Archives of Sexual Behavior
https://doi.org/10.1007/s10508-018-1271-y

ORIGINAL PAPER

The Gay Community Involvement Index: An Exploratory Factor Analysis and Initial Validation of a New Measure of Gay Community Involvement

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Received: 23 August 2017 / Revised: 16 May 2018 / Accepted: 4 July 2018

Abstract
This article details initial measure development, exploratory factor analysis, and preliminary validation of the Gay Community Involvement Index (GCII) across two studies. Previous research on gay community involvement has relied on measures that do not distinguish between distinct ways in which men may be involved in the gay community (e.g., going to bars and clubs vs. advocating for political issues). The GCII is a new multidimensional measure of the type and intensity of participation in a variety of activities within the gay community. Exploratory factor analysis suggested four subscales: Community Activities, Nightlife, Media, and Political Activism. We report strong evidence for internal consistency within subscale scores, as well as both convergent and discriminant validity for subscale scores. This measure may help those researching gay men's health and well-being better understand the impact of different types of community involvement on health and psychosocial outcomes.

Keywords Gay men · Gay community involvement · Health and well-being · Sexual orientation

Introduction

Community involvement is a central construct in research on the health and well-being of gay men. Some of the most influential and prolific lines of work on gay men's health, including theories of minority stress and health behaviors, make reference to community involvement as a key factor (Meyer, 2003; Ramirez-Valles, 2002). Despite the theoretical importance of this construct, few investigators have attempted to clarify its meaning and scope. Past work has often relied on idiosyncratic measures of gay community involvement developed for each specific study (e.g., Doyle & Molix, 2014; Flores, Mansergh, Marks, Guzman, & Colfax, 2009; Ramirez-Valles, Kuhns, Campbell, & Diaz, 2010; Tiggemann, Martins, & Kirkbride, 2007) with little evidence of adequate psychometric properties. Furthermore, there are many qualitatively distinct ways in which men may be involved in the gay community (e.g., going to bars and clubs, advocating for political issues). Few studies have assessed how these dimensions of community involvement might differentially influence health. In fact, many studies have used heterogeneous measures that tap into many dimensions of community involvement without distinguishing between them. This lack of specificity may contribute to contradictory and inconclusive findings.

The aim of the present work was to develop a multidimensional measure of gay community involvement for use in research on gay men's health and well-being and to perform initial psychometric tests on scores on this measure. In developing this new measure, we drew upon previous work (e.g., Barrett & Pollack, 2005; Frost & Meyer, 2012; Kippax et al., 1992) while endeavoring to more clearly explicate the nature and scope of this construct. Here, we define gay community involvement as behavioral engagement in a diverse range of ongoing activities involving other members of the gay community. In the following sections, we situate the construct of community involvement within a broader framework of social identity, trace early and current research on

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s10508-018-1271-y) contains supplementary material, which is available to authorized users.

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Published online: 02 November 2018

gay community involvement, discuss the multidimensional nature of this construct, and elaborate on the development of this new measure.

Community Involvement as Collective Identification

Much past research in psychology has demonstrated that social identities (and the extent of identification with social groups) shape health and well-being (Jetten, Haslam, & Haslam, 2012; Tajfel & Turner, 1986). This is especially true for members of devalued and minority groups (including gay men) who regularly contend with prejudice and discrimination from dominant groups (Branscombe, Schmitt, & Harvey, 1999; Doyle & Molix, 2014). An important way in which people express their social identities is through community involvement (Bilewicz & Wójcik, 2010). As a form of collective social identification, community involvement is related to "the degree to which the person engages in actions that directly implicate the collective identity category in question" (i.e., behavioral identification; Ashmore, Deaux, & McLaughlin-Volpe, 2004, pp. 92–93). Therefore, gay community involvement may be conceptualized as a behavioral manifestation of social identity.

Research on Gay Community Involvement and Health

Some of the earliest efforts to empirically assess gay community involvement were framed around research on HIV transmission and prevention (e.g., Herek & Glunt, 1995; Kippax et al., 1992). One early study (Kippax et al., 1992) conducted with a sample of 535 gay and bisexual men in New South Wales, Australia, found that gay community involvement (operationalized as "the degree of men's 'immersion' in modern gay culture and politics"; p. 105) was not significantly associated with sexual risk behaviors, but was strongly associated with having ever been tested for HIV. Importantly, gay community involvement was found to be highly socially patterned, with greater education, income, and occupational status, as well as residence in the inner city, related to greater involvement in the gay community. Other work has also demonstrated that gay community involvement is highly patterned on demographic factors such as socioeconomic status (e.g., Barrett & Pollack, 2005) and area of residence (e.g., Mills et al., 2001; Ross, Tikkanen, & Berg, 2014).

Overall, results of research on associations between gay community involvement and sexual risk behaviors have been consistently mixed, with various studies reporting either protective (Lelutiu-Weinberger et al., 2013; Ramirez-Valles et al., 2010) or risk effects of community involvement (e.g., Fergus, Lewis, Darbes, & Kral, 2009; Flores et al., 2009; Halkitis & Parsons, 2003). One reason for these inconsistencies may be issues of measurement, as each study measured gay community involvement differently. Lelutiu-Weinberger et al. (2013) found that gay community involvement was negatively associated with risky sexual behavior and drug use when it was measured as identification with the gay community. Ramirez-Valles et al. (2010) measured gay community involvement in terms of volunteer work for GLBT clubs or AIDS organizations. They found no main effect of gay community involvement on risk of sexual activity under the influence of drugs and alcohol (although involvement moderated the relationship between stigma and sexual risk behavior such that stigma was only a significant predictor of sexual risk behavior for gay men who were less involved). In contrast, Flores et al. (2009) found that gay community involvement was positively associated with risky sexual behavior when community involvement was measured as attendance at gay bars and clubs. Similarly, Fergus et al. (2009) found that gay community involvement was positively associated with sexual risk behaviors when it was defined as number of gay friends and the amount of time spent with other gay men.

