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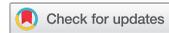
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A Quantitative Analysis of LGBTQ Material Hardship at Research Universities

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This quantitative study examined the material hardships experiences of LGBTQ students at research universities. Using a series of regression analyses, we find relationships between students' sexual identity and experiencing material hardship, including differential relationships when disaggregating by sexual orientation. These results identify unique experiences for students based upon their sexual orientation and expand understandings of LGBTQ students' experiences with material hardship beyond community colleges or aggregate understandings.

Much of the scholarship focused on the experiences of LGBTQ students has centered on White cisgender students; specifically, those who are gay, middle-class, and able-bodied (McGarrity, 2014). A recent emergence of scholarship (e.g., Blockett, 2017; Duran, 2019; Garvey et al., 2019; Kulick et al., 2017; Whitehead, 2019) expands beyond this narrow focus by intentionally focusing on the experiences of LGBTQ students of Color; this work makes many important contributions toward understanding that LGBTQ students' experiences are not all ubiquitous. Despite the expansion in some areas of LGBTQ scholarship, Lange et al. (2019) acknowledged how the existing body of work "is incomplete and has regularly reproduced a monolithic idea about what it means to be queer and trans at colleges and universities" (p. 519). This study responds to the call by exploring the experiences of LGBTQ students navigating forms of material hardship during college.

Understandings of students' experiences with material hardship have also expanded over the past decade. The prevalence of food insecurity (students lacking nutritionally adequate meals), students who do not have a place to live (i.e., homelessness), and students experiencing housing insecurity for whom financial challenges necessitate frequent moves or limit their ability to pay bills associated with housing (Goldrick-Rab et al., 2019, 2018) represent critical issues in higher education. A 2018 report from the Wisconsin Hope Lab, using a large national sample, found that 36% of the students experienced food insecurity and similarly, 36% experienced housing insecurity, and 9% of those students experienced homelessness (Goldrick-Rab et al., 2018). Only a year later, already high numbers increased further. In the Hope Lab's 2019 study, 45% of students reported food insecurity within 30 days of completing the survey, 56% reported housing

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insecurity, and 17% reported experiencing homelessness (Goldrick-Rab et al., 2019). These results align with other studies of postsecondary food (e.g., Bruening et al., 2017) and housing insecurity or homelessness (e.g., Bowers & O'Neill, 2019; Mulrenan et al., 2020; Wright et al., 2020) that also indicate high rates of basic needs insecurity experienced by students across both four-year (e.g., Allen & Alleman, 2019; Silva et al., 2017) and two-year (e.g., Gupton, 2017; Vasquez et al., 2019) institutions.

The systemic and structural realities for many students with historically minoritized identities further exacerbate concerns of food and housing insecurity for many of these student populations. A growing body of scholarship begins shaping understandings of the realities of material hardship experienced by historically minoritized students. Regan's (2020) systematic review of literature examining collegiate food insecurity, concluded that "already disadvantaged demographic groups ... are more likely to experience food insecurity" (p. 9). For example, Vasquez et al. (2019) provided insight about students' lived experiences including the strategies used by men of Color at community colleges for prioritizing during difficult financial decisions that require choosing between necessities (e.g., food, shelter, gas). Phillips et al. (2018) found that students who are not cisgender were more likely to experience food insecurity than their cisgender peers. Several single institution studies about material hardship during college found that students with LGBTQ students were overrepresented among students experiencing both homelessness and food insecurity (Smith & Knechtel, 2020; Willis, 2019). In a national study of food and housing insecurity, Goldrick-Rab et al. (2018) also found that "homosexual [sic]" and bisexual students experienced higher rates of food and housing insecurity than their heterosexual peers. Despite these recurrent trends, no quantitative studies have focused specifically on better understanding LGBTQ students' experiences with forms of material hardship during college.

Study Purpose and Language Clarification

At its core, this research study is an exploratory examination of college students' material hardships considering sexual and gender identity. In responding to the call from Renn (2010) for studying the intersection of sexual identity with the critical higher education issues, three research questions guide this paper:

1. What is the prevalence of material hardships amongst LGBTQ students at research universities?
2. What is the relationship between students' sexual identity and experiencing material hardship while attending a research university?
3. What is the relationship between students' gender identity and experiencing material hardship while attending a research university?

