

Sexual Orientation, Psychological Well-Being, and Mental Health: A Longitudinal Analysis From Adolescence to Young Adulthood

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In the past, mainly cross-sectional research has shown that nonheterosexuals report lower levels of psychological well-being and functioning than heterosexuals. Drawing on minority stress theory (Meyer, 2003), life span theory, and identity formation theory (Erikson, 1968), the present study analyzed developmental trajectories in psychological functioning from adolescence to young adulthood in nonheterosexual and heterosexual populations. Based on data from the Michigan Study of Adolescent and Adult Life Transitions (MSALT), nonheterosexual adolescents and young adults were compared with their heterosexual peers regarding their psychological development from the ages of 16 to 28. Overall levels of depressive affect, suicidal ideation, alcohol consumption, and social alienation were elevated for nonheterosexual young adolescents. For depressive affect and social alienation as well as suicidal ideation, the 2 groups grew apart during their high-school years but converged after leaving high school. For alcohol consumption, a divergent trend emerged after high school. No differences were found for self-esteem. None of the interactions between sexual orientation and gender reached statistical significance. The results point toward a higher degree of complexity in developmental patterns compared with results of previous studies. The study underscores the nonstatic nature of mental health disparities and highlights the potential and the need to prevent psychological maladjustment for nonheterosexual populations.

Keywords: sexual orientation, psychological well-being, mental health, longitudinal study

Zusammenfassung [German]: Bisherige, im Wesentlichen querschnittlich angelegte Forschung hat gezeigt, dass nicht-heterosexuelle Personen im Vergleich zu heterosexuellen Personen über ein niedrigeres psychisches Wohlbefinden und ausgeprägtere psychische Gesundheitsbelastungen berichten. Die vorliegende Studie untersuchte die Entwicklungsverläufe psychischen Wohlbefindens und psychischer Gesundheit von nicht-heterosexuellen und heterosexuellen Personen von der Jugend bis ins junge Erwachsenenalter. Als theoretische Ansätze wurden die *Minority Stress* Theorie (Meyer, 2003) sowie Theorien der Lebensspanne und Identitätsentwicklung (Erikson, 1968) herangezogen. Die *Michigan Study of Adolescent and Adult Life Transitions* (MSALT) diente als Datengrundlage, um die Entwicklung von nicht-heterosexuellen Jugendlichen und jungen Erwachsenen im Alter von 16 bis 28 Jahren mit ihren heterosexuellen Altersgenossen zu vergleichen. Nicht-heterosexuelle Heranwachsende berichteten insgesamt über stärkeren depressiven Affekt, häufigere Suizidgedanken, stärkere soziale Entfremdung und ausgeprägteren Alkoholkonsum. Depressiver Affekt und soziale Entfremdung entwickelten sich in den beiden Gruppen während der Schulzeit auseinander, die Unterschiede nahmen aber im jungen Erwachsenenalter, nach Beendigung der Schulzeit, wieder ab. Eine konvergierende Entwicklung konnte ebenso für Suizidgedanken belegt werden. Hinsichtlich des Alkoholkonsums zeigte sich eine divergierende Entwicklung erst während des jungen Erwachsenenalters. Im Selbstwert zeigten sich insgesamt keine konsistenten Unterschiede zwischen den beiden Gruppen. Interaktionen zwischen sexueller Orientierung und *gender* konnten statistisch nicht abgesichert werden. Insgesamt weisen die Ergebnisse darauf hin, dass von komplexeren Entwicklungsmustern auszugehen ist, als bisherige Studien dies nahelegten, und für Unterschiede im psychischen Befinden von nicht-heterosexuellen Personen im Vergleich zu heterosexuellen Personen eine substanzielle Entwicklungsdynamik besteht. Die Ergebnisse betonen sowohl das Potenzial als auch die Notwendigkeit, Entwicklungsrisiken und ungünstigen Entwicklungsverläufen vorzubeugen und zu begegnen.

Schlüsselwörter: sexuelle Orientierung, psychisches Wohlbefinden, psychische Gesundheit, Längsschnitt-Studie

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摘要 [Mandarin]: 性向、心理福祉與心理健康: 從青春到青年的縱向分析
橫斷面研究的結果報告, 顯示非異性戀者的心理福祉與心理功能, 較異性戀者為低。本研究採用少數族群壓力理論、生命全程發展心理學理論、以及認同建構理論, 分析比較非異性戀者與異性戀者, 從青少年到青年時期, 心理功能的發展軌跡。資料取自密西根青少年與青年生命轉折期研究計劃, 所有參與者在16歲到28歲間的調查結果。整體結果, 在青少年時期, 非異性戀者比異性戀者呈現較高的憂鬱症狀、自殺意圖、嗜酒問題與社交疏離程度。憂鬱情感、社交疏離與自殺意圖, 兩調查組在高中階段呈現最大差距, 此差距在高中之後就不再顯著; 嗜酒問題, 兩調查組的差距, 在高中之後才開使浮現; 自尊則無統計上的差異。兩性向組別與性別組別的交叉比較亦無統計顯著性。相較於過去類似研究, 本研究結果能夠呈現較高複雜度的心理發展形態, 顯示心理健康的差距並非穩定不變, 也凸顯在青少年時期, 針對非異性戀者預防心理適應不良之可行性與必要性。

關鍵字: 性向 (sexual orientation), 心理福祉 (psychological well-being), 心理健康 (mental health), 縱向研究 (longitudinal study)

Over the last decades, views on homosexuality have gradually but substantially changed in Western societies (for an overview, Clarke, Ellis, Peel, & Riggs, 2010; Herek, & Garnets, 2007). The shift in the 19th century from condemnation as a sin to categorization as a psychopathology of same-sex sexual orientation further continued to acceptance of homosexuality as being within the normal range of sexuality and identity (see Meyer, 2003). Although same-sex sexual attraction and behavior is now conceptualized as being within the range of nonpathological, “normal” human behavior, there is evidence that suggests that individuals with same-sex sexual desires and behaviors show elevated levels of symptoms of psychological distress (Balsam, Beauchaine, Mickey, & Rothblum, 2005; Cochran, Sullivan, & Mays, 2003; King et al., 2008). A key element in explaining this phenomenon is the distinction between same-sex sexual desires and behaviors, on the one hand, and the attributed minority status, on the other: The latter has been shown to be the major source of stress and negative consequences for mental health (Meyer, 2003; Rosario, Schrimshaw, Hunter, & Gwadz, 2002).

Yet studies on general psychological functioning and mental health of lesbian, gay, bisexual, and queer (LGBQ) populations (including non-LGBQ self-identified populations of men who have sex with men [MSM] and women who have sex with women [WSW]) are scarce, and even rarer are studies based on adolescent random samples and studies that are longitudinal in nature (King et al., 2008; Marshal et al., 2011). The present study aims to investigate the development of psychological well-being and mental health in heterosexual and nonheterosexual youth in a population-based U.S. sample during the transition to adulthood.

Sexual Orientation, Minority Status, and Minority Stress

Sexual orientation can be defined as sexual attraction, emotions, fantasies, behavior, or self-labeling, or a combination of these (Klein, Sepekoff, & Wolf, 1985; Mock & Eibach, 2012; Sell, 1997). In a nonheterosexual individual, at least one of these aspects of sexual orientation is directed (exclusively or partly) toward persons of the same sex (Clarke et al., 2010).