Though each of the measures employed in the above studies likely captures facets of gay community involvement, bundling them all under the general label of "gay community involvement" may contribute to the lack of clarity in this research. We would expect that different types of gay community involvement may be differentially related to health outcomes. Environments that promote alcohol use, such as gay bars and clubs, may lead to more sexual risk behavior, whereas participation in groups that are focused on awareness and prevention of AIDS may lead to less sexual risk behavior (Ramirez-Valles et al., 2010). Participation in gay community groups such as sports teams or book clubs may not directly relate to risk outcomes, but could lead to more time spent with gay men, which has been associated with sexual risk behavior (Fergus et al., 2009) or likelihood of being tested for HIV (Kippax et al., 1992). A measure that accurately captures various dimensions of gay community involvement and differentiates between them is necessary to clarify the current literature on the impact of community involvement on sexual risk behavior.

Other health outcomes that researchers have frequently investigated in conjunction with gay community involvement include body image (e.g., Davids, Watson, Nilsson, & Marszalek, 2015; Doyle & Engeln, 2014; Hospers & Jansen, 2005; Tiggemann et al., 2007), psychological well-being (e.g., Doyle & Molix, 2014; Ramirez-Valles, Fergus, Reisen, Poppen, & Zea, 2005), and mental health (e.g., Mao et al., 2009; Ramirez-Valles et al., 2005). As with sexual risk behaviors, effects of gay community involvement on these various outcomes remain somewhat unclear. For example, previous research on psychological well-being has indicated that gay community involvement is associated with increased self-esteem (Doyle & Molix, 2014; Ramirez-Valles et al., 2005); however, both of these studies measured gay community

involvement using items related to political advocacy or consumption of LGBT media. The research on gay community involvement and body image is similarly uncertain. Some early work on gay men's body image (e.g., Levesque & Vichesky, 2006; Tiggemann et al., 2007) reported null associations between gay community involvement and body dissatisfaction. More recent research, however, has pointed toward nuanced effects of gay community involvement on body image that may be driven by mediating (e.g., sexual objectification experiences; Davids et al., 2015) and moderating variables (e.g., body size; Doyle & Engeln, 2014), but may also plausibly be related to issues of measurement. This previous research has measured gay community involvement using idiosyncratic scales created for specific studies (Davids et al., 2015; Hospers & Jansen, 2005; Levesque & Vichesky, 2006; Tiggemann et al., 2007). While there was some overlap (e.g., most measures included an item about frequenting LGBT venues), there were also many differences between the scales. Davids et al. were the only researchers to include items regarding LGBT advocacy, whereas Levesque and Vichesky (2006) uniquely assessed consumption of LGBT media, such as visiting LGBT websites. We believe that types of community involvement may be differentially related to various body image and well-being outcomes. For example, Jankowski, Fawkner, Slater, and Tiggemann (2014) found that images of men in gay men's magazines were more sexualized than images of men in magazines targeting straight men; therefore, men who report greater community involvement by reading more magazines geared toward gay men may show greater body image disturbance than men who participate in the gay community by attending a book club for gay men. A theoretically derived and psychometrically sound measure of gay community involvement is necessary in order to help clarify these various lines of work on gay men's health and well-being. Furthermore, such a measure must acknowledge and accommodate the multidimensional nature of this construct.

Multidimensional Nature of Gay Community Involvement

There are a variety of ways in which men may be involved in the gay community. Importantly, levels of involvement are not always identical across dimensions. One gay man may frequently attend social events targeted toward gay men, such as circuit parties, but he may not be particularly interested in activities focused on advocacy, such as gay rights protests. Another gay man may show the opposite pattern of involvement. This diversity is particularly important for researchers interested in gay men's health and well-being to understand, in that different dimensions of involvement may be related to health outcomes in unique ways.

Within the extant literature on gay community involvement, little attention has been paid to this multidimensionality. Various research groups have utilized unique measures that tap into specific dimensions of gay community involvement without addressing the overarching construct. For example, Ramirez-Valles et al. (2005, 2010) have frequently operationalized gay community involvement as participation in gay rights or HIV/AIDS organizations, a decidedly political/activist dimension of community involvement. In contrast, other researchers have focused on social aspects of gay community involvement, such as gay intimacy and socializing (i.e., whether men have a same-sex partner and how they socialize with other gay men; Barrett & Pollack, 2005). With such starkly different dimensions of gay community involvement under investigation, it is perhaps unsurprising that results differ, and even conflict, across studies. In other cases, measures of gay community involvement tap more than one dimension (i.e., both political and social) without distinguishing between them, muddying results even further. Moreover, researchers often provide little or no evidence of adequate reliability and validity for scores on the measures of gay community involvement they use, leading to overall questionable conclusions within this literature.

The Current Research

The goals of this work were to create a psychometrically sound, multidimensional measure of community involvement among gay men, the Gay Community Involvement Index (GCII), to examine the initial factor structure of scores on this measure, and to provide initial evidence of the construct validity of these scores. Study 1 details the creation of items for this measure and evidence for the initial psychometric properties of these items. In Study 2, a reduced set of items was administered to a new sample, along with a series of measures designed to assess the validity of scores on the GCII.

Study 1

Method

Participants

Participants were 215 gay men in the U.S. ranging in age from 18 to 78 years ($M = 29.36$, SD= 10.40). Participants were located in 33 different states. In an open-ended question, the majority of participants self-identified as White (73%), 6% as Black, 4% as Asian/Asian American, 8% as Hispanic/Latino, 2% as Native American, and 7% as multiracial.

Procedure and Measures

Participants were recruited from attendees at the Chicago Pride Parade (25%), via social media (18%), via flyers posted in businesses around the Chicago area (11%), via postings on online blogs/message boards (8%), via e-mails to gay community groups (4%), and via snowball sampling through participants who already completed the study (34%). Interested participants were e-mailed a link to a survey hosted on Qualtrics. Informed consent was obtained from all individual participants included in the study. Participants completed the new measure of gay community involvement as part of a larger online survey with measures of body image and anti-fat bias (see Foster-Gimbel & Engeln, 2016). Order of the measures was counterbalanced. Participants were compensated with a $5 Amazon.com gift card.

Creation of New Measure of Gay Community Involvement

A group of researchers generated items intended to assess multiple types of gay community involvement. We began by exploring previous measures of gay community involvement (Barrett & Pollack, 2005; Frost & Meyer, 2012; Kippax et al., 1992). These studies defined gay community involvement by measuring (1) participation in different types of organizations with primarily LGBT members, (2) whether participants read national gay newspapers or other gay media, (3) venues participants had used to meet other gay men, (4) immersion in gay culture and politics, (5) social engagement with other gay men, and (6) connectedness to the gay community.

