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Internalized homophobia and internalizing mental health problems: A meta-analytic review

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ABSTRACT

Research on internalized homophobia (IH) has linked it to both mental and physical health outcomes. Extant research indicates that IH and mental health are related in a variety of different subgroups of lesbian, gay and bisexual (LGB) persons. However, much of this research has suffered from methodological issues. Studies have frequently substituted distress-related constructs (e.g., self-esteem and general well-being) for measures of internalizing mental health problems. Furthermore, many studies have misapplied measures of IH designed for gay men with lesbian samples. The current study used Hierarchical Linear Modeling to perform meta-analysis. Effect sizes were combined across multiple studies that used dimensional measures of internalizing mental health problems (i.e., depression and anxiety). The use of multilevel modeling techniques allowed for the evaluation of moderating effects on these relationships, including those of gender, year of data collection, mean age of the sample, publication type, and type of symptomatology measured. Thirty-one studies were meta-analyzed for the relationship between IH and mental health ($N = 5831$), revealing a small to moderate overall effect size for the relationship between the two variables. Higher levels of IH were associated with higher scores on dimensional measures of internalizing mental health problems. Significant moderating effects were also found for mean age of the sample and the type of symptomatology measured in each study. The relationship between IH and internalizing mental health problems was stronger in studies with a higher mean age. The relationship between IH and depressive symptomatology was stronger than the relationship between IH and symptoms of anxiety. Limitations and future research directions are discussed as well as implications for clinical practice.

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Research suggests that lesbian, gay and bisexual (LGB) adults and adolescents are at increased risk for negative mental health outcomes in comparison to their heterosexual counterparts (Cochran & Mays, 2000; Cochran, Sullivan, & Mays, 2003; Fergusson, Horwood, &

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Beautrais, 1999; Hatzenbuehler, McLaughlin, & Nolen-Hoeksema, 2008; Herrell, Goldberg, True, et al., 1999). LGB individuals experience higher rates of substance use disorders, mood and anxiety disorders, and suicide attempts. What's more, these striking disparities in mental health have persisted despite general societal shifts towards greater tolerance of LGB individuals (Broverman, 2006; Loftus, 2001). Many attribute this increased prevalence of mental health problems in part to the experience of sexual orientation-based stressors, including internalized homophobia (IH), perceived stigma due to sexual orientation, and sexual orientation-based victimization (for a review see Meyer, 2003). Although several reviews have been written on LGB minority stress and its components (Meyer, 2003; Szymanski, Kashubeck-West, & Meyer, 2008; Williamson, 2000), to date there have been no meta-analyses conducted on the relationship between these constructs and mental health outcomes.

IH in particular has received significant attention as a potential correlate of internalizing mental health problems (for reviews see Szymanski et al., 2008; Williamson, 2000). Meyer and Dean (1998) define IH as the LGB individual's direction of societal antihomosexual attitudes toward the self. Some research suggests IH is related to internalizing mental health problems, but there has been a tendency to report relationships between IH and distress-related variables (e.g., general well-being and self-esteem) instead of dimensional measures of internalizing symptom severity, such as the Brief Symptom Inventory (BSI) or Center for Epidemiological Studies Depression Inventory (CES-D). Psychological distress is a common feature of mood and anxiety disorders, but it is not sufficient to meet diagnostic criteria for any mental illness. In fact, some recent evidence suggests that these dimensional self-report measures of internalizing symptoms may over-estimate Major Depression in LGB samples when a structured psychiatric interview is used for the criterion (Mustanski, Garofalo, & Emerson, in press). Additionally, recent research indicates that the association between IH and some health outcomes may be declining, and higher levels of IH are no longer associated with risky sexual behavior (Newcomb & Mustanski, in press). This change highlights the importance of using meta-analysis to examine the relationship between IH and internalizing mental health problems in the context of societal shifts towards increased tolerance of LGB individuals.

Little research has evaluated the potential for differences in the relationship between IH and internalizing mental health problems by demographic variables (i.e., gender and age), contextual differences (i.e., change over time), methodological differences (i.e., type of internalizing symptomatology measured), and publication status (i.e., published in a peer-reviewed journal or unpublished). By combining the results of the studies on this topic over the last several decades, we can more confidently describe the relationship between IH and internalizing mental health problems. It is also important to consider racial/ethnic differences in the relationship between IH and internalizing mental health problems. Unfortunately, few studies report results split by race/ethnicity making this analysis unfeasible. Regardless, examining other potential moderators of this relationship will help to advance our understanding of the contexts in which this relationship is the strongest, an endeavor that is necessary in order to accurately consider issues of IH and LGB minority stress in future research and clinical work.

1. The construct of internalized homophobia

IH can be defined as the LGB individual's inward direction of society's homophobic attitudes (Meyer, 1995). IH is not simply the experience of negative attitudes toward one's own sexual orientation. The construct includes negative global attitudes toward homosexuality, discomfort with disclosure of sexual orientation to others, disconnectedness from other LGB individuals, and discomfort with same-sex sexual activity. This internalization of negative attitudes is theorized to lead to conflicts within the individual, lowered self-regard, and self-deprecating attitudes (Meyer & Dean, 1998). The definition falls in line with Allport's (1954) conceptualization of stigma and prejudice. Allport described stigma as leading to "traits due to victimization," or defensive reactions that can be either "extroverted" (externally expressed) or "introverted" (internally expressed) in nature. Extroverted reactions include obsessive concern with the stigmatizing characteristic and rebellion against stigma, whereas introverted reactions include self-denigration and identification with the aggressor. The concept of IH can clearly be seen in Allport's theory, particularly in the introverted reactions in which the stigmatized LGB individual identifies with the beliefs of the heterosexual majority.

Several researchers have incorporated IH into Brooks' (1981) conceptualization of minority stress as psychosocial stress that results from being a member of a lower-status minority group (e.g., DiPlacido, 1998; Meyer, 1995). Brooks described minority stress in ethnic minorities as the experience of chronic stressors (e.g., lower income, neighborhood violence, prejudice, etc.) that can lead to adverse health outcomes. Applied to LGB individuals, Meyer argued that minority stress (i.e., the combined experience of IH, perceived stigma due to one's sexual orientation, and sexual orientation-based victimization) in gay men and women results from both the occurrence of negative events related to sexual orientation and the overall experience of being a minority in dominant society. The LGB individual experiences incongruence between the values of society and his or her individual culture, needs, and experience.

According to DiPlacido (1998), minority stress issues become more difficult to tease apart for lesbians due to the dual stigmatization of being a lesbian and a woman. Some researchers, however, question the applicability of IH to all LGB individuals (e.g., Russell & Bohan, 2006). Most research on this construct has been conducted with samples composed of primarily White gay-identified men. According to Russell and Bohan, much of the research on IH has ignored the unique socio-cultural experiences of minority individuals within the LGB population, resulting in the potential for mislabeling certain individuals as having high levels of IH because their experiences differ from those of White gay men.

