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The Role of Openness to Experience and Sexual Identity Formation in LGB Individuals: Implications for Mental Health

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Openness to experience has been shown to have a positive impact on mental health in the general population, but there is a dearth of information both about why this is the case and on LGB populations in this area. The present article explores the relationship between openness to experience, LGB identity development, and mental health. The results revealed a full mediation model, where the positive impact of openness to experience on mental health is fully mediated by positive LGB identity development. Limitations and implications are discussed.

KEYWORDS homosexuality, bisexuality, sexual orientation, openness to experience, personality traits, identity formation

The relationship between personality and identity in general is not well understood. Personality—the consistent behavior patterns and interpersonal processes originating within an individual (Burger, 2004)—has been related to qualities considered innate to an individual, such as temperament, and forms the basis of how individuals might behave in different situations (Ryckman, 2004). These traits are considered to be stable across the lifespan (McCrae & Costa, 1982). Identity is a crucial part of development typically thought of as the way an individual sees himself or herself, both independently and in relation to others, and is composed of multiple turning points of further differentiation across the lifespan (Erikson, 1968). In contrast to personality, identity has been shown to develop across the

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lifespan, and adolescence and early adulthood are generally considered crucial developmental periods (Erikson, 1959). An individual may develop not only an overall identity as a person but also multiple social identities in regard to one's culture, ethnicity, class, religion, and sexuality (Amiot, de la Sablonniere, Terry, & Smith, 2007; Berman, Schwartz, Kurtines, & Berman, 2001).

As a stable, internal, and fundamental part of each individual's experience of him or herself, personality (in conjunction with other internal and external factors) serves as the context in which identity develops. It seems likely that certain personality traits impact how identity will develop; some personality traits may facilitate or hinder the development of individual identity factors. In the general population, both personality factors and identity have been shown to impact mental health (Lidy & Kahn, 2006; Ozer & Benet-Martinez, 2006; Rosario, Scrimshaw, & Hunter, 2010). The purpose of this study is to elucidate what impact a single broad personality trait—openness to experience—might have on identity, as well as on mental health factors, in lesbian, gay, and bisexual (LGB) individuals.

PERSONALITY: OPENNESS TO EXPERIENCE

Psychologists commonly define personality as the consistent behavior patterns and interpersonal processes originating within an individual (Burger, 2004). In recent years, the trait approach to personality has become more prevalent, and the description of "normal" personality is typically made in terms of an individual's profile across five traits: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Costa & McCrae, 1988). These "big five" traits have been observed to be stable, as they are at least partially genetically determined, and are expected to be fairly consistent across the lifespan (McCrae, 1993). Personality traits have been shown to have an influence on mental health (Krueger, Caspi, Moffitt, Silva, & McGee, 1996; Lidy & Kahn, 2006; Ozer & Benet-Martinez, 2006).

Openness to experience, one of the big five personality traits, is the quality by which people are curious, have a preference for variety, and are attentive to both positive and negative internal emotions (Williams, Rau, Cribbet, & Gunn, 2009). Costa and McCrae (1992) described openness to experience as the recurrent need to enlarge and examine experience. It has been correlated with creativity and divergent thinking (McCrae & Ingraham, 1987), a willingness to express dissenting opinions (Packer, 2010), and lower automatic prejudice (Flynn, 2005) and outgroup-directed bias (Lecci and Johnson, 2008). Openness to experience has also been shown to be related to positive health outcomes (Ironson, O'Cleirigh, Weiss, Schneiderman, & Costa, 2008), lower sympathetic reactivity to stress, and even an increase in positive affect in the face of a stressor (Williams et al., 2009). Finally,

openness to experience has been positively correlated with ratings of general identity exploration—those who are higher in openness to experience also tend to report more past and present exploration in relation to their identity (Tesch & Cameron, 1987).

LGB IDENTITY

Identity formation is critical in the developmental process for any individual (Halpin & Allen, 2004). However, it may be particularly complicated or more difficult for an LGB individual because of the additional social pressures he or she faces. Forming one's sexual identity and integrating it into one's overall sense of who he or she is can be particularly challenging for LGB individuals. Social pressures unique to minority groups may impact identity development, and LGB individuals have been shown to be subject to minority stress in the form of internalized homophobia/biphobia, expectations of discrimination, and actual experiences of discrimination and violence (Meyer, 1995). James Marcia, who revisited and extended the work of Erik Erikson, believed that it is especially pertinent to study the identity development of individuals belonging to unique populations (2002). Lesbian, gay, and bisexual individuals would certainly be characterized as such, considering they often face unique struggles during identity development (Kimmel, Rose, & David, 2006) and display less traditional patterns of development in adolescence (Evans & D'Augelli, 1996).