Of note, this paper uses the acronym LGBTQ (i.e., lesbian, gay, bisexual, transgender, questioning, queer) when specifically referencing this study. This acronym is inclusive of the sexual and gender identity categories represented within the data. References to prior scholarship retain the authors' acronyms or language use.

Review of Literature

Studies examining the intersection of LGBTQ students and their socioeconomic status or experiences remain limited. When discussions related to financial hardships appear in studies of LGBTQ students, economic-based topics emerge from participants' narratives or are acknowledged tangentially and remain in the periphery of the work (e.g., Cisneros, 2018; Goode-Cross

& Good, 2009). Due to the limited availability of directly related scholarship, this review of literature situates the present study in the context of several related literatures. We integrated the knowledge and ideas that situated this study and provided the foundations for our exploration of LGBTQ students' material hardship at research universities.

Income and Material Hardship

Governmental and scholarly initiatives have focused on providing clear definitions of poverty in the United States. Annually, the United States Department of Health and Human Services publishes guidelines for determining the federal poverty level based on the amount of income and number of people in a household. This standard metric for determining poverty levels represents one way of operationalizing income-poverty and is used for government programs and in some studies (e.g., Williams Institute, 2019). Other scholars (e.g., Beverly, 2001; Gershoff et al., 2007; Iceland & Bauman, 2007), however, acknowledge the importance of considering material hardship more broadly than the exclusionary focus on current income.

Material hardship, or “the inadequate consumption of very basic goods and services such as food, housing, clothing” (Beverly, 2001, p. 24) provides a more effective means of identifying those experiencing insecurity and provides more direct opportunities for informing interventions, programs, and policies for supporting individuals with material hardships (Beverly, 2001). An additional important distinction between the measures is that material hardship acknowledges short-term financial limitations while measures of poverty more effectively capture longer-term income shortages (Iceland & Bauman, 2007).

We support these conceptions of material hardships; however, within the literature review we provide information regarding both income and material hardships in the sections below due to the limited nature of existing data specifically on material hardships of people in the LGBTQ community.

Material Hardship and Income in United States LGBTQ Communities. Nationally, the Williams Institute (2019) found that LGBT people in the United States has higher prevalence for four negative socioeconomic indicators. When compared to non-LGBT people, LGBT people are more frequently unemployed, underinsured, food insecure, and have income of less than \$24,000. Using data from a national Gallup survey, the Williams Institute found that 15% of non-LGBT respondents were food insecure while 27% of LGBT respondents identified as food insecure—nearly double the amount of LGBT people reported experiencing food insecurity.

In LGBTQ communities, homelessness also represents an additional risk factor of suicidality (Ream & Peters, 2021). Further disaggregating, within the LGBTQ community, individuals' multiple identities have salient influences in studies of material hardship. Schmitz and Woodell's (2018) qualitative study of LGBTQ homeless youth found that religion and spirituality served as sources of resilience for participants in their study. In a study of food insecurity for adult women, Patterson et al. (2020) found that lesbian and bisexual women reported higher levels of all four measures of food insecurity when compared to heterosexual women; of note, they also acknowledged that bisexual women experienced a higher percentage of food insecurity than lesbian women. At the intersection of sexual orientation and disability, Albelda et al. (2009) found higher poverty rates for people who are also disabled. Unfortunately, additional scholarship that disaggregates experiences of material hardship amongst LGBTQ people remains absent.

Experiences of transgender people also highlight substantial economic disparities and barriers. In 2015, The National Center for Transgender Equality conducted the largest transgender study in the United States with nearly 30,000 participants (Grant et al., 2016). They found differences in self-reported poverty based on sexual orientation and race with people of Color and bisexual or pansexual individuals having higher prevalence of poverty when compared to the sample overall and United States overall poverty levels. More than 25% of respondents also avoided medical care because of cost in the previous year (Grant et al., 2016). Levels of poverty and economic hardship were even higher for transgender people who also have a disability.

