NEGATIVE FAMILY TREATMENT'S EFFECTS ON THE WELL-BEING OF SEXUAL MINORITY WOMEN AND TRANSMEN IN VIET NAM, AND THE ROLES OF SEXUALITY-RELATED SOCIAL SUPPORT AND SOCIAL CONNECTION

by

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ABSTRACT

Background: Research linking family rejection to sexual/gender minority health is currently limited to a few studies using samples from Western countries, with transgender populations under-represented.

Methods: Data were from an online survey of adult Vietnamese sexual minority women (SMW) and transmen. Latent class analysis (N=2664) was conducted to suggest latent classes of family treatment experience. Latent class regression identified predictors of latent family treatment classes (N=2459); evaluated the associations between family treatment and health/well-being, and identified differences by gender identity (N=2496); and assessed social support and social connection as moderators/mediators of such associations in the SMW sub-sample (N=1949).

Results: Data supported six latent classes including one of non-negative and five of negative family treatment. Younger age, transman identity, religious affiliation, and parent awareness of non-heterosexuality predicted being in worse classes.

Overall, negative family treatment predicted lower life satisfaction, poorer mental health and increased suicidality and substance use. There were differences by gender identity: (i) among SMW only the most negative class had elevated odds of substance use, but for transmen three negative classes did; and (ii) for life satisfaction and mental health, there is a 'the more negative the treatment, the worse the outcome' trend in SMW, but in transmen only the second most negative class was associated with worse outcomes. In the full sample, three negative classes had elevated odds of suicide attempts, the second most negative class having the highest odds.

In SMW, sexuality-related social support and connection to other SMW predicted well-being, with stronger associations for social support. Connection to other SMW predicted substance use. Evidence were not found for moderation, but were found for mediation: negative family treatment predicted connection to other SMW, which in turn predicted both well-being and substance use.

Conclusions: Results support the hypothesis that negative family treatment is harmful for health/well-being. SMW networks should be targeted to increase the effectiveness and availability of support. Areas for future research include: (i) family reactions to persons of different age ranges; (ii) experience and outcomes in segments of the population that are more isolated, living outside of urban areas, without internet access, and with multiple sources of stress; (iii) the lack of a moderation effect of social support in this family-oriented culture; (iv) the role of other types of support providers e.g., *parents-like others*; and (v) mechanisms underlying the associations between connection to other SMW and substance use.

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CHAPTER 1: INTRODUCTION

Background and Significance

Sexual orientation and gender identity related disparities in mental health

Research in the United States and other western countries indicates that lesbian, gay, bisexual and transgender populations (LGBT) have higher risk of depression, anxiety, suicidality and substance use than heterosexuals. The evidence is strong for lesbian, gay and bisexual people (LGB), based on meta-analyses comparing LGB to heterosexuals (King et al., 2008; Marshal et al., 2011; Meyer, 2003). Research comparing transgender to non-transgender persons is limited, but studies with transgender only samples found high prevalence of depression and suicide attempts (Clements-Nolle, Marx, Guzman, & Katz, 2001; Grossman & D'Augelli, 2007).

In an international study, Mathy (2002) found that rates of suicide attempts were higher among gay men than among heterosexual men in North America, South America, Asia and Australia, suggesting that excessive psychological distress for LGBT is a global phenomenon. In Asia, research in resource-rich countries (Taiwan, Thailand, Hong Kong, South Korea and Japan) has found lower quality of life and higher depression, substance use and suicidality in lesbians and gay men (LG) (Hidaka et al., 2008; Kong, Oh, & No, 2002; Kuang & Nojima, 2003, 2005; Lam et al., 2004; van Griensven et al., 2004). Research on similar topics is limited in lower income Asian countries; this is an important gap in the literature, because LGBT in these countries are also subject to stressors affecting their mental health and may be even more disadvantaged due to economic factors.

