King's Research Portal

Document Version
Peer reviewed version

[Link to publication record in King's Research Portal](#)

Sexual orientation differences in the self-esteem of men and women: A systematic review and meta-analysis

Livia Bridge, Patrick Anthony Smith, Katharine Amber Rimes

Abstract

Sexual minority individuals experience higher rates of mental health problems than heterosexual people. It has been suggested that minority stress explains this disparity, partly by elevating rates of general psychological risk factors such as low self-esteem. This study investigated self-esteem in sexual minority people compared to heterosexual people through a systematic review and meta-analysis. A systematic search of four databases was conducted. Observational studies comparing self-esteem in sexual minority and heterosexual men and women separately were included**.** A qualitative synthesis and random effects meta-analysis were conducted. Potential moderators were explored using sub-group analyses of age, sexual minority orientation and sample type. Thirty-two eligible studies were identified; 25 compared self-esteem in men and 19 in women. Most studies used the Rosenberg Self-esteem Scale (RSES) to measure self-esteem. Compared to heterosexual men and women, there was significantly lower self-esteem in sexual minority men (*SMD*= -0.33, 95% *CI* = [-0.44, -0.23]) and women (*SMD*= -0.20, 95% *CI*= [-0.29, -0.11]). This difference appeared to be moderated by sample type: there was preliminary evidence for more robust differences in men and bisexual individuals. Findings are consistent with the suggestion that self-esteem is lower in sexual minorities than in heterosexual individuals. However, caution is required in drawing firm conclusions due to methodological limitations of the included studies. Self-esteem is a potential target for intervention to prevent psychological disorders in this population.

Keywords: Self-esteem; Sexual Minority; LGBT; Meta-Analysis; Psychiatric Disorders

Public significance statement:

This study suggests that sexual minority individuals have lower self-esteem on average than their heterosexual counterparts. Self-esteem could be a potential target for new interventions aimed at reducing disparities in mental health between sexual minority and heterosexual individuals.

Sexual minority individuals experience higher rates of common mental health problems compared to their heterosexual peers (King, et al., 2008; Plöderl & Tremblay, 2015). Identifying factors that contribute to this disparity is important for the development of interventions to prevent psychological disorders in sexual minorities. Minority stress theory (Meyer, 2003) proposes that discrimination and stigma related to sexual orientation can explain the inequality in mental health between sexual minority and heterosexual individuals. Stigma related to sexual identity is widespread and sexual minority individuals experience higher rates of sexual orientation related victimization compared to heterosexual populations, resulting in unique stressors (Herek, 2009). Stigma and discrimination might also be internalized or responded to in ways that causes additional, "proximal", minority stressors (e.g. concealment of identity, fear of victimization, internalized homophobia). It is proposed that the increased prevalence of mental health disorders in this population is a consequence of these additional stress processes.

An extension of minority stress theory proposed that minority stress also increases the risk of general psychological processes that are implicated in mental health problems. Hatzenbuehler's (2009) psychological mediation framework outlines that minority stress increases emotion dysregulation and unhelpful cognitive processes that are risk factors for psychological disorders. It is suggested that elevations in these negative processes mediate the relationship between minority stress and increased rates of psychopathology.

Identifying the most important mediators within this framework could help develop interventions aimed at preventing mental health problems in sexual minority individuals.

Self-esteem and Mental Health

One potential mediator suggested within this framework that has been widely researched in relation to mental health is self-esteem. Self-esteem refers to the part of people's self-concept that is evaluative or affective (Leary & Baumeister, 2000). Self-esteem can be thought of as either a global or as a domain-specific evaluation in areas such as academic ability, athleticism, and, social interactions (Swann & Bosson, 2010). In the context of mental health, researchers have mainly conceptualized and measured low self-esteem as a global negative evaluation of the self. The current review will therefore focus on this definition of self-esteem as global, to remain consistent with this literature.

In the general population, evidence supports a strong association between self-esteem and mental health. A meta-analysis of longitudinal studies demonstrated that self-esteem is associated with the development of depression and maintenance of anxiety disorders (Sowislo & Orth, 2013). This association has been extended to sexual minority populations, with low self-esteem being associated with higher rates of suicidality in Lesbian Gay and Bisexual (LGB) adolescents (Savin-Williams & Ream, 2003; Van Heeringen & Vincke, 2000) and higher self-esteem associated with reduced risk of depression in Lesbian Gay Bisexual and Queer (LGBQ) young people (Hall, 2018).

The Impact of Minority Stress on Self-Esteem

According to sociometer theory, self-esteem is a subjective internal monitor of how much an individual is valued by others (Leary & Baumeister, 2000; Leary, Terdal, Tambor, & Downs, 1995). When this value is perceived to be low then self-esteem is equivalently low. This theory would suggest that when sexual minority individuals perceive stigma or

discrimination from heterosexual populations, this reduces their perceived value by the

majority social group and self-esteem would be lower as a result. Indeed, associations

between anti-LGB discrimination and low self-esteem have been demonstrated in sexual

minority individuals (Huebner, Rebchook, & Kegeles, 2004; Rosario, Rotheram-Borus, &

Reid, 1996)

Proximal minority stressors such as internalized homophobia could also negatively

affect self-esteem. Negative beliefs about one's sexual identity might be considered a

domain-specific component of self-esteem that might trigger, or result in, more global

negative beliefs about the self. Indeed, an association between internalized homophobia

and low self-esteem has been demonstrated in lesbian women (Peterson, 2006; Szymanski,

Chung, & Balsam, 2001)

Self-esteem as a Mediator Between Minority Stress and Mental Health

Several cross-sectional studies have found evidence consistent with a role for self-

esteem as a mediator between minority stress and mental health in sexual minority

individuals. For example, McGregor, et al. (2001) found evidence that internalized

homophobia leads to distress through low self-esteem in lesbian women; a finding

replicated for bisexual youth (Martin-Storey & Crosnoe, 2012) and gay men (Feinstein,

Davila, & Yoneda, 2012). The same finding has also been demonstrated for anti-LGB

discrimination and concealment of identity (Williams, Mann, & Fredrick, 2017).

Levels of Self-esteem in Sexual Minority and Heterosexual Individuals

The evidence presented above suggests that self-esteem may contribute to mental

health problems in sexual minority populations. However, Hatzenbuehler's (2009) theory

proposes that mental health disparities between sexual minority and heterosexual

populations are caused by elevations in psychological risk factors. Evidence of differences in

self-esteem between heterosexual and sexual minority populations is needed to support

this suggestion. Within Hatzenbuehler's original theory paper, a narrative review found

mixed results for studies comparing levels of self-esteem in sexual minority and

heterosexual samples but a systematic review with meta-analysis was not conducted.