Income and Material Hardship for College Students. Considering financial conditions for college students and their basic needs looks different in many ways than considering material hardship for the general population outside of college. Burgeoning research on the topics of housing and food insecurity during college represent the most consistent focus for understanding students' material hardships. The Wisconsin HOPE Lab (e.g., Goldrick-Rab et al., 2018) remains one of the largest producers of studies about college students' basic needs insecurity.

Extant research on food and housing insecurity continually reaffirms negative relationships with experiencing these forms of material hardship and multiple student outcomes. In an analysis of research on food insecurity, Regan (2020) analyzed and detailed the breadth of scholarship that found direct relationships between food insecurity and students' academic success (e.g., lower GPAs, dropping classes, missing classes) as well as with students' mental and physical health (e.g., depression, anxiety, lower self-esteem, poor nutrition). The expanding prevalence of this work and the replication of findings across contexts and demographic characteristics highlights the imperative of expanding knowledge about students' material hardships in college.

Income and Material Hardship for LGBTQ College Students. The limited research that acknowledges aspects of material hardship for LGBTQ students exists as barely more than a passing note among a cascade of other data and demographic discussions in large national studies. Most prominently, Goldrick-Rab et al.'s (2018) study with the Wisconsin HOPE lab was the largest national survey of college students' basic needs insecurity. In their 2017 administration, they expanded their demographic categories including the following sexual orientation options: "heterosexual," "homosexual," "bisexual," and "none." Their self-described category of gender included the options of "male," "female," and "nonbinary." As the first study, to our knowledge, to include expanded gender and sexual orientation variables, we acknowledge the progress associated with more expansive options; we also, acknowledge the limited and oppressive nature of the provided identity categories. LGBTQ students experienced higher rates of basic needs insecurity than heterosexual, male or female [sic] peers (Goldrick-Rab et al., 2018). Other mentions of LGBTQ students in studies of food insecurity (e.g., Bruening et al., 2017; Hagedorn et al., 2019; Haskett et al., 2020) and housing insecurity or homelessness (e.g., Hallett & Crutchfield, 2018; Smith & Knechtel, 2020) do not devote substantive discussion to students' experiences by sexual orientation or gender identity.

Beyond food and housing insecurity, extremely limited scholarship examines other aspects of LGBTQ students who come from low-income backgrounds or experience material hardships. Gonzales (2019) interviewed 16 low-income, first-generation, sexual minority college students. Her participants described feeling less involved in campus and unable to participate in academic or social activities at the same levels as peers without financial concerns. The participants also described negative influences on their well-being including additional stress and a lack of sense of belonging even within LGBTQ settings which they described as "highly classed" (Gonzales, p. 54). Gonzales' study did not specifically address other aspects of material hardship but instead

highlighted some of the many ways social class created additional barriers for the low-income LGBTQ students in her study.

Despite the limited research about material hardships for LGBTQ students, institutions demonstrate awareness of this problem. Many institutions (e.g., Kent State, University of Oregon, University of California Berkeley, Indiana University) now offer distinct emergency funds for supporting LGBTQ students. Much like variations with institutional emergency funds, LGBTQ emergency funds also differ in purpose and scope. Indiana University, for example, offers up to \$3,000 per semester for no more than two semesters. They offer this funding for LGBTQ students who “have been cut off from financial support from the [students’] family because [the student] revealed to them a sexual orientation or gender identity of which they disapprove” (Indiana University, 2021, para. 3). Conversely, the University of Utah’s fund focused exclusively on one-time emergency costs and offers an annual scholarship of no more than \$300 (University of Utah, 2023, para. 3). The presence of these and other LGBTQ-specific funds demonstrates the growing institutional awareness of unique material hardships and financial challenges facing LGBTQ students, even though research justifying this helpful policy intervention still lags behind practitioners’ awareness of this important student need.