Although there are different theoretical conceptions of sexual orientation, resulting in disagreement about base rates of homosexuality and bisexuality, all approaches agree that a relatively small percentage of the general population is nonheterosexual. This holds particularly true for individuals who consistently claim

nonheterosexual orientation and identity. One influential general population study concerned with LGBQ mental health found in a sample of 2,917, only 41 self-identified homosexual and 32 self-identified bisexual men and women, resulting in an estimate of 2.5% of persons labeling themselves as lesbian, gay, and bisexual (Cochran et al., 2003). In general, base rates of nonheterosexuals in the population range between 2% and 4% for homosexual men and 1% to 3% for homosexual women, and 0.5% to 2% for bisexual men and 2% to 4% for bisexual women (cf. Mock & Eibach, 2012; Savin-Williams, Joyner, & Rieger, 2012).¹

As a minority group that differs from the majority with respect to sexuality, a rather tabooed aspect of life, nonheterosexual populations have been stigmatized and legally discriminated against in most cultures and epochs. Even in modern Western societies that emphasize a tradition of equal rights, same-sex sexual activity between consenting adults has frequently been criminalized (e.g., as recently as 2003, it was prohibited in 14 U.S. states; see Carpenter, 2012). Prejudice against nonheterosexuals is still a widespread phenomenon, and the risk of being bullied and victimized is substantially higher than it is for heterosexuals (Bontempo & D'Augelli, 2002; Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998).

Research has shown that socially and culturally based stress induced by being a target of discrimination can impair psychological functioning and well-being, and, furthermore, is a substantial risk factor for certain psychological disorders (e.g., Dohrenwend, 2000; Mazure, 1995). Drawing on general social psychological models of prejudice and stigma (e.g., Allport, 1954; Goffman, 1963) and general stress theory (e.g., Dohrenwend, 1998, 2000), Meyer (2003) proposed a minority stress theory focusing on LGBQ or, more general, nonheterosexual populations. He identified three mechanisms that turn nonheterosexual minority status into a stress factor: (a) victimization, i.e. the experience of prejudice-related events, (b) the anticipation of prejudice-related events and the costs of concealment, and (c) the internalization of homophobia. The experience of prejudice-related events (e.g., verbal and physical aggression, discrimination at work) results in costs to recover from psychologically aversive or harmful situa-

¹ In the following, we use the term nonheterosexual (nonheterosexuality, respectively) to refer to individuals and populations who report same-sex sexual attraction, show same-sex sexual behavior, or identify as LGBQ, unless otherwise indicated for making a reference to a specific subgroup.

tions, or even physical harm. The anticipation of such events and the effort of concealment lead to cost–benefit management problems. On the one hand, perfect disclosure of one's nonheterosexual preferences might be liberating but would increase the risk of discriminatory acts; (partial) concealment, on the other hand, protects against stigmatization and prejudice-related aggression but requires special attention to withholding information, particularly in informal social contexts in which others relax and do not feel a need to censor their behavior. Finally, the internalization of homophobic attitudes can cause stress through the development of a negative self-image related to nonheterosexuality. For example, a religious nonheterosexual person may think that suffering is justified because nonheterosexual behavior is construed as a sinful or reproachable act. Meyer (2003) reported empirical evidence for the importance of all three mechanisms (see also Hatzenbuehler, 2009; Kwon, 2013). Of the three, there is indication that the impact of the direct effects of victimization is more negative in regard to mental health (Bontempo & D'Augelli, 2002; Lehavot & Simoni, 2011).

On an individual level, gender might be a key moderator of non-heterosexual-related minority stress. Gender is associated with social roles and behaviors also related to sexuality. Judgment and perception of sexual desires, identity, and behavior is moderated by the gender of the sexual agents, and also by the perceiving person's gender (e.g., Herek, 2000, 2002; Kite & Whitley, 1996). In general, gender norms in regard to sexual orientation are narrower, more restrictive, and more closely intertwined for men than for women, at least in Western cultures, especially with regard to displaying same-sex directed affectionate behavior, which is more accepted among women (e.g., Deaux & Lewis, 1984; Hort, Fagot, & Leinbach, 1990). Although all nonheterosexual groups are perceived in a more negative light in comparison with their heterosexual peers, gay men are confronted with more negative attitudes than are gay women, and they more often become victims of violence, particularly at the hands of heterosexual men (Balsam et al., 2005; Herek, 2000, 2002). This might lead to differences in minority stress and, in turn, to different symptoms of psychological distress.

Mental Health and Minority Stress: Empirical Findings

In agreement with the aforementioned theoretical assumptions on minority stress, empirical studies consistently replicated three major findings regarding mental health effects in nonheterosexual populations in comparison with their heterosexual peers (Cochran et al., 2003; Herek & Garnets, 2007; King et al., 2008; Meyer, 2003): (a) depression, as well as mood and anxiety disorders, are more prevalent; (b) suicidal ideation and suicide attempts occur more frequently; and (c) alcohol abuse is elevated, and (less consistently) so is tobacco and drug abuse (cf. also Balsam et al., 2005; Bloomfield, Wicki, Wilsnack, Hughes, & Gmel, 2011; Conron, Mimiaga, & Landers, 2010; Marshal, Friedman, Stall, & Thompson, 2009).

Regarding gender effects, in their systematic review, King et al. (2008) concluded that nonheterosexual populations have elevated risks in all three areas, with some qualifying gender differences. Although evidence for gender differences in mood disorders in nonheterosexual populations is less clear, gay and bisexual men show a higher risk than lesbian and bisexual women for suicidal

ideation, suicide attempts, and anxiety disorders. Lesbian and bisexual women are more prone to substance use and/or dependency (compared with a less clear pattern for gay and bisexual men; McCabe, Hughes, Bostwick, West, & Boyd, 2009). Additionally, struggles with eating disorders seem to differ by gender; compared with heterosexual men, gay and bisexual males have a lower risk of becoming obese, but higher prevalence rates of anorexia and bulimia; lesbian and bisexual women do not have a higher risk of anorexia or bulimia than heterosexual women, but have a higher disposition toward becoming obese (Conron et al., 2010; Dean et al., 2000; French, Story, Remafedi, Resnick, & Blum, 1996).

Development of Mental Health in Nonheterosexual Populations Over the Life Span

The evidence for differences in psychological functioning between nonheterosexual and heterosexual populations is mainly derived from cross-sectional studies, so it remains unclear to what extent these differences are stable over time or limited to a specific phase in the process of sexual identity formation. In general, all individuals experience a change in psychological well-being and mental health over the life course in a regular pattern. This is reflected, for example, in an overall decline in self-esteem during adolescence and a recovery after puberty during the transition into adulthood (Baldwin & Hoffmann, 2002; Wagner, Lütke, Jonkmann, & Trautwein, 2013). Various studies showed that these trajectories are moderated by demographic characteristics, and in particular, gender: On average, females show lower self-esteem, but these differences only appear at the onset of puberty, become more pronounced during adolescence, and persist, on a reduced level, through adulthood (Kling, Hyde, Showers, & Buswell, 1999; Mcleod & Owens, 2004; Wagner et al., 2013). Similar gender-specific trajectories have been reported for other aspects of psychological functioning, such as depressive symptoms (Twenge & Nolen-Hoeksema, 2002).