The construction and validation of measures of IH is of particular concern to critics. Most measures of IH were developed by using homogenous samples of White gay men. Furthermore, few have sought to construct and validate new scales of IH since the first scales emerged. Two notable exceptions are the Short Internalized Homonegativity Scale (SIHS) (Currie, Cunningham, & Findlay, 2004) and the Internalized Homonegativity Inventory (IHNI) (Mayfield, 2001), but these scales have rarely been used in empirical work. One early measure of IH was the Nungesser Homosexual Attitudes Instrument (NHAI) (Nungesser, 1983), and this is still the most widely-used scale to measure the construct. The continued use of the NHAI as it was originally constructed poses questions about the validity of this measure given large societal changes in the visibility and acceptance of the LGB community (Loftus, 2001). For example, one item from the original version of the NHAI evaluates agreement with the following statement: "Male homosexuals do not dislike women any more than heterosexual men." Disagreement with this statement (i.e., male homosexuals dislike women more than heterosexual men dislike women) was thought to indicate higher levels of IH. "Dislike" for heterosexual women may no longer be a valid indicator of IH. What's more, the NHAI or one of its revisions is frequently used to measure IH in lesbians, despite the fact that the measure was not developed for women. One measure that was created specifically for use with lesbian populations has rarely been utilized in research (Lesbian Internalized Homophobia Scale; Szymanski & Chung, 2001).

2. IH and internalizing mental health problems

Early research in the 1970s and 1980s indicated that LGB individuals showed only slightly elevated counts of psychiatric

disorder symptomatology which did not differ significantly from their heterosexual counterparts (see Meyer, 2003). However, more recent research by Fergusson et al. (1999) and Herrell et al. (1999) found that LGB individuals may be at an increased risk for several psychiatric disorders and suicide. Additionally, recent population-based research indicates that LGB adults and adolescents are at increased risk for internalizing mental health problems (Cochran & Mays, 2000; Cochran et al., 2003; Hatzenbuehler et al., 2008). Higher levels of IH may be associated with this increased risk (DiPlacido, 1998; Meyer, 1995; Meyer & Dean, 1998; Williamson, 2000).

Meyer (1995) provided evidence for his theory that minority stress is a risk factor for internalizing mental health problems through a study of 741 gay men living in New York City. This research found that IH was the component of minority stress that was most predictive of negative mental health outcomes. Significant relationships were found between IH and five components of mental health-related distress: demoralization, guilt, sex difficulties, suicidality (ideation and/or behavior), and AIDS-related traumatic stress response (a measure of stress relating to the impact of AIDS on the gay community). DiPlacido (1998) found similar results in a sample of lesbians and found positive correlations between IH (as measured by the NHAI) and several components of poor mental health, including negative affect and alcohol consumption. Depressive symptomatology also had a significant relationship with degree of disclosure of sexual orientation, such that rates of symptomatology were higher in lesbians who had lower rates of disclosure. Low rates of disclosure of sexual orientation are associated with higher levels of minority stress in LGB individuals (Meyer, 2003).

Many researchers have reported that LGB individuals are at an elevated risk for lifetime suicide ideation and attempts, but much of this research has been plagued by methodological issues, including measurement issues and selection bias in recruitment (for a review see Meyer, 2003). Garofalo, Wolf, Kessel, Palfrey, & DuRant (1998) found that LGB youth and other youth who were questioning their sexual orientation were three times more likely to have attempted suicide in the previous year than their heterosexual peers. These researchers further found that sexual orientation was an independent predictor of suicide attempts for the males in the sample but not for the females. Most studies examining rates of suicide in sexual minority youth, however, use single item measures of suicide and/or sexual minority identity. As Savin-Williams (2001) suggests, the use of single item measures may over-estimate rates of suicide in sexual minority youth populations.

Several researchers suggest that IH may help to explain the differences in suicidal behavior between LGB individuals and their heterosexual peers (e.g., Rofes, 1983), and some research on LGB youth supports these theories (Hammelman, 1993). Hammelman found that the increased risk for suicide in LGB youth may be partially explained by several life experiences that are consistent with Meyer's (1995) minority stress theory. This research suggests that LGB youth show an elevated risk for suicide when they discover their same-sex preferences earlier in adolescence, experience negative "coming out" reactions from significant others, experience sexual orientation-based victimization, and use drugs and alcohol to cope with their emerging sexual identities. All of these experiences contribute to minority stress and lead to a greater likelihood of internalizing society's antihomosexual attitudes.

3. Moderators of the relationship between IH and internalizing mental health problems

One potential moderator of the relationship between IH and internalizing mental health problems is gender. Although few have examined gender as a moderator of this relationship directly, research indicates that male sexual minority youth experience more verbal and physical sexual orientation-based victimization than females (D'Augelli, Pilkington, & Hershberger, 2002). Furthermore, there are larger differences in rates of victimization between adult heterosexual and non-heterosexual men than those in women (Balsam, Rothblum, & Beauchaine, 2005), indicating that men more frequently experience sexual orientation-based victimization. It would follow that as a result men would be more likely to internalize societal antihomosexual attitudes and that the effects of IH on mental health would be more intensely felt by non-heterosexual men than by non-heterosexual women.

Another potential moderator of the relationship between IH and internalizing mental health problems is the year in which the data was collected (i.e., change over time or cohort effects). The LGB community has experienced a significant increase in acceptance and visibility between the time the first studies of IH were published approximately 30 years ago and the present day (Savin-Williams, 2008). For example, the number of gay/straight alliances in United States secondary schools rose from 100 in 1995 to more than 3000 in 2007 (glsen.org, 2007). Furthermore, 3 of 4 high school seniors graduating in 2006 favored legalizing same-sex marriage or civil unions (Broverman, 2006). General Social Survey (GSS) data also provides evidence for this change, indicating that Americans' attitudes about the morality of homosexuality have become increasingly liberal since the early 1990s, and opinions about civil rights for homosexuals have become more accepting since the early 1970s (Loftus, 2001).

This historic change has decreased antihomosexual behavior and attitudes in many parts of the country, and therefore, it is likely that the nature and effects of IH have changed since the first studies emerged in the late 1970s. In fact, a recent meta-analysis indicates that the positive association between IH and risky sexual behavior has decreased over time, such that these variables appear to no longer be correlated (Newcomb & Mustanski, in press). It is important to note, however, that antihomosexual behavior has not been eliminated completely despite changes in general attitudes. It is plausible that the increase in visibility of the LGB community has caused some types of antihomosexual behavior to become more subtle in nature, thus changing the expression of IH, while its detrimental effects remain unchanged. The ideal way to study the effects of these changes on the self-acceptance and mental health of LGB individuals would be to conduct a longitudinal study with continuous enrollment of cohorts across a range of time spanning changing social attitudes. This would allow for disentanglement of developmental and cohort effects. Unfortunately, no such studies exist. However, meta-analysis of studies on the relationship between IH and internalizing mental health problems published over the last three decades offers an alternative method for exploring the potential for changes in the effects of IH.