Contextualizing Research Universities

Research universities provide distinct and important contexts for considering material hardships for students. Research universities provide students with access to additional opportunities such as participation in high impact educational practices like undergraduate research which is more prevalent at research universities (National Survey of Student Engagement (NSSE), 2011). Participation in these high impact practices support multiple positive outcomes including: students’ learning (Kilgo et al., 2015), sense of belonging (Ribera et al., 2017), and six-year degree completion (McDaniel & Van Jura, 2020). Understanding LGBTQ students’ experiences at research institutions presents an opportunity for learning about a substantial portion of students at these institutions. Using data from four national surveys of students at research institutions, Greathouse et al. (2018) found that across datasets, the percentage of LGBTQ students ranged from 7% to 13%. When analyzing students’ descriptions of academic impediments, only 7% of heterosexual or cisgender students reported finances as an impediment; conversely, LGBTQ students more frequently reported financial concerns ranging from queer-spectrum students (12%) to trans-spectrum students (15%). The present study makes progress toward further exploring material hardship experienced by LGBTQ students at research universities.

Study Materials and Methods

Data and Sample

The present study utilized 2016 data from the Student Experience in the Research University (SERU) survey. SERU is a multi-institutional study of college students’ experience at research universities. The larger SERU research program comprises 23 institutions, however, institutions can opt to participate in select elements and modules of the study. Thus, based on the variables of interest and research questions for this study, data was collected from 15 research institutions that varied regarding institutional characteristics, such as size, geographic location, and profile. All institutions were public universities except one institution. There was a 14% average response rate collectively for all institutions.

For the sample, a review for missing data revealed most of the included variables comprised 2% or less missing data. Considering the large participant sample, the researchers employed

listwise deletion to attend to missingness in the analysis. The final analytic sample included 72,225 students from the institutional sample.

Variables and Measures

Based on the conceptual foundation, we identified three variables of interest that represent material hardship. Preliminary tests pertaining to the appropriateness of the data for exploratory factor analysis, e.g., Kaiser–Meyer–Olkin test of sampling adequacy and Bartlett’s test of sphericity (Tucker & LaFleur, 1991), showed significant results and confirmed the measure was appropriate for factor analysis. The subsequent factor analysis demonstrated that the three items loaded to a single factor (0.80 or higher) and were relatively correlated.

Constructed from the preliminary analyses, the dependent variable was a 3-item measure for material hardship ($\alpha = .80$). Items asked students how frequently they:

1. skipped/cut a meal because there wasn’t enough money for food
2. worried about their own debt and financial circumstances
3. cut down on personal or recreational spending

The independent variable for the first research question represented participants’ sexual identity, including gay or lesbian, bisexual, queer, and questioning. The independent variable for the second research question characterized gender identification, including man, woman, trans (i.e., trans man/trans woman), gender queer, and gender nonconforming.

The authors included a host of control variables representing background characteristics, institutional variables, and students’ college experiences. Refer to [Table 1](#) for a description and descriptive statistics for the variables. For background characteristics, the analysis included control variables, such as students’ race and self-reported ability status (i.e., having a physical or learning disability). The analysis also included variables representing institutional size, racial diversity (measured by the percentage of the undergraduate student population that is White) and institutional social class diversity (measured by the percentage of the undergraduate population that is Pell-eligible).

Consistent with studies focusing on college impact and the associated literature (see Mayhew et al., 2016; Pascarella & Terenzini, 2005), the authors incorporated factors associated with the college environment that were pertinent to the study and informed by the theoretical foundation including: academic level (e.g., sophomore, senior), students’ work experiences and academic major. Research has also suggested spirituality is a pertinent factor when examining material hardships (see Lindsey et al., 2000; Toolis & Hammack, 2015). Thus, the researchers included a control variable for spirituality.

An important aspect of this study focused on students’ affordability and ability to pay for college. Grounded in prior literature about affordability (see Baum, 2006; Cabrera et al., 1990; Perna & Li, 2006), authors incorporated several control variables embodying affordability and perceptions about the ability to pay for college. The analysis included a variable that represented students’ self-reported social class (i.e., low, mid or high). The models also incorporated a variable pertaining to Pell grant receipt. That item asked respondents if they have ever received a Pell grant (1 = yes, 0 = no). The final variable epitomized students’ perceptions about their ability to pay for college. This measure was a mean-based composite scale ($\alpha = .87$) comprising two items that asked participants to indicate their concern with paying for their undergraduate education and their concern with their accumulated debt. It is worth noting, the researchers also

Table 1

Description of Ability to Pay (N=72,225)