Based on these previous measures, we identified six potential domains of gay community involvement into which we could categorize various items: (1) Friends/Coworkers/Neighbors (e.g., "I have many gay friends"), (2) Places (e.g., "I hang out in places where I know I can socialize with other gay men"), (3) Clubs and Organizations (e.g., "I am a member of a gay community group or organization"), (4) Politics/Ideology (e.g., "I participate in political activism related to LGBTQ issues"), (5) Media (e.g., "I read magazines or newspapers geared toward the gay community"), and (6) General community identification (e.g., "I am actively involved in the gay community").

After generating potential domains of gay community involvement, we presented these ideas to a group including four gay men for discussion and feedback on potential items. The group provided feedback on the relevance of current items and ideas for additional items that were ultimately included in our measure. The initial scale included 53 items. Participants responded on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Thirty-one of these items were adapted from previous measures of gay community involvement (Barrett & Pollack, 2005; Frost & Meyer, 2012; Kippax et al., 1992), including items that were modified from the original scale to reflect the modern gay community.[1] Based on this group's feedback, we initially decided to include items related to general gay community identification (e.g., "I strongly identify with the gay subculture"). However, a review of our remaining items by a researcher who has previously used measures of gay community involvement led us to remove an additional three items that were not capturing the behavioral facet of involvement and thus did not truly fit with the content of the scale.

Results

Attention Checks

We included two attention checks in the online survey. The first required respondents to select a specific response (i.e., "If you are reading this, please select strongly agree"). We eliminated 22 participants (10%) because they did not pass this check. A second validity check involved examining open-ended responses for coherence and relevance. Additional 12 participants (5%) were eliminated from analyses because their open-ended data were nonsensical or irrelevant to the questions asked (e.g., responding by pasting an item from one of our measures). Thus, the final sample included 181 participants. Note that sample sizes vary slightly in the analyses below, as some respondents did not answer all questions. The greatest percentage of missing data on any item was 1.7% (3 participants).

Measure Development

Initial Item Analysis Means, SDs, corrected item–total correlations, and alpha if item deleted were examined for all items (see Table 1). We eliminated 6 items for low (< .30) item–total correlations. Six additional items had very high or low means, indicating a restricted range of responses. Two of these items ("I don't want to be a part of the gay community" and "I don't think it's important to be involved political issues affecting the gay community," both reversed scored) were cut for having extremely high means (after being reverse-scored; 6.02 and 5.64, respectively). We cut four items with extremely low means (e.g., "I go to sex clubs/bathhouses," or "I attend religious services with other gay men"). We then subjected the remaining 42 items to factor analysis, which further guided item reduction.

Exploratory Factor Analysis We conducted a parallel analysis using Watkins' (2006) Monte Carlo program in order to determine how many factors to retain. Parallel analysis cre-

[1] For example, Kippax et al. (1992) included items about attending gay theater, films, or books; we changed this to be gay television shows, blogs, and other online content.

Table 1 Descriptive statistics, item–total correlations, and alpha if item deleted for Gay Community Involvement items (from Study 1)

Item	*N*	Minimum	Maximum	M	SD	Item–total correlation	Alpha if item deleted
I have many gay friends	178	1	7	4.57	1.84	.48	.93
My closest friends are straight (R)	178	1	7	3.74	1.97	.39	.93
Many of my neighbors are gay	178	1	7	3.04	1.81	.40	.93
There are few gay people who live in my community (R)	178	1	7	4.90	1.88	.25	.94
Lots of gay people live in my neighborhood	178	1	7	3.67	2.05	.28	.94
I have gay coworkers	178	1	7	4.21	2.10	.39	.93
I don't work with many gay people (R)	178	1	7	4.21	1.98	.19	.94
I spend time in places that are gay hangouts**	178	1	7	3.58	1.82	.64	.93
I spend time in places not specifically aimed at gay individuals when I go out (R)	178	1	7	3.60	1.72	.19	.94
I attend gay festivals when I can	178	1	7	4.62	1.82	.51	.93
When I exercise, I work out with other gay men	178	1	7	2.70	1.79	.51	.93
I hang out in places where I know I can socialize with other gay men**	178	1	7	3.94	1.72	.69	.93
I spend time at a community center focused on the gay community**	178	1	7	2.38	1.67	.32	.94
I prefer to spend time in places where I know there will *not* be many gay men (R)	178	1	7	5.60	1.46	.14	.94
I go to a gym/health club where many gay men work out	178	1	7	2.76	1.92	.43	.93
I frequent gay bars/clubs**	178	1	7	3.67	1.97	.46	.93
I avoid gay bars/clubs (R)	178	1	7	5.15	1.82	.15	.94
I go to parties where the guests tend to be other gay men**	178	1	7	3.86	1.78	.64	.93
I go to sex clubs/bathhouses	178	1	7	2.05	1.59	.39	.93
I spend time in public cruising areas	178	1	7	2.15	1.53	.29	.94
I go to public places for hooking up	178	1	7	2.24	1.60	.34	.93
I am actively involved in the gay community**	178	1	7	3.61	1.80	.77	.93
I am not involved with the gay community (R)	178	1	7	5.09	1.84	.62	.93
I strongly identify with the gay subculture	178	1	7	4.12	1.84	.59	.93
I spend much of my free time with members of the gay community	178	1	7	4.04	1.85	.71	.93
I am a part of the gay community	178	1	7	5.16	1.72	.56	.93
I don't want to be a part of the gay community (R)	178	1	7	6.02	1.37	.35	.93
I keep up with news about what's going on in the gay community**	178	1	7	4.85	1.67	.53	.93
I am a member of a gay community group or organization**	178	1	7	3.13	2.16	.50	.93
I am a part of an unofficial gay community group (e.g., a book club, sports team, running club, etc.)**	178	1	7	2.85	2.13	.52	.93
The social groups I spend time with do not have many gay men as members (R)	178	1	7	4.93	1.74	.38	.93
I am involved in a professional group (e.g., a business networking group) focused on the gay community**	178	1	7	2.61	1.89	.46	.93
I make a point to support businesses that are a part of the gay community (e.g., they are owned by gay men or have many gay employees)**	178	1	7	4.60	1.82	.60	.93
I am involved with a sport team/organization for gay men**	178	1	7	2.29	1.93	.34	.94
I attend religious services with other gay men	178	1	7	2.08	1.71	.40	.93
I volunteer with LGBTQ-focused charities or social services**	178	1	7	2.90	1.92	.58	.93
I do volunteer work in the gay community**	178	1	7	2.78	1.93	.56	.93
I am politically informed about issues affecting the gay community**	178	1	7	4.80	1.75	.37	.93
I participate in political activism related to LGBTQ issues**	178	1	7	3.29	1.87	.56	.93
I am involved in LGBTQ interest activism**	178	1	7	3.26	1.87	.66	.93
I am not involved in any political activism related to gay rights (R)**	178	1	7	4.32	2.19	.47	.93
I feel it is important to be politically active in the gay community**	178	1	7	4.50	1.75	.50	.93