Sexual stigma, sexual minority stress and sexual/gender minority health

Meyer's (1995, 2003) minority stress model posits that LGB persons experience stressors related to their minority status, such as prejudice events (enacted stigma), expectations of rejection (perceived stigma), and internalized stigma, which increase risk of negative health outcomes. Empirical research supports this model, linking poor mental health and suicidality to experience of discrimination (Mays & Cochran, 2001), threats, verbal abuse, assaults and hate crimes (Herek, Gillis, & Cogan, 1999; Otis & Skinner, 1996), perceived stigma and anticipated social rejection (Hatzenbuehler, Nolen-Hoeksema, & Erickson, 2008; Meyer, 1995; Ross, 1985), and internalized stigma (Mayfield, 2001; Meyer, 1995; Szymanski, Chung, & Balsam, 2001; Szymanski & Sung, 2010). This model is also supported by research with transgender samples, which has associated suicide attempts with gender-identity-based discrimination, verbal abuse and physical victimization (Clements-Nolle, Marx, & Katz, 2006), and associated psychological distress with enacted and perceived stigma (Bockting, Miner, Romine, Hamilton, & Coleman, 2013).

There has been little research explicitly examining the links between sexual stigma and health in sexual/gender minorities in Asia. Drawing on existing evidence from North America and Europe, one might expect that sexual stigma of any form – enacted, perceived or internalized – negatively affects Asian LGBT. However, more could be learned about culture/context-specific aspects of minority stressors in Asian countries and their implications for LGBT health. Two studies – one about sexual identity development among Asian American LG adolescents (Chung & Katayama, 1998) and the other about Taiwanese gay men's relationships with their parents (Wang, Bih, & Brennan, 2009) –

both revealed that in addition to disapproval of homosexuality, respondents were faced with strong social and family pressure to conform to the heterosexual roles of getting married (to an opposite-sex person) and having children.

Viet Nam context, the populations of interest, and the prominence of sexual stigma in the family

This study was conducted in Viet Nam, a lower middle-income country in Southeast Asia with a Confucius-influenced culture that values hierarchical social order and the patriarchal family. For a young Vietnamese person, to get married (to an opposite-sex person) and have children is not simply a matter of pursuing personal happiness and fulfillment. It is also to please one's parents and ease their worries by doing what is expected, and to some extent, it is considered a filial duty and the appropriate way of life. Women are also expected to be sexually naïve and modest, and to get married while they are still young and "marriageable". This social context is therefore restrictive for sexual minority individuals in general, and especially for sexual minority women.

Research conducted with LGBT in Viet Nam to date is mostly focused on HIV risks in men who have sex with men (MSM). Research on Vietnamese LGBT's experience of stigma and discrimination is nascent. Several HIV studies, however, have noted that Vietnamese MSM encounter rejection from family (Le & Khuat, 2005; B. N. Vu & Girault, 2005). One study that looked at both HIV and social stigma confirmed that gay men and transwomen (i.e., male-to-female transgender persons) encounter rejection from family and discrimination outside the family (L. M. Vu et al., 2009). In 2009, the first study of sexual stigma experience of Vietnamese sexual minority women (Nguyen,

Nguyen, Le, & Le, 2010) was conducted in response to the lack of research about this population, led by the author of this dissertation. No research has specifically addressed social stigma against Vietnamese transmen (i.e., female-to-male transgender persons).

The Nguyen et al. (2010) study mentioned above conducted in-depth interviews with sexual minority women in Ha Noi. Because it was the first study on the topic of stigma with this population, the questions were kept very open-ended, asking respondents to speak about "challenges in life as a woman who loves women". Respondents predominantly talked about challenges at home, highlighting the prominence of the family(-of-origin) in their experience of sexual stigma. Among those whose families knew or suspected they loved women, non-acceptance was common, often chronic, and could be aggressive. Parents often forbade their daughters from meeting their girlfriends, sometimes using control tactics, emotional threats and physical violence. Some parents were relentless in trying to persuade their daughters to change and pressuring them to conform to heterosexuality and traditional femininity. Most of the respondents kept their same-sex relationships secret. Those whose parents did not yet know pretended that their girlfriends were just friends. Among those whose parents did know but were unaccepting, many tried to see their girlfriends in secret. Some respondents pretended to date men, and some struggled with whether they should put their feelings for women aside and marry a man to please their families. In short, this study revealed that family disapproval is a major source of stress for Vietnamese sexual minority women. In addition, quite a few respondents also reported experiencing devaluation and discrimination outside the family (on the streets, in the neighborhood, at school and at the workplace). In the midst of such negativity, some reported receiving support for their sexuality from (usually a small

number of) friends and the most consistent sources of support were other sexual minority women and internet forums catering to women who are interested in women.