Variables	Operational Definition	Mean	Std. Dev.	Min.	Max.
Ability to Pay					
<u>Social Class</u>					
Low Income, Working Class or Poor	1=Yes, 0=No	0.24	0.42	0	1
Middle Class		0.41	0.49	0	1
<u>Pell Status</u>					
Pell Recipient	1=Yes, 0=No	0.29	0.45	0	1
<u>Affordability</u>					
Affordability Scale	Standardized, mean-based scale measuring affordability ($\alpha = .84$)	0.00	0.93	-1.17	1.4
Additional Variables					
Gay or Lesbian	1=Yes, 0=No	0.03	0.16	0	1
Bisexual	1=Yes, 0=No	0.05	0.21	0	1
Queer	1=Yes, 0=No	0.01	0.11	0	1
Questioning	1=Yes, 0=No	0.01	0.11	0	1
Race (is a student of color)	1=Yes, 0=No	0.36	0.48	0	1
Disability (has a physical or learning disability)	1=Yes, 0=No	0.08	0.27	0	1
Gender (woman)	1=Yes, 0=No	0.62	0.48	0	1
Gender (trans man, trans woman)	1=Yes, 0=No	0.002	0.04	0	1
Gender (gender queer/gender nonconforming)	1=Yes, 0=No	0.005	0.07	0	1
Spirituality	Number of hours participating in spiritual activities	1.55	0.96	1	8
Parents Education (one or both parents attended any college)	1=Yes, 0=No	0.88	0.32	0	1
Institutional Size	Institutional Size	31,330	9,423	16,331	50,745
Institutional Racial Diversity	Percentage of undergraduate population that is White	56%	12%	39%	73%
Institutional Social Class Diversity	Percentage of undergraduate population that is Pell eligible	22%	5%	12%	31%
Academic Level	1=Freshman, 4=Senior	2.89	1.07	1	4
Work (on campus)	Number of hours working	3.85	9.54	0	1500
Work (off campus)	Number of hours working	5.22	10.93	0	168
Residential Living (lives on campus)	1=Yes, 0=No	0.29	0.46	0	1
Major: STEM	1=Yes, 0=No	0.27	0.44	0	1
Major: Humanities/Social Sciences	1=Yes, 0=No	0.38	0.48	0	1
Major: Other Professional Majors (e.g. business, education)	1=Yes, 0=No	0.33	0.47	0	1

considered housing insecurity as an outcome variable. The sample included a very small number of students who were housing insecure. As a complementary step, the researchers also conducted preliminary analyses which revealed no changes in the final analysis.

Analysis

Consistent with Astin (1993) I-E-O model and Pascarella (1985), the authors focused on the important variables for doing research on college impact. These epitomized variables that represented inputs (i.e., variables pertaining to background and precollege) and environment (i.e., variables pertaining to college experiences and institutional context). Following recommendations from Dugan and Yurman (2011), we began by disaggregating the data based upon students' sexual identities to examine the unique experiences of students who hold different historically minoritized sexual identities without assuming commonality across all LGBTQ students; these analyses did not identify significant differences amongst lesbian and gay, bisexual, or queer students.

The researchers utilized ordinary least squares (OLS) as an analytical tool. The authors employed analytic tools and techniques to test for multicollinearity and did not find any significant issues affecting the study. Prior to analysis, the researchers standardized all continuous variables.

When studying college students and grouped data, there could be an issue regarding clustering or nesting that might affect the results and interpretation of data (Raudenbush & Bryk, 2001). Researchers have often utilized multilevel modeling (MLM) or hierarchical linear modeling (HLM) to address this potential issue. However, research has suggested when examining a smaller number of aggregates or group level data (i.e., colleges and universities) results may not yield adequate statistical power for between group comparisons (Ethington, 1997; Loes et al., 2015; Raudenbush & Bryk, 2001). Considering the limited institutional sample, the researchers utilized the clustering command (SVY) in the statistical program STATA (Version 12). This statistical tool adjusts standard errors to account for clustering effects (Groves et al., 2004; Salisbury et al., 2012). Regarding the assumptions for linear regression, the researchers conducted conventional tests for goodness of fit and normality (e.g., histograms, normal probability plot), and no significant issues were found.