A third potential moderator of the relationship between IH and internalizing mental health problems is age. According to certain theorists, the effects of IH will likely be most intensely felt early in the coming out process (e.g., Gonsiorek, 1988; Meyer, 1995). The long-lasting effects of early socialization experiences and the persisting experience of minority stress, however, will continue to affect the LGB individual throughout the lifespan. Although age is not a perfect proxy for time since an individual came out as an LGB individual, the two variables are strongly correlated. It would follow that the experience of IH would be most detrimental and salient for younger LGB individuals in terms of internalizing mental health outcomes.

A final potential moderator of the relationship between IH and internalizing mental health problems is the type of internalizing symptomatology measured in each study. Scant theoretical writing or empirical research has been presented in the literature to address whether IH may be differentially related to two of the main components of internalizing mental health problems: symptoms of depression and anxiety. Pachankis' (2007) work on sexual orientation as a "concealed stigma," however, indicates that the experience of minority stress may be equally associated with depression and

anxiety. The author describes the process of concealing one's sexual orientation due to perceived stigma as resulting in negative cognitive-affective-behavioral consequences. These consequences include aspects of both depression (e.g., guilt, shame, negative self-view, and social isolation) and anxiety (e.g., hypervigilance, preoccupation, and social avoidance). Pachankis, Goldfried, and Ramrattan (2008) further found that IH mediated the relationship between parental rejection due to sexual orientation and higher levels of rejection sensitivity. Rejection sensitivity is thought to be a primary motivator for concealing one's sexual orientation and therefore a precursor to cognitive-affective-behavioral outcomes that are associated with both depression and anxiety.

Other research supports the assertion that components of minority stress may not be differentially associated with symptoms of depression and anxiety. Using implicit measures of IH, Hatzenbuehler, Dovidio, Nolen-Hoeksema and Phills (2009) found that the association between internalized societal attitudes and internalizing mental health problems may be mediated by cognitive processes (i.e., rumination and emotional suppression). Rumination in particular (i.e., unproductive repetitive thought) is associated with both depression and anxiety (Watkins, 2008). If IH engages cognitive processes that are equally likely to result in depression or anxiety, then IH should not be differentially associated with these different types of internalizing symptomatology.

4. Current study

Although extant research has provided evidence for a link between internalizing mental health problems and IH, outcome variables often were measures of general well-being and self-esteem. It is unclear whether this relationship would be consistent under a stricter conceptualization of internalizing mental health (i.e., use of dimensional measures based on psychiatric symptomatology of depression and anxiety). This distinction is especially important as it is critical that we come to a better understanding of the reasons behind LGB individuals' increased risk for suicide and internalizing mental health problems. Furthermore, the literature tends to report relationships between IH and internalizing problems as a whole (i.e., combining measures of depression and anxiety). Although depression and anxiety are both characterized by negative affect, it is possible that IH may be differentially related to these two constructs. This possibility warrants further investigation in meta-analysis. Finally, little research has evaluated the possible moderating effects of other demographic and methodological variables on this relationship, including those of participant gender, year in which the data was collected, and mean age of the sample used in each study. It is important to note that age is inherently confounded by cohort effects due to change in attitudes toward LGB individuals across the time period covered by studies included in this analysis. However, meta-analysis provides a unique opportunity to partially control for the effects of cohort on mean age of the sample because year of data collection is included in the model as a potential moderator.

5. Hypotheses

H1. Based on Cohen's (1988) widely-used parameters for strength of effect size, we expect to find a small to moderate effect size for the relationship between IH and internalizing mental health problems (i.e., dimensional measures of depression and anxiety). IH has consistently been found to be related to multiple indicators of distress that correlate strongly with internalizing mental health problems (i.e., general well-being and self-esteem).

H2. A significant moderating effect is expected for participant gender on the relationship between IH and internalizing mental health problems, such that the relationship between these two variables will be stronger for men than for women. This effect is expected due to higher rates of sexual orientation-based victimization in men and the overuse of IH instruments designed for men on female participants which may therefore be less sensitive. To further examine the contribution of measurement issues to this effect, we will conduct an analysis with only the studies examining the relationship between IH and internalizing mental health problems in women. We will examine the moderating effect of the type of measure (i.e., scales developed specifically for use with women vs. scales developed for use with men) on this relationship.

H3. A significant moderating effect is expected for year of data collection on the relationship between IH and internalizing mental health problems. A recent meta-analysis found that the positive association between IH and risky sexual behavior has decreased over time (Newcomb & Mustanski, in press). A similar decrease is expected for the positive association between IH and internalizing mental health problems. This moderating effect is expected to represent a cohort effect. IH was likely more salient for older cohorts of LGB individuals and therefore will be more strongly associated with internalizing mental health problems. Change in attitudes toward LGB individuals in the general population has likely led to both a decrease in the internalization of antihomosexual attitudes and a decrease in the salience of this construct for younger cohorts of LGB individuals.

H4. We expect to find a significant moderating effect for mean age of the sample on the relationship between IH and internalizing mental health problems, such that the relationship between the two variables will be stronger for studies with younger participants than for those with older participants. This is consistent with past research and theory indicating that although the effects of IH continue throughout the LGB individual's life, it's effects are strongest at a younger age and when the individual first "comes out" (e.g., Hammelman, 1993; Meyer, 1995).

H5. We expect to find a significant moderating effect for the type of publication of each study, such that the relationship between IH and mental health will be stronger for the studies that were published in a peer-reviewed journal than those that were either published in other types of publications or were unpublished. This moderating effect is expected because of the "file drawer effect," or the publication bias toward studies that describe statistically significant findings.

H6. We expect that the type of distress symptomatology measured in studies will not moderate the relationship between IH and internalizing mental health problems. Although few have discussed the potential for a differential association between IH and symptoms of depression and anxiety, theoretical writing on perceived stigma (Pachankis, 2007) and some empirical work on minority stress (Hatzenbuehler et al., 2009; Pachankis et al., 2008) indicates that IH is equally likely to be associated with depression and anxiety.

6. Methods

6.1. Literature search

Literature search was conducted in several ways in order to access published studies, dissertation data, and unpublished data. The combination of these three sources of data helped to decrease the likelihood of a file drawer effect in analysis. A literature search was first conducted of published studies up to August 2008 using the PsycINFO and PUBMED databases. These databases were searched using the keywords "internalized homophobia," "homonegativity," and "heterosexism." After searching these keywords, studies were selected for further analysis if they contained any measure related to mental health or psychological distress. Additional studies were added to the list by cross-checking the

reference sections of all studies with the original list, producing a total of 101 studies.

Of the original list of 101 studies, 27 were doctoral dissertations. In order to obtain dissertation data, individual authors were contacted via email when such information was available. When email addresses were either unavailable or out of date, requests were made to obtain the dissertations from the sponsoring institution through Interlibrary Loan. In two cases, neither of these options was possible and the dissertations were purchased from the ProQuest database.