Table 1 (continued)

Item	*N*	Minimum	Maximum	M	SD	Item–total correlation	Alpha if item deleted
I do not think it is important to be involved in political issues affecting the gay community (R)	178	1	7	5.64	1.44	.28	.94
I am politically active in the gay community**	178	2	7	3.15	1.84	.60	.93
I give money to gay organizations	178	1	7	3.31	2.01	.54	.93
I make a point to vote for political candidates based on their stances on gay rights issues**	178	1	7	5.17	1.78	.32	.94
I watch televisions programs focused on a gay audience**	178	1	7	3.98	1.73	.52	.93
The television programs I watch don't tend to have gay characters (R)	178	1	7	4.81	1.53	.16	.94
I do not read magazines or newspapers specifically focused on the gay community. (R)**	178	1	7	4.79	2.01	.43	.93
I use sites/apps like Grindr, Scruff, or Adam for Adam for meeting gay men	178	1	7	4.05	2.14	.19	.94
I read blogs and other online content focused on the gay community**	178	1	7	4.46	1.83	.42	.93
I watch television programs geared toward the gay community**	178	1	7	4.07	1.77	.54	.93
I read magazines or newspapers geared toward the gay community**	178	1	7	3.89	1.88	.56	.93

**Item retained in final scale

ates a set of random data with the same number of factors and number of participants as the original data set and generates a random factor structure. The factors from the actual data set are compared with those from the random data set. Factors with eigenvalues greater than the randomly generated factors are retained. The results of the parallel analysis indicated four factors. We then ran an exploratory factor analysis using principle axis factoring with direct oblimin rotation. We used the guidelines suggested by Costello and Osborne (2005) and Tabachnick and Fidell (2001) for avoiding multicollinearity to guide item reduction, which stipulates .32 as a cutoff for item factor loadings. Based on the results of our exploratory factor analysis, we removed 6 items that loaded on multiple factors (factor loadings within .10 of each other). We removed an additional 12 items that did not load on any of the four factors (i.e., they had no factor loading greater than .32 on any factor). The pattern matrix indicated that the 20 remaining items all loaded on one of the four factors, with all loadings greater than .39 (see Table 2). The eigenvalues of the four factors were 7.94, 2.52, 2.01, and 1.22.

Factor 1 included items about participating in activities within the gay community, such as volunteering for the gay community and being a part of an official or unofficial group of gay men (such as a business group, sports team, or book club). We named this the Community Activities subscale ($\alpha = .84$). The second factor contained items regarding consumption of media directed toward the gay community. We named this the Media subscale ($\alpha = .86$). The third factor included items about socializing with other gay men at bars, clubs, and parties. We called this the Nightlife subscale ($\alpha = .86$). The fourth factor contained items about participating in political activism related to the gay community. We named this final factor the Political Activism subscale ($\alpha = .86$). Subscale scores were created by taking the mean of the items on each factor (after reverse scoring two items): "I do not read magazines or newspapers specifically focused on the gay community" and "I am not involved in any political activism related to gay rights." See Table 3 for inter-correlations between scores on each of the four subscales. While all subscales were significantly correlated with GCII total scores and with other subscales, there were significant differences in the strength of the correlations. For example, we would predict that those who participate in political advocacy would be more likely to also go to a community center for gay men, but not necessarily more likely to spend time in gay bars. Indeed, a Fischer's r to z transformation showed that scores on the Nightlife and Political Activism subscales were more weakly correlated than scores on Political Activism and Community Activities, $z = -4.16$, $p < .001$. See subscripts in Table 3 for indications of which correlation coefficients differed.

Discussion

The initial psychometric analysis of the GCII suggested four meaningful subscales mapping on to different types of community involvement: Community Activities, Media, Nightlife, and Political Activism. Estimates of internal consistency were high for all subscale scores. Though all subscale scores were positively correlated with each other, some correlations were much weaker than others, indicating the subscales appear to be capturing meaningfully different constructs. This is consistent with our argument that different types of gay community involvement should be measured separately instead of assuming the construct can be captured

Table 2 Pattern matrix coefficients for exploratory factor analysis

Item	EFA factor loadings			
	F1	F2	F3	F4
I do volunteer work in the gay community	**.71**	−.05	.07	−.14
I volunteer with LGBTQ-focused charities or social services	**.71**	.01	−.06	−.25
I am involved with a sport team/organization for gay men	**.64**	−.08	.14	.15
I spend time at a community center focused on the gay community	**.55**	.09	−.08	−.01
I am a member of a gay community group or organization	**.54**	.05	−.07	−.27
I am involved in a professional group (e.g., a business networking group) focused on the gay community	**.44**	.15	.05	−.10
I am part of an unofficial gay community group (e.g., a book club, sports team, running club, etc.).	**.41**	.03	.21	−.15
I watch television programs focused on a gay audience	.11	**.83**	−.02	.14
I read blogs and other online content focused on the gay community	−.09	**.81**	−.06	.00
I watch television programs geared toward the gay community	.05	**.75**	.02	.01
I read magazines or newspapers geared toward the gay community	.00	**.71**	.11	−.05
I do not read magazines or newspapers specifically focused on the gay community	−.03	**.52**	.12	−.11
I frequent gay bars/clubs	.08	−.11	**.80**	.11
I hang out in places where I know I can socialize with other gay men	−.11	.19	**.78**	−.13
I go to parties where the guests tend to be other gay men	−.02	.07	**.71**	−.13
I spend time in places that are gay hangouts	.18	.14	**.68**	.05
I am politically active in the gay community	−.04	−.07	.13	**−.86**
I participate in political activism related to LGBTQ issues	.10	−.05	.00	**−.78**
I am involved in LGBTQ interest activism	.20	.22	−.03	**−.64**
I am not involved in any political activism related to gay rights	.06	.05	−.06	**−.63**

Bold values indicate highest factor loading

Table 3 Inter-correlations between gay community involvement factor subscales scores in study 1

	Gay community involvement total	Community activities	Nightlife	Media	Political activism
Community Activities	.85	–	–	–	–
Nightlife	.67	.43[a]	–	–	–
Media	.71	.36[a]	.42[a]	–	–
Political Activism	.76	.63[b]	.28[a]	.39[a]	–

All ps < .001

Superscripts indicate significantly different means ($p < .05$). Those with the same superscript are not significantly different from each other

unidimensionally. A second study using the reduced set of items was designed to provide initial tests of construct validity for scores on the GCII.