The researchers conducted analyses for each sexual and gender identification for a better comparison and interpretation of results across the identities. The analytical protocol consisted of seven models. Models I–IV investigated the relationship between disaggregated sexual identity (e.g., gay, bisexual) and material hardships, while controlling for precollege and background characteristics. Models V–VII explored the relationship between disaggregated gender identity (e.g., woman, trans) and material hardships.

Results

The analysis revealed significant results for the majority of the disaggregated sexual identities when examining students' material hardships. Refer to Table 2 for the regression estimates. The analysis demonstrated that, on average and holding all other covariates constant, being a student who identifies as gay or lesbian was positively associated with material hardships ($\beta = 0.06$, $p < .01$). There was a stronger positive relationship for bisexual students ($\beta = 0.13$, $p < .001$) and queer students ($\beta = 0.11$, $p < .001$). The findings indicated the strongest relationships between the independent and outcome variables, i.e., effect size (see Kelley & Preacher, 2012), for bisexual and queer students, with a weaker relationship for gay students. The researchers did not observe a statistically significant relationship for students who identify as questioning.

Table 2

Regression Estimates, Sexual Orientation

Variables	I	II	III	IV
Gay	0.06** (0.01)			
Bisexual		0.13*** (0.01)		
Queer			0.11*** (0.02)	
Questioning				0.04 (0.02)
Race	-0.02* (0.01)	-0.02* (0.01)	-0.02* (0.01)	-0.02* (0.01)
Disability	0.17*** (0.01)	0.17*** (0.01)	0.17*** (0.01)	0.17*** (0.01)
Gender: Woman	0.04*** (0.01)	0.03** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Gender: Trans	0.08 (0.07)	0.06 (0.07)	0.06 (0.07)	0.09 (0.07)
Gender: Nonconforming	0.17*** (0.04)	0.14** (0.04)	0.13** (0.04)	0.17*** (0.04)
Spirituality	0.01* (0.002)	0.01** (0.002)	0.01* (0.002)	0.01* (0.002)
Parents Education	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Social Class: Low	0.31*** (0.02)	0.30*** (0.02)	0.31*** (0.02)	0.31*** (0.02)
Social Class: Mid	0.08*** (0.01)	0.08*** (0.01)	0.08*** (0.01)	0.08*** (0.01)
Pell Grant Recipient	0.10*** (0.01)	0.10*** (0.01)	0.10*** (0.01)	0.10*** (0.01)
Affordability	0.46*** (0.004)	0.46*** (0.004)	0.46*** (0.004)	0.46*** (0.004)
Institutional Size	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)
Inst. Racial Diversity	-0.003 (0.02)	-0.003 (0.02)	-0.003 (0.02)	-0.003 (0.02)
Inst. Social Class Diversity	-0.004 (0.02)	-0.005 (0.02)	-0.005 (0.02)	-0.005 (0.02)
Academic Level	0.001	0.001	0.001	0.001

(continued)

Table 2
(Continued)

Variables	I	II	III	IV
	(0.01)	(0.01)	(0.01)	(0.01)
Work: On Campus	0.02*	0.03*	0.03*	0.03*
	(0.01)	(0.01)	(0.01)	(0.01)
Work: Off Campus	0.03***	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)
Residential Living	-0.12***	-0.12***	-0.12***	-0.12***
	(0.02)	(0.02)	(0.02)	(0.02)
Major: STEM	0.06	0.05	0.06	0.06
	(0.05)	(0.05)	(0.05)	(0.05)
Major: Humanities/Social Sciences	0.11*	0.11*	0.11*	0.11*
	(0.04)	(0.04)	(0.04)	(0.04)
Major: Other Professional	0.05	0.05	0.05	0.05
	(0.04)	(0.04)	(0.04)	(0.04)
Constant	-0.22***	-0.21***	-0.22***	-0.21***
	(0.04)	(0.04)	(0.04)	(0.04)
R-squared	0.42	0.42	0.42	0.42

Note. Standard errors in parentheses
 ***p<0.001, **p<0.01, *p<0.05

Regarding model fit, the R^2 (or proportion of variance explained) was approximately 42% for all models.