Finally, requests for unpublished data were posted on two professional listservs that are used by sexual orientation researchers ("American Psychological Association Division 44" and "Sexnet"). Unpublished data from three studies was obtained through postings on listservs, and contacts from listservs provided data from three additional published studies that were not found using keyword searches on the PsycINFO and PUBMED databases. Finally, one individual author of published data was contacted because it was apparent from the published article that additional unpublished data from the study may be available. This author was able to provide additional unpublished data for analysis.

6.2. Study selection: inclusion criteria

Studies to be included in the final analyses needed to meet the following criteria: (1) All studies needed to contain a continuous variable measure of IH; (2) All studies needed to contain a measure of the statistical association between IH and internalizing mental health problems; (3) Studies were excluded if the participants included transgender individuals and did not report separate analyses. There is not enough research available on this group to perform analysis separately, but the inclusion of these individuals could significantly alter the results of the analysis; (4) Studies were excluded if they contained participants who identified as heterosexual and did not report separate analyses; (5) Outcome variables needed to be either dimensional measures of overall internalizing mental health problems (e.g., the Global Symptoms Inventory or Brief Symptoms Index), or an independent dimensional measure of depression and/or anxiety based on symptomatology; (6) Studies were excluded if they used data from a previously published and/or analyzed data set already included in the meta-analysis in order to avoid duplicating effect sizes from the same participants; (8) Studies were excluded if they were not published in the English language in order to avoid potential inconsistencies in the definition of IH based on language of origin.

6.3. Coding and calculation of effect sizes

A detailed coding scheme was developed in order to identify all information necessary to evaluate for the possible moderating effects (i.e., gender, mean age of the sample, year of data collection, type of symptomatology measured, and publication type), calculate the effect size of each study, and identify potential explanations for inconsistencies and directions for future research (i.e., measure of IH, measure of internalizing mental health problems, sample size, etc.). Year of data collection was substituted for year of publication wherever possible to evaluate change over time in the relationship between IH and internalizing mental health problems more accurately. Individual authors were contacted in order to obtain this information.

The vast majority of the studies reported Pearson product–moment correlations, which are already adequate measures of effect size. Because of this, the correlation coefficient was used as the effect size statistic (ES_r), and studies reporting statistics from a *t*-test, ANOVA, or chi-square were converted to ES_r using conversion formulas outlined by Lipsey and Wilson (2001). In cases where statistics were reported for multivariate relationships or other relationships that are not easily converted into ES_r, individual authors were emailed in order to obtain zero order correlations. If the authors of the studies did not respond to email or no longer had this data available, the studies were dropped from analyses. According to Lipsey and Wilson, multivariate relationships pose a particular challenge to meta-analysis as the Beta statistic from regression analyses is dependent upon the other covariates included in the model. The inclusion of these covariates in Beta statistics makes it difficult to make meaningful comparisons with other studies that do not include the same covariates.

In several cases, studies included multiple measures of IH and internalizing mental health problems. In situations where it was clear that one measure more closely fit the definition of IH or internalizing mental health problems, this measure was used in analysis. However, in situations where it appeared that multiple measures adequately measured the construct, correlations were averaged across these multiple measures. For example, if a study provided correlations between IH and depression using both the NHAI and another valid measure of IH, the correlations were averaged to produce a single effect size.

6.4. Analyses

Meta-analysis was conducted using Hierarchical Linear Modeling (HLM) 6.06 statistical software and procedures outlined by Raudenbush and Bryk (2002). The use of HLM in meta-analysis allows for multiple analyses. First, it allows for the calculation of an overall effect size statistic for the relationship across multiple studies. Second, it allows for the analysis of the effects of moderating variables, such as participant gender, year of data collection, mean age of the sample, type of symptomatology measured, and publication type. We used a random effects approach in estimating the overall effect size of the relationship. The random effects approach assumes that the effect sizes included are heterogeneous and are sampled from a distribution of population effect sizes. This allows for generalizability of results outside of the studies included in the analysis. The moderating variables included in this analysis represent fixed effects. A fixed effects analysis was used in estimating the moderating effects because it does not account for heterogeneity in effect sizes and our aim was to model the variability between the studies included in the analysis. Following procedures outlined by Raudenbush and Bryk, we were able to explore potential inconsistencies between studies using a fixed effects model for moderating variables. An advantage of using HLM for meta-analysis is that it allows for the simultaneous modeling of random and fixed effects. Robust standard errors were used for all effects because they account for deviations from normality.

After coding all eligible studies that were retrieved through the previously described methods, 31 studies were eligible for meta-analysis of the relationship between IH and internalizing mental health problems. Four of these studies provided separate analyses for male and female participants. For these four studies, two separate effect sizes were coded resulting in 35 total data points for the meta-analysis. All ES_r statistics were converted to a standardized score using the Fisher's *r* to *z score* transformation in order to be able to combine scores across studies on a standardized scale. Next, all ES_r scores were weighted according to the inverse of the variance in each study which is largely dependent on sample size of the study. This allows for studies with larger sample sizes to be given more weight in analysis. The resulting weighted *z scores* were averaged across studies using HLM 6.06 software.

The following equation was used for meta-analysis in HLM in order to obtain the overall effect size for the relationship between IH and internalizing mental health problems:

Level-1 model

$$d_j = \delta_{0j} + e_j$$

Level-2 model

$$\delta_{0j} = \gamma_{00} + u_j$$

In this model, d_j is the standardized correlation between IH and internalizing mental health problems in study j, and δ_{0j} is the corresponding unknown population parameter value for this relationship with Level 1 error, e_j. For the analysis of the "true" effect size of this relationship, we include no predictors at Level 2, or moderating variables, and the unknown true effect size δ_{0j} varies around a grand mean, γ_{00} plus Level 2 error, u_j. A model with no predictor variables included is referred to as the unconditional model. Therefore, the estimated true standardized effect size of the relationship between IH and internalizing mental health problems is represented by the intercept γ_{00}. In order to obtain the aggregated ES_r, the value of γ_{00} is converted back to a correlation coefficient by using the Fisher's z to r transformation.

Several variables were entered into Level 2 of the Hierarchical Linear Model in order to evaluate for possible moderators of the relationship between IH and internalizing mental health problems, including participant gender, year of data collection, and mean age of the sample. This is referred to as a conditional analysis. Eight of the 31 studies included in the unconditional analysis did not report separate statistical associations between IH and internalizing mental health problems for male and female participants. Because Hierarchical Linear Models cannot be run with missing data at Level 2, these 8 studies were dropped from this conditional analysis. It should be noted that a conditional analysis should only be pursued if there is significant variance in the effect sizes included in the unconditional analysis, as indicated by the τ statistic and the corresponding chi-square significance test. The following equation was used to evaluate the conditional model:

Level-1 model

$$d_j = \delta_{0j} + e_j$$

Level-2 model

$$\delta_{0j} = \gamma_{00} + \gamma_{01}(\text{Gender}) + \gamma_{02}(\text{Data\_Collection}) + \gamma_{03}(\text{Mean\_Age}) + u_j$$

All predictor variables entered into the equation are entered as either uncentered or centered depending on whether the variable had an interpretable zero value. The centering process affects the estimated value of the intercept in the equation because it is estimated when all predictors are at their zero value. Year of data collection and participant gender were both coded such that their "0" values were interpretable and were entered as uncentered. The mean age variable was not transformed in any way and was entered into Level 2 of the model as centered around the grand mean of the variable (i.e., the mean across all studies). Additionally, γ_{01}, γ_{02}, and γ_{03} refer to the moderating effects of participant gender, year of data collection and mean age of the sample, respectively, on the unknown population parameter δ_{0j} for the relationship between IH and internalizing mental health problems.