A number of models of sexual minority identity development have been proposed. The two predominant models for examining LGB identity development are the stage models (e.g., Cass, 1984) and the dimensions perspective (e.g., Mohr & Fassinger, 2000). Stage models characterize identity development as a linear progression through a number of stages, and as one progresses through the stages, certain challenges are brought to the fore while others are left behind (e.g., Cass, 1984; Troiden, 1989). Cass's stage model, the most prominent and arguably the most well-known stage model, depicts the individual as having six stages to progress through—identity confusion, comparison, tolerance, acceptance, pride, and synthesis (Cass, 1984). Progression through the stages is characterized by initially questioning assumed heterosexuality, feeling alienated from heterosexual peers, seeking out LGB peers to emulate, integrating oneself into and eventually becoming identified with the LGB community, and finally, accepting the new LGB identity in the context of the rest of the world. There are multiple criticisms of the stage model. First, stage models make the assumption that identity moves in a linear, developmental fashion (Yarhouse, 2001). This linear, one-size-fits-all model does not account for contextual variations, such as historical and cultural or contextual factors. Cass assumes that individuals' identity formation process occurs in a heterosexist culture (Adams & Phillips,

2009), and although LGB individuals in many places still do not have some basic rights that heterosexuals have, important strides toward the acceptance of gay individuals in the greater culture have been made since Cass's model was conceptualized. Additionally, a child growing up within a context that places valuative judgments on sexuality is likely to have a different identity trajectory compared to a child forming his identity in a less valuative context (Yarhouse, 2001). This suggests that Cass's model may need to be updated to include historical, cultural, geographical, and contextual considerations.

The dimensions perspective, rather than combining many different factors into overarching stages, examines discrete aspects of the LGB individual's current experience, such as homonegativity and need for acceptance, among many others (e.g., Mohr & Fassinger, 2000). However, although there is very little literature that directly criticizes the dimensions perspective, there are some obvious shortcomings to looking at identity in this way. It would be impossible to measure every dimension that is relevant to LGB identity, and there is danger that studies utilizing this perspective may miss some important dimensions that impact LGB identity or include irrelevant aspects. Finally, the dimensions perspective has slightly less empirical validation than the stage models do. More empirical study on this perspective should be conducted before researchers adopt and rely on this method fully.

It should be noted that although models of sexual minority identity development have been proposed and studied, less has been investigated specifically in terms of bisexual identity development. These models may be inadequate for describing the experience of bisexual individuals, as bisexuals may experience more identity confusion (Balsam & Mohr, 2007; Floyd & Stein 2002), and stigma relating to identifying specifically as bisexual may influence identity development (Fox, 2003). Additionally, there may be differences between gay men and lesbians, as gender has been found to be a discriminating factor in terms of predicting LGB identity development course (Rosario, Schrimshaw, & Hunter, 2008). However, much of the research on sexual minority identity development has looked at LGB individuals together. While LGB individuals develop identities particular to their orientation and gender, they also likely develop a broader "LGB" identity under the commonality of being attracted to and having sexual experiences with same-sex partners (Mohr & Kendra, 2011). Deviation from the heterosexual "norm" is the common identity experience that all LGB individuals share, so they have often been studied under one umbrella.

As a result of these uncertainties in the literature, there is no clear consensus as to whether the stage models or dimensions perspective best characterizes the experience of an LGB individual's identity formation process. However, regardless of the way the model presents or defines the process, there are three characteristics that are typically included and that tend to form the foundation of LGB identity theory. These include self-definition (discovering and defining oneself as an LGB individual),

self-acceptance (accepting oneself as an LGB individual), and disclosure of LGB identity to others (commonly referred to as "coming out"; Elizur & Mintzer, 2001). In the stage models, these three characteristics would progress together through different stages, while the dimensions perspective would examine these aspects of the individual's experience separately at any point in time.