The dissertation and its significance

Building on the Nguyen et al. study (2010), the author of this dissertation designed and led the implementation of the first quantitative study on the experience of sexual stigma and social support among Vietnamese sexual minority women and transmen. Though the initial intended focus was on sexual minority women, the study also obtained a sub-sample of transmen, as the two groups tend to mingle socially. Using data from this study (N=2664, including 543 transmen), this dissertation (i) quantitatively documents the experience of negative family treatment in sexual minority women and transmen; (ii) evaluates its associations with health/well-being in these two groups; and (ii) examines the role of sexuality-related social support and social connections in protecting health and buffering against the harms of negative family treatment in sexual minority women.

This study makes several contributions to the existing literature on LGBT health research with regards to content, method and theory. In terms of content, the contributions are at local (Viet Nam), regional (Asia) and international (regardless of context) levels. It is the first study to quantify the experience of one major stigma component in the lives of these populations, and the first study to link sexual stigma to mental well-being, suicidality and substance use in sexual/gender minorities in Viet Nam. More generally, it contributes to narrowing the gap of research on LGBT mental health and research linking minority stress and mental health in resource-poor settings. In the regional context, the study calls attention to the under-researched area of social stress and

mental health, and to the under-studied sexual/gender minority groups in general and sexual minority women and transmen in particular. Regardless of country or regional context, this study contributes to the currently very limited research on the relationship between negative family treatment and health in transgender populations (see more details in Chapter 2: Literature Review).

With regard to methods, this study helps broaden the range of methods used to measure family rejection. In the current literature, family negativity in response to a person's sexual/gender minority status is often measured either as a one-dimensional construct on a continuum from rejection to acceptance, or as a series of variables reflecting different behaviors or behavior dimensions. Using a person-centered rather than a variable-centered approach, this dissertation introduces a conceptualization of family treatment as a latent categorical variable capturing potentially different types of experience. These types of experience may have different predictors and different implications for health, thus providing a more nuanced picture (see more details in Chapter 2: Literature Review).

With regard to theory, this study applies matching theories of social support in studying the role of social support in relation to the effect of negative family treatment on health (see more detailed in Chapter 2: Literature Review). Studies in the LGBT health literature have tested hypotheses about social support's main effects (i.e., being beneficial to health) and stress-buffering effects (i.e., reducing the effect of sexual stigma on health), but few explained why the measures of social support used were expected to buffer against stress/sexual stigma. An exception is a study (Doty, Willoughby, Lindahl, & Malik, 2010) that matched support to stress based on Cohen and colleagues' *matching*

theory of social support (Cohen & McKay, 1984) and compared sexuality-related to non-sexuality-related support in buffering against sexuality-related stress. In studying the role of social support, this dissertation draws from the same theory as well as a theory by Thoits (2011) which matches types of support to social sources of support, in the selection of support variables to be tested, given the specific stressor of negative family treatment. Based on the findings, theory and future research directions are discussed.

In addition to contributing to the body of LGBT research, this dissertation has immediate relevance for practice. Its findings will be a focus of two workshops scheduled for June 2014 involving members of LGBT communities, parents of LGBT, health care providers and health officials in Viet Nam. The workshops will discuss the psychological suffering of sexual minority women and transmen as a result of family and societal rejection. This is expected to contribute to the advocacy for family acceptance, which was first launched following the Nguyen et al. study (2010) and has strengthened by the establishment of an activist parents group (a "Vietnamese PFLAG"). This is also expected to start the discussion with the health sector in order to increase awareness among health providers about harmful practices they should avoid and positive strategies they could employ to help LGBT and their families.

Theoretical Perspectives

This study was informed by social stress and social support theories, specifically the sexual minority stress model and stress-buffering theories of social support.