In a similar vein, sexual orientation status is likely to vary in its impact on general psychological well-being and mental health across the life span. From a general developmental perspective, Erikson's (1968) model of identity formation emphasizes the importance of sexual identity as the driving force in the fifth stage of human development, during which the adolescent is challenged by various role confusions. According to this theory, adolescents struggle with the development of sexual desires and behavior, integrating these into their self-image. At the end of this stage, a person has supposedly developed a reflected understanding of his or her sexual needs. Although, in Erikson's theory, it is reasonable to assume that all adolescents face this developmental task, the conflicts in the process of identity formation may be more pronounced for nonheterosexual youth because of their specific minority status and, for example, a lack of access to positive role models. Nevertheless, although nonheterosexual youth and young adults potentially experience more severe identity conflicts, Erikson's theory maintains that, eventually, a stable equilibrium will be achieved, a point at which mental health indicators for nonheterosexual and heterosexual young adults should converge.

An argument for convergence also follows from (homosexual) identity formation theory, which describes several stages, starting with first awareness and confusion, and leading to the acknowl-

edgment of nonheterosexual/non-normative desires, and ultimately to self-acceptance and identity integration (Cass, 1979, 1996; Eliason & Schope, 2007). Retrospective studies suggest that awareness (can) start before early adolescence, and peak during adolescence and young adulthood, with slightly different patterns according to gender, type of sexual orientation, and its stability (Calzo, Antonucci, Mays, & Cochran, 2011; Floyd & Bakeman, 2006; Rosario, Schrimshaw, Hunter, & Braun, 2006; Savin-Williams & Diamond, 2000). Integrating these feelings into personality development can lead to complex psychological reactions, and elevated psychological stress levels may increase from the young person's perception that his or her nonheterosexual orientation is incongruent with (most) peers' orientations during a phase when insecurity about the self is already elevated (Halpin & Allen, 2004; Meyer, 2003; similarly, see Gonsiorek, 1988).

Having same-sex directed desires or identifying as nonheterosexual most likely has different consequences at different stages of the life course. In particular, stress deriving from the status of sexual minority itself should vary with age. As Meyer (2003) pointed out, minority stress always includes two aspects: input and output. Stress depends on "input," as society confronts individuals with different types and levels of minority stress. Given that children and adolescents are typically bound to their families and school environments, they are potentially exposed to environments that hold negative or even hostile attitudes toward nonheterosexual minorities, with little opportunity to avoid exposure to such circumstances. For example, if the process of "coming out" takes place during adolescence, the threat of being bullied and suffering from peer victimization is particularly likely (Bontempo & D'Augelli, 2002; Garofalo et al., 1998; Russell & Joyner, 2001).

Stress also depends on "output," that is, the means of coping with minority stress. Strategies for dealing with psychosocial problems on the individual level are, in general, more limited during adolescence than in adulthood (Aneshensel, 1992; Coventry, Gillespie, Heath, & Martin, 2004; Masten, 2001). In his model of minority stress, Meyer (2003) suggests that coping strategies on a "collective level" can also mitigate individual limitations in coping resources. Minority groups often develop mechanisms for dealing with minority-specific stressors, for example, by sharing and affirming collective identity and values (Meyer, 2003; Mills, Paul, Stall, Pollack, & Canchola, 2004; Morris, Waldo, & Rothblum, 2001). But because a nonheterosexual identity is likely to be formed in solitude at the outset, there is little to no social support until the individual actively seeks minority group support, which requires the initial formation of a minority identity. In retrospective studies, the lack of social belongingness, the problem of finding peers and adults in whom to confide, and limited access to social support are reported as key developmental challenges for nonheterosexual individuals, contributing to minority adjustment problems (Lewis, Derlega, Berndt, Morris, & Rose, 2001; Mills et al., 2004).

Jager and Davis-Kean (2011) argue that, for sexual minorities, the phase between childhood and adolescence is the most challenging in terms of psychological functioning and well-being. Studies drawing on development models of sexual identity demonstrate that psychological functioning, well-being, and mental health depends on the stage of identity formation during adolescence (Halpin & Allen, 2004; Rosario, Schrimshaw, & Hunter, 2011). Additional support stems from studies suggesting that the

negative impact of awareness and disclosure of nonheterosexual identity was more pronounced when individuals were relatively young (D'Augelli & Hershberger, 1993; Friedman, Marshal, Stall, Cheong, & Wright, 2008; Savin-Williams, 1995).

These studies were based on convenience samples, which limits the generalizability of results, but the few existing longitudinal studies using population-based samples seem to point in a similar direction. Jager and Davis-Kean (2011) compared the development in depressive affect and self-esteem in heterosexuals and nonheterosexuals. They were able to show differences between nonheterosexual youth and their heterosexual peers. Additionally, the authors reported that trajectories for depressive affect showed some convergence, but evidence was weaker for such a trend in self-esteem. Developmental dynamics are also shown in a study conducted by Marshal et al. (2013), who found evidence for a widening gap between the two groups in depressive symptoms and suicidality during adolescence, but no indication for a converging trend—the differences remained stable in young adulthood.

Age-related changes in the differences between heterosexuals and nonheterosexuals were also found in alcohol use but showed a different, diverging pattern: Dermody et al. (2014) found very little differences during adolescence and exacerbated use among nonheterosexuals only in young adulthood (similarly Hatzenbuehler, Corbin, & Fromme, 2008). This replicates the findings of Corliss, Rosario, Wypij, Fisher, and Austin (2008), although the latter also found higher risk behavior even in younger nonheterosexual individuals. Using the same data sets, similar patterns were found for tobacco use (Corliss et al., 2013) and drug abuse (Marshal et al., 2009). These findings indicate a pattern that differs from the one suggested by Jager and Davis-Kean (2011) as risk for mental disorder, reflected by substance abuse, seems to increase in older nonheterosexual individuals. Hatzenbuehler et al. (2008; Hatzenbuehler, 2009) argue that substance-related psychological problems are not (only) a result of minority stress, but a result of (minority specific) subcultures which foster certain risk behaviors.

The Present Study

The following analyses address mental health in a nonheterosexual subsample of the Michigan Study of Adolescent and Adult Life Transitions (MSALT). The original sample was a stratified sample of fifth- and sixth-grade students in southeast Michigan in 1983, with regular follow-up studies. We examined the last five waves of data collected over a period of 12 years when participants were aged approximately 16 to 28 years. The study includes various outcome measures of general psychological well-being and sexual orientation. As a nonselective youth sample drawn from 10 school districts, the data set allows us to investigate differences in the trajectories of heterosexually and nonheterosexually oriented individuals throughout the critical period of identity formation on a population-based sample. Considering the development of sexual orientation and the non-heterosexual-specific experience of minority stress, we assume that the dynamic of psychological well-being and mental health in formative processes of nonheterosexual identities will be different from that of heterosexual adolescents and young adults.

The longitudinal analyses differentiated sexual orientation by comparing nonheterosexual with heterosexual individuals, and by exploring gender effects and the interaction of gender with sexual

orientation. The following outcomes were considered in our analyses: (a) three indicators of mental health: depressive affect, suicidal ideation, and alcohol consumption; (b) feelings of social alienation as an aspect of social functioning; and (c) general self-esteem as a central indicator of general psychological well-being.

Hypothesis 1: Based on the assumptions of minority stress for nonheterosexuals, we expected levels of mental health and well-being of nonheterosexuals to be lower compared with their heterosexual peers at the peak of sexual identity formation (Herek & Garnets, 2007; King et al., 2008; Meyer, 2003).

Hypothesis 2: (a) We expected nonheterosexual youth to score higher on measures of depressive affect, suicidal ideation, alcohol consumption, as well as social alienation, and lower on measures of general well-being around the ages of 16 to 20, a period during which—despite considerable variability—the majority of nonheterosexuals are concerned with mastering developmental milestones concerning sexual orientation formation (Calzo et al., 2011; Floyd & Bakeman, 2006; Savin-Williams & Diamond, 2000). (b) We also expected trajectories to converge toward adulthood, because nonheterosexual youth will most likely improve their coping resources but also finding “collective” ways of coping, for example, in the form of support from like-minded people, throughout the process of identity formation (Masten, 2001; Mills et al., 2004; Morris et al., 2001). However, because of persisting minority stress over the life span, we did not expect complete convergence.