It is also important to note that at any point in identity development, an individual is vulnerable to problems and difficulties that could interrupt the process—linear or otherwise. The idea of identity foreclosure is originally based on a concept by the same name put forth by James Marcia (e.g., 1966), who said that identity development is centered on the tasks of exploration, crisis, and commitment. An individual explores different values, ideas, and ways of being, which can cause emotional and interpersonal upheaval, and eventually—ideally—commits to or "achieves" an identity (2002). Identity foreclosure, according to Marcia, is what happens when an individual makes a commitment without full exploration or crisis. An LGB individual might choose identity foreclosure if the upheaval created by the exploration and crisis feels too frightening, overwhelming, or negative, in which case he or she may instead choose to adopt the identity expected of him or her by significant others, such as parents. This may be particularly salient in ethnic minority populations, as for these individuals multiple minority identities intersect, which creates its own set of processes. That is, according to Roccas and Brewer (2002), people who carry multiple identities typically experience four stages of identity development: intersection, dominance, compartmentalization, and merger. For example, it has been shown that Black LGB youths report less comfort with their LGB identity being known, and that Black and Latino/a LGB individuals disclosed their sexual identity to fewer others than did White LGB youth (Rosario, Schrimshaw, & Hunter, 2004). The negotiation of multiple identities can add an important layer to developing an LGB identity. In Cass's LGB identity stage model, if the individual has a positive experience at any stage—if he or she receives a positive reaction from both hetero- and homosexual others, for example—the individual's identity is strengthened, characterized by progressing smoothly through the stages (Cass, 1984). However, if it is a negative experience, the LGB identity can be devalued, identity foreclosure may be chosen, and assumed heterosexuality (the identity expected of the individual from parents and a heteronormative society in general) may be accepted in spite of the contrary evidence that began the process of exploration in the first place.

Numerous studies have shown that LGB individuals are at greater risk for a number of mental health problems, including depression, anxiety, substance abuse and dependence, suicidal behaviors, and sexual risk-taking behaviors than their heterosexual peers (Fergusson, Horwood, & Beautrais, 1999; Hatzenbuehler, McLaughlin, & Nolen-Hoekzema, 2008; Bostwick, Boyd, Hughes, & McCabe, 2010; McCabe, Bostwick, Hughes, West, & Boyd,

2010; Rhodes, McCoy, Wilkin, & Wolfson, 2009; Brooks, Lee, Newman, & Leibowitz, 2008). Rates of suicide ideation and attempts in the adolescent LGB population have been reported as much higher than adolescent norms in the general community (Zhao, Montoro, Igartua, & Thomb, 2010). The experience of an LGB individual is complex, and as a minority group, they face multiple unique stress factors. Literature on LGB identity formation and mental health shows that those who are either further along in their identity development and/or who feel more positively about their sexual identity are also individuals who are more psychologically adjusted (Balsam & Mohr, 2007; Rosario, Schrimshaw, & Hunter, 2010). However, other research has found no such relationship (D'Augelli, 2002; Floyd and Stein, 2002). Although there is some recent evidence that factors such as social stress and lack of social support or feelings of isolation (Bradley-Engen & Teasdale, 2010; Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009) as well as internalized homonegativity/binegativity and stigma (Bockting, Coleman, Miner, Ross, & Rosser, 2008; Hatzenbuehler et al., 2009) put LGB individuals at risk for mental health problems, and that social support may be protective (Kulkin, 2006), further research is necessary to begin to understand the impact of identity development on mental health problems in LGB populations.

CURRENT STUDY

Openness to experience in particular might impact the development of identity specifically in terms of identity foreclosure. Openness to experience is thought of as a tendency to seek out or not shy away from new experiences, emotions, ideas, values, and sensations. If an individual is higher in openness to experience, he or she may be less likely to be pulled toward foreclosure, as the exploration and crisis may be experienced as less uncomfortable or frightening. In that case, identity development is less likely to be interrupted, and the process—linear or not—could continue until a well-developed identity is reached and the individual feels better about his or her sexual minority status. In fact, in one study on ego identity in (not specifically LGB) college students, openness to experience was indeed shown to have a negative relationship to foreclosure (Clancy & Dollinger, 1993). Additionally, foreclosure has been associated with less curiosity, less awareness, and a less active analysis of the self (Donovan, 1975; Read, Adams, & Dobson, 1984). It is hypothesized that the relationship between Openness to Experience and foreclosure will be even stronger for LGB individuals, as foreclosure might be a particularly tempting choice for individuals whose ultimate identity can be heavily stigmatized. If there is a strong negative relationship between openness to experience and foreclosure, that would mean that the more open you are, the more well developed your LGB identity will be.