Social stress and the minority stress model

Social stress theory is concerned with the relationship between social factors and mental health (Schwartz & Meyer, 2010). One of the key themes is social distribution of

stress (Aneshensel, 1992), with the hypothesis that distribution of stressors vary across groups with different social positions, resulting in mental health disparities. The sexual minority stress model (Meyer, 1995, 2003) elaborates that in addition to the general stress of living that everyone is faced with, sexual minority individuals are subject to stressors that are specific to their sexual minority status, which may lead to poorer mental health outcomes. This model suggests that on average we should expect a disparity between heterosexuals and sexual minority people in mental well-being. Also, there is variation in the amount of minority stress that sexual minority individuals encounter, which is expected to correspond with variations in mental health and well-being within sexual minority groups. The study of social stress that affects sexual minorities thus requires both inter-group comparison (between heterosexuals and sexual minorities) and intra-group comparison (among members of a sexual minority group) (Schwartz & Meyer, 2010). This dissertation focuses on intra-group comparison. The minority stress experience central to this dissertation is negative treatment by parental family (based on disapproval of same-sex attraction/relationships or of non-conformity with traditional expectations of femininity).

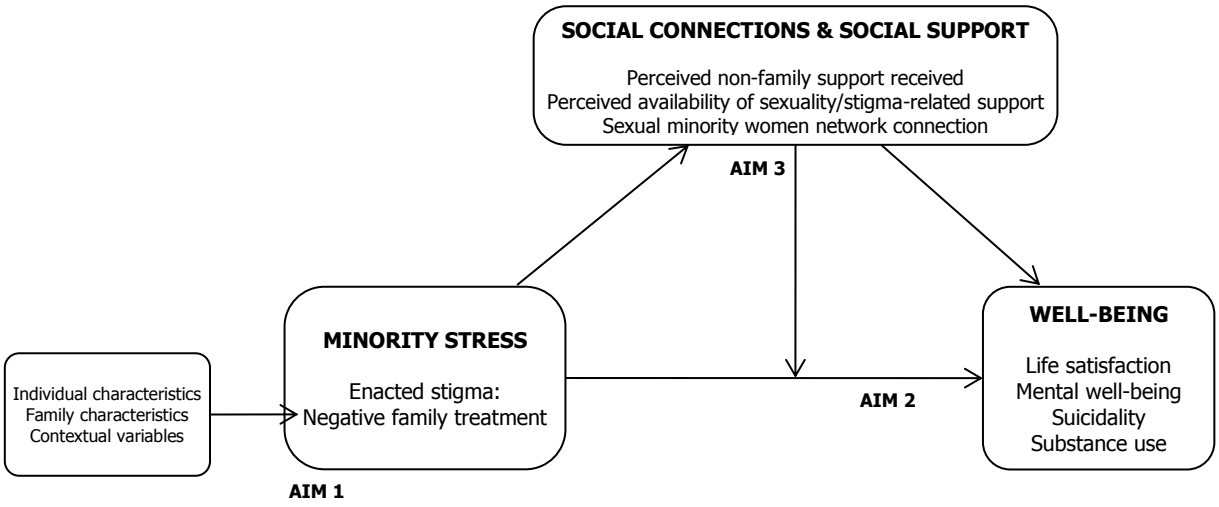
Social support and stress-buffering

Social support theory is not one theory but a body of theoretical work that includes different hypotheses for the role of social support in relation to stress and well-being. The two hypotheses most often tested are the main effects hypothesis, that social support and social connections are beneficial to health; and the interactive stress-buffering hypothesis, that social support protects health through reducing the effect of stress on health (Cobb, 1976; Cohen & Wills, 1985). An additive stress-buffering

hypothesis, where stress experience leads to mobilization of support which in turn is beneficial to health, has also been proposed (Wheaton, 1985). All three hypotheses are examined in this study.