A follow-up analysis was conducted to examine the contribution of measurement issues to the moderating effect of gender on the relationship between IH and internalizing mental health problems. For this analysis, we only included studies conducted on all-female samples. We examined the moderating effect of type of IH measure (measures designed specifically for women vs. measures designed for men but used on female samples) on the relationship between IH and internalizing mental health problems. We then returned to the original conditional model and removed the studies with all-female samples that used IH measures designed for women to re-examine the moderating effect of participant gender.

A second conditional analysis was conducted on the relationship between IH and internalizing mental health problems in order to evaluate for publication bias. For this analysis, publication type (i.e., published in a peer-reviewed journal vs. published in another medium or unpublished) was added into the model to create the following equation:

Level-1 model

$$d_j = \delta_{0j} + e_j$$

Level-2 model

$$\delta_{0j} = \gamma_{00} + \gamma_{01}(\text{Pub}) + u_j$$

Type of publication was entered into Level 2 of this conditional analysis as uncentered. For this variable, studies published in a peer-reviewed journal were entered as 1 and studies published in another medium (e.g., book chapters, dissertations, etc.) and unpublished studies were entered as 0, and therefore the value "0" for this variable is interpretable. As such, γ_{01} refers to the moderating effect of publication type on the population parameter δ_{0j} for the relationship between IH and internalizing mental health problems.

A final conditional analysis was conducted in order to determine whether the relationship between IH and internalizing mental health problems differed based on whether the outcome measure assessed symptoms of depression or anxiety. For this analysis, all studies that measured general negative affect (i.e., ones that measured distress based on symptomatology of both depression and anxiety) were dropped from analysis if they were not able to be separated into two separate effect sizes. For studies in which separate statistics were provided for the relationship between IH and both depressive and anxiety symptoms, two separate effect sizes were coded, producing a total of 33 data points for analysis. A new variable was added at Level 1 ("Type") to indicate whether the effect size statistic reflected anxiety or depressive symptoms (0 = anxiety and 1 = depression). The model for this analysis was the following:

Level-1 model

$$d_j = \delta_{0j} + \delta_{1j}(\text{Type}) + e_j$$

Level-2 model

$$\delta_{0j} = \gamma_{00} + u_j$$

$$\delta_{1j} = \gamma_{10} + u_j$$

The variable denoting type of symptomatology was entered as uncentered at Level 1 for this analysis in order to evaluate whether there is an effect for type of measure of internalizing mental health problems (i.e., depression or anxiety). As with the previous analyses, the type of symptomatology variable was entered as uncentered because the "0" value of the variable is interpretable. However, this variable was entered at Level 1 instead of Level 2 because 11 of the studies included in this analysis have effect sizes for the relationship between IH and both depression and anxiety separately. As a result, the variable for type of measure can vary within the individual studies or across studies. The statistic of interest for this analysis is γ_{10}, which reflects the effect of type of symptomatology measured on the relationship between IH and internalizing mental health problems.

7. Results

Thirty-one studies met the criteria for meta-analysis of the relationship between IH and internalizing mental health problems (see Table 1), representing responses from 5831 participants. Of these 31 studies, twenty were published in peer-reviewed academic journals, six were unpublished doctoral dissertations, four were extracted from unpublished data, and one was published in a book. The year of data collection for these studies ranged from 1986 to 2008, with a median of 2003. Participants included lesbian, gay and bisexual men and women and the mean age across all studies was 32.70.

The true effect size of the relationship between IH and internalizing mental health problems is obtained from an unconditional model in which no variables other than the standardized *z score* variable are included in the model (see Table 2). After using Fisher's *z* to *r* transformation to convert the intercept back to ES_r, the unconditional analysis yielded a small to moderate effect size (Cohen, 1988) for the relationship between IH and internalizing mental health problems ($\gamma_{00} = .268$, $ES_r = .262$). This analysis also revealed that the variance component (τ) between studies was .01 and that there was significant variability in the effects sizes included in the analysis ($\chi^2 = 83.409$, $df = 34$, $p < .01$), indicating that a conditional analysis evaluating for the potential effects of moderating variables was appropriate.

The second, or conditional, analysis evaluated the moderating effects of participant gender, year of data collection, and mean age of the sample on the relationship (see Table 3). The main statistics of interest in this analysis are the previously mentioned moderating variables. γ_{01} reflects the difference in the average association between IH and internalizing mental health problems between male and female participants ($\gamma_{01} = .01$, $p = .864$), indicating a non-significant difference in the association between men and women.

Table 1
Characteristics of studies of internalized homophobia and internalizing mental health problems.