Potential Moderators of Sexual Orientation Differences in Self-esteem

The mixed findings about levels of self-esteem in sexual minority compared to

heterosexual individuals could be explained by factors that moderate self-esteem, increase

levels of minority stress or its impact.

Gender and gender identity

Although both sexual minority men and women are subject to minority stressors

that could negatively impact self-esteem, there is reason to compare differences in men and

women separately. Firstly, in the general population, women have been shown to report

lower self-esteem than men (Kling, Hyde, Showers, & Buswell, 1999). Secondly, male and

female sexual minority individuals may experience different forms of minority stressors. For

example, female sexual minority individuals experience multiple sources of minority stress

in addition to sexual orientation, such as sexist events. Sexism can be internalized by women

in the same way that homophobia is internalized by sexual minority individuals (Szymanski,

Gupta, Carr, & Stewart, 2009). The presence of multiple stigmas might interact in sexual

minority women to increase the impact of minority stress on self-esteem. However, findings

demonstrating interaction between gender and sexual orientation related stigma have not

been found.

Additionally, there is some evidence that sexual minority men experience more of

certain kinds of anti-LGB discrimination than sexual minority women, including both verbal

and physical victimization (Balsam, Beauchaine, Mickey, & Rothblum, 2005; Herek, 2009,

D'Augelli, Grossman, & Starks, 2005). Higher rates of victimization could increase the impact

of minority stress on self-esteem in sexual minority men and increase the disparity in self-

esteem compared to heterosexual men.

Increasing numbers of individuals are identifying as transgender, genderqueer or

nonbinary so this review will investigate whether there are sufficient studies asking about

different gender identities to report sub-group analyses based on gender and gender

identity.

Sexual minority orientation

Disparities in mental health exist between different minority sexual orientations.

Bisexual men and women have been found to experience higher rates of depression and

anxiety compared to lesbian women and gay men (Ross, et al., 2018). Bisexual individuals

potentially experience stigma and discrimination from both heterosexual and Lesbian Gay

Bisexual and Transgender+ (LGBT+) communities (Brewster & Moradi, 2010). They may also

have reduced support networks to cope with discrimination as they often report lower

levels of perceived belonging to the LGBT+ community (Hayfield, Clarke, & Halliwell, 2014).

Increased experience of minority stress might result in lower self-esteem for bisexual

individuals.

Bisexual identity has also been associated with lower levels of identity certainty

compared to lesbian or gay individuals (Bejakovich & Flett, 2018). Identity uncertainty is in

turn related to psychological distress (Dyar, Feinstein, & London, 2015). Young adults who

identify as mostly heterosexual but experience same-sex attractions also appear to be at

higher risk for mental health problems compared to those identifying as gay or lesbian

(Kuyper & Bos, 2016). Potential disparities in self-esteem between sexual minority and

heterosexual groups might therefore be larger for individuals not identifying as exclusively gay or lesbian.

Age

Young sexual minority individuals under the age of 25 experience additional stressors compared to adults. Sexual identity uncertainty is associated with psychological problems. Emerging adulthood is a time when sexual identity is still developing and there may be uncertainty over same-sex attractions (Morandini, Blaszczynski, Costa, Godwin, & Dar-Nimrod, 2017; Savin-Williams & Cohen, 2015). Sexual minority young people might also be more likely to face other stressors, including "coming out" to their family for the first time, although for some people the first coming out will happen later in life or it is typically an ongoing experience (Savin-Williams, 1998). Young people may also have fewer coping resources, having had less time to create social networks and access to LGBQ support. This theory is supported by research that has shown younger age is associated with lower levels of social well-being in LGBQ people (Kertzner, Meyer, Frost, & Stirratt, 2009). Sexual minority young people could therefore be more vulnerable to the impact of minority stressors on their self-esteem. However, it is also important to consider cohort effects. For example, older adults grew up at a time where anti-LGBTQ+ attitudes and discrimination were more prevalent. This review will therefore explore the moderating effects of age on sexual orientation differences in self-esteem.

Sampling issues

Recruitment methods for obtaining sexual minority participants in research are limited by the visibility of these individuals and small numbers compared to the heterosexual population. These limitations mean that sexual minority participants are most commonly convenience rather than random or population-based samples (Meyer & Wilson,

2009). This is an inherent difficulty in research with hidden populations or stigmatized

groups like sexual minority people because sexual orientation data is often omitted form

national or government-led population-based health surveys (Wolff et al., 2017; Patterson,

Jabson, & Bowen, 2017). This introduces potential differences across research studies, as

samples may not be representative of the wider sexual minority population. Indeed, rates of

common mental health problems have been shown to be higher in convenience compared

to population-based samples of sexual minority adults (Kuyper, Fernee, & Keuzenkamp,

2016). Differences in self-esteem based on sexual orientation might vary depending on the

types of sample compared. Variation could exist between convenience and random samples

or, for example, how representative the recruitment of a convenience samples is (e.g.

recruitment from the community, only university students, recruitment from only specific

LGBT+ venues/populations etc).

The Present Study

Despite evidence that lower self-esteem is associated with higher rates of

psychological distress in sexual minority individuals, no study to date has systematically

reviewed the literature regarding differences in self-esteem between heterosexual and

sexual minority individuals. The primary aim of the current review was therefore to identify

studies comparing levels of self-esteem in heterosexual and sexual minority populations to

assess whether sexual minority individuals have lower self-esteem than heterosexual

individuals. Demographic factors that could moderate differences in self-esteem between

sexual minority and heterosexual orientations are also yet to be investigated. The second

aim of this review was therefore to explore potential moderators of sexual orientation

differences in self-esteem. These two aims were addressed firstly, through a qualitative

summary of self-esteem differences and secondly, a meta-analysis of self-esteem

differences for studies reporting sufficient data. Sub-group analyses were also used to

identify whether sexual minority orientation, age and sample type moderated differences in

self-esteem. Men and women were compared separately to identify whether differences in

self-esteem are present for both these genders and if gender is a moderator of disparities

This review also investigated whether there was sufficient data on gender and gender

identity to include non-binary and transgender participants in separate sub-group

comparisons.

Method

Protocol and Search Strategy

The review protocol was pre-registered on PROSPERO (CRD42017080654,

https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=80654). Two approaches

were used to identify relevant studies. First, a comprehensive search of PsychInfo, Web of

Science, Embase and Medline databases was conducted. Search items included an extensive

list of synonyms for sexual minority individuals combined with synonyms for self-esteem.

Search terms were tailored to each database; see Appendix A for full search strategy.

Searches were originally conducted from the beginning of database records up to the time

of the search, August 2018.

Second, reference lists of relevant review articles and eligible studies were hand

searched. Searches were also conducted in the table of contents for journals from which a

at least three eligible studies were retrieved (i.e. Archives of Sexual Behaviour, Sex Roles,

International Journal of Eating Disorders and the Journal of Homosexuality). It was decided

that unpublished grey literature would not be included in the search as the quality of these

studies has not been reviewed. This could have introduced potential publication bias into

the review and therefore several formal tests of publication bias were conducted, see below

for details.