In addition, matching theories of social support helped inform the study. Cohen and colleagues' matching theory (Cohen & McKay, 1984; Cohen & Wills, 1985) posits that social support has a stress-buffering effect (as opposed to purely a main effect) when it matches the coping requirements of a stressful situation. This idea has been applied in a study of a sexual minority sample, which found that sexuality-related social support, but not other social support, buffered the effect of sexuality-related stress (Doty et al., 2010). Thoits' (2011) theory matches the type of support to the source of support, differentiating *significant others* (those who are close to the person but may not have experienced the same kind of stressor) and *similar others* (those who have experienced the same stressor but may be not close to the person). Thoits argues that based on their different positions relative to the person and the stressor, the types of support needed from significant others and similar others differ. The present study drew from the matching concept in both these theories to select measures of social support in matching to the stressor of negative family treatment.

Conceptual Framework



Specific Aims and Hypotheses

Aim 1: Examine heterogeneity among sexual minority women and transmen in Viet Nam with regards to types of experience with negative family treatment, and assess predictors of such types

Hypothesis 1.1: There is heterogeneity in the experience of negative family treatment, such that a set of variables representing negative family behaviors is explained by a mixture of distributions.

Hypothesis 1.2: Characteristics of the individual (age, sexual/gender identity), the family (religious affiliation, parent awareness of sexual/gender identity/behavior, family economic status) and the context (urban/rural, geographical region) differentiate the risk of some types of family treatment versus others.

Aim 2: Evaluate negative family treatment's associations with life satisfaction, mental health, suicidality and substance use, and identify differential effects (if any) for sexual minority women and transmen

Hypothesis 2.1: Negative family treatment is negatively predictive of life satisfaction; and positively predictive of poor mental well-being (depressive symptoms, anxiety symptoms and probable depression), suicidality (having ever attempted suicide and having attempted suicide more than once), and substance use (smoking and heavy drinking).

Hypothesis 2.2: These associations differ between sexual minority women and transmen.

Aim 3: Assess, in the sexual minority women sub-sample, perceived social support and connection to other sexual minority women as moderators and mediators of negative family treatment's associations with (i) well-being (specifically with life satisfaction and depressive symptoms) and (ii) substance use (smoking and heavy drinking).

With regard to well-being, the hypotheses are about the main effects, moderation (or interactive stress-buffering) effects, and mediation (or additive stress-buffering) effects of perceived social support and connection to other sexual minority women:

Hypothesis 3.1: Main effects hypothesis: Perceived social support and connection to other sexual minority women is associated with well-being (positively associated with life satisfaction and negatively associated with depressive symptoms).

Hypothesis 3.2: Interactive stress-buffering hypothesis: Perceived social support reduces the association between negative family treatment and well-being.

Hypothesis 3.3: Additive stress-buffering hypothesis: Negative family treatment predicts higher connection to other sexual minority women (and possibly higher perceived social support), which in turn predicts well-being.

With regard to substance use, since there could be both a stress-buffering effect (i.e., social support/connections buffering against stress therefore reducing smoking/drinking) and a social influence or contextual effect (i.e., social connections and context of social contacts facilitating smoking/drinking), the hypothesis is a bit more complex:

> Hypothesis 3.4: Perceived social support has a negative (reducing) or neutral effect on smoking and drinking, whereas connection to other sexual minority women has a neutral or positive (increasing) effect on smoking and drinking.

Organization of the Dissertation

Chapter 2 of this dissertation reviews the literature on two topics: (1) negative family treatment of sexual/gender minority individuals, including evidence on its prevalence, how it is measured in research, and its association with health and well-being; and (2) how social support and social connections relate to health and stress, especially in sexual minority populations. Chapter 3 describes the methodology, including study design and procedures, measures and analysis plans. Chapters 4 to 6 are three manuscripts each addressing one of the three study aims. Chapter 7 integrates the findings and discusses implications for programs as well as future research.

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CHAPTER 2: LITERATURE REVIEW

This chapter reviews the literature on two topics relevant to this dissertation: (1) negative family treatment of sexual/gender minority individuals, including how it is measured and its association with health and well-being; and (2) social support and social connections, including theories of how these relate to health and stress and empirical evidence from research with lesbian, gay, bisexual and transgender (LGBT) samples. Following the review is a discussion detailing how the review informed the dissertation study.