Hypothesis 3: With regard to general gender effects, we expected to replicate findings of higher levels of depressive affect and lower levels of well-being for women compared with men, and higher rates of alcohol consumption for men compared with women (Hatzenbuehler et al., 2008; Twenge & Nolen-Hoeksema, 2002; Wagner et al., 2013). Additionally, we tested whether the effects of sexual orientation on the trajectories for mental health and well-being differ by gender.

Method

Sample

The sample was taken from the large-scale MSALT. In 1983, the MSALT started as a study on adolescent development with 3,248 fifth- and sixth-grade students from 143 classrooms in 10 school districts located in southeastern Michigan (Eccles et al., 1989). Since 1983, nine waves of assessment were conducted at differing time intervals. For the present study, we examined Waves 5 to 9, data collected in 1988, 1990, 1992, 1995/1996, and 1999/2000, respectively, when participants were 16 (Wave 5) to 28 years old (Wave 9). We included all individuals with at least one valid entry for the key variables, resulting in a total sample 2,451. The sample’s mean age at the first time point of assessment was 11 years and 5 months, 52.7% were female participants, and 88.1% labeled themselves as White (see Table 1; see also Statistical Analyses section).

We chose the data from Waves 5 to 9 because these included measures for depressive affect, self-esteem, and social alienation on a similar scale. Additionally, Waves 6 to 9 included a measure

Table 1
Demographics of the Sample (Total and by Sexual Orientation)

	Total sample (N = 2451)	Heteros. (n = 1631)	Nonhet. (n = 77)	Miss. SO (n = 743)
Female (%)	52.7	57.0	58.4	42.5
Ethnicity: White (%)	88.1	93.8	93.5	82.9
Age (1st wave) in years (M [SD])	11.4 (0.52)	11.4 (0.49)	11.4 (0.51)	11.5 (0.57)
Parental family income <\$20,000 (%)	10.5	9.8	10.9	13.7
>\$60,000 (%)	34.2	34.9	23.9	33.1
Nonhet. (% of valid N)	4.5			

Note. Heteros. = heterosexual orientation; Nonhet. = nonheterosexual orientation; Miss. SO = no information on sexual orientation available.

of alcohol use, and Waves 7 to 9 included suicidal ideation and sexual orientation. Background information about gender, family characteristics, and other demographics were taken from earlier waves of data collection using the target person and his or her parents as a source of information.

For Waves 5 and 6, students were assessed while still in high school (10th and 12th grades). Data for Waves 7, 8, and 9 were collected 2, 6, and 10 years after finishing high school. Trained personnel administered questionnaires in Waves 5 and 6. For the later waves, participants were contacted by mail or by phone. Participation was voluntary throughout.

Measures

Sexual orientation and behavior. To assess sexual orientation, several variables were available in MSALT. In Waves 8 and 9, participants were asked to report the sex of those partners with whom they had had sexual intercourse (“all male,” “mostly male,” “both male and female,” “mostly female,” “all female”). As this only concerned individuals who were sexually active, we also used information about the sex of people the participant dated (administered to singles only; similarly assessed with five categories from “all male” to “all female”), and the sex of his or her partner in either a stable romantic relationship or domestic cohabitation (or marriage). If individuals reported any same-sex partners in answer to any of the questions, they were included in the group of nonheterosexually oriented individuals. Wave 7 also included two measures of sexual orientation: For individuals in a romantic relationship, the partner’s sex was recorded. Individuals who were not romantically involved at the time were asked to name the preferred sex of a dating partner on a 7-point scale (“How important is it to you that your dates have the following characteristics?” “Male” or “Female”). If individuals reported a same-sex partner or stated that it was of importance that a partner was of the same sex, this was counted as an indication of (partial) nonheterosexual orientation. For eight participants, sexual orientation inconsistencies were cleaned and recoded as missing (e.g., being married to a same-sex partner without having same-sex-oriented intercourse at all). A total of 77 individuals were coded as nonheterosexual, which represented 4.5% of the 1,708 participants with valid information on variables on sexual orientation. Because of the limited sample size, bisexual and homosexual orientation was not further differentiated.

Depressive affect. Depressive affect was assessed for Waves 5 to 9 with a four-item scale of depressive affect corresponding to the Center for Epidemiologic Studies Depression Scale (Radloff, 1977; sample item, “I feel unhappy, sad, or depressed”). Items were answered on a 7-point Likert scale ranging from 1 (*never*) to 7 (*daily*). Reliabilities of the scales were satisfactory for all of the five waves, with Cronbach’s alpha between .70 and .76. Long-term stability was relatively high, with correlations around $r = .50$ (see Table 2, which contains stabilities, and also correlations, across domains).

Suicidal ideation. Suicidal ideation was assessed for Waves 7 to 9 with three items corresponding to the Suicide Ideation Scale (Rudd, 1989; sample item, “I feel like I want to die”). Items were answered on a 7-point Likert scale ranging from 1 (*never*) to 7 (*daily*). Reliabilities of the scales were satisfactory for all three waves, with Cronbach’s alpha between .64 and .71. Long-term stability ranged between $r = .43$ (age 20 to 23) and $r = .50$ (age 23 to 28; see Table 2).

Alcohol consumption. Alcohol consumption was assessed for Waves 6 to 9 with two items assessing alcohol use in the last 6 months (“About how often in the past six months did you do the things listed below?”: “Get drunk?” “Drink alcohol”) on a 7-point rating scale (1 = *never*, 7 = *>21 times*). Reliabilities of the scales were good for all the four waves, with Cronbach’s alpha between .78 and .90. Long-term stability ranged from $r = .59$ (age 18 to 20) to $r = .65$ (age 23 to 28; see Table 2).

Social alienation. Social alienation was assessed for Waves 5 to 9 with a single item indicator (“Do you have trouble fitting in with others?”), which was also measured on a 7-point scale (from *never* to *daily*). Long-term stability ranged between $r = .32$ (age 16 to 18) and $r = .45$ (age 23 to 28; see Table 2).

Self-esteem. General self-esteem was assessed for Waves 5 to 9 with three items (e.g., “I am satisfied with myself”), using a 7-point Likert scale ranging from 1 (*never*) to 7 (*daily*). Reliabilities of the scales were good (Cronbach’s alpha between .78 and .85). Long-term stability ranged from $r = .40$ (age 18 to 20) to $r = .50$ (age 23 to 28; see Table 2).

Statistical Analyses

To test statistical significance for change over time and group differences, we used ANOVA for repeated measurement. The five domains were analyzed separately, as the number of available data varied across constructs (from three measurement occasions to five).

Missing data was present, in particular because of panel mortality. Participation in the later Waves 7 to 9, in which sexual orientation was assessed, dropped to 71.4% on the variables included in the analyses. Women were more likely to continue their participation, $\chi^2(1) = 36.3$, $p < .01$, and participation rates differed by group of ethnic origin (classified by individuals’ self-labeling as White, African American, or other), $\chi^2(2) = 62.2$, $p < .01$. Following current recommendations to avoid listwise or pairwise deletion, we used multiple data imputation to maintain maximal test power and simultaneously minimize the risk of biased parameter estimates (Graham, 2009). We implemented an inclusive imputation strategy involving all individuals who provided at least one valid datum in one of all dependent or independent variables used (Collins, Schafer, & Kam, 2001; Graham, 2009).