Inclusion and Exclusion Criteria

The following inclusion criteria were applied to select eligible studies. Studies must

have been available as full text original articles, containing quantitative data, published in a

peer-reviewed journal and available in English. A measure of sexual orientation must have

been collected for both a sexual minority and a heterosexual group of participants. Sexual

orientation could be measured using self-reported sexual identity, attraction, behaviour

fantasy or a combination of these. The definition of sexual minority was not pre-defined in

the eligibility criteria and therefore any reasonable definition was accepted. Studies were

excluded if either the sexual minority or heterosexual group were a sub-population selected

based on a variable that could be related to both self-esteem and sexual orientation and

therefore confound comparisons (e.g. clinical status). For example, sexual minority

participants are more likely to have a mental health problem, and self-esteem and mental

health problems can have reciprocal relationships. Self-esteem must have been measured in

both sexual minority and heterosexual groups using a valid and reliable self-report measure

of global self-esteem. Studies were excluded if information on the validity or reliability of

the self-esteem measure was not available. Finally, self-esteem must have been compared

in the sexual minority and heterosexual group separately for different genders, either using

a statistical test or report of means and an estimate of dispersion. Studies that did not

compare different genders separately but included gender as an additional variable in

analysis were included. Any observational study design was acceptable. There was no

restriction on year or location of publication.

Study Selection

Study selection was conducted in three stages, illustrated in the PRISMA flow

diagram in Figure 1. A total of 7,322 records were retrieved through database searches and

an additional three records through other sources. After duplicates were removed, title and

abstracts of 5,347 records were screened by the first reviewer against the eligibility criteria.

Full texts were then retrieved for remaining articles (N= 209) and independently assessed

against eligibility criteria by the first and second reviewer. There was good agreement on

eligibility between the two reviewers (*kappa*= 0.82). Where there was disagreement this

was resolved through discussion with reference to the inclusion and exclusion criteria. This

resulted in a total of 32 studies eligible for inclusion in the qualitative synthesis. An update

of the search from November 2017 up to August 2018 identified no new eligible studies.

[INSERT FIGURE 1 HERE]

Data Extraction and Coding

Data was extracted and coded by the first author and all effect size statistics were

independently checked by a second rater. First, general study information was extracted

including, author, title, year and country of publication. Next, number of participants, means

and standard deviation for self-esteem measures for each sexual orientation group was

extracted separately by gender to calculate effect sizes.

Where insufficient information was provided to calculate an effect size, authors

were contacted to request this data. The main findings for the difference between self-

esteem in each sexual minority group compared to the heterosexual group were also

identified and coded to provide data for the qualitative synthesis.

Study characteristics and potential moderators of the relationship between sexual

orientation and self-esteem were then coded.

Study characteristics and demographics

Study design, self-esteem measure, and sexual orientation measure were extracted. Study design was extracted and coded as cross-sectional when sexual orientation and self-esteem were measured at the same time point whereas studies were coded as longitudinal when sexual orientation was measured at an earlier time point to self-esteem. Sexual orientation measure was coded as either attraction, behaviour or identity depending on which was used to define the sexual minority and heterosexual groups. When groups were defined using a score combining the above characteristics, the sexual orientation measure was coded as composite.

Age and sample type were extracted for sexual orientation groups separately. Age was then coded as below or above 25 years; this is the cut-off for the World Health Organization's definition of young people. Coding of age was based on either the oldest mean age of the different sexual orientation groups or the age range of the overall sample. Sample type was coded as general community, university student, school student, mixed or a sub-population. Studies were coded as general community samples if both sexual orientation groups were recruited at least partly from the community using either purposive, convenience or random sampling. Samples were coded as university student or school student where participants were selectively recruited from universities or schools. Studies were coded as mixed where either the sexual minority or heterosexual group was a student sample and the other used a general community sample, as defined above. Specific sub-populations were coded when purposive samples were recruited that were a sub-group of the general population.

Sexual minority orientation for each sample was coded based on the definition provided by each study. For example, studies that had a combined lesbian/gay and bisexual group were labelled as "combined sexual minority" whilst separate lesbian/gay, bisexual or

other sexual minority samples were coded as "lesbian", "gay" or "bisexual" respectively.

Two studies also included "incidentally gay" and "mostly heterosexual" samples. Incidentally

gay was defined as having predominantly opposite-sex attractions and only incidental same-

sex attractions.

Methodological Quality Assessment

The Effective Practise Health Project's (EPHPP, 1998) tool for assessing the quality of

quantitative studies was used to measure the quality of eligible studies. The EPHPP has been

shown to have excellent inter-rater reliability (Armijo-Olivo, Stiles, Hagen, Biondo, &

Cummings, 2012). The tool was adapted to differentiate between the quality of studies in

this review. Within the confounders section important confounders that should be

controlled for were identified as : age, ethnicity, socioeconomic status and education level .

The section on design was removed as all but one study used a cross-sectional design.

Intervention integrity was not coded as no intervention studies were included in this review.

For the blinding section, as all studies were observational, only participants' awareness of

the research question was considered. Each study was coded by two raters independently.

Where there was disagreement, the raters independently reviewed the study again to check

if information had been overlooked in error. If there was still disagreement, a third rater

made the final decision.

Analysis

Studies were excluded from the meta-analysis when means or standard deviations

could not be obtained, and no other statistics could be used to estimate effect size. This

resulted in eight studies being excluded from analyses. A qualitative summary of study

characteristics and the main findings for all self-esteem comparisons were summarized

before the meta-analysis to ensure the findings of these studies were included in the review

and provide context for the analyses. For studies where enough statistics were reported, or

provided on request, effect sizes and their 95% confidence intervals were calculated for the

difference in self-esteem between each sexual minority group and the heterosexual

comparison. For the overall meta-analysis, comparing all sexual minority individuals to

heterosexual individuals, a pooled mean and standard deviation were calculated for studies

including both a bisexual and lesbian or gay comparison group, to create a combined sexual

minority group. This method was used as effect sizes for the separate sub-groups would not

have been independent and could therefore not both have been included in the meta-

analysis. Effect sizes for the separate lesbian, gay and bisexual samples were used in the

sub-group analysis of sexual minority orientation. Effect sizes were calculated separately for

men and women. The mean and standard deviation for each group were used to calculate

effect sizes. Effect sizes were calculated as standardized mean difference (SMD) using the

formula for either Cohen's d or, where sample sizes were small or unequal, Hedge's g. Effect

sizes were calculated so that a negative value indicated the sexual minority group had lower

self-esteem.