Negative Family Treatment of LGBT and Its Associations with Health

Prevalence of family disapproval and negative treatment of LGBT individuals

Existing evidence, primarily from studies conducted in Western countries, suggests negative family treatment is a common experience among lesbian, gay and bisexual (LGB) persons. In a sample of American LGB youth living at home, D'Augelli, Hershberger and Pilkington (1998) reported that among female youth who had come out to their families, proportions who experienced negative treatment from mothers and fathers were 38% and 19% for verbal abuse, 10% and 10% for physical threat, and 10% and 5% for physical attack. Among male youth, these proportions were 24% and 19% for verbal abuse, 3% and 2% for physical threat, and 3% and 2% for physical attack. Savin-Williams (1990) reported from another sample of American sexual minority youth whose parents knew of their sexuality that 10% of mothers and 22% of fathers were rejecting of their sexual orientation, and 58% of mothers and 55% of fathers were somewhere between rejecting and accepting (but not accepting). Based on Italian survey data, Bertone (2003) reported that about 10% of gay and lesbian respondents experienced

"strong, even violent, reactions of refusal by parents", and about half of respondents whose sexuality was known to their families reported negative reactions ranging from "violent refusal", to "request to seek help from a psychologist" to "recover" to heterosexuality, to parent self-blaming (p. 7).

Little research has been done outside of North America or Europe to quantify negative family treatment of sexual and gender minorities, especially sexual minority women and female-to-male transgender persons (transmen). Qualitative research, however, suggests this is a major issue. In Ha Noi, Viet Nam, many sexual minority women who participated in a qualitative study led by the author of this dissertation (Nguyen, Nguyen, Le & Le, 2010) considered their relationships with their parents the biggest challenge in their lives as women who love women, because it involved many issues such as how to conceal their sexuality from their parents, whether to let them know, how to cope with their reactions, and how to protect them from pain and suffering. The study reported a range of negative treatment by parents and family members who knew or suspected about respondents' same-sex attraction or relationships, including general disapproval and pressure to conform to heteronormativity, specific behaviors targeting the respondent (e.g., verbal abuse, threats, limitation of personal liberty, seeking help from doctors and shamans, physical attacks, cutting financial and other support), behaviors targeting the respondent's girlfriend (e.g., asking her to stop the relationship, insulting or physically attacking her, or telling her parents about the relationship), and solicitation of help from their schools/workplaces and from local authorities to intervene in the relationship. Building on this qualitative research, this dissertation aimed to

quantitatively study negative family treatment of sexual minority women and transmen in Viet Nam.

Measurement of family disapproval/negative treatment

This literature predominantly measures family rejection using either a binary or a continuous scale. Quite a few studies used a single ordinal rating of parent/family reactions from accepting to rejecting or a binary variable based on such rating (D'Augelli, Hershberger, & Pilkington, 2001; D'Augelli, 2002; Padilla, Crisp, & Rew, 2010; Savin-Williams, 1989), which, while valid, do not reflect the potentially complex nature of negative family treatment. Willoughby and colleagues (2010) used a multiple-item measure drawn from the Family Reaction subscale of the Measure of Gay-related Stress (Lewis, Derlega, Berndt, Moriss, & Rose, 2002), which is likely an improvement in reliability over a single-item, but is similar in that it measures family rejection on a continuous scale. Ryan and colleagues (2009) used an instrument that captures the complexity of family treatment by recording frequency of 51 negative reactions. In the analysis, however, they used the count of items positively answered as a continuous variable, noting that this was a simplification. Other studies used a variable-centered approach, quantifying specific behaviors (e.g., Bertone, 2003), or dimensions of family behavior (e.g., D'Augelli and colleagues [1998] capturing verbal abuse, physical threat and physical attack).