Ten data sets were generated with the tool Multiple Imputation in SPSS 21. Resulting statistics (means, standard errors, and variances) were combined following Rubin (1987). Effect sizes (ds) were operationalized as mean differences between groups divided by the standard deviation for the respective time point.

Results

Depressive Affect

Overall, reports of depressive symptoms declined over the observational period from $M = 4.11$ at age 16 to an average of $M = 2.97$ at the age of 28 (see Table 3 for an overview of means, standard deviations, and effect sizes). Confirming Hypothesis 1, between-subjects’ F tests indicated that individuals of sexual minority status showed more depressive symptoms, $F(1, 2447) = 10.28$, $p < .01$ (see Table 4 for an overview of statistical significance), with effect sizes ranging from $d = 0.08$ to $d = 0.28$. As predicted (Hypotheses 2a and 2b), differences between the two groups widened from $d = 0.08$ at the age of 16 to $d = 0.28$ at age 18 and 20, but converged again to $d = 0.17$ at age 23 and $d = 0.18$ at age 28 (see also Figure 1). This effect pattern is statistically represented in a significant quadratic trend component for sexual orientation, reflecting the early increase and later decrease in mean differences (see Table 4). Regarding Hypothesis 3, for gender effects, we found a statistically significant between-subjects main effect of gender, in the sense that women reported more depressive symptoms than did men. Additionally, a significant linear trend was identified for gender, reflecting that the gender gap in depressive affect became less pronounced with age, declining from $d = 0.73$ at age 16 to $d = 0.30$ at age 28 (see Figure 1). The interaction between sexual orientation and gender was not statistically significant.

Suicidal ideation. Overall, there was a decrease in suicidal ideation from $M = 2.44$ at the age of 20 to $M = 2.07$ at 28 (see Table 3). Both the linear and quadratic components reached statistical significance (see Table 4), reflecting an asymptotic, diminishing decrease with age. As predicted (Hypothesis 1), we found a significant main effect of sexual orientation for suicidal ideation with nonheterosexuals reporting higher values than heterosexuals. Across age, the differences between groups diminished from $d = 0.58$ to $d = 0.30$, which is reflected in a statistically significant linear trend for sexual orientation, supporting Hypothesis 2b (see Table 4). In a similar way, there was both a statistically significant main effect and linear trend effect for gender (Hypothesis 3; see Table 4); women reported higher values compared with men, but gender differences diminished over time, from $d = 0.14$ at age 20 to $d = 0.01$ at age 28 (Figure 2). None of the interactions between sexual orientation and gender yielded statistical significance (see Table 4).

Consumption of alcohol. In general, alcohol consumption increased across age, with the most pronounced increase between ages 20 and 23 (Tables 3 and 4). Regarding differences by sexual orientation, a rather complex pattern emerged: In line with Hypothesis 1, there was a statistically significant main effect of sexual orientation (see Table 4), indicating higher consumption levels for nonheterosexual individuals. This difference developed across age in a way we did not predict: There were only negligible differences at age 18 and 20, standardized

Table 2
Correlations of Depressive Affect, Suicidal Ideation, Alcohol Consumption, Social Alienation, and General Self-Esteem (Imputed Data)

Age	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	
Depressive affect	16 (1)	1																					
	18 (2)	.46	1																				
	20 (3)	.40	.48	1																			
	23 (4)	.33	.36	.46	1																		
	28 (5)	.26	.37	.39	.50	1																	
Suicidal ideation	20 (6)	.26	.40	.55	.34	.29	1																
	23 (7)	.25	.32	.32	.51	.33	.43	1															
	28 (8)	.18	.19	.20	.27	.46	.34	.50	1														
	18 (9)	-.04	.02	-.01	-.05	-.03	.11	.05	.04	1													
	20 (10)	-.04	-.02	-.02	-.09	-.12	.09	.00	.00	.59	1												
Consumption of alcohol	23 (11)	-.10	-.01	-.03	-.01	-.06	.04	.03	.01	.45	.61	1											
	28 (12)	-.12	-.04	-.06	-.02	-.02	.07	.02	.05	.36	.49	.65	1										
	16 (13)	.32	.22	.17	.09	.10	.09	.12	.03	-.08	-.05	-.03	-.03	1									
	18 (14)	.16	.35	.25	.16	.20	.21	.13	.10	-.15	-.08	-.06	.02	.32	1								
	20 (15)	.18	.22	.38	.27	.24	.28	.21	.21	-.12	-.13	-.08	.02	.30	.37	1							
Social alienation	23 (16)	.08	.16	.24	.39	.25	.17	.33	.19	-.06	-.07	-.05	-.04	.15	.26	.43	1						
	28 (17)	.09	.17	.16	.25	.40	.10	.24	.30	-.10	-.13	-.07	-.07	.22	.26	.37	.45	1					
	16 (18)	-.37	-.23	-.24	-.20	-.17	-.18	-.16	-.14	-.05	-.06	-.01	-.11	-.25	-.17	-.17	-.18	-.11	1				
	18 (19)	-.25	-.42	-.32	-.28	-.20	-.24	-.21	-.16	-.05	.01	.06	.01	-.17	-.26	-.23	-.18	-.14	.40	1			
	20 (20)	-.19	-.31	-.52	-.29	-.23	-.32	-.16	-.12	-.06	-.02	.02	-.03	-.10	-.22	-.33	-.21	-.13	.32	.47	1		
General self-esteem	23 (21)	-.21	-.28	-.37	-.59	-.35	-.26	-.37	-.22	.04	.07	.05	.03	-.07	-.14	-.23	-.36	-.23	.28	.38	.44	1	
	28 (22)	-.25	-.26	-.28	-.39	-.56	-.20	-.22	-.37	.01	.02	.02	-.02	-.11	-.18	-.27	-.25	-.37	.27	.29	.39	.50	1

Table 3

Means and Standard Errors for Overall Group, and Both Heterosexual and Nonheterosexual Individuals, and the Standardized Mean Differences Between the Two Subgroups

Construct	Age	Overall			Heteros.		Nonhet.		<i>d</i>
		<i>M</i>	<i>SE</i>	<i>SD</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	
Depressive affect	16	4.11	0.06	1.32	4.10	0.05	4.21	0.20	-0.08
	18	3.56	0.03	1.24	3.54	0.03	3.88	0.17	-0.28
	20	3.50	0.03	1.20	3.48	0.03	3.83	0.14	-0.28
	23	3.15	0.03	1.20	3.13	0.03	3.35	0.15	-0.17
	28	2.97	0.03	1.18	2.95	0.03	3.17	0.14	-0.18
Suicidal ideation	20	2.44	0.04	1.12	2.41	0.03	3.01	0.17	-0.58
	23	2.15	0.03	1.04	2.13	0.03	2.47	0.14	-0.32
	28	2.07	0.03	0.95	2.05	0.02	2.37	0.11	-0.30
Consumption of alcohol	18	3.76	0.08	2.41	3.75	0.07	3.92	0.37	-0.09
	20	4.08	0.07	2.00	4.08	0.06	4.15	0.25	-0.04
	23	4.02	0.07	1.87	3.98	0.06	4.82	0.24	-0.46
	28	3.75	0.07	1.79	3.70	0.08	4.64	0.23	-0.52
Social alienation	16	3.34	0.06	1.66	3.32	0.06	3.57	0.21	-0.16
	18	2.84	0.05	1.54	2.81	0.05	3.37	0.24	-0.38
	20	2.48	0.03	1.41	2.48	0.03	2.43	0.17	0.03
	23	2.24	0.04	1.40	2.24	0.04	2.26	0.20	-0.02
	28	2.18	0.04	1.39	2.17	0.04	2.42	0.23	-0.17
General self-esteem	16	4.61	0.07	1.34	4.62	0.07	4.41	0.16	0.17
	18	4.88	0.03	1.30	4.88	0.03	4.94	0.21	-0.05
	20	4.93	0.03	1.25	4.93	0.03	4.76	0.16	0.13
	23	4.95	0.05	1.27	4.95	0.05	4.89	0.15	0.04
	28	5.02	0.04	1.29	5.03	0.05	4.93	0.21	0.08

Note. Heteros. = heterosexual orientation; Nonhet. = nonheterosexual orientation; *d* = mean difference between heterosexual and nonheterosexual individuals relative to the overall standard deviation.