Analyses were conducted using Review Manager 5 software (Cochrane

Collaboration, 2011). Pooled estimates of effect size were calculated separately by gender.

Since studies had different sample characteristics, a random-effects meta-analysis was

conducted (Hunter & Schmidt, 2000). Heterogeneity was assessed using chi-squared

statistics and an I^2 statistic to quantify the percentage of variance in effect sizes between

studies not explained by sampling error. Planned sub-group analyses were then carried out

to explore potential moderators of the difference in self-esteem between sexual minority

and heterosexual groups including, age, sexual minority orientation and sample type.

Given variation in the quality of eligible studies identified, a sensitivity analysis based on methodological quality of studies was conducted including only studies with strong methodologies. Publication bias was assessed using Comprehensive Meta-Analysis software (Borenstein, Hedges, Higgins, & Rothstein, 2005). Several tests were included: funnel plot inspection, fail-safe N for pooled effect estimates (Rosenberg, 2005) and the trim and fill method to identify and adjust for studies that could be missing from the funnel plot (Duval & Tweedie, 2000).

Results

Study and Participant Characteristics

Key study and participant characteristics and main findings for each study are summarized in Appendix Table B. Articles were published between 1983 and 2018 and contained data from 28,340 heterosexual and 5,429 sexual minority individuals of which 19, 355 (57.3%) were male and 14, 414 (42.7%) were female. Most studies were conducted in North America (75% in the USA). All but one study used a cross-sectional design. For most studies, sexual orientation was measured using self-reported identity (72%), and self-esteem using the Rosenberg Self-Esteem Scale (78%). No eligible studies used "sexual fantasy" to measure sexual orientation. All but two studies used a convenience or purposive sampling method. This mostly involved either recruiting undergraduate university students or advertising in LGB-specific venues (e.g. social media sites, bars, clubs, churches, community/support groups). Most samples did not assess gender identity; those that did assess it included either no transgender, or nonbinary participants or excluded these participants from analyses due to small numbers. Not enough studies included data on or comparisons of transgender or non-binary groups to include them for a separate sub-group analysis.

The mean overall age of participants was 26 and ranged from 12 to 80 years. The average age of sexual minority women (27.5 years) and men (28.1 years) was slightly older than that of heterosexual women (26.7 years) and men (25.4 years). For studies where ethnicity was reported, one study included only Hispanic individuals (Gonzalez-Guarda, De Santis, & Vasquez, 2013) but for all other studies, samples consisted of at least 60% white participants.

Quality Assessment

Using the EPHPP quality assessment tool, six studies were coded as weak, 13 moderate and 13 strong, see Table C. There was good agreement between the two raters for overall scores (Kappa = 0.71). Notably, only one study was coded as strong for selection bias, and only two studies used random sampling methods. Study samples might not have been representative of the wider general population.

Sexual Orientation Differences in the Self-esteem of Men

A summary of the main findings found for all comparisons of self-esteem in sexual minority men compared to heterosexual men are shown below in Table 1**.**

[INSERT TABLE 1]

Overall meta-analysis for men

Nineteen studies were included in the meta-analysis comparing levels of self-esteem in sexual minority and heterosexual men. The pooled estimate of effect size for the difference in self-esteem suggested that sexual minority men have significantly lower self-esteem than heterosexual men (*SMD* = -0.33, 95% *CI* = [-0.44, -0.23], *p* = < 0.00001) with a small to medium effect. The test for between-group heterogeneity was significant, χ^2 (18) = 45.37, *p* = 0.0004, I^2 = 60 %, indicating moderate to high heterogeneity between studies that could be accounted for by moderators, see Figure 2 for forest plot.

[INSERT FIGURE 2]

Publication bias

To check for evidence of publication bias in studies including men, a funnel plot of effect size by standard error was inspected, see Figure 3. The funnel plot appeared to be symmetrical, suggesting no evidence of publication bias. Duval and Tweddle's trim and fill method estimated that no studies were missing from the funnel plot. Finally, Rosenberg's failsafe N was calculated showing that an additional 445 non-significant studies would be needed to make the pooled effect size non-significant.

[INSERT FIGURE 3]

Sensitivity analysis

Six studies were eligible for inclusion in the sensitivity analysis to assess whether differences in self-esteem remained when only studies with strong methodology were included in analysis. The sensitivity analysis showed that sexual minority men still had significantly lower self-esteem than heterosexual men (*SMD* = -0.49, 95% *CI* = [-0.63, -0.34], *p* = < 0.00001) and this effect was larger than when all studies were included.

Moderators

Age

Four studies eligible for meta-analysis were coded as < 25 and compared in a sub-group analysis to 15 studies coded as > 25 years of age. The pooled effect size for men < 25 years (*SMD* = -0.36, 95% *CI* = [-0.58, -0.13], *p* = 0.002) was comparable to men > 25 years (*SMD* = -0.33, 95% *CI* = [-0.45, -0.21], *p* = 0.00001). The test of between sub-group differences was not significant and the very small difference in effect size between the two age sub-groups suggests that age does not moderate sexual orientation differences in self-esteem for men, see Appendix Figure D1.

Sample type

Ten general community, three university student, four mixed and two sub-population sample studies were included in the sub-group analysis of sample type. For all sample types except sub-populations, sexual minority men demonstrated significantly lower self-esteem than heterosexual men. This effect appeared to be larger in mixed samples (SMD = -0.52, 95% CI = [-0.82, -0.22], p= 0.0008) compared to general community (SMD = -0.34, 95% CI = [-0.47, -0.21], p = < 0.00001) and the smallest effect for university students (SMD= -0.28, 95% CI= [-0.54, - 0.02], p = 0.03). The test of between sub-group differences approached significance, χ^2 (3) = 7.79, p= 0.05, and sample type explained 61.5% of between-study heterogeneity. This suggests that sexual orientation differences in the self-esteem of men might be moderated by the sample type; see Appendix Figure D2.

Sexual minority orientation

Seven studies eligible for the sub-group analysis included a combined sexual minority sample, twelve a gay sample and two a bisexual sample. Self-esteem was significantly lower in all sexual minority orientation groups compared to heterosexual men. The pooled estimate of effect size was slightly larger for bisexual men (SMD = -0.47, 95% CI = [-0.76, -0.19], p = 0.001) compared to gay (SMD = -0.39, 95% CI = [-0.54, -0.24], p < 0.00001) and combined sexual minority men (SMD = -0.24, 95% CI = [-0.39, -0.10], p = 0.0009). The test of between-sub-group differences was not significant (p = 0.22) but did explain 34.2% of heterogeneity between studies; see Figure 4 below for forest plot. A separate meta-analysis of the two studies reporting statistics for both a gay and bisexual sample found no significant difference between the self-esteem of gay and bisexual men (SMD = -0.15, 95% CI = [-0.40, 0.11], p = 0.26).

