variables available in the databases and potential inconsistencies in the operational definitions used across different sources of data for variables of interest. The authors acknowledge these aspects of the study and readers are well advised to keep in mind the authors' notations about the limitations of the study, including the use of a proxy measure of sexual orientation, possible elective placement of adoptees, inability to

differentiate minority sub- groups, and possible underestimation of mental health diagnoses. They address these potential limitations to the extent possible with sophisticated mathematical modeling and sensitivity analyses.

Given the “noise” in the study variables, addressed below, it may have been difficult to find any significant and meaningful associations. Yet, we must appreciate the authors' efforts to utilize these data to assess whether shared genetic and familial environmental factors influence the association between marriage type (as a proxy for sexual orientation) and mental health diagnoses. This contributes to clarifying the extent to which the higher prevalence of mental health issues of lesbian women and gay men may be due in part to familial tendencies toward such diagnoses in both heterosexual and gay/lesbian siblings.

Here, I would like to further address the issue of phenotype accuracy especially with respect to sexual orientation and other potential confounds, and finally consider some common mis- understandings of the meaning and implications of findings of genetic correlations to human behavior.

Although it was the only option given the study design, using marriage as a proxy for sexual orientation may lead to misclassification as acknowledged by the authors. Additionally, the use of such dichotomous measures of sexual orientation in genetic research has been critiqued for inconsistency with both theoretical and empirical research on sexual diversity (e.g., Hamer et al., 2021). It assumes that a single question (same- sex v opposite marriage) is sufficient to classify a person's sexual orientation while sexual orientation is generally understood as multidimensional. It limits the heterogeneity of the test samples and assumes that there is a strict orientation classification cutoff that is reflected in having been in a same-sex marriage. Further, it uses a lifetime criterion which is inconsistent with developmental research on sexual orientation and sexual fluidity (e.g., Diamond, 2016; Mustanski et al., 2014).

Heteronormativity and homo-negativity privilege heterosexual marriage over same-sex marriage. The authors acknowledge that bisexual persons may be included in the same-sex marriage groups, but it is also likely that there are lesbian women and gay men as well as bisexual women and men in opposite-sex marriages given the more ubiquitous social acceptance, if not a social expectation, of heterosexuality and marriage. Although this study limited the opposite-sex marriage group to those who have never been in a same-sex registered partnership or same-sex legal marriage, this does not assure heterosexual orientation. Thus, use of this proxy potentially introduces noise in at least two ways: (1) misclassification of sexual orientation and (2) differential selection bias for entering into same-sex versus opposite-sex marriage. We do not have estimates of what proportion of lesbian women, gay men, and bisexual women and men, chose to marry in comparison with their heterosexual counterparts, so that is one source of potential selection bias. Also, selecting the type of marriage one enters into may be confounded with personality and social factors that could not be accounted for in this study. For example, it is possible

that those entering same-sex marriages are more inclined to declare their emotions through both same-sex marriage and seeking mental health care despite the stigma associated with those actions.

Another potential confound is that reasons for entering into legal unions may differ by sexual orientation (and gender within same-sex couples). A study of Swedish marriages found that same-sex couples appear to marry for different reasons than do opposite-sex couples (Aldén et al., 2015). For gay men, resource pooling was the main reason for registered partnerships. For lesbian women, family formation was an important factor, particularly after 2002 as adoption became available to same-sex couples. Although raising children is also a motivator for heterosexual couples, compared to lesbian couples' heterosexual marriages showed more "specialization" in terms of unequal earning power and division of labor related to childbearing and rearing. It is possible that the associations with sexual orientation are influenced by personality traits associated with issues more related to resource concerns and desire for family formation that cannot be accounted for with the current analyses. These findings highlight the need for matching within gender for comparisons and attenuate interpretability of the male–female full and adoptive sibling comparisons, such as those in Table 2 of Wu et al. (2022).

Both minority sexual orientation and mental health problems are subject to the effects of stigma and discrimination. As the authors noted, minority stress theories are important to consider, but do not preclude other factors from being predictive of mental health problems. It is important to note

When psychopathology occurs among heterosexuals, it is not interpreted by mental health professionals or society as implicating heterosexuality per se as the cause of the individual's problem, even when it is manifested in sexual thoughts, feelings, and behaviors. Rather, psychological interventions aim to help mentally ill or distressed heterosexuals to live their lives in a fulfilling way, as heterosexuals, fully capable of establishing meaningful intimate relationships with people of the other sex." (Herek & Garnets, 2007, p. 354)

Although Sweden has been a leader in improving the rights of LGBT persons in recent decades, a 2009 report concluded that "hate crimes toward LGBT persons exists in Swedish society, and LGBT persons experience discrimination in the labour market, education and access to goods and services" (Danish Institute for Human Rights, 2009, p. 3). In 1944, homosexuality was decriminalized, and more recent cohorts have felt the impact of more numerous legal changes and lessening stigma earlier in their development than older cohorts. For example, registered partnerships became legal in 1995 and gender-neutral marriage in 2009, adoption rights for same-sex couples in 2003, and prohibition of discrimination based on sexual orientation was added to the Swedish constitution in 2011 (Swedish Institute, n.d.).

These changes in structural stigma may have differential impact depending on birth cohort. Using repeated nationwide population-based cross-sectional surveys

in 2005, 2010, and 2015 in Sweden, Hatzenbuehler et al. (2018) found significant reductions in the association between sexual orientation and psychological distress related to decreasing structural stigma. By 2005, the sexual orientation disparity (gay men/lesbians vs. heterosexuals) in psychological distress was reported to be eliminated. In the Xu et al. study, cohort effects were not found. Differences in study design as well as the specificity and accuracy of measures may account for this. Further research will be needed to clarify the relationship of changes in structural stigma on the relationship between sexual orientation and mental health.

The current study was not designed to find direct linkage between genes related to sexual orientation, mental illness, or their overlap. Instead, it was focused on whether common familial factors might explain part of the association between sexual orientation and mental health diagnoses. Given the long history of associating homosexuality with mental illness, articles such as this receive both praise and criticism. Part of the resistance to talking about findings from behavior genetics research, especially as it relates to stigmatized minorities, is related to fears of (re) pathologization, (re)criminalization, and the potential use as justification for “corrective” or “eugenic” interventions. On the other hand, modern behavior genetics strives to increase understanding of the interplay of genes and environment. We are always and at all times the product of our biology in interaction with our environment. Every thought we have is a neuro-chemical reaction. Dismissing the study of potential biological influence on human behavioral trait development because it might be potentially socially dangerous if misapplied, runs the risk of ignoring the potential insights that an integrated bio-psycho-social perspective might afford. Indeed, the Xu et al. study serves to underscore how research on behavioral genetics can point to the need to search for additional unmeasured factors that may help explain the mental health disparities associated with sexual orientation.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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