Currently absent from this literature is a person-centered approach, which would help discern patterns of family treatment experienced by individuals. For example, with data capturing verbal abuse, physical threat and physical attack (e.g., in D'Augelli et al., 1998), it is possible that some individuals experience only one and others experience

different combinations of these treatments. Similarly for data recording a detailed list of family behaviors (e.g., in Ryan et al., 2009), there might be one subgroup that experiences one subset of these behaviors, another subgroup that experiences another subset, and yet another that experiences a combination. The person-centered approach could make meaningful contributions to the literature, as it would allow segmenting the sample/population into groups with different patterns of experience, document their prevalence, examine whether and how they differ in individual and family characteristics and contextual factors, and evaluate if their health outcomes differ; all such information is useful for the design and targeting of interventions.

Negative family treatment and the health of LGBT

Health research has accumulated ample data linking the experience of sexual stigma and health in LGBT adolescents and adults (Institute of Medicine, 2011). Research on the health impacts of negative parental/family treatment specifically is less extensive. The Institute of Medicine (2011) noted that health research with LGBT youth has largely focused on the school environment, with limited family-focused research. This situation has led some authors to call for research of LGBT youth to pay greater attention to parents and family systems (Bouris et al., 2010; D'Augelli, 2005; Garofalo, Mustanski, & Donenberg, 2008; Horn, Kosciw, & Russell, 2009). In studies of adult LGBT, the family-of-origin receives even less attention – a review of LGBT health in early and middle adulthood by the Institute of Medicine (2011) did not reference any studies that examined the roles of family-of-origin when discussing stigma, discrimination and victimization, or protective factors.

A recent review of family influence on LGBT health (Bouris et al., 2010) found two studies that reported associations between family rejection of LGB identity and mental health. In a sample of American and Canadian LGB youth, family rejection was associated with higher scores on the Brief Symptom Inventory (BSI) (D'Augelli, 2002). In a sample of white and Latino LGB young adults in California (Ryan et al., 2009), family rejection during adolescence was associated with elevated depressive symptoms at present. Another study found that in LGB adolescents in New York, parent discouragement of gender atypicality was associated with BSI scores and trauma, as assessed by the Trauma Symptom Checklist (D'Augelli, Grossman, & Starks, 2006). Also related to the topic of well-being but not specific to mental health, in a study by Savin-Williams (1989), parent acceptance (as opposed to rejection) predicted being comfortable with one's sexual orientation in young lesbians and in young gay men who considered parents important to their self-worth; and comfort level of one's sexual orientation was associated with gay men's self-esteem. Willoughby, Doty and Malik (2010) found that family rejection predicted negative LGB identity, a construct related to internalized homophobia.

Several studies have also examined associations between negative family treatment and suicidality. In a sample of American, Canadian and New Zealander LGB youth (D'Augelli et al., 2001), father's rejection or intolerance was associated with past suicide attempts. A study of LGB adolescents in New York (D'Augelli et al., 2005) found that psychological abuse by parents and parent discouragement of gender atypical behavior were associated with sexual-orientation-related suicide attempts. In the study of

white and Latino LGB young adults mentioned above (Ryan et al., 2009), family rejection was associated with suicidal ideation and suicide attempts.

Effects of family treatment on substance use have also been examined. The same study of white and Latino LGB young adults (Ryan et al., 2009) found that family rejection predicted illicit substance use (but not heavy drinking) and substance/alcohol-related social or legal problems. Padilla, Crisp and Rew (2010) found that mother's positive or neutral reaction to sexual identity disclosure (as opposed to negative reaction or non-disclosure) was negatively associated with illegal drug use. In addition to these studies, Rosario, Schrimshaw and Hunter (2009) found that the number of important persons (family and others) who reacted negatively to disclosure was predictive of alcohol, cigarette and marijuana use in LGB youth.

The literature on family treatment of transgender persons is more limited, but suggestive of negative consequences. In a sample of 55 transgender youth in New York, childhood parental verbal and physical abuse related to gender-identity or gender-nonconforming behavior was predictive of suicide attempts (Grossman & D'Augelli, 2007). Data from the National Transgender Discrimination Survey suggest an effect of family rejection and family violence: 51% of those who experienced family rejection and 65% of those who experienced family violence had attempted suicide, much higher than the 32% among those with accepting families; lifetime alcohol/drug use prevalence was 47% among those who experienced family violence, 32% among those who experienced family rejection, and 19% among those with accepting families (Grant et al., 2011).