Because no consensus has been reached in the literature regarding whether the stage model or dimensions perspective better captures the experience of the LGB individual, it seems important to use both models to examine identity development. Thus, the current study conceptualizes LGB identity from both a stage and dimensions perspective, looking at Cass's stage model (1984) together with the negative identity factor of the dimensions perspective (Mohr & Fassinger, 2000). The negative identity aspect of the dimensions perspective has to do with how the LGB individual subjectively feels about his or her sexual minority status, from denigrating it and idealizing heterosexual individuals to accepting and embracing it entirely. The present study aims to elucidate how openness to experience might influence LGB identity formation and thus, ultimately, impact mental health. It is hypothesized that openness to experience will have a positive association with identity development, and that identity, in turn, will have a positive impact on mental health. While the relationship between openness to experience and mental health has been well established in the literature for general populations (Krueger et al., 1996; Lidy & Kahn, 2006), it is hypothesized that for LGB individuals, this relationship will be mediated by more developed and more positive sexual minority identity. It should be noted that it is expected that there will be differences in identity development based on sexual orientation (specifically less developed identity for bisexual individuals), sex (specifically less developed identity for females), and ethnicity (specifically less developed identity for racial and ethnic minorities, as compared to White individuals), and these demographic characteristics will be controlled for when assessing the primary research questions.

METHOD

Participants

Participants ($N = 109$) included adults who self-identified as lesbian, gay, or bisexual and were recruited online through LGB online message boards and through a Facebook group created for the study. The mean age of participants was 30 ($SD = 7.8$). The sample was nearly evenly split by gender (male, 45.9%) and relationship status, with 48.6% indicating their status as "single" and 51.4% indicating that they were "in a significant relationship." Participants predominantly self-identified White (68.8%), followed by Asian and Pacific Islander (11.0%), Latino/a (10.1%), Black (8.3%), and Native American (1.8%). Participants were split by sexual orientation, as 40.4% self-identified as gay, 22.0% as bisexual, and 22.0% as lesbian (22.0%). Bisexual individuals were specifically targeted via message boards in order to include more bisexual individuals, as they are a population that is underrepresented in the literature (Navarro, 2010). Of the bisexual participants, 68%

were female. Participants came from diverse areas across the United States, including urban, suburban, and rural communities.

Design and Procedure

Participants were solicited to participate in an online survey in exchange for a $25 Amazon.com gift card. They were informed that participation was anonymous and voluntary—no identifying information (names, birthdates) were asked for, and they could end their participation at any point during the survey. Participants completed an approximately 1.5-hour online survey using Surveymonkey (www.surveymonkey.com, 2011). The study was approved by the Teachers College, Columbia University Institutional Review Board (IRB). Participants agreed to informed consent online using a standard IRB consent form. To participate, participants clicked "accept" at the bottom of the form prior to the beginning of the survey. Because the survey was extremely long, analyses were run to examine any demographic differences between those who completed the full study and those who did not. No significant differences were found on any demographic variable between these two groups.

Measures

Demographics

Participants were asked to indicate demographic characteristics through forced answers including biological sex (male, female), sexual orientation (lesbian, gay, bisexual), relationship status (single, in a significant relationship), and ethnicity (White, Black, Latino/a, Asian/Pacific Islander, Native American). For the purposes of the present study, participants were dichotomized into ethnic minority vs. non-minority. Participants also self-reported their age, among other demographic information not used in the present study.

Openness to Experience

NEO Personality Inventory–Revised. The NEO PI-R (Costa & McCrae, 1985a) is a 240-item measure of five distinct continuous dimensions or factors of personality including Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. These subscales have been shown to have high test-retest reliability, ranging from .86 to .91 (McCrae & Costa, 1983). Although participants completed the entire measure, the current study utilized only the Openness to Experience subscale. This subscale explores correlated stable personality aspects including active imagination, aesthetic sensitivity, attentiveness to inner feelings, preference for

variety, and intellectual curiosity. Higher scores indicate greater Openness to Experience (Costa & McCrae, 1985b). The Openness to Experience scale has been shown to have good internal consistency (α = .87; Costa & McCrae, 1985a). Alpha for the present sample on the Openness to Experience subscale was 0.91.