When exploring the association between students’ gender identification and their material hardships, the results yielded mixed results. The findings revealed, on average and holding all other covariates constant, a statistically significant (but modest) positive relationship for students who identify as women ($\beta = 0.03, p < .001$). There were no observable statistically significant relationships when examining the other gender identities. Refer to Table 3 for the regression estimates.

As might be expected, in addition to the independent variables of interest, control variables representing economic or financial characteristics had positive and statistically significant relationships with material hardships. For instance, results showed that gay or lesbian students who were Pell grant recipients ($\beta = 0.10, p < .001$) and bisexual students who self-identify with a low social class ($\beta = 0.30, p < .001$) experienced higher levels of material hardships. Similarly, the affordability measure for all gender identities had positive relationships ($\beta = 0.46, p < .001$) with material hardships.

Notably, the findings also showed positive relationships between material hardship and additional control variables. When examining sexual identity, several variables were consistent predictors of material hardships for all four sexual identities, race, ability status, work, residential

Table 3

Regression Estimates, Gender Identification

Variables	V	VI	VII
Gender: Woman	0.03*** (0.01)		
Gender: Trans		-0.003 (0.07)	
Gender: Nonconforming			0.05 (0.04)
Gay	0.07*** (0.02)	0.06** (0.02)	0.06** (0.02)
Bisexual	0.14*** (0.01)	0.15*** (0.01)	0.15*** (0.01)
Queer	0.142*** (0.02)	0.142*** (0.02)	0.133*** (0.02)
Questioning	0.05* (0.02)	0.05* (0.02)	0.05* (0.02)
Race	-0.02* (0.01)	-0.02* (0.01)	-0.02* (0.01)
Disability	0.17*** (0.01)	0.17*** (0.01)	0.17*** (0.01)
Spirituality	0.01** (0.002)	0.01** (0.002)	0.01** (0.002)
Parents Education	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Social Class: Low	0.30*** (0.02)	0.30*** (0.02)	0.30*** (0.02)
Social Class: Mid	0.08*** (0.01)	0.08*** (0.01)	0.08*** (0.01)
Pell Grant Recipient	0.10*** (0.01)	0.10*** (0.01)	0.10*** (0.01)
Affordability	0.46*** (0.004)	0.46*** (0.004)	0.46*** (0.004)
Institutional Size	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)
Inst. Racial Diversity	-0.002 (0.02)	-0.002 (0.02)	-0.002 (0.02)
Inst. Social Class Diversity	-0.005 (0.02)	-0.004 (0.02)	-0.004 (0.02)
Academic Level	0.001	0.001	0.001

(continued)

Table 3
(Continued)

Variables	V	VI	VII
	(0.01)	(0.01)	(0.01)
Work: On Campus	0.03*	0.03*	0.03*
	(0.01)	(0.01)	(0.01)
Work: Off Campus	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)
Residential Living	-0.12***	-0.12***	-0.12***
	(0.02)	(0.02)	(0.02)
Major: STEM	0.05	0.05	0.05
	(0.05)	(0.05)	(0.05)
Major: Humanities/Social Sciences	0.11*	0.11*	0.11*
	(0.04)	(0.04)	(0.04)
Major: Other Professional	0.05	0.05	0.05
	(0.04)	(0.04)	(0.04)
Constant	-0.22***	-0.20***	-0.20***
	(0.04)	(0.04)	(0.04)
R-squared	0.42	0.42	0.42

Note. Standard errors in parentheses
 ***p<0.001, **p<0.01, * p<0.05

living and having a STEM major. Consistent with prior research about spirituality (see Lindsey et al., 2000; Toolis & Hammack, 2015), results showed a positive and statistically significant relationship between students’ spirituality and material hardships and this was consistent across all sexual and gender identities.

Limitations

There are limitations associated with the present research study. First, despite the large overarching sample, the number of participants for each sexual and gender identity group was relatively small. While the aim of the study was an exploratory examination, a student sample with greater numbers of participants may produce more nuanced results. Second, considering the institutional sample (i.e., N = 15 research universities), generalizability to the larger population is limited. Third, the scale representing material hardships consisted of three items. For example, the item representing “personal and recreational spending” may elicit different perspectives in participants. Future examinations of material hardship should include clear language that assesses material hardship. For a more complete investigation of material hardships, researchers might consider other comprehensive scales that can better epitomize the breadth and scope of hardships that students face during college.