Study	Type of publication	Participant gender	*N*	Mean age	Measure IH	Measure mental health	Statistic reported	Effect size (ES_r)
D'Augelli (2008)	Unpublished data	Male/female	526	17.03	RHAI	BSI	$r = .29$	.29
Szymanski & Kashubeck-West (2008)	Journal	Female	304	39.92	LIHS	HSCL	$r = .33$	.33
Gold et al. (2007)	Journal	Male	74	34.71	RHAI	BDI-II	$r = .42$	.42
Lewis, Derlega, Clarke, and Kuang (2006)	Journal	Female	105	35.90	LIHS	POMS	$r = .21$	.21
Skidmore, Linsenmeier, and Bailey (2006)	Journal	Male	50	35.00	ATGNS	BDI-II/STAI	$r = -.11$	.11
		Female	44	31.00			$r = .04$	−.04
Garofalo & Mustanski (2005)	Unpublished data	Male	310	20.16	RHAI	BSI	$r = -.13$	.13
		Female	137	20.16			$r = -.25$	.25
Szymanski (2005)	Journal	Female	143	41.11	LIHS	HSCL	$r = .38$	.38
Lease et al. (2005)	Journal	Male/female	583	40.14	RHAI	CES-D	$r = .28$	.28
Dudley, Rostosky, Korfhage, & Zimmerman (2004)	Journal	Male	154	18.04	Wright, Dye, Jiles, and Marcello (1999)	SF-36	$r = .23$	.23
Rivers (2004)	Unpublished data	Male/female	119	28.00	RHAI	MAACL-D	$r = .20$	.20
White (2004)	Dissertation	Male	185	21.50	Ross & Rosser, 1996	CES-D	$r = -.01$	.01
Igartua, Gill, & Montoro (2003)	Journal	Male/female	193	33.00	NHAI	BDI/BAI	$r = -.39$	.39
Lewis, Derlega, Griffin, and Krowinski (2003)	Journal	Male/female	204	35.80	IHP	CES-D	$r = .14$	.14
Luhtanen (2003)	Journal	Male	149	35.54	Perceived Acceptance/Rejection of Negative Stereotypes	CES-D	$r = .39$	.39
		Female	164	38.12			$r = .30$	.30
Tan (2003)	Dissertation	Male	100	33.00	HS	DH-S	$r = -.02$	.02
D'Augelli (2002)	Unpublished data	Male/female	462	19.20	RHAI	BSI	$r = .36$	.36
Rosario, Scrimshaw, Hunter, and Gwadz (2002)	Journal	Male/female	140	18.30	NHAI	BSI	$r = .15$	.15
Rowen & Malcolm (2002)	Journal	Male	86	34.38	Ross & Rosser, 1996	SC-ES	$r = -.38$	.38
Allen (2001)	Journal	Male	101	38.00	NHAI	MCMI-III	$r = .38$	.38
D'Augelli, Grossman, Hershberger and O'Connell (2001)	Journal	Male/female	416	68.50	RHAI	Current mental health	$t = 3.28$	.16
McGregor et al. (2001)	Journal	Female	55	45.11	IHQ	CES-D	$r = .30$	.30
Rosario, Hunter, Maguen, Gwadz, and Smith (2001)	Journal	Male	80	18.30	NHAI	BSI	$r = .29$	.29
		Female	76	18.30			$r = .13$	.13
Szymanski, Chung, and Balsam (2001)	Journal	Female	157	36.06	LIHS	Self-Rating Depression Scale	$r = .33$	.33
Earle (2000)	Dissertation	Female	82	28.82	RHAI-L	SMDI	$r = .30$	.30
Frock (2000)	Dissertation	Female	66	36.19	IHSL	SCL-90-R (DEP/ANX)	$r = .17$	.17
Simonsen, Blazina, and Watkins (2000)	Journal	Male	117	37.00	Restricted Affective Behavior With Men	HSCL	$r = .32$	.32
Wagner, Brondolo, and Rabkin (1996)	Journal	Male	142	40.00	NHAI	BSI	$r = .35$	.35
Shidlo (1994)	Book chapter	Male	62	32.27	NHAI	SCL-90-R	$r = .43$	.43
Nicholson & Long (1990)	Journal	Male	89	35.70	NHAI	POMS	$r = -.44$	.44
Goldberg (1989)	Dissertation	Male	72	36.10	NHAI	BSI-ANX	$r = 0$	0
Alexander (1987)	Dissertation	Male	84	35.40	NHAI	MDI	$r = -.41$	.41

Note. RHAI = Revised Homosexual Attitudes Inventory; LIHS = Lesbian Internalized Homophobia Scale; ATGNS = Attitudes Toward Gender Nonconformity Scale; NHAI = Nungesser Homosexual Attitudes Inventory; IHP = Internalized Homophobia Scale; HS = Homophobia Scale; IHQ = Internalized Homophobia Questionnaire; RHAI-L = Nungesser Homosexual Attitudes Inventory for Lesbians; IHSL = Internalized Homophobia Scale for Lesbians; BSI = Brief Symptom Inventory; HSCL = Hopkins Symptom Checklist; BDI-II = Beck's Depression Inventory – 2nd Edition; POMS = Profile of Mood States; STAI = State-Trait Anxiety Inventory; CES-D = Center for Epidemiological Studies Depression Scale; SF-36 = SF-36 Health Survey; MAACL-D = Multiple Affect Adjective Checklist-Depression Subscale; BDI = Beck's Depression Inventory; BAI = Beck's Anxiety Inventory; DH-S = Depression–Happiness Scale; SC-ES = Self-Concept of Emotional Stability; MCMI-III = Million Clinical Multiaxial Inventory-III; SMDI = Short Form Multiscore Depression Inventory; SCL-90-R = Symptom Checklist-Revised; MDI = Multiscore Depression Inventory.

Table 2
Effects from unconditional analysis on IH and internalizing mental health problems.

Fixed effect	Coefficient value	Standard error	*t* ratio	*df*	*p* value
Intercept (γ_{00})	.268	.023	11.850	34	<.001
Estimation of variance	Standard deviation	Variance component	*df*	χ^2	*p* value
Random effect (u_j)	.099	.010	34	83.409	<.001

γ_{02} reflects the amount of change in the association between IH and internalizing mental health problems for each unit increase in the year of data collection. $\gamma_{02} = -.004$, $p = .479$, meaning that there were no significant differences in the relationship between IH and internalizing mental health problems depending on the year of data collection. γ_{03} reflects the amount of change in the relationship between IH and internalizing mental health problems for each unit increase in the mean age of the sample. $\gamma_{03} = .008$, $p < .05$, meaning that for every unit increase in the mean age of the sample, the correlation between IH and internalizing mental health problems increased by .008. This is a significant result, which indicates that the positive correlation between IH and internalizing mental health problems tends to become stronger as the average age of the sample increases, when controlling for participant gender and the year of data collection. Finally, the variance component (t) was .008, and there was still a significant amount of unexplained variance between studies in the conditional analysis ($\chi^2 = 43.902$, $df = 23$, $p < .01$). It should be noted that there were fewer studies included in the conditional analysis because studies that measured male and female participants together were dropped from analysis, and therefore the variance components estimates from the unconditional and conditional analyses may not be directly comparable. However, when using an unconditional model of just the 23 studies included in the conditional analysis of moderating variables as a comparison, it was revealed that the variance component of the conditional analysis reflects approximately a 54% decrease in the unexplained variance from the unconditional analysis.

A follow-up analysis was conducted using only the all-female samples to examine the contribution of measurement issues to the moderating effect of gender on the relationship between IH and internalizing mental health problems. This analysis found that type of IH measure was a significant moderator of the relationship between IH and internalizing mental health problems ($\gamma_{01} = .102$, $p < .05$). Studies using IH measures designed specifically for women revealed significantly higher effect sizes than studies using IH measures designed for men when measuring this construct in women. We then returned to the original conditional analysis and removed the studies with all-female samples using IH measures designed for women and re-examined the moderating effect of gender on the relationship between IH and internalizing mental health problems. The moderating effect of gender remained non-significant ($\gamma_{01} = .026$, $p = .678$).

In order to test for publication bias (e.g., "filedrawer effect") a separate conditional analysis was conducted in which type of publication (i.e., published in a peer-reviewed journal vs. unpublished or published through another medium) was added as a Level 2, or between-studies, moderating variable. The main statistic of interest for this analysis was γ_{01}, which reflects the difference in the relationship between IH and internalizing mental health problems between studies published in peer-reviewed journals and those that were either published in other media or were unpublished. $\gamma_{01} = .038$, $p = .603$, which indicates that differences between the effects reported in studies published in peer-reviewed journals and unpublished studies were not significant.