[INSERT FIGURE 4]

Sexual Orientation Differences in the Self-esteem of Women

A summary of the main findings found for all comparisons of self-esteem in sexual minority women compared to heterosexual women are shown below in Table 2.

[INSERT TABLE 2]

Overall meta-analysis for women

Fourteen studies were included in the meta-analysis comparing self-esteem in sexual minority and heterosexual women. The pooled estimate of effect size (SMD = -0.20, 95% CI = [-0.29, -0.11], p = 0.0001) suggests that sexual minority women have significantly lower self-esteem than heterosexual women, but this effect is small. The test for between-study heterogeneity was not significant, χ^2 (13) = 18.67, p = 0.13, I^2 = 30%, but there was still a small to moderate level of heterogeneity between studies that could be explored through moderators, see Figure 5 for forest plot.

[INSERT FIGURE 5]

Publication bias

Visual inspection of the funnel plot did not provide evidence of publication bias for studies including women; see Figure 6. Duval and Tweddle's trim and fill method estimated no studies missing from the funnel plot and Rosenberg's fail-safe N found that 51 non-significant studies would be needed to make the pooled effect size non-significant.

[INSERT FIGURE 6]

Sensitivity analysis

Five studies were included in the sensitivity analysis for women. Sexual minority women had significantly lower self-esteem than heterosexual women and this effect was slightly larger than when all studies were included (SMD = -0.25, 95% CI = [-0.41, -0.09], p = 0.002).

Moderators

Age

Four studies eligible for the sub-group analysis were coded as < 25 years and compared in a sub-group analysis to 10 studies coded as > 25 years of age. The effect size for women < 25 years (*SMD* = -0.25, 95% *CI* = [-0.42, -0.08], *p* = 0.0004) compared to women > 25 years (*SMD* = -0.19, 95% *CI* = [-0.29, -0.08], *p* = 0.0008) suggests a slightly larger difference in self-esteem between sexual minority and heterosexual women for young people, but there is still a disparity in older women. However, the test of sub-group differences was not significant and differences and therefore differences in effect size may be due to chance or sampling error; see Appendix Figure D3.

Sample type

Ten studies using general community and two with university student samples were eligible for the sub-group analysis of sample type. General community studies showed that sexual minority women had lower self-esteem than heterosexual women with a small effect (*SMD* = -0.24, 95% *CI* = [-0.35, -0.14], *p* = < 00001) whereas the pooled effect size was not significant for university samples (*SMD* = 0.10, 95% *CI* = [-0.35, 0.15], *p* = 0.43). The test of between sub-group differences was not significant but this should be interpreted with caution due to the small sub-group sizes; see Appendix Figure D4.

Sexual minority orientation

Six studies eligible for the sub-group analysis had a combined sexual minority sample, eight had a lesbian sample and five studies included a bisexual sample. Sexual minority women had significantly lower self-esteem in each sexual minority orientation group but the pooled estimate of effect size for the bisexual women (*SMD* = -0.25, 95% *CI* = [-0.39, -0.10], *p* = 0.0008) was slightly larger than for lesbian women (*SMD* = 0.19, 95% *CI* =

[-0.35, -0.03], *p* = 0.02) and combined sexual minority women (*SMD* = 0.18, 95% *CI* = [-0.32, -

0.04], *p* = 0.02); see Figure 6 for forest plot. However, the test for between sub-group

differences was not significant (*p* = 0.78). A separate meta-analysis of five studies that

reported self-esteem for both a lesbian and bisexual sample found no significant difference

in self-esteem between lesbian and bisexual women (*SMD* = -0.07, 95% *CI* = [-0.27, 0.14], *p* =

0.17).

[INSERT FIGURE 7]

Discussion

The main aim of this review was to determine whether sexual minority men and

women have lower self-esteem than their heterosexual counterparts. The generalizability of

findings is limited because few population-based studies were identified. However, for the

studies that were included, the meta-analysis and qualitative synthesis found evidence that,

overall, sexual minority men and women both have lower self-esteem than heterosexual

men and women. Based on previous research demonstrating a strong association between

low self-esteem and mental health, this provides support for the psychological mediation

framework theory that proposes mental health disparities between sexual minority and

heterosexual populations can be explained by elevated levels of general psychological

processes that contribute to risk for psychological disorders (Hatzenbuehler, 2009). Self-

esteem has been proposed as a potential risk factor within this framework but mixed

findings regarding differences between sexual minority and heterosexual individuals had

been reported previously. The current review extends this evidence by systematically and

quantitively demonstrating a disparity in self-esteem between sexual minority and

heterosexual individuals. The current review does not demonstrate that these disparities in

self-esteem are a result of minority stress. However, taken together with previous evidence

for an association between sexual orientation related discrimination and self-esteem, this finding provides evidence consistent with this aspect of the psychological mediation framework.

Potential moderators of sexual orientation difference in self-esteem were also investigated where possible.

Gender

Differences in self-esteem appeared to be more robust for men than women. Sexual minority men's self-esteem was lower than heterosexual men's with a small to medium effect compared to a small effect for women. Furthermore, a higher percentage of studies comparing self-esteem in men found a difference compared to those comparing women. There are several possible explanations for why differences appear to be larger or more consistent in men. Firstly, in the general population, women have been found to have lower self-esteem than men (King, 1999). This could result in floor effects; it is possible that the impact on self-esteem of growing up with sexist attitudes has already lowered self-esteem for some women and that either sexual minority stressors do not impact significantly further, or this is not being detected due to floor effects on the questionnaire for some participants.

Alternatively, it is possible that the impact of minority stress on self-esteem is greater for men than women. Sexual minority men experience more of certain kinds of anti-LGB discrimination than sexual minority women (Balsam, et al., 2005; Herek, 2009). There are several possible reasons for this. For example, gender non-conformity is associated with higher rats of sexual orientation victimization by peers and parents in male compared to female youth (D'Augelli, Grossman, & Starks, 2005). Additionally, sexual minority men experience higher rates of HIV than sexual minority women and HIV positive status is

associated with discrimination experiences (Huebner, Rebchook, & Kegeles, 2004). Both factors might increase the impact of minority stress on self-esteem in gay men. Further, women might have developed additional resources to cope with discrimination due to facing multiple social disadvantages. For example, Brooks (1981) found that affiliation with feminist organizations was a useful source of support for lesbian women whilst participation in feminist activities has been associated with increased self-acceptance and self-esteem in sexual minority women (Leavy & Adams, 1986).

However, it should be noted that although sexual orientation differences in self-esteem were more consistently reported for men, the overlap in confidence intervals for sexual orientation differences in self-esteem for men and women mean that conclusive interpretations about differences in the size of effects are not possible in the current review. Gender differences in self-esteem between sexual minority individuals was not the focus of this study and requires a separate review.