$d = 0.09$ and $d = 0.04$, respectively; substantial differences developed only after age 23, with mean differences $d = 0.46$ at age 23 and $d = 0.52$ at age 28. This is represented in both a statistically significant linear trend component for sexual orientation, indicating a stronger increase over time for sexual minorities, and a statistically significant cubic component, reflecting that this acceleration is nonlinear and takes place mainly between the ages of 20 and 23 (see Table 4). Additionally, there was a statistically significant effect for gender, indicating higher means for males, regardless of sexual orientation, supporting Hypothesis 3. A statistically significant linear trend component indicated an increasing gender gap across age, from $d = 0.38$ at age 18 to $d = 0.56$ at age 28 (see also Figure 3). The interactions of sexual orientation and gender yielded no statistical significance, showing similar developmental patterns for men and women by sexual orientation (Figure 3).

Social alienation. In general, feelings of social alienation declined over time and decreased from $M = 3.34$ at the age of 16 to $M = 2.18$ at the age of 28 (all within-subjects components statistically significant for age, see Table 4). Regarding sexual orientation (Hypothesis 1), a mainly nonlinear pattern emerged: The general between-subjects effect related to sexual orientation was statistically significant, indicating stronger feelings of alienation for the nonheterosexual group. However, this effect was moderated by age: Report of social alienation for nonheterosexual individuals was particularly discrepant from their heterosexual peers at the age of 18, with an effect size of $d = 0.38$ compared with mean differences of $d = 0.02$ to 0.17 at all other age levels, supporting both Hypotheses 2a and 2b. These specific differences between the heterosexual and nonhetero-

sexual groups are reflected in statistically significant higher order components, the cubic and fourth-order component (see Table 4). For gender, the between-subjects factor was also statistically significant, indicating more frequent reports of social alienation for men than for women, with effects ranging between $d = 0.08$ to 0.13 . The within-subject effects for gender and, again, the interactions between gender and sexual orientation were not statistically significant. In Figure 4, this pattern is depicted separately for the four subgroups.

General self-esteem. Regarding development of general self-esteem over time, there was an overall increase from $M = 4.61$ at the age of 16 to $M = 5.02$ at the age of 28 (all within-subject contrasts statistically significant; see Table 4). Counter to our predictions in Hypotheses 1 and 2, there was neither a statistically significant between-subjects effect on self-esteem for sexual orientation, nor did we find a clear pattern for the development of differences between the two groups over time. Differences between heterosexual and nonheterosexual individuals seemed more accentuated at the ages of 16 and 20, but smaller at the ages of 18 and 23. Therefore, only the higher order trend components of within-subject contrasts yielded statistical significance (see Table 4). Regarding gender differences, there was a statistically significant main effect, indicating lower self-esteem in women, which we had predicted (Hypothesis 3). No within-subject trend components reached significance for gender, indicating a rather constant gender gap over the years, with mean differences of about one-fifth standard deviation, ranging from $d = 0.18$ to $d = 0.29$ (see also Figure 5). The interactions between sexual orientation and gender were not statistically significant.

Table 4

Results of ANOVA for Repeated Measurement (Time), Sexual Orientation, and Gender

Construct	Effects	Time	SO	Gend.	SO × Gend.
Depressive affect	Between subj. effects <i>F</i> test ($df_1 = 1, df_2 = 2,447$)		10.28**	61.23**	1.51
	Within subj. contrasts <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Linear	263.65*	0.62	14.91**	0.54
	Quadratic	3.06	5.03*	1.79	1.81
	Cubic	2.52	3.18	0.96	0.98
Suicidal ideation	Between subj. effects <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Within subj. contrasts <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Linear	83.81**	8.26**	4.44*	0.96
	Quadratic	16.33**	2.89	2.05	1.51
	Cubic	7.85**	13.11**	33.31**	0.68
Consumption of alcohol	Between subj. effects <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Within subj. contrasts <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Linear	15.54**	20.37**	4.69*	0.86
	Quadratic	22.59**	3.43	0.54	0.14
	Cubic	7.85**	12.97**	0.67	0.41
Social alienation	Between subj. effects <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Within subj. contrasts <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Linear	223.32**	6.14**	4.38*	0.53
	Quadratic	35.77**	3.40	0.57	0.46
	Cubic	11.47**	2.24	0.56	0.39
General self-esteem	Between subj. effects <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Within subj. contrasts <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Linear	6.11**	11.67**	0.76	0.75
	Quadratic	29.40**	7.71**	0.71	0.40
	Cubic	10.61**	2.31	10.50**	0.33
	Between subj. effects <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Within subj. contrasts <i>F</i> test ($df_1 = 1, df_2 = 2,447$)				
	Linear	29.40**	1.07	0.65	0.37
	Quadratic	10.61**	2.16	1.28	1.2
	Cubic	12.89**	4.16*	3.35	1.44
	4th order	6.35**	5.42*	0.84	0.82

Note. For better overview, parameters with $p < .05$ additionally bold. SO = sexual orientation; Gend. = gender; Subj. = subjects; SO × Gend. = interaction between sexual orientation and gender.

* $p < .05$. ** $p < .01$.

Discussion

For this study, we compared the developmental trajectories in psychological functioning and well-being of heterosexually and nonheterosexually oriented persons from adolescence to young adulthood (ages 16 to 28). Drawing on minority stress theory

(Meyer, 2003), life span theory, and identity formation theory (Erikson, 1968), we predicted elevated levels of depressive symptoms, suicidal ideation, alcohol consumption, and social alienation, and lower self-esteem for nonheterosexuals, increasing differences between heterosexuals and nonheterosexuals during sexual iden-

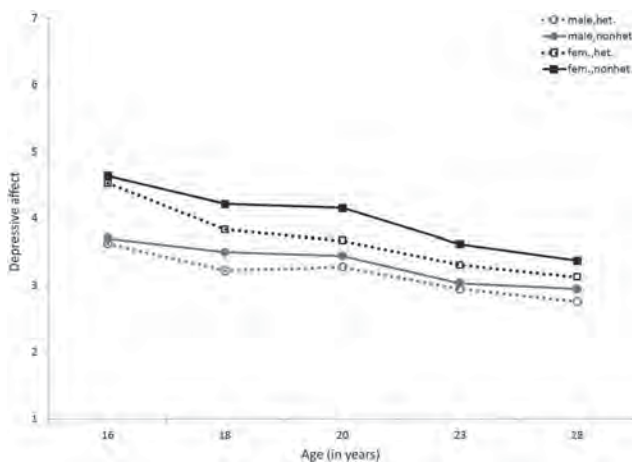


Figure 1. Development of depressive affect by sexual orientation and gender from the ages 16 to 28. Het. = heterosexual orientation; Nonhet. = nonheterosexual orientation; fem. = female.