The final analysis of the relationship between IH and internalizing mental health problems was a conditional analysis that evaluated whether the type of measure of internalizing mental health (i.e., depression or anxiety) moderated the association between the two variables by adding this variable as a Level 1 predictor of the relationship (see Table 4). The main statistic of interest in this analysis is γ_{10}, which reflects the difference between the relationships between IH and the two measures of internalizing mental health problems. $\gamma_{10} = .093$, $p < .05$, which indicates that across studies, the correlation between depressive symptoms and IH is significantly higher than the correlation between anxiety symptoms and IH by .093 units. The variance component (τ) in this analysis is .005, which indicates that there is not a significant amount of variance between studies left unexplained by this analysis ($\chi^2 = 14.510$, $df = 10$, $p = .151$).

8. Discussion

Meta-analysis revealed a small to moderate correlation between IH and two important aspects of internalizing mental health: symptoms of depression and anxiety. This finding is consistent with both Hypothesis H1 and previous research on a variety of other distress-related variables, including general well-being and self-esteem (for reviews see Szymanski, Kashubeck-West, & Meyer, 2008; Williamson, 2000). This result indicates that this relationship between IH and psychological distress holds up under a stricter conceptualization of distress (i.e., when only including dimensional measures of distress based on psychiatric symptomatology of depression and anxiety). Furthermore, the current analysis evaluated a variety of moderating effects on this relationship, including those of gender, year of data collection, mean age of the sample, and type of symptomatology measured.

The current analysis found no moderating effect for participant gender on the relationship between the two variables. This finding is inconsistent with Hypothesis H2. It was expected that the relationship between IH and internalizing mental health problems would be stronger for men due to higher rates of sexual orientation-based

Table 3
Effects from conditional analysis of IH and internalizing mental health problems (Level 2 predictors).

Fixed effect	Coefficient value	Standard error	*t* ratio	*df*	*p* value
Intercept (γ_{00})	.323	.100	3.221	23	.004
Gender (γ_{01})	.010	.059	.174	23	.864
Data collection (γ_{02})	−.004	.005	−.720	23	.479
Mean age (γ_{03})	.008	.003	2.278	23	.032
Estimation of variance	Standard deviation	Variance component	*df*	χ^2	*p* value
Random effect (u_j)	.089	.008	23	43.902	.006

Table 4
Effects from conditional analysis IH and internalizing mental health problems (Level 1 predictor).

Fixed effect	Coefficient value	Standard error	*t* ratio	*df*	*p* value
Intercept (γ_{00})	.195	.031	6.332	22	<.001
Type of distress (γ_{10})	.093	.034	2.768	22	.012
Estimation of variance	Standard deviation	Variance component	*df*	χ^2	*p* value
Random effect (u_j)	.070	.005	10	14.510	.151

victimization in men and the overuse of IH scales designed for gay and bisexual men to measure this construct in women. Although gay and bisexual men appear to experience higher rates of sexual orientation-based victimization, these experiences may not lead to increased internalization of societal antihomosexual attitudes. Non-heterosexual men and women are exposed to the same general societal attitudes regardless of rates of victimization. It is possible that these general antihomosexual societal attitudes may be more important to the development of IH than victimization experiences, thus accounting for the lack of a moderating effect of gender.

We also cited measurement issues (i.e., the under-utilization of scales of IH designed for women) in our hypothesis that the relationship between IH and internalizing mental health problems would be stronger in men. Five of the studies included in this analysis used measures of IH designed specifically for lesbian and bisexual women, and additional analysis revealed that these five studies reported significantly higher effect sizes than the six studies using IH measures designed for men. This suggests that the use of IH measures designed for men on female samples is a less precise method for measuring the effects of this construct. However, the moderating effect of participant gender remained non-significant when these five studies were removed from the original conditional analysis. According to the current analysis, gay and bisexual men and women appear to have an equally strong association between IH and internalizing mental health problems.

Inconsistent with Hypothesis H3, the current analysis found no moderating effect for year of data collection on the relationship between IH and internalizing mental health problems. This suggests that there are no cohort effects for this relationship. The finding seems inconsistent with societal trends of increased tolerance toward same-sex behavior and a previous meta-analysis showing a decrease in the positive association between IH and risky sexual behavior (Newcomb & Mustanski, in press). Considering the increase in tolerance and visibility of the LGB community over the past several decades, one would assume that the internalization of negative societal attitudes would have decreased, and IH would have become less salient in terms of health outcomes for more recently assessed cohorts of LGB individuals. It is possible, however, that with this increased tolerance and visibility, homophobic behavior has become more subtle in nature but no less detrimental in its effects on mental health. Furthermore, despite apparent changes in general societal attitudes (Loftus, 2001), there have still been a handful of high profile hate crimes and anti-gay legal decisions (e.g., bans on same-sex marriage) in the last several years. In fact, emerging epidemiological research indicates that rates of mood disorders, generalized anxiety disorder, alcohol use disorders, and psychiatric comorbidity increased significantly for LGB individuals living in states that banned gay marriage between 2000 and 2005 (Hatzenbuehler, McLaughlin, Keyes, & Hasin, 2010). While one would expect that increased tolerance overall would lead to a change in the effects of IH, the presence of these events in the popular media may have left the experience of IH unaltered across cohorts. This result indicates that although increased tolerance and visibility have altered the effects of IH on certain outcome variables, such as sexual risk behaviors, these societal changes have not altered the effect of IH on internalizing symptoms.

Inconsistent with Hypothesis H4, a significant moderating effect was found for mean age of the sample on the relationship between IH and internalizing mental health problems. Older LGB individuals tended to show a stronger association between these two variables. In this analysis, $\gamma_{03} = .008$, meaning that on average the association between these two variables increased by .008 for every unit increase in the mean age of the sample. This represents a relatively large change in effect size (an estimated difference in the correlation of approximately .22 between the youngest and oldest mean samples, assuming a purely linear effect) considering that the mean age of the samples range from 17.03 to 45.11. This finding needs to be interpreted within the context of the fact that relatively few of the studies included in the meta-analysis contained samples that were either primarily composed of LGB youth or of LGB adults over the age of 40. This age heterogeneity within each study sample limits the specificity of our findings. More research is needed in order to clarify the role of age as a moderator of the relationship between IH and internalizing mental health problems.

If in fact this result for the moderating effect of mean age of the sample on the relationship between IH and mental health is accurate, it is inconsistent with expectations. Although past research and theory indicates that the effects of IH should be strongest when an individual first comes out (e.g., Meyer, 1995), it is possible that the effects of IH may accumulate over time in an additive fashion rather than diminishing after the individual initially comes out. This would lead to stronger effects as age increases. It is important to acknowledge that age is probably not a very good proxy for number of years since a person "came out," since individuals can come to terms with and reveal their sexual orientation to others at any age. Additionally, these results could be evidence for a cohort effect. The older participants from these studies may have "come out" during a time when homosexuality was less acceptable and the effects of IH were stronger leading to more internalizing mental health problems. The fact that year of publication was included in the model, however, should have helped to control for the confounding effect of cohort. The fact that year of data collection did not have a significant effect argues against such a cohort effect.