Sexual Minority Orientation

The current review provides some support for the idea that self-esteem might be lower for sexual minority individuals not identifying as gay or lesbian. Differences in self-esteem were slightly larger for bisexual men and women compared to heterosexual comparisons than for gay or lesbian men and women. The above findings support previous research that showed bisexual individuals experience additional minority stress (Brewster & Moradi, 2010; Hayfield, et al., 2014) and that this can be associated with increased psychological problems, such as lower self-esteem (Ross, et al., 2018). Further, incidentally gay and mostly heterosexual young men were found to have lower self-esteem than heterosexual individuals whilst the same finding was more mixed for sexual minority young people in general. Similarly, bisexual women were more consistently found to have lower

self-esteem than heterosexual women compared to lesbian identified women, although this

pattern was not replicated when attraction was used to define sexual orientation. This is in

line with previous studies showing differences in the prevalence of mental health problems

between bisexual and lesbian or gay individuals are more robust when identity is used to

define sexual orientation (Bostwick, Boyd, Hughes, & McCabe, 2010; Ross, et al., 2018). This

could be because biphobia or stigma within the LGBT+ community is less experienced or has

less impact on people whose behaviour or attractions would be assessed as bisexual but

identify as gay or lesbian.

However, no conclusions can be drawn about self-esteem differences between

sexual minority orientations for two reasons. Firstly, the overlap in confidence intervals

between effect sizes for gay/lesbian and bisexual individuals indicate the population mean

could be the same. Secondly, direct comparison of bisexual and lesbian/gay samples found

no difference in self-esteem, although this might be explained by small study numbers.

Differences in self-esteem between lesbian or gay individuals and other sexual minority

orientations needs to be directly compared in future research.

Age

Previous research suggested that younger sexual minority people might experience

more minority stress and therefore lower self-esteem (Birkett, Newcombe, & Mustanski,

2015). However, in the current meta-analysis age did not appear to moderate differences in

self-esteem between sexual minority and heterosexual men. Sub-group analysis revealed

that sexual minority individuals had lower self-esteem than heterosexual individuals for

both young people and those above 25, with almost no difference in the size of this effect.

However, for women there was some evidence to suggest that differences in self-esteem

are larger for young people. Sexual orientation differences were more consistently reported

for younger women and the size of this effect was slightly larger, although again sub-group

differences were not statistically significant. One possible reason for these mixed findings is

that the current review was restricted by the available data reported and therefore age was

considered as binary. It may be that more subtle differences in self-esteem occur over the

life span that might be captured if age was treated as continuous. It is also important to

consider other age and cohort effects. For example, participants who were older adults in

these studies may have been experiencing ageism and they also grew up at a time where

anti-LGBTQ+ attitudes and discrimination were more prevalent.

Sample Type

For women, there were very small numbers in each sub-group but only studies

comparing general community, mixed samples or school students showed that sexual

minority women had significantly lower self-esteem than heterosexual women. Similarly,

sample type appeared to moderate sexual orientation differences in self-esteem for men,

with general community and mixed samples more likely to show larger group differences

than university student samples. For men, self-esteem was not significantly lower in sexual

minority individuals for specific sub-populations, for example siblings of sexual minority men

or runners. This is consistent with previous studies showing that mental health disparities

differ depending on the method used to recruit LGB samples (Kuyper, et al., 2016) and

suggests the need for further research into self-esteem across different sub-groups.

Limitations

The strength of conclusions that can be drawn from the current review are limited by

the methodology of studies identified. All but one study used a cross-sectional design,

meaning it is not possible to determine whether sexual orientation and related minority

stress has a causal influence on self-esteem differences between sexual minority and

heterosexual individuals. This is a limitation of the literature investigating the relationship between sexual orientation, self-esteem, and mental health more generally. The current review highlights the need for more longitudinal studies to address whether self-esteem differences predict later sexual orientation related mental health disparities. The generalizability of findings is also limited by study quality, with only one study included in in analyses using population-based sampling; self-esteem differences between both heterosexual and sexual minority men and women might not extend to populations outside of the convenience samples used in the majority of studies. As mentioned previously, this is an inherent difficulty when researching hidden populations with a lack of population-based survey data available. However, sensitivity analyses showed that sexual minority men and women had significantly lower self-esteem when only including strong methodologies, suggesting observed effects were not only a result of bias in study designs.

Further, there has been little research into whether existing measures of self-esteem are valid measures of the construct within sexual minority individuals. General self-esteem scales do not assess self-esteem in relation to one's sexuality, which may be particularly relevant for sexual minority people. Effect sizes could therefore have been underestimated.

It is also not possible to make strong conclusions about moderators of sexual orientation differences in self-esteem from this review due to the small number of studies in sub-groups and therefore underpowered comparisons. However, initial evidence from this review that sexual minority orientation, age, and sample type might moderate sexual orientation differences in self-esteem can be addressed in future studies. Not all potential moderators were explored due to limitations of data available from the studies identified. Ethnicity was not explored here due to the lack of data available and almost all studies were conducted in North America or Europe. More studies are needed to generalize findings to

other cultures. Similarly, other factors such as gender non-conformity, outness and socioeconomic status could all moderate differences in self-esteem and are areas of possible future research. Transgender people and those with non-binary gender identities could not be investigated in analyses due to insufficient data available. Again, there might be an important impact on self-esteem of being both a gender and sexual minority.

Implications

The findings of lower self-esteem in sexual minority individuals suggests that, given previous evidence that self-esteem is a risk factor for mental health problems (Sowislo & Orth, 2013, lower self-esteem could be a factor contributing to elevated rates of mental health problems in these individuals. These findings suggest that self-esteem could be a possible target for interventions aimed at reducing mental health disparities between sexual minority and heterosexual people. Once low self-esteem has developed, future research could seek to adapt existing clinical interventions, such as CBT for low self-esteem (Morton, Roach, Reid, & Stewart, 2012; Waite, McManus, & Shafran, 2012), to address issues affecting self-esteem in this population, such as how to cope with stigma. It also highlights the potential need for clinicians working with sexual minority clients to assess and address lower self-esteem and any issues related to sexual orientation

It should be noted that this review focused on differences in self-esteem as a continuous outcome. Only one study compared proportions of sexual minority and heterosexual individuals with "clinically" low self-esteem (Cenat et al., 2015). However, there are no widely agreed cut-offs regarding what constitutes "clinically" low self-esteem. At the same time, low self-esteem is not only associated with more mental health problems but also poorer life outcomes more generally (e.g. job satisfaction, relationships, and health;

Orth, Robins, & Widaman, 2012). Self-esteem interventions could therefore potentially have relatively broad effects.