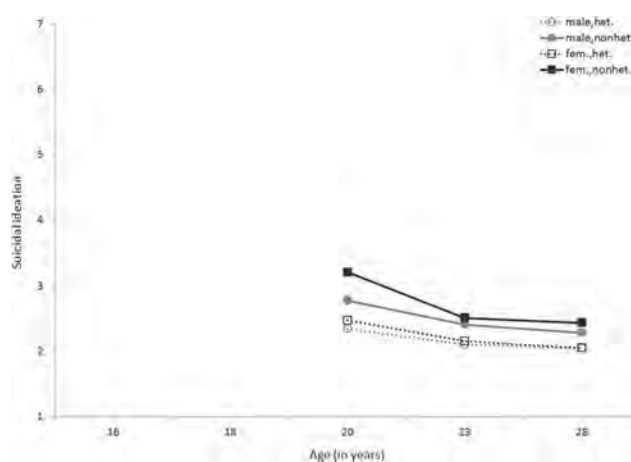


Figure 2. Development of suicidal ideation by sexual orientation and gender from the ages 20 to 28. Het. = heterosexual orientation; Nonhet. = nonheterosexual orientation; fem. = female.

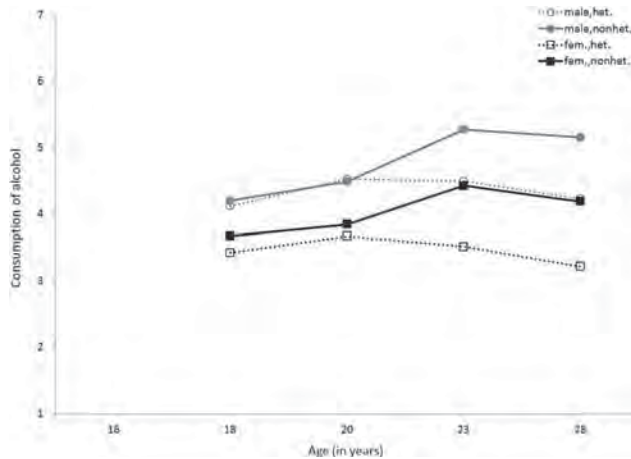


Figure 3. Development of consumption of alcohol by sexual orientation and gender from the ages 18 to 28. Het. = heterosexual orientation; Nonhet. = nonheterosexual orientation; fem. = female.

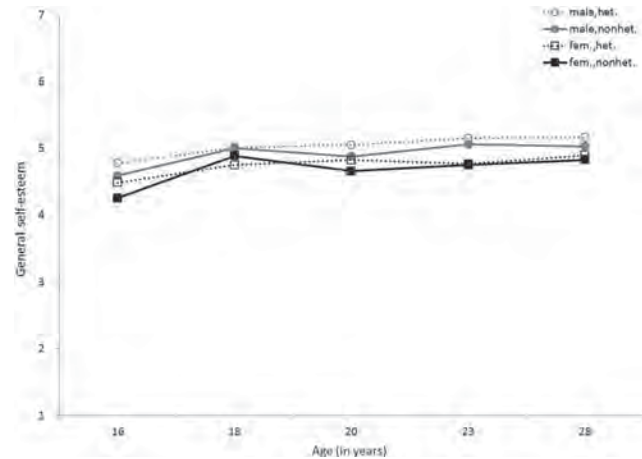


Figure 5. Development of general self-esteem by sexual orientation and gender from the ages of 16 to 28. Het. = heterosexual orientation; Nonhet. = nonheterosexual orientation; fem. = female.

tity formation and toward the end of high school, but converging after high school and in adulthood.

Overall, the findings were in line with our predictions: Compared with their heterosexual peers, overall levels of depressive symptoms, suicidal ideation, alcohol consumption, and social alienation were, on average, higher in nonheterosexuals. For depressive affect and social alienation, we found evidence for the predicted developmental pattern: During the earlier developmental stages (16 to 20 years old), the two groups grew apart, with increasingly higher risks for nonheterosexuals; this was followed by a converging trend in the post-high-school years. Similarly, though our inferences are limited by the lack of data between the ages of 16 and 18, we found a converging trend for suicidal ideation (between 20 and 28 years old). Overall, nonheterosexual youth showed higher levels of alcohol consumption, but here the gap did not develop before the age of 20; differences were most pronounced at ages 23 and 28. Feelings of social alienation di-

verged and peaked at the age of 18. No differences were found for self-esteem as an indicator for general well-being, contrary to our predictions that it would follow a trend similar to the other indicators of mental health, in particular, depressive symptoms. Additionally, gender effects were consistent with previous findings: Compared with men, women showed higher levels of depressive affect and were more likely to report suicidal ideation in conjunction with lower general well-being. Compared with women, men showed higher levels of alcohol consumption and reported more feelings of social alienation. We found converging trends for men and women in levels of depressive affect and reports of suicidal ideation, but not for self-esteem and social alienation, and a diverging development for alcohol consumption. None of the interactions between sexual orientation and gender reached statistical significance.

These findings strongly support both the minority stress model (Meyer, 2003; Rosario et al., 2002) and the identity formation theory (Eliason & Schope, 2007; Erikson, 1968; Halpin & Allen, 2004), revealing general differences between nonheterosexual and heterosexual adolescents and young adults, but showing substantial dynamics of between-group differences across age. Overall, the nonheterosexual group showed weaker mental health and perceived less social integration, particularly at a younger age when a sexual minority identity is typically formed and fewer coping mechanisms are in place.

The main findings are also in line with former studies that used longitudinal designs drawing on convenience samples of heterosexual and nonheterosexual participants (e.g., Hatzenbuehler et al., 2008; Rosario et al., 2011; Savin-Williams, 1995), and also with the few longitudinal studies based on representative samples (Corliss et al., 2008; Dermody et al., 2014; Jager & Davis-Kean, 2011; Marshal et al., 2013). In the following paragraphs, we discuss specific similarities and differences between these longitudinal studies—focusing on those with nonselective, population-based sampling comparable with our study—and our findings.

Perhaps most surprisingly, we were not able to replicate the self-esteem differences between heterosexual and nonheterosexual groups reported by Jager and Davis-Kean (2011). One explanation

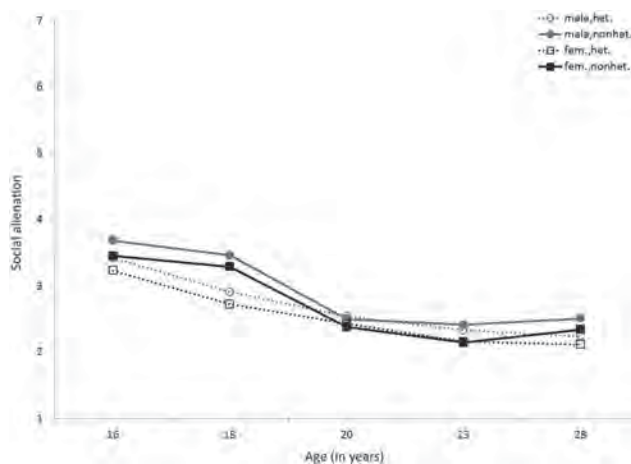


Figure 4. Development of social alienation by sexual orientation and gender from the ages 16 to 28. Het. = heterosexual orientation; Nonhet. = nonheterosexual orientation; fem. = female.

might be that our study drew on a considerably smaller sample size, and therefore differences might remain undetected. Yet other studies reported results similar to ours, that is, more frequent reports of depressive affect in nonheterosexual groups, but no differences in measures of general subjective well-being (e.g., Balsam et al., 2005, for cross-sectional evidence). Shenkman and Shmotkin (2011), using data from a convenience sample, found higher levels of depressive symptoms for nonheterosexuals, but at the same time, higher levels of positive affect in nonheterosexuals compared with a matched sample of heterosexuals. In sum, differences regarding self-esteem seem to be at least more varied than for depressive affect, in which the findings are mostly consistent across studies, that is, across sampling techniques, operationalizations, and design (e.g., cross-sectional, longitudinal).