Inconsistent with Hypothesis H5, type of publication was not a significant moderator of the relationship between IH and internalizing mental health problems. This suggests that there is no difference between results reported in peer-reviewed journals and those reported by other means (i.e., "file drawer effect"). It should also be noted, however, that the conditional model still retained a significant amount of unexplained variance. Because of this, there may be several other moderating variables of the relationship between IH and mental health that have not yet been investigated.

Finally, the current analysis also found a significant moderating effect for the type of symptomatology evaluated in each study. There was a stronger relationship between IH and internalizing mental health problems in those studies measuring depressive symptomatology than in those measuring symptoms of anxiety. This was inconsistent with expectations. The limited theoretical writing and empirical work on this topic indicated that IH would not be differentially related to depression and anxiety (Hatzenbuehler et al., 2009; Pachankis, 2007; Pachankis et al., 2008). Revisiting minority stress theory (i.e., the combined effects of IH, perceived stigma, and victimization experiences; Meyer, 1995) may help to explain this finding. According to Meyer (1995), the internalization of negative societal attitudes results in lowered self-regard and demoralization, whereas perceived stigma (i.e., expectations of rejection and discrimination resulting from one's minority status) results in hypervigilance to experiences of prejudice and discrimination. Perhaps IH is more likely to engage cognitive processes that negatively affect one's self-view, and therefore would be more likely to result in depressive symptomatology. The hypervigilance associated with perceived stigma may engage chronic hyperarousal processes that would be more strongly associated with symptoms of anxiety. However, the current finding may also reflect a measurement issue with regards to questionnaire-based dimensional measures of psychological distress. Items assessing anxiety within dimensional measures of psychological distress tend to focus on physical symptoms of anxiety (e.g., racing heart and shortness of breath) rather than the cognitive process underlying these physiological symptoms (e.g., rumination and fear of negative evaluation). Measures of IH tend to focus almost exclusively on cognitions. As such, this analysis may only describe the relationship between IH and the physiological dimension of anxiety rather than the cognitive dimension.

Several limitations of the current meta-analysis deserve mention. First, many of the studies included in the meta-analysis sampled very specific subgroups within the LGB community, such as women with early stage breast cancer (McGregor et al., 2001), male survivors of sexual assault (Gold, Marx, & Lexington, 2007), and Caucasian LGB individuals that are currently affiliated with a faith group (Lease, Horne, & Noffsinger-Frazier, 2005). However, combining data across multiple studies through meta-analysis makes it possible to come to a more generalizable estimate of the effect size. Second, several subgroups were underrepresented in the studies included in this analysis, including LGB individuals from different racial/ethnic minority groups, who may differ in their experience of IH. This underrepresentation may have led to the calculation of an overall effect size that is not representative of the diversity of the LGB population. Furthermore, underrepresentation of subgroups limited the ability to examine race/ethnicity as a potential moderating variable. Third, the mean age of the samples in the studies included in the analysis was not normally distributed. The majority of the studies in this analysis had a mean age in either the mid-30s or late teens/early-20s, with fewer studies with older participants (i.e., mean age over 40). The use of robust standard errors in analysis should have helped to correct for this deviation from normality in estimating significance, but the ability to make conclusions about older age groups is still limited. Fourth, many of studies included in this analysis used measures of IH that may not have been appropriate for the study sample. Many of the studies evaluating the effects of IH in women used measures that were developed and validated using all-male samples. Only half of these studies used measures of IH developed specifically to measure the construct in women. Additionally, the majority of studies used measures of IH that may be outdated (e.g., NHAI). Societal attitudes toward homosexuality have become more tolerant in recent years, and it is possible that the construct of IH may also have changed since these measures were constructed. Finally, it is important to note that the mental health measures used in the included studies are dimensional nature and do not provide actual psychiatric diagnoses. Although dimensional measures are based on psychiatric symptomatology, emerging research suggest that these types of measures may over-estimate psychiatric diagnoses in some LGB populations (Mustanski et al., in press).

Given the limitations of the current analyses and the current state of the literature, future research on the relationship between IH and mental health should address several deficits in the literature. Investigators studying this relationship in the future should focus on the differential effect of IH on psychological outcomes in a variety of different ethnic groups. Although many of the studies included in the current meta-analysis reported ethnically diverse samples, none of the studies provided separate correlations between IH and mental health problems by ethnic group. Considering differences in acceptability and tolerance toward homosexuality by ethnic group (Loftus, 2001), it would follow that the internalization of these negative attitudes could also vary by ethnicity. Additionally, future research should focus on the development of measures of IH that assess this construct in different ethnic groups and take into consideration the differential experiences of IH in non-White gay male samples.

Future research should also consider the differential effect of IH on mental health by age. Given societal trends toward increased acceptance and tolerance toward the LGB community, it is possible that the effect of IH on mental health is becoming less pronounced and that its effects are strongest in older individuals who “came out” during a time in which homosexual behavior was less acceptable. However, the results of the current study suggest that the relationship between the two variables has not changed significantly over time and that cohort effects are not significant. Alternatively, the subtle effects of IH may accumulate over time as the LGB individual continues to encounter antihomosexual attitudes, thus accounting for the stronger relationship in older individuals. Research that takes a life course perspective on the accumulation of adversity and stigma over a lifetime may help to characterize these effects.

Finally, future research should also address whether or not IH is related to actual psychiatric diagnoses, as measured by semi-structured or structured interviews. Although this meta-analysis indicates that IH is associated with higher levels of psychological distress, it is unclear whether this corresponds to higher rates of actual diagnoses. Given recent research indicating that continuous measures of psychological distress (e.g., BSI and CES-D) may over-estimate actual diagnoses in LGB youth (Mustanski et al., in press), it is important to more clearly define the mental health outcomes associated with IH.

Given the results of the current analysis and extant research indicating significant associations between IH, internalizing mental health problems, and a number of distress-related variables (e.g., general well-being and self-esteem), the expression of IH in LGB individuals is an important consideration for clinicians and health professionals working with this population. Some models have been suggested for how to integrate attention to IH into empirically-supported treatments (ESTs). For example, Safren and Rogers (2001) point out in their guidelines for cognitive-behavioral therapy (CBT) with LGB clients that negative societal attitudes toward homosexuality may impact both the content of cognitive distortions and the negative reinforcement of maladaptive behaviors (e.g., social isolation and expectations of rejection). These authors also emphasize the importance of neither downplaying nor overemphasizing the role of stress related to one's sexual orientation when treating LGB clients. Clinicians should evaluate the relative importance of IH and other stressors related to sexual minority status with each client rather than making assumptions about the detrimental effects of these variables. Clinicians and other mental health workers should also be aware that the effects of IH on mental health may vary between LGB subgroups, such as those of race/ethnicity. Future research can help to clarify the differential effects of IH on mental health problems in a variety of demographic groups within the LGB population.

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