Identity

Lesbian, Gay, and Bisexual Identity Scale (LGBIS). The LGBIS (Mohr & Fassinger, 2000) is a 27-item measure designed to assess six continuous dimensions of lesbian, gay, and bisexual (LGB) identity that have been discussed in the clinical and theoretical literature including Internalized Homonegativity/Binegativity (α = .79), Need for Privacy (α = .81), Need for Acceptance (α = .75), Identity Confusion (α = .77), Difficult Process (α = .75), and Superiority (α = .65). These subscales have demonstrated constancy in both male and female sexual minority populations, including bisexual populations (de Oliviera, Lopes, Costa, & Nogueira, 2012). Because factor analyses indicate that Homonegativity/Binegativity, Need for Privacy, Need for Acceptance, and Difficult Process load onto a single, second-order factor, these scales are combined to create a single factor reflecting the degree of overall difficulties related sexual orientation identity (Negative Identity; Mohr & Fassinger, 2000). There are no available psychometrics on the Negative Identity factor; however, the subscales that make up this factor show good internal consistency (α ranging from .75 to .81; Mohr & Fassinger, 2000). The current investigation utilizes the computed Negative Identity subscale, where higher scores indicate greater negative identity. Alpha for the present sample on the Negative Identity subscale was 0.93.

Gay Identity Questionnaire (GIQ). The GIQ (Brady & Busse, 1994) is a brief Guttman-type measure used to identify and assess 6 progressive stages of gay identity formation, including Identity Confusion, Identity Comparison, Identity Tolerance, Identity Acceptance, Identity Pride, and Identity Synthesis. An individual's score on the GIQ classifies them directly as being in one of the six stages. Inter-item consistency scores for the GIQ have been obtained using the Kuder-Richardson formula, and psychometrics are as follows: for Stage 3, $r = 0.76$, for Stage 4, $r = 0.71$, for Stage 5, $r = 0.44$, and for Stage 6, $r = 0.78$ (psychometrics for Stages 1 and 2 were not available due to too few subjects; Brady & Busse, 1994). Although the authors of the original validation study used the language "homosexual identity" throughout their scholarly articles and termed the measure "Gay Identity Questionnaire," they state that the study included "men with same-sex thoughts, feelings, and/or behavior," which would include all sexual minority men, including bisexuals (1994, p. 6).

Identity. A Spearman rank-order correlation between the LGBIS Negative Identity Scale and the GIQ stage revealed a significant relationship ($r = -0.591$; $p < .001$). Because of this association, and to capture both a stage and dimensional representation of LGB identity development, an overall LGB identity score was computed by using the regression score of a principal components analysis of the scale scores on the LGBIS Negative Identity Scale and the GIQ. The principal components analysis yielded a single component accounting for 76.45% of the variance in LGBIS and GIQ. Because GIQ loaded onto this variable positively (0.874) and the LGBIS Negative Identity variable loaded onto it negatively (−0.874), higher scores on this identity variable indicate more well-developed identity.

Mental Health

Symptom Check List-90 Brief Symptom Inventory (BSI). Distress was measured using the SCL-90-R, Brief Symptom Inventory (Derogatis & Melisaratos, 1983), which is a multidimensional self-report inventory designed to screen for a broad range of psychological problems and symptoms of psychopathology. In this study, a 52-item brief version (General Symptom Index, GSI) was used to measure continious levels of overall psychological distress. The measure presents a list of "problems" and asks participants to rate "how much that problem has distressed or bothered you in the past 7 days, including today." The GSI has shown adequate internal consistency (.77 to .86) and good 1-week test-retest reliability (.78 to .90) (Derogatis & Melisaratos, 1983). Higher scores indicate greater distress. The theoretical range for the BSI GSI is 0–4; for the present sample, scores ranged from 0–3.11 (mean = .962; *SD* = .802). The internal consistency for the present sample was excellent ($\alpha = .976$).

Rosenberg Self-Esteem Scale (RSES). The RSES (Rosenberg, 1989) is a uni-dimensional measure of global self-esteem, where higher scores indicate greater self-esteem. Initial examination of the psychometrics indicate that the RSES is a highly reliable and consistent scale (Reproducibility = .92; Scalability =.72). The theoretical range for the RSES is 0–30; for the present sample, scores ranged from 7–30 (mean = 20.57; *SD* = 5.54). The internal consistency for the present sample was good ($\alpha = .819$).