Study 2

The purpose of Study 2 was to evaluate the convergent validity of scores on the subscales of the GCII and to provide additional tests of the internal consistency of subscale scores. Specifically, we aimed to assess the associations between different types of gay community involvement and demographic, identity, and health/well-being variables. Central to our hypotheses were differential associations between the four GCII subscales and various constructs that should be more or less relevant for each.

For the Community Activities subscale, we were particularly interested in associations with demographic factors, such as location of residence (Mills et al., 2001; Ross et al., 2014). Specifically, we predicted that gay men living in more rural areas would score lower on this subscale compared to those living in urban areas due to a smaller local population of other gay men and lack of access to LGBTQ-specific venues. For the Nightlife subscale, we were particularly interested in associations with risky sexual behavior and body surveillance. While involvement in gay nightlife can be part of a positive gay identity (Holt & Griffin, 2003), health risks related to alcohol and drug use, sexual objectification, and

casual sex (which may be relatively prevalent in many gay bars and clubs; Grov, Hirshfield, Remien, Humberstone, & Chiasson, 2013; Lea, Reynolds, & de Wit, 2013) led us to predict that higher scores on this subscale would be associated with greater risky sexual behavior and greater self-reported body surveillance. For the Media subscale, we were particularly interested in associations with men's reports of their favorite media. We predicted that men whose favorite TV shows or news outlets were LGBTQ-focused would score higher on this subscale and that scores on this subscale would positively correlate with body surveillance (Jankowski et al., 2014). For the Political Activism subscale, we were particularly interested in associations with political interest and history of political campaign volunteerism. We predicted that men who reported volunteering for a political campaign and those with greater interest in politics would score higher on this subscale. We also predicted a positive correlation with age given that political involvement in general increases with age (Cox, 2016).

Though we were primarily interested in these specific associations for the various subscales, we also wanted to test general associations of scores on the GCII subscales with relevant constructs, particularly those related to group identity and minority stress. In addition to studies that measured gay community involvement with idiosyncratic measures, previous studies have used measures of collective self-esteem as a proxy for gay community involvement (e.g., Herek, Cogan, Gillis, & Glunt, 1998; Zea, Reisen, & Poppen, 1999). Though the GCII was created to be a behavioral measure of involvement rather than an attitudinal measure, we nonetheless predicted that collective self-esteem should be positively correlated with all subscale scores of the GCII, given likely overlap between attitudes and behavior in this domain. Similarly, in light of past work demonstrating positive associations between gay community involvement and personal self-esteem (e.g., Doyle & Molix, 2014; Zea et al., 1999), we predicted that self-esteem would positively correlate with scores on all GCII subscales.

Internalized homophobia and perceived discrimination are two primary minority stressors that can damage the health and well-being of sexual minorities (Meyer, 2003). Interestingly, past work suggests divergent associations of these stressors with gay community involvement. Previous research has shown that internalized homophobia is negatively correlated with connectedness to the gay community (Frost & Meyer, 2009). In contrast, perceived discrimination has been associated with greater behavioral identification with the gay community (Doyle & Molix, 2014). Following this, we predicted that men who reported greater internalized homophobia would score lower on all subscales of the GCII, whereas men who reported greater perceived discrimination would score higher on all subscales of the GCII.

Method

Participants

Men who completed Study 1 were disqualified from completing Study 2. Participants were 151 gay men in the U.S. ranging in age from 18 to 80 years ($M = 32.17$, $SD = 12.61$). Participants were located in 39 different states. In an open-ended question, the majority of participants self-identified as White (60%), 23% as Black, 5% as Asian/Asian American, 6% as Hispanic/Latino, 3% as Native American, and 3% as multiracial. Participants were recruited from LGBTQ centers (7%), e-mails to gay men's community, social, or advocacy groups (37%), social media (27%), and snowball sampling through participants who already completed the study (22%). Participants completed the study online and were compensated with a $5 Amazon.com gift card. Informed consent was obtained from all individual participants included in the study. Alphas for all measures are shown in Table 4.

Measures

Gay Community Involvement Index The revised 20-item scale was used for this study.

Political Interest Interest in politics was measured using a single item ("How much interest do you generally have in what is going on in politics?"). Participants responded on a scale of 1 (*none at all*) to 5 (*a great deal*). Participants also responded yes or no to the question, "Have you ever done volunteer work for any kind of political campaign?"

Media Participants were asked to list their two favorite TV shows or web series and their two favorite magazines. Two raters coded the responses to determine whether shows or magazines were "LGBTQ-focused" (whether the show had primary characters who were LGBTQ, whether the show had LGBTQ-focused primary plots, or whether the magazine or newspaper was specifically aimed at the LGBTQ community). For a full list of all items coded as "LGBTQ-focused" media, please see the Supplemental Material. The raters discussed any discrepancies until they reached a consensus. Participants were scored as either 1—at least one LGBTQ-focused TV show or magazine, or 0—no LGBTQ-focused media. The two raters had high inter-rater reliability, $\kappa = .96$.