Depressive symptoms and suicidal ideation did in fact converge in young adulthood, bearing in mind that suicidal ideation was not measured across the entire observational period, but only in the last three waves. However, our results indicate decreasing differences in young adulthood (age 20 to 28), contrary to findings reported by Marshal and colleagues (2013), who reported a diverging trend in adolescence but stable disparities in young adulthood. This discrepancy might be related to the fact that the age range in the Add Health sample, on which Marshal et al.'s study was based, is larger than that in the MSALT sample, which might mask converging trends in the statistical analysis of the Add Health data. Another potential explanation might be historical changes possibly associated with different effects on mental health outcomes in nonheterosexual populations. The MSALT cohort is almost 10 years older than the Add Health sample. Yet, drawing on the results of Jager and Davis-Kean (2011), we would have predicted the opposite pattern: fewer differences between heterosexually and nonheterosexually oriented individuals for later-born cohorts, given the increasing public acceptance of homosexuality in the United States.

Regarding alcohol consumption, we found—contrary to our hypotheses and different from the results for depressive symptoms, suicidal ideation, and social alienation—higher consumption levels for nonheterosexuals compared with heterosexuals starting only when the cohort reached drinking age. Cross-sectional studies usually also show higher rates for younger nonheterosexual youth (e.g., Garofalo, et al., 1998). When taking a closer look at other longitudinal studies, the evidence appears less consistent: Corliss and colleagues (2008) found differences in alcohol consumption already in very young nonheterosexual youth. In contrast, Dermody et al. (2014) found the same developmental trajectories reported in the present study, that is, higher alcohol consumption levels emerging after high school (similarly, Hatzenbuehler et al., 2008). These differences might be related to the ways in which nonheterosexual status was determined: Corliss et al. focused on nonheterosexual individuals who had “come out” at a very young age, that is, during their high school years. In our study, as well as in Dermody et al., sexual orientation was assessed at age 18 and older. Individuals who experienced a “coming out” process at a very young age might be a special subpopulation within the nonheterosexual group, associated with a different (earlier) socialization into nonheterosexual social circles. What all studies have in common is that differences in alcohol use increase with age. The pattern of results suggests that alcohol consumption is, in general, less (or not exclusively) a reaction to minority stress (i.e., a form

of “self-medication,” which should lead to a peak in adolescence), but also a result of other factors, for example, of getting involved in LGBQ subcultures with more permissive attitudes toward alcohol use (cf. discussion in Hatzenbuehler et al., 2008, and Herek & Garnets, 2007). Additional research is necessary to explain these findings in further detail, including exploring alternative psychological and social explanations (e.g., starting families, working in different occupations).

In general, as Hatzenbuehler (2009) argues, there are relevant factors beyond minority stress. General psychological factors (e.g., sexual identity formation *sensu* Erikson) and sociological factors, (e.g., social norms and group dynamics; Herek & Garnets, 2007) as well as the legal societal framework (Hatzenbuehler et al., 2012) affect the psychosocial development of nonheterosexual youth and adults. It was hypothesized that stress related to nonheterosexuality and its impact vary across cultures and historical periods (e.g., Andersen & Fetner, 2008; Clarke et al., 2010). The MSALT sample was drawn at a time when the general public in the United States was far less ready to accept homosexuality than it is today. Compared with the results of Jager and Davis-Kean (2011), who analyzed a later-born sample, the differences we found indicate that the transition into adulthood and the formation of a nonheterosexual identity are less conflict-laden now than they were 25 years ago (although, as mentioned earlier, Marshal et al., 2013, showed the opposite pattern). Our study underscores the need to better understand the mental health trajectories of nonheterosexual youth, as minority stress theory implies that there is no inherent reason why nonheterosexual men and women are at higher mental health risks during the transition to adulthood. Although it is reassuring that, by the age of 28, these differences have dissipated, many nonheterosexual individuals have an elevated risk of enduring (avoidable) lower mental health and well-being for almost 10 years.

Strengths and Limitations of the Present Study

The main strength of the present study is the population-based nature of the longitudinal data, as individuals were not sampled by convenience according to their sexual orientation status. The study followed the participants through the critical transition into adulthood collecting data on a broad array of psychological and behavioral constructs, thus reflecting development over 12 years.

From a critical point of view, representativeness of the overall sample inevitably means a small sample size for the group of interest, even when applying a very broad definition of nonheterosexual orientation (original $N = 77$). We were not able to distinguish between mainly homosexually oriented youth and bisexuals, whereas some research indicates that bisexuals are potentially more affected by psychological distress (e.g., Jager & Davis-Kean, 2011). In a similar vein, our sample was drawn from southeastern Michigan, which has a slightly higher proportion of Whites in the student population compared with the general United States. Mainly as a result of this and the size of the sample, we were not able to further test generalizability across subgroups, for example, by ethnicity and region, nor were we able to test for cohort effects, which might be of importance (e.g., Hatzenbuehler et al., 2012; Jager & Davis-Kean, 2011). Furthermore, we had no specific data that would have enabled us to differentiate the timing of when individuals started experiencing nonheterosexual desires. This

would have allowed us to analyze the development of mental health and well-being of sexual minority groups more closely. In addition, details of minority stress that individuals might have encountered (e.g., type and intensity of bullying and harassment) were not included in the present study.

However, we tested the sensitivity of our presented results in regard to the specific operationalizations we had chosen. Alternative operationalizations regarding sexual orientation (i.e., report of sexual activity only), as well as more restrictive algorithms for missing imputation (i.e., including only those of the larger sample of 1,708 with information on their sexual orientation), resulted in only minor variations of the results presented. Similarly, the findings were robust with regard to the statistical procedure applied for data analysis, using latent growth curve modeling instead of repeated measurement ANOVA. Regressing intercept and change parameters on sexual orientation and gender yielded very similar results to the ones presented here.

Outlook

The main intention of the presented analyses was to better understand psychological functioning and well-being of nonheterosexual youth during their transition into adulthood. Research showing that symptoms of psychological distress are more common in nonheterosexual populations bears the risk of once more affecting these populations negatively by “proving” the stigma (cf. Clarke et al., 2010; Herek & Garnets, 2007; Meyer, 2003). It is a basic tenet of our research that distress develops over the life course as a result of a complex combination of challenges, coping, and support structures at every stage of life. This leads to the important distinction between contexts minority groups can hardly avoid (e.g., family, school, peers) and those they can actively seek out or create (e.g., LGBTQ support groups). It seems crucial for future research to further investigate the different social contexts nonheterosexual youth are exposed to, and to learn more about the conditions that foster positive coping when a young man or woman comes to realize that his or her sexual orientation differs from that of most peers. To become aware of the risks a sexual minority status bears, but also to realize that weaker mental health in nonheterosexual minorities can be mitigated or even avoided altogether, seems important not only for future research but also for interventions in school and family settings—the contexts in which nonheterosexuals often suffer the most, but in which they could also experience the support they most need.

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