The indication that self-esteem differences may be more robust for bisexual individuals suggests that extra support in coping with biphobia or lack of understanding about bisexuality could be beneficial for those individuals. The impact of sample type on self-esteem differences in the current review suggest that future trials of self-esteem interventions should include as diverse samples as possible, not limited to sexual minority university students and should consider stratifying gender and bisexuality.

Conclusions

Overall, this review found evidence that self-esteem tends to be lower in sexual minority compared to heterosexual individuals. However, there were methodological limitations with most of the included studies, and more research is needed using population-based random sampling methods. The current review also provides some evidence that self-esteem differences might be more robust for men and sexual minority individuals not identifying as gay or lesbian. Due to the limited power to compare sub-groups in this review, these potential moderators of sexual orientation differences in self-esteem should be further explored to establish whether these sub-groups are particularly at risk for lower self-esteem. Exploration of the possible mechanisms or factors through which sexual minority status and related stigma or discrimination affect self-esteem should also be explored in future research.

Funding

References

Armijo-Olivo, S., Stiles, C. R., Hagen, N. A., Biondo, P. D., & Cummings, G. G. (2012).

>   Assessment of study quality for systematic reviews: a comparison of the Cochrane

>   Collaboration Risk of Bias Tool and the Effective Public Health Practice Project

>   Quality Assessment Tool: methodological research. *Journal of Evaluation in Clinical*

>   *Practice, 18*, 12-18.

Balsam, K. F., Beauchaine, T. P., Mickey, R. M., & Rothblum, E. D. (2005). Mental health of

>   lesbian, gay, bisexual, and heterosexual siblings: effects of gender, sexual

>   orientation, and family. *Journal of Abnormal Psychology, 114*, 471-6.

Bejakovich, T., & Flett, R. (2018). "Are you sure?": Relations between Sexual Identity,

>   Certainty, Disclosure, and Psychological Well-being. *Journal of Gay & Lesbian Mental*

>   *Health*, 00-00.

Birkett, M., Newcomb, M. E., & Mustanski, B. (2015). Does it get better? A longitudinal

>   analysis of psychological distress and victimization in lesbian, gay, bisexual,

>   transgender, and questioning youth. *Journal of Adolescent Health, 56*, 280-85.

Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2005). Comprehensive meta-analysis

>   version 2. *Englewood, NJ: Biostat, 104*.

Bostwick, W. B., Boyd, C. J., Hughes, T. L., & McCabe, S. E. (2010). Dimensions of sexual

>   orientation and the prevalence of mood and anxiety disorders in the United States.

>   *American Journal of Public Health, 100*, 468-75.

Brewster, M. E., & Moradi, B. (2010). Perceived experiences of anti-bisexual prejudice:

>   Instrument development and evaluation. *Journal of Counseling Psychology, 57*, 451-

>   68.

Brooks, V. R. (1981). *Minority stress and lesbian women*: Free Press.

Cenat, J. M., Blais, M., Hebert, M., Lavoie, F., & Guerrier, M. (2015). Correlates of bullying in

Quebec high school students: The vulnerability of sexual-minority youth. *Journal of

Affective Disorders, 183*, 315-21.

D'Augelli, A. R., Grossman, A. H., & Starks, M. T. (2005). Parents' awareness of lesbian, gay,

and bisexual youths' sexual orientation. Journal of Marriage and Family, 67(2), 474-

482.

Duval, S., & Tweedie, R. (2000). Trim and fill: a simple funnel-plot–based method of testing

and adjusting for publication bias in meta-analysis. *Biometrics, 56*, 455-63.

Dyar, C., Feinstein, B. A., & London, B. (2015). Mediators of differences between lesbians

and bisexual women in sexual identity and minority stress. *Psychology of Sexual

Orientation and Gender Diversity, 2*, 43.

Feinstein, B. A., Davila, J., & Yoneda, A. (2012). Self-concept and self-stigma in lesbians and

gay men. *Psychology & Sexuality, 3*, 161-77.

Gonzalez-Guarda, R. M., De Santis, J. P., & Vasquez, E. P. (2013). Sexual orientation and

demographic, cultural, and psychological factors associated with the perpetration

and victimization of intimate partner violence among Hispanic men. *Issues in Mental

Health Nursing, 34*, 103-9.

Hall, W. J. (2018). Psychosocial risk and protective factors for depression among lesbian,

gay, bisexual, and queer youth: a systematic review. *Journal of Homosexuality, 65*,

263-316.

Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin"? A

psychological mediation framework. *Psychological Bulletin, 135*, 707.

Hayfield, N., Clarke, V., & Halliwell, E. (2014). Bisexual women's understandings of social

    marginalisation:'The heterosexuals don't understand us but nor do the lesbians'.

    Feminism & Psychology, 24, 352-72.

Herek, G. M. (2009). Hate crimes and stigma-related experiences among sexual minority

    adults in the United States: Prevalence estimates from a national probability sample.

    Journal of Interpersonal Violence, 24, 54-74.

Huebner, D. M., Rebchook, G. M., & Kegeles, S. M. (2004). Experiences of harassment,

    discrimination, and physical violence among young gay and bisexual men. *American

    Journal of Public Health, 94*, 1200-3.

Hunter, J. E., & Schmidt, F. L. (2000). Fixed effects vs. random effects meta-analysis models:

    Implications for cumulative research knowledge. *International Journal of Selection

    and Assessment, 8*, 275-92.

Kertzner, R. M., Meyer, I. H., Frost, D. M., & Stirratt, M. J. (2009). Social and psychological

    well-being in lesbians, gay men, and bisexuals: the effects of race, gender, age, and

    sexual identity. *American Journal of Orthopsychiatry, 79*, 500.

King, M., Semlyen, J., Tai, S. S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A

    systematic review of mental disorder, suicide, and deliberate self harm in lesbian,

    gay and bisexual people. *BMC Psychiatry, 8*, 70.

Kling, K. C., Hyde, J. S., Showers, C. J., & Buswell, B. N. (1999). Gender differences in self-

    esteem: a meta-analysis. *Psychological Bulletin, 125*, 470.

Kuyper, L., & Bos, H. (2016). Mostly heterosexual and lesbian/gay young adults: Differences

    in mental health and substance use and the role of minority stress. *The Journal of

    Sex Research, 53*, 731-41.

Kuyper, L., Fernee, H., & Keuzenkamp, S. (2016). A comparative analysis of a community and general sample of lesbian, gay, and bisexual individuals. *Archives of Sexual Behavior, 45*, 683-93.

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. *Advances in Experimental Social Psychology, Vol 32, 32*, 1-62.

Leary, M. R., Terdal, S. K., Tambor, E. S., & Downs, D. L. (1995). Self-Esteem as an Interpersonal Monitor - the Sociometer Hypothesis. *Journal of Personality and Social Psychology, 68*, 518-30.