Satisfaction with Life Scale (SWLS). The SWLS (Diener, Emmons, Larsen, & Griffin, 1985) is a brief, 5-item Likert-type scale with scores ranging from 1–7, where higher scores indicate a greater degree of life satisfaction. Scores are averaged to create a composite life satisfaction score. These five items have been shown to load onto a single factor indicating overall level of life satisfaction. Two-month test-retest correlation coefficients were $\alpha = .82$ and $\alpha = .87$, respectively. The theoretical range for the SWLS is 1–7; for the present sample, scores ranged from 1.6–7 (mean = 4.62; *SD* = 1.27). For the present sample, internal consistency was good ($\alpha = .842$).

TABLE 1 Intercorrelations of mental health variables

Measures	1	2	3
1. BSI	–		
2. RSES	− 0.63**	–	
3. SWLS	− 0.47**	0.671**	–

Note. **$p < .01$; BSI = Brief Symptom Inventory; RSES = Rosenberg Self-Esteem Scale; SWLS = Satisfaction with Life Scale.

Mental Health. An overall mental health score was computed by using the regression score of a principal components analysis of the scale scores on the BSI, RSES, and SWLS. These scales were shown to be highly correlated, making them appropriate to be combined in this manner (Table 1). The principal components analysis yielded a single component accounting for 72.85% of the variance in the three mental health measures. Because the RSES and SWLS loaded onto this variable positively (0.906 and 0.838, respectively) and BSI loaded onto it negatively (−0.815), higher scores on this mental health variable indicate generally better mental health.

RESULTS

Consistent with Baron and Kenny's (1986) recommendations for testing for mediation in a linear regression framework, an approach including a hierarchy of regressions was utilized. According to Baron and Kenny's four-regression approach, significance must be observed in each of the first three analyses (the predictor predicting the outcome and proposed mediator, and the proposed mediator predicting the outcome), and only then can the fourth regression (with both the predictor and proposed mediator predicting the outcome) be run to test for full mediation. All analyses were conducted using two steps. The first step in all analyses included demographic covariates in an attempt to control for demographic differences. Demographics included in the first step were *age* as a continuous variable along with *sex, minority status, relationship status, lesbian,* and *bisexual* as dummy coded variables so that they can be treated in a linear regression framework. No demographics demonstrated significance, with the exception of *sex, minority status*, and *bisexual* when predicting *identity*, indicating that women, ethnic minority groups, and bisexual individuals in this sample had less developed/more negative feelings about their sexual minority identities ($\beta = -0.279$, $p < .05$; $\beta = -0.201$, $p < .05$; $\beta = -.362$, $p < .01$, respectively).

The analysis included four sequential linear regression analyses. First, *mental health* (outcome) was regressed on *Openness to Experience* (predictor). Next, *mental health* (outcome) was regressed on *identity* (proposed mediator). Next, *identity* (proposed mediator) was regressed on *Openness*

TABLE 2 Hierarchical regression analysis summary for demographic variables and openness to experience predicting mental health ($N = 109$)

Block and Predictor Variable		B	SEB	β	R^2	ΔR^2
Block 1:	Age	−.001	.013	−.007	.10	
	Sex	−.041	.262	−.021		
	Minority	−.324	.214	−.151		
	Relationship	.319	.199	.160		
	Lesbian	.461	.330	.192		
	Bisexual	−.030	.260	−.015		
Block 2:	Openness to Experience	.024	.008	.300**	.17	.07

Note. $^{**}p < .01$; Openness to Experience = Openness to Experience Scale on the NEO-PI-R.

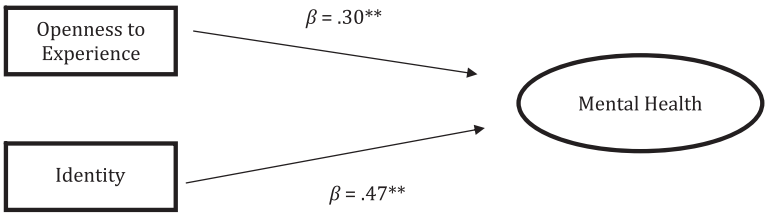
TABLE 3 Hierarchical regression analysis summary for demographic variables and identity predicting mental health ($N = 109$)

Block and Predictor Variable		B	SEB	β	R^2	ΔR^2
Block 1:	Age	−.001	.445	−.007	.10	
	Sex	−.041	.013	−.021		
	Minority	−.324	.262	−.151		
	Relationship	.319	.214	.160		
	Lesbian	.461	.199	.192		
	Bisexual	−.030	.330	−.015		
Block 2:	Identity	.473	.092	.473***	.28	.18

Note. $^{***}p < .001$; Identity = composite identity variable.

to Experience (predictor). Finally, because all the above regressions were significant, *mental health* was regressed on both *identity* and *Openness to Experience* in the same model.