Perceived Discrimination Perceived discrimination based on sexual orientation was measured using a five-item adapted version of a measure of experience with gender discrimination (Schmitt, Branscombe, Kobrynowicz, & Owen, 2002) that has been successfully used to measure past experience with sexual orientation discrimination (e.g., "I have person-

Table 4 Descriptive statistics for measures in Study 2

Measure	*N*	α	Possible range	M (SD)
GCII community activities	151	.68	1–7	3.59 (1.25)
GCII nightlife	151	.86	1–7	4.44 (1.64)
GCII media	151	.78	1–7	4.37 (1.44)
GCII political activism	151	.77	1–7	4.09 (1.65)
Internalized homophobia	151	.89	1–4	2.03 (.73)
Collective self-esteem	151	.81	1–7	4.50 (1.30)
Perceived discrimination	151	.79	1–7	4.46 (1.14)
Self-esteem	151	.85	5–30	19.16 (5.94)
Body surveillance	149	.69	12–56	33.99 (7.09)
Risky sexual behavior (receptive)	149	–	0–40.65	7.05 (11.2)
Risky sexual behavior (insertive)	149	–	0–37.01	6.44 (10.19)
Risky sexual behavior (regular partner)	149	–	0–64.14	10.23 (17.97)
Risky sexual behavior (casual partner)	149	–	0–17.78	3.26 (4.84)

Range, mean, and standard deviation for risky sexual behavior analyses reflect capped values

ally been a victim of discrimination based on my sexual orientation"). Participants rate how often they feel they have been the victim of sexual orientation discrimination on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Total scores are obtained by taking the mean of the five items. When used with samples of gay men, this measure has previously shown high levels of internal consistency ($\alpha = .85$, Doyle & Molix, 2014).

Internalized Homophobia The Internalized Homophobia Scale (Martin & Dean, 1987) measures the extent to which LGBTQ individuals are ashamed of their same-sex attractions and wish they were able to change their sexual orientation (e.g., "You have tried to stop being attracted to people of the same sex"). Respondents rated their agreement with nine items on a scale of 1 (*often*) to 4 (*never*). Items were reverse-scored so that higher scores reflected greater internalized homophobia. Total scores are obtained by taking the mean of all items. Cronbach's alpha has been reported as .79 in samples of gay men (Meyer, 1995).

Collective Self-Esteem We used the four-item Importance to Identity subscale of the Collective Self-Esteem Scale (Luhtanen & Crocker, 1992), which measures the extent to which participants feel their group membership (in this case, the gay community) is an important part of their identity (e.g., "In general, belonging to the gay community is an important part of my self-image"). Participants rated their agreement on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). After reverse scoring appropriate items, total scores are obtained by taking the mean. Cronbach's alpha on this subscale was originally reported as ranging from .76 to .86 (Luhtanen & Crocker, 1992).

Self-Esteem We used the Rosenberg Self-Esteem measure (Rosenberg, 1965). After reverse scoring appropriate items, total scores were obtained by taking the sum of the ten items. Cronbach's alpha has previously been reported as .80 in LGBTQ populations (Walters & Simoni, 1993).

Body Surveillance We used the Body Surveillance subscale of the Objectified Body Consciousness Scale (McKinley & Hyde, 1996) to assess the degree to which participants engaged in the habitual body monitoring that indicates self-objectification (e.g., "During the day, I think about how I look many times"). Subscale scores were obtained by taking the sum of items after reverse scoring. Cronbach's alpha has been reported as .72 in a sample of gay men (Engeln-Maddox, Miller, & Doyle, 2011).

Risky Sexual Behavior Participants were asked how many times in the past 6 months they had engaged in (1) unprotected receptive anal intercourse with a regular partner, (2) unprotected receptive anal intercourse with a casual or one-time partner, (3) unprotected insertive anal intercourse with a regular partner, and (4) unprotected insertive anal intercourse with a casual or one-time partner. Participants were asked to give their best estimation.

Results

We performed a series of MANOVAs to test the impact of different residences, ethnicities, political interests, and consumption of LGBTQ-focused media on GCII subscales. Results are shown in Table 5. See Table 6 for all correlations between GCII scores and the relevant variables below.

Table 5 Multivariate analyses of variance (MANOVA) for GCII subscales

	Community activities	Nightlife	Media	Political activism
Ethnicity				*
White ($n=91$)	3.90 (1.26)	4.39 (1.63)	4.39 (1.51)	4.95 (1.33)
Black ($n=34$)	3.96 (.76)	4.65 (1.55)	4.45 (1.25)	4.28 (1.37)
Done volunteer political work	***			**
Yes ($n=38$)	4.19 (1.13)	4.78 (1.45)	4.74 (1.34)	4.77 (1.49)
No ($n=112$)	3.37 (1.22)	4.31 (1.68)	4.23 (1.45)	3.83 (1.62)
Residence		**		
Rural	3.54 (.24)	2.31 (.47)[a]	4.65 (1.50)	2.83 (1.40)
Suburban	3.68 (.85)	4.19 (1.10)[b]	4.34 (1.13)	4.77 (1.22)
Small urban	3.50 (1.40)	4.31 (1.74)[b]	3.98 (1.48)	4.03 (1.66)
Large urban	3.69 (1.25)	4.81 (1.65)[b]	4.72 (1.41)	4.00 (1.68)
Media	*	***	***	
No LGBTQ-focused media	3.39 (1.65)[a]	3.79 (1.62)[a]	3.96 (1.70)[a]	3.63 (2.18)
At least one LGBTQ-focused media	3.41 (.96)[a]	4.40 (1.59)[b]	4.68 (1.18)[b]	4.23 (1.37)
Blank	4.20 (1.13)[b]	5.26 (1.49)[c]	4.14 (1.52)[c]	4.29 (1.47)

Superscripts indicate significantly different means ($p<.05$). Those with the same superscript were not significantly different from each other
*$p<.05$, **$p<.01$, ***$p<.001$

Table 6 Bivariate correlations between GCII subscales and variables of interest

	Community activities	Nightlife	Media	Political activism
Age	.11	−.17*	.03	.25**
Political interest	.25**	.08	.30***	.52**
Internalized Homophobia	.03	−.33***	−.25**	−.51***
Perceived discrimination	.24**	.24**	.27**	.21**
Collective self-esteem	.24**	.41***	.35***	.21**
Self-esteem	.19*	.35***	.29***	.53***
Body surveillance	−.08	.13	.18*	.13

*$p<.05$, **$p<.01$, ***$p<.001$

Media Use

In this sample, 51% ($n=77$) listed at least one LGBTQ media type as a favorite. Twenty-six percent ($n=39$) did not list any LGBTQ media as one of their favorites, and 23% ($n=35$) left the question blank. We found significant differences between these three groups on Media subscale scores, $F(2, 147)=4.23$, $p=.02$, $\eta_p^2=.05$. Men who listed at least one LGBTQ media favorite scored higher on the Media subscale than men who did not, $p=.01$. We also found significant differences between these groups' Nightlife scores, $F(2, 147)=8.19$, $p<.001$, $\eta_p^2=.10$, with men who reported at least one LGBTQ media source as one of their favorites scoring higher than men who did not, $p=.04$.