Discussion

Considering the dearth of literature about material hardships and LBGTQ identity, the aim for this study was an exploratory examination of the topic. The results of this study expand the

knowledge about LGBTQ college students' material hardship at research universities. In alignment with previous studies (Goldrick-Rab et al., 2018; Smith & Knechtel, 2020; Willis, 2019), having an LGBTQ, trans, or gender-nonconforming identity statistically significantly predicted experiencing material hardship across all five models. These relationships persisted when controlling for pre-college characteristics (e.g., parent education, social class, Pell recipient) commonly used in describing students' material status. Including college experiences (e.g., academic level, residential living, student employment) also did not account for the relationships between LGBTQ students and material hardship.

In addition to the main variables of interest, the analyses demonstrated statistically significant relationships between a host of other covariates and material hardships. As expected, the covariates in the study representing financial and economic factors (i.e., social class, affordability) had positive relationships with material hardships. To provide new knowledge that supplements our current understanding of this matter, the researchers of this study argue qualitative research that offer deep interrogations of the experiences of students with material hardships can provide statistically significant contributions to the scholarship.

The results also revealed numerous noteworthy findings pertaining to nonfinancial or noneconomic factors. Consistent with prior literature (see Lindsey et al., 2000; Toolis & Hammack, 2015), spirituality was a notable predictor of material hardships for college students in the present study. Similarly, additional research must be done to interrogate the specific reasons why spirituality might predict financial, food and housing insecurity in college students. In addition, ability status was a statistically significant predictor of material hardships in the study. There is a dearth of prior literature that has attended to the relationship between ability status and financial, food and housing insecurity. This line of inquiry is critical for higher education.

Implications for Research and Practice

Future research should continue the practice of conditional effects analysis; the lack of significant findings between sexual identities in the present study does not align with Goldrick-Rab et al.'s (2018) result that bisexual students were more likely than their peers with other minoritized sexual identities (i.e., gay, lesbian, other) to experience material hardship. Continued use of large datasets with a breadth of sexual and gender identity variables remains important. The observed relationship between material hardship for gender-nonconforming students, but not transgender students, represents a necessary area for further research toward understanding these differences. In addition, qualitative studies focused on the unique experiences of LGBTQ students who experience material hardship will enhance the depth of understanding these students' realities. Additional discussion and implications will be provided in a forthcoming manuscript.

Researchers ought to also continue to investigate the relationship between other social identities and material hardships. For instance, considering the statistically significant finding regarding the relationship between ability status and material hardships in the present study, future research should explore how ability intersects with other social identities, such as gender, sexual and racial identity. Further, research may consider the environmental influences that might be influential factors on the relationship between identity and material hardships. Recognizing this study focused on research universities, examining varying institutional contexts might reveal the distinct impact of college environments on how gender and sexual identity is associated with material hardships.

The growing presence of LGBTQ emergency funds demonstrates awareness and tangible action by institutional agents toward supporting LGBTQ students' unique material hardships. Our results further indicate the importance of continuing this intervention strategy; however, future research must examine the efficacy of these emergency funds. Limited scholarship connects these funds with supporting students' persistence (Geckeler et al., 2018) but studies using more advanced methodologies (Evans et al., 2019, 2020) actually found no statistically significant relationship with students receiving emergency funds and their completion of persistence levels. Instead, Evans et al., found significant relationships with emergency aid only in combination with a comprehensive support program (e.g., mentoring, referrals, emergency funds). Although none of these studies specifically examined LGBTQ students, or students at research universities, expanding support for LGBTQ students experiencing material hardships beyond just writing a check holds value. Our results demonstrate differential experiences of material hardship for students within the LGBTQ population at research institutions, and those designing interventions against financial instability should design initiatives specifically focused on supporting these students' unique needs and financial situations. Additional qualitative research should seek better understanding about the contexts and experiences that influence the within-group disparities of material hardship for LGBTQ students at research universities.

Disclosure statement

No potential conflict of interest was reported by the authors.

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