Tables 2 and 3 show that both *Openness to Experience* and *identity* independently significantly predicted *mental health* ($\beta = 0.30$; $t(101) = 2.946$; $p < .01$; $\beta = 0.473$; $t(101) = 5.147$; $p < .01$, respectively), such that higher Openness to Experience and higher identity development predicted better mental health (see also Figure 1). Openness to Experience accounted for



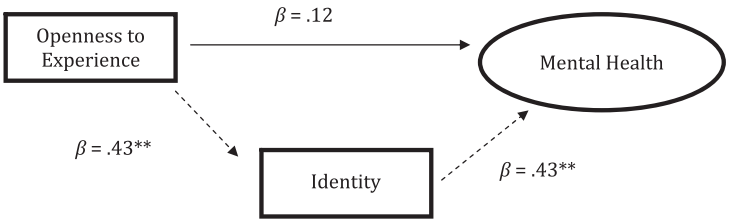
Note. β = Beta Regression Coefficient; $^{**}p < .01$.

FIGURE 1 Summary of direct effects of openness to experience and identity on mental health.

TABLE 4 Hierarchical regression analysis summary for demographic variables and openness to experience predicting identity ($N = 109$)

Block and Predictor Variable		B	SEB	β	R^2	ΔR^2
Block 1:	Age	−.019	.012	−.146	.16	
	Sex	−.556	.252	−.279*		
	Minority	−.433	.207	−.201*		
	Relationship	.161	.192	.081		
	Lesbian	−.338	.318	−.141		
	Bisexual	−.744	.251	−.362**		
Block 2:	Openness to Experience	.035	.007	.433***	.31	.15

Note. *$p < .05$; **$p < .01$; ***$p < .001$; Openness to Experience = Openness to Experience Scale on the NEO-PI-R.



Note. β = Beta Regression Coefficient; **$p < .01$.

FIGURE 2 Summary of direct and indirect effects of openness to experience and identity on mental health.

7.2% of the variance in mental health ($R^2_{change} = 0.072$; $F(7,101) = 2.906$; $p < .01$), while identity accounted for 18.8% of the variance in mental health ($R^2_{change} = 0.188$; $F(7,101) = 5.722$; $p < .01$). Table 4 shows that *Openness to Experience* significantly predicted *identity* ($\beta = 0.433$; $t(101) = 4.658$; $p < .01$), accounting for 12.9% of the variance in identity ($R^2_{change} = 0.129$; $F(7,101) = 6.484$; $p < .01$), such that greater Openness to Experience predicted better identity development (see also Figure 2).

As shown in Table 5, when both *Openness to Experience* and *identity* were included together in a single step as predictors of *mental health, identity* remained a significant predictor ($\beta = 0.426$; $t(100) = 4.206$; $p < .01$), while Openness to Experience was no longer significant ($\beta = 0.116$; $t(100) = 1.116$; $p > .05$). This finding indicates that the relationship between *Openness to Experience* and *mental health* is fully mediated by *identity* (Figure 2).

DISCUSSION

In the general population, openness to experience has typically been found to have a positive impact on mental health and its physiological components

TABLE 5 Hierarchical regression analysis summary for demographic variables, openness to experience, and identity predicting mental health ($N = 109$)

Block and Predictor Variable		B	SEB	β	R^2	ΔR^2
Block 1:	Age	−.001	.445	−.007	.10	
	Sex	−.041	.013	−.021		
	Minority	−.324	.262	−.151		
	Relationship	.319	.214	.160		
	Lesbian	.330	.199	.192		
	Bisexual	.260	.330	−.015		
Block 2:	Identity	.426	.101	.426***		
	Openness to Experience	.009	.008	.116	.29	.19

Note. ***$p < .001$; Identity = Composite Identity Variable; Openness to Experience = Openness to Experience Scale on the NEO-PI-R.