Political Work and Interest

Twenty-five percent of the men in our sample reported having previously done volunteer work for a political campaign. Men who had previously volunteered for a campaign scored higher than men who had not on both the Political Activism, $F(1, 148)=9.87$, $p=.002$, $\eta_p^2=.06$, and the Community Activities subscale, $F(1, 148)=13.02$, $p<.001$, $\eta_p^2=.08$.

Political interest was positively correlated with Political Activism scores, as well as Media and Community Activities scores. The correlation between political interest and Political Activism was significantly stronger than the correlation between political interest and Media, $z=-2.3$, $p=.02$, or between political interest and Community Activities, $z=-2.8$, $p<.01$. The correlation between political interest and Nightlife scores was not significant (see Table 6).

Age

There was a small, significant negative correlation between age and Nightlife subscale scores (among those 21 and older). We also found a significant positive correlation between age and Political Activism scores.

Residence

There was a significant effect of residence on Nightlife subscale scores, $F(1, 146) = 9.01$, $p = .003$, $\eta_p^2 = .06$. Respondents from rural areas scored significantly lower than respondents from suburban ($p = .04$), small urban ($p = .02$), and large urban areas ($p = .003$). As residence changed from rural to large urban, scores on the Nightlife subscale increased. A trend analysis indicated that the data fit a linear model, adjusted $R^2 = .06$, $p = .01$. Contrary to our predictions, there was no evidence of an association between location of residence and Community Activities scores.

Ethnicity

Based on the demographic makeup of our sample, we compared Black participants ($n = 34$, 23% of our sample) to White participants ($n = 91$, 60% of our sample). We found a significant difference between Black and White participants on our political activism scale, $t(147) = 2.42$, $p = .02$, $d = .50$. Black participants reported significantly less political activism than White participants. There were no differences between Black and White participants on any other GCII subscales.

Risky Sexual Behavior

We examined acts of unprotected receptive and insertive anal sex as well as unprotected sex with a casual and regular partner. Men in our sample had significantly more unprotected sex with a regular partner than with a casual partner, $t(148) = 4.65$, $p < .0001$, $d = .53$. In order to account for outliers on these variables, we capped values at three SDs above the mean. We then ran negative binomial regressions with the GCII subscale scores on the four risky sexual behavior measures (receptive, insertive, casual, and regular) in order to account for non-normal data. There was a significant negative relationship between Political Activism scores and unprotected anal sex with a casual partner. Men who scored higher on Political Activism reported less unprotected anal sex with a casual partner, $z = -4.28$, $p < .000001$. There was also a significant positive relationship between Nightlife scores and unprotected insertive anal sex. Men who scored higher on the Nightlife subscale reported more unprotected insertive anal sex, $z = 2.06$, $p = .039$. There were no other significant associations between any GCII subscale scores and measures of risky sexual behavior.

Well-Being Variables

Greater self-esteem was significantly positively correlated with all four GCII subscale scores (see Table 6). The correlation between self-esteem and Political Activism scores was significantly higher than the correlation between self-esteem and Community Activities ($z = -3.42$, $p < .001$), Nightlife ($z = -1.93$, $p = .05$), and Media ($z = -2.51$, $p = .01$). Contrary to our predictions, we did not find a significant correlation between body surveillance and Nightlife scores. However, we did find a small, significant positive correlation between body surveillance and Media scores.

Minority Stress and Group Identity

Greater internalized homophobia was significantly negatively correlated with Nightlife, Media, and Political Activism scores. Internalized homophobia and Community Activities scores were not significantly correlated. Higher scores on the measure of perceived discrimination were positively correlated with all four subscale scores, indicating that men who perceived greater sexual orientation-based discrimination reported greater involvement across all dimensions. Similarly, greater reported collective self-esteem was positively correlated with all four subscale scores. See Table 6 for all correlations.

Discussion

Multiple Dimensions of Involvement

No currently available measures reliably capture the multidimensional nature of gay community involvement. Results of the current studies suggest the importance of carefully assessing different types of gay community participation and provide initial support for use of the GCII as a multidimensional measure of behavioral involvement in the gay community. Evidence from an exploratory factor analysis in Study 1 indicated a four-factor model of gay community involvement, with each of the factor-based subscales showing strong internal consistency. The first factor, Community Activities, comprises items related to gay men's participation in activities within the gay community and with other gay men (e.g., sports teams, book clubs, or volunteering). The second factor, Nightlife, assesses the degree to which gay men socialize with other gay men at LGBTQ-focused bars, clubs, and parties. The third factor, Media, examines the degree to which gay men consume media geared toward LGBTQ populations. The fourth and final factor, Political Activism, measures the extent to which men are involved in political activities that advance the LGBTQ community.

Though exploratory factor analysis indicated four factors, all GCII subscales were correlated with one another. However, the pattern of inter-correlations among subscale scores points to meaningful differences between different types of involvement. For example, there are many reasons that could explain the relatively high correlation between Political Activism and Community Activities scores (and why these scores were more highly correlated than other subscales). It is possible that men who responded to the Community Activities items "I volunteer with the LGBTQ community" or "I am part of a gay community organization" may have been referring to participation in a political organization. Additionally, items on the Community Activities and Political Activism subscales both involve explicitly affiliating with other gay men over shared values or interests. However, while there was some overlap between the two factors, political activism (especially direct action on behalf of the LGBTQ community) necessitates an interest in politics that is not required for men who participate in a gay sports team, for example. In contrast, the lowest correlation was between Nightlife and Political Activism, which makes sense given that items on the Nightlife scale focus exclusively on socialization without a specific focus on shared values or interests.