Leavy, R. L., & Adams, E. M. (1986). Feminism as a correlate of self-esteem, self-acceptance, and social support among lesbians. *Psychology of Women Quarterly, 10*, 321-26.

Martin-Storey, A., & Crosnoe, R. (2012). Sexual minority status, peer harassment, and adolescent depression. *Journal of Adolescence, 35*, 1001-11.

McGregor, B. A., Carver, C. S., Antoni, M. H., Weiss, S., Yount, S. E., & Ironson, G. (2001). Distress and internalized homophobia among lesbian women treated for early stage breast cancer. *Psychology of Women Quarterly, 25*, 1-9.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*, 674-97.

Meyer, I. H., & Wilson, P. A. (2009). Sampling lesbian, gay, and bisexual populations. *Journal of Counseling Psychology, 56*, 23.

Morandini, J. S., Blaszczynski, A., Costa, D. S., Godwin, A., & Dar-Nimrod, I. (2017). Born this way: Sexual orientation beliefs and their correlates in lesbian and bisexual women. *Journal of Counseling Psychology, 64*, 560.

Morton, L., Roach, L., Reid, H., & Stewart, S. H. (2012). An evaluation of a CBT group for women with low self-esteem. *Behavioural and cognitive psychotherapy, 40*, 221-25.

Peterson, T. L. (2006). Internalized homophobia, lesbian identity development, and self-esteem in undergraduate women. *Journal of Homosexuality, 50*, 49-75.

Patterson, J. G., Jabson, J. M., & Bowen, D. J. (2017). Measuring sexual and gender minority populations in health surveillance. LGBT health, 4(2), 82-105.

Plöderl, M., & Tremblay, P. (2015). Mental health of sexual minorities. A systematic review. *International Review of Psychiatry, 27*, 367-85.

Rosario, M., Rotheram-Borus, M. J., & Reid, H. (1996). Gay-related stress and its correlates among gay and bisexual male adolescents of predominantly Black and Hispanic background. *Journal of Community Psychology, 24*, 136-59.

Rosenberg, M. S. (2005). The file-drawer problem revisited: a general weighted method for calculating fail-safe numbers in meta-analysis. *Evolution, 59*, 464-68.

Ross, L. E., Salway, T., Tarasoff, L. A., MacKay, J. M., Hawkins, B. W., & Fehr, C. P. (2018). Prevalence of depression and anxiety among bisexual people compared to gay, lesbian, and heterosexual individuals: A systematic review and meta-analysis. *The Journal of Sex Research, 55*, 435-56.

Savin-Williams, R. C. (1998). The disclosure to families of same-sex attractions by lesbian, gay, and bisexual youths. *Journal of Research on Adolescence, 8*, 49-68.

Savin-Williams, R. C., & Cohen, K. M. (2015). Developmental trajectories and milestones of lesbian, gay, and bisexual young people. *International Review of Psychiatry, 27*, 357-66.

Savin-Williams, R. C., & Ream, G. L. (2003). Suicide attempts among sexual-minority male youth. *Journal of Clinical Child and Adolescent Psychology, 32*, 509-22.

Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A

meta-analysis of longitudinal studies. *Psychological Bulletin, 139*, 213.

Szymanski, D. M. (2009). Examining potential moderators of the link between heterosexist

events and gay and bisexual men's psychological distress. *Journal of Counseling

Psychology, 56*, 142-51.

Szymanski, D. M., Chung, Y. B., & Balsam, K. F. (2001). Psychosocial correlates of internalized

homophobia in lesbians. *Measurement and Evaluation in Counseling and

Development, 34*, 27-38.

Szymanski, D. M., Gupta, A., Carr, E. R., & Stewart, D. (2009). Internalized misogyny as a

moderator of the link between sexist events and women's psychological distress. *Sex

Roles, 61*, 101-09.

Van Heeringen, C., & Vincke, J. (2000). Suicidal acts and ideation in homosexual and bisexual

young people: A study of prevalence and risk factors. *Social Psychiatry and

Psychiatric Epidemiology, 35*, 494-99.

Waite, P., McManus, F., & Shafran, R. (2012). Cognitive behaviour therapy for low self-

esteem: A preliminary randomized controlled trial in a primary care setting. *Journal

of behavior therapy and experimental psychiatry, 43*, 1049-57.

Williams, S. L., Mann, A. K., & Fredrick, E. G. (2017). Proximal minority stress, psychosocial

resources, and health in sexual minorities. *Journal of Social Issues, 73*, 529-44.

Wolff, M., Wells, B., Ventura-DiPersia, C., Renson, A., & Grov, C. (2017). Measuring sexual

orientation: A review and critique of US data collection efforts and implications for

health policy. The Journal of Sex Research, 54(4-5), 507-531.

Table 1. Self-esteem comparisons between sexual minority and heterosexual men: Summary of results by sub-groups

	Sexual Minority (SM) men < Heterosexual	SM men = Heterosexual	Heterosexual men < SM
All samples	N	N	N
	15	10	0
Age	N (%)	N (%)	
< 25	4 (50.0)	4 (50.0)	0
> 25	11 (64.7)	6 (35.3)	0
SM orientation			
Combined SM	4 (50.0)	4 (50.0)	0
Gay	8 (53.3)	7 (46.7)	0
Bisexual	2 (66.7)	1 (33.3)	0
Mostly heterosexual/Incidentally gay	2 (100)	0	0
Sample Type			
General community	7 (63.6)	4 (36.4)	0
University	1 (33.3)	2 (66.6)	0
School	3 (50.0)	3 (50.0)	0
Mixed	4 (100)	0	0
Sub-population	0	2 (100)	0

Note. Table indicates the number of samples (percentages in brackets) in which sexual orientation group comparisons show a statistical difference in either direction or a lack of statistically significant difference.

Table 2. Self-esteem comparisons between sexual minority and heterosexual women: Summary of results by sub-groups.

	SM < Heterosexual	SM = Heterosexual	Heterosexual < SM
All samples	N	N	N
	6	13	1
Age	N (%)	N (%)	N (%)
< 25	4 (57.1)	3 (42.9)	0
> 25	2 (16.7)	9 (75)	1 (8.3)
SM orientation			

Combined SM	2 (25)	6 (75)	0
Lesbian	2 (18.2)	8 (72.8)	1 (9)
Bisexual	3 (42.2)	4 (37.8)	0
Mostly heterosexual/Incidentally gay	1 (50)	1 (50)	0
Sample Type			
General community	4 (36.4)	7 (65.6)	0
University	0 (33.3)	2 (66.6)	0
School	3 (50)	3 (50)	0
Mixed	0	1 (100)	0
Sub-population	0	2 (66.7)	1 (33.3)

Note. Table indicates the number of samples (percentages in brackets) in which sexual orientation group comparisons show a statistical difference in either direction or a lack of statistically significant difference.