(Lee-Baggley, Preece, & DeLongis, 2005; Oswald, Zandi, Nestadt, Potash, Kalaydjian, & Wand, 2006; Williams et al., 2009). Specifically, higher openness to experience has been correlated with lower blood pressure reactivity, positive affect increase in the face of a stressor, and better sleep compared to lower-openness to experience peers during stressful times (Williams et al., 2009), as well as lower cortisol levels when presented with a stressor (Oswald et al., 2006). Openness to experience has also been found to be associated positively with identity development in the general population (Tesch & Cameron, 1987). For LGB individuals, identity development exploration can be challenging, as individuals are often met with discrimination and negative feedback from important others (Benton, 2003), and these challenges may in turn put an individual's mental health in jeopardy. For these individuals, openness to experience may be especially important for identity development.

Based on the literature, it was expected that there would be differences according to sex, minority status, and bisexuality vs. LG identification (Rosario, Schrimshaw, & Hunter, 2008; Roccas & Brewer, 2002; Rosario, Schrimshaw, & Hunter, 2004; Balsam & Mohr, 2007; Floyd & Stein, 2002). The present findings were consistent with that hypothesis, in that women, ethnic minority groups, and bisexual individuals in this sample had less developed and/or more negative feelings about their sexual minority identities. It is important to note that the results from analyses on openness to experience and identity on mental health controlled for these demographic differences in identity.

In the present study, the positive effect of openness to experience on mental health found in the general population was replicated for this LGB sample, and it was found to be fully mediated by sexual minority identity. That is, openness to experience was found to have a positive impact on LGB identity development, and identity development, in turn, was associated with better mental health outcomes. This pathway accounted for

the positive impact of openness to experience on mental health in this sample.

Identity development is a time of exploring options for identity, a process Marcia calls "moratorium," and it is considered to be a time of great struggle (Marcia, 2002). Moratorium requires a lack of identity commitment while the individual actively explores all options in terms of his or her identity. For LGB individuals, who face societal and personal messages that they should choose a more normative identity (i.e., heterosexual), moratorium may be an especially difficult struggle, and foreclosure is likely tempting. For this population, openness to experience may allow an LGB individual to continue exploring and struggling, even in a difficult heteronormative climate, with his or her sexual identity until he or she is prepared to commit to it in a way that feels comfortable and satisfying. As a result of an ability to remain in moratorium for as long as it takes, the experience of one's identity can become stronger. In turn, that stronger identity can be protective for LGB individuals in terms of mental health outcomes, as a stronger identity has been associated with better mental health outcomes in the literature (Rosario, Scrimshaw, & Hunter, 2010), which was also found in the present study.

In recent years, LGB communities have achieved major gains in the U.S. in terms of public perception and human rights on a broad scale (Fetner, 2010). However, in specific communities, attitudes toward lesbian, gay, and bisexual individuals may remain oppressive for various contextual reasons. For example, religion, culture, and size of community setting can play a role in differing pictures of mental health in LGB individuals (Yarhouse, 2001; Poon & Saewyc, 2009). Openness to experience may serve as a resource for LGB individuals in such communities, in that it appears to aid in the development of a clearer and more positive sexual minority identity, which, in turn, seems to be protective in terms of mental health.

There are several limitations to the present study. First, all of the data were collected via anonymous, self-report measures. As a result, it is impossible to know whether participants were being completely truthful. Self-report measures also tend to be subject to people's biases; there is evidence that people's answers on personality measures are subject to subtle contextual cues (Krahe, Becker, & Zollter, 2008), perceptions of desirability (Arnold & Feldman, 1981), and reflect self-perception as opposed to "objective" information (Haeffel & Howard, 2010). Second, the data is cross-sectional, so making claims about causation is tenuous at best. However, since personality is considered to be a stable trait in contrast to identity, it can be thought of as an antecedent to the construction of an identity through development. Thus, although these variables were measured concurrently, it is theorized that identity is built within the context of personality factors. It is possible, however, that the association between identity and mental health behaves in the opposite or even multiple directions, such that those with better mental

health are better equipped to engage in necessary identity exploration, which may in turn promote better mental health.

Despite these limitations, the present study is an important addition to the study of LGB experience. For minority populations such as this, it is important to study what factors might be protective or put individuals at risk for negative mental health outcomes. If the experience of gay, lesbian, and bisexual individuals as they navigate their sexual identity formation is better understood, better predictions and protections against potential pitfalls can be made.

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