Advantages of the GCII

The GCII builds on past work on gay community involvement, using previous measures for inspiration in item generation. However, the GCII has the advantage of being a single, psychometrically validated, relatively short scale that can be included in studies of gay community involvement that seek to capture different dimensions of involvement using a continuous scale. The four factors of the GCII have each been included as components of previous measures of gay community involvement (Barrett & Pollack, 2005; Frost & Meyer, 2012; Ramirez-Valles et al., 2005, 2010), but no previous scales included all of these areas of involvement. The scale used by Kippax et al. (1992) contains 50 items across three different sections: Social Engagement, Gay Community Involvement, and Sexual Engagement in the Gay Community. Similarly, Barrett and Pollack (2005) measured community involvement in five different ways: whether men attended meetings, read media, perceived exclusivity, had an overall affiliation, and socialized within the gay community. The GCII can be administered as a relatively brief, single measure with a consistent response scale. Additionally, some items included in the GCII that appeared in earlier measures have been updated to reflect the modern gay community. For example, our media scale includes TV shows, online content, and blogs, which more comprehensively reflects how people access content today, rather than from newspapers and magazines. We also broadened political activism to include LGBTQ interest activism.

Previous behavioral measures of gay community involvement have often used yes or no measures, which limits variability. For example, Barrett and Pollack (2005) measured gay community involvement using some items similar to those on the GCII; however, almost all of the items were dichotomized. Similarly, Frost and Meyer (2012) measured whether participants reported any involvement in a LGBTQ community organization, compared to no involvement. The GCII has the advantage of measuring involvement using continuous scales.

In order to clarify the current literature on the impact of community involvement on sexual risk behavior, there is a need for a measure that accurately and consistently captures various dimensions of gay community involvement. Previous research has found conflicting results using different measures of community involvement. Other measures asked similar questions in different ways, sometimes using different types of items (e.g., Barrett and Pollack [2005] included 12-step and charitable groups as types of community organizations, whereas Frost and Meyer [2012] did not include these items). Results on the role of gay community involvement have varied notably when community involvement is measured as identification with the gay community, proportion of gay friends, attendance at gay bars and clubs, or participation in HIV/AIDS organizations (Fergus et al., 2009; Flores et al., 2009; Lelutiu-Weinberger et al., 2013; Ramirez-Valles et al., 2010). Having one, multidimensional measure of this construct may help to reduce inconsistencies in the literature on the effect of gay community involvement on health and well-being outcomes.

Support for the Construct Validity of GCII Scores and Areas for Future Research

Results from Study 2 provide initial support for the convergent validity of scores on the GCII. For example, consistent with previous work, all GCII subscale scores were positively related to perceived discrimination and personal self-esteem (Doyle & Molix, 2014). Greater reported body surveillance was correlated with greater consumption of media geared toward the gay community, which often tends to be more appearance-focused than media geared toward straight men (Jankowski et al., 2014). As predicted, Nightlife scores were also related to riskier sexual behaviors, such as unprotected insertive anal intercourse, while Political Activism was associated with less risky sexual behavior with a casual partner. These findings are consistent with the argument that different types of community involvement may be differentially related to sexual health behaviors.

GCII scores correlated positively with collective self-esteem, a construct that has previously been used as a measure of gay community involvement. However, correlations were only small to moderate, indicating that these constructs

are not interchangeable. In further support of this argument, collective self-esteem scores showed a differential pattern of correlations with other variables included in these studies. For example, in our sample, collective self-esteem was positively correlated with body surveillance. In isolation, a researcher may conclude from this finding that gay community involvement in general might be linked with negative body image outcomes. However, pattern of correlations between body surveillance and GCII scores suggests that consuming media targeting the gay community has a negative impact on body image, whereas community activities or political activism does not. This is one example of how the multidimensional nature of the GCII subscales may help to disentangle the mixed findings on the effects of gay community involvement.

Limitations

Our intention in creating this measure was to perform exploratory analyses and initial validation. However, follow-up studies attempting to replicate our factor structure with confirmatory factor analysis are warranted.

Though we attempted to recruit gay men who might be less involved in the gay community by posting fliers in non-LGBTQ-focused businesses and areas and with snowball sampling, many members of our sample (approximately 50%) were recruited from gay community groups or LGBTQ events, such as gay festivals. These sources likely draw gay men who are more involved with the gay community on average. Likewise, our sample was recruited to participate in an online study targeted toward men who identify as gay, which could have led to a sample of gay men particularly invested in this component of their identity. Given these limitations, we might expect less variability on GCII scores in our samples compared to what might be found in a sample of gay men recruited without specific attention to sexual orientation. This decreased variability could lower the effect sizes for some analyses. Despite this potential decrease in variability, many of our results were consistent with previous research on gay community involvement that have used more diverse or representative samples (Doyle & Molix, 2014; Mills et al., 2001).

Our samples' diversity in terms of ethnicity was also limited, resulting in inadequate power to compare scores of gay men of different ethnicities beyond Black and White. A larger, more diverse sample could allow for tests of structural invariance on the GCII for different ethnicities. Future research using this scale could also explore findings, indicating that ethnic minority men may show less participation in the gay community on average (Han, 2007; Rosario, Schrimshaw, & Hunter, 2004).

Our measure was specifically designed to assess community involvement for gay men. However, many of the items on the GCII are not specific to gay men and likely could be adapted for other sexual minority populations, such as lesbian women. Future research is necessary in order to assess the validity of GCII scores for other sexual minority populations.

Conclusion

Previous research on gay community involvement has shown mixed or inclusive results on a variety of outcomes. Some have argued that increased participation in the gay community serves as a buffer from stressors related to identification with a minority group (Branscombe et al., 1999; Doyle & Molix, 2014). Other theories, however, suggest that certain aspects of gay community involvement may result in harmful outcomes, such as risky sexual behavior (Flores et al., 2009; Halkitis & Parsons, 2003). The multiple subscales of the GCII may help to resolve some of these contradictory findings, particularly in research on HIV transmission and prevention (e.g., Herek & Glunt, 1995; Kippax et al., 1992), body image and weight-related discrimination (e.g., Davids et al., 2015; Doyle & Engeln, 2014; Foster-Gimbel & Engeln, 2016; Tiggemann et al., 2007) and mental health (e.g., Mao et al., 2009; Ramirez-Valles et al., 2005). We believe that future research will be able to use the GCII to more accurately test the influence of gay community involvement on important health issues within the gay community.

Funding This work was supported by grants from the Weinberg College of Arts and Sciences and the Northwestern Office of Undergraduate Research.

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