In short, there is growing evidence in the literature that negative family treatment is harmful to LGBT mental health and substance use. However, the number of studies on

this topic remains small; the samples are limited to Western cultures, and mostly focused on the US; and transgender populations are under-represented.

Relevance to this dissertation

The above review confirms the importance of studying the negative family treatment of a sexual minority or transgender person. That rejecting and aggressive behaviors by parents are not uncommon in the US or Italy suggests that across cultures, families face high levels of difficulty in accepting an LGBT child and that LBGT's experiences of family rejection and violence are common. Improving an understanding of negative family treatment of LGBT and its impact on health in a non-western, family oriented, society is vital to understanding how to promote their health and well-being.

Based on the review of how family negativity has often been measured in health research, this dissertation research makes a methodological contribution to this literature by introducing another way to characterize negative family treatment, conceptualizing it as a categorical phenomenon. Using latent class modeling allows an examination and representation of the heterogeneity that potentially exists, and a more nuanced assessment of whether different categories (types) of family treatment experience have different antecedents and health consequences.

Finally, examining the effects of negative family treatment on the health and well-being of sexual minority women and transmen in Viet Nam represents an initial step toward narrowing the gap of research on the associations between sexual stigma in general, and sexual stigma in the family in particular, and health in non-western countries, and specifically (low to middle income) Asian countries. The inclusion of a

transmen sub-sample also contributes to the dearth of literature on family influences on their health.

Social Support, Social Connections and Sexual Minority Health

Stress, social support and health: Main effects, stress-buffering effects, and matching theories of social support

Social connections and social support have been linked to mental and physical health by many studies (Berkman, 1995; Cohen & Wills, 1985; Kessler, Price, & Wortman, 1985; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). In SM health research, social support has been found to be positively correlated with life satisfaction (Wayment & Peplau, 1995), self-esteem (Yakushko, 2005), psychological well-being (Detrie & Lease, 2007), positive sexual identity and positive sexual-and-ethnic identity (L. Vu, Choi, & Do, 2011); and with lower risk of anxiety (Sivasubramanian et al., 2011), depression and suicidality (Sivasubramanian et al., 2011; Teasdale & Bradley-Engen, 2010).

The minority stress model theorizes that social support ameliorates the negative impact of minority stressors on mental well-being (Meyer, 1995, 2003). This *stress-buffering* model, which is dominant in the stress literature, is operationalized through a Social Support × Stress interaction term, expected to be positively associated with mental health and negatively associated with distress (Cohen & McKay, 1984); it is also called the *stress moderation* model, or the *interactive stress-buffering* model (see Figure 2.1). The model has some support from LGB research. In LGB adolescents, it has been found that having sexual minority friends moderates the effects of interpersonal problems at school and arguments at home on psychological distress (Ueno, 2005), and that family

support reduces the negative effect of antigay abuse on mental health (Hershberger & D'Augelli, 1995). In LGB young adults, sexuality-related social support (specifically perceived availability of emotional support and advice for dealing with sexuality-related stress) has been found to lower the effect of sexuality-related stress on emotional distress (Doty et al., 2010).

The evidence is not uniform, however. Several studies tested but did not find an interactive effect of social support and sexual minority stress. In a study of gay male youth (Friedman, Koeske, Silvestre, Korr, & Sites, 2006), peer and parental support contributed to lower suicidality, but did not moderate the association between bullying and suicidality. In South Indian men who have sex with men, perceived social support was associated with lower depression, but did not moderate the influence of gender non-conforming stigma or HIV stigma on depression (Logie, Newman, Chakrapani, & Shunmugam, 2012). Szymanski (2009) found that social support neither had a direct effect nor moderated the effect of heterosexist events on psychological distress in gay and bisexual men. These findings reflect a theme in the broader stress literature, that the evidence for the stress-buffering hypothesis is inconsistent (Thoits, 2011).

Scholars studying stress and coping have theorized about mechanisms for the *stress-buffering* versus *main* (i.e., non-stress-buffering) effects of social support on health, which may shed light on these inconsistent findings. According to Cohen (2004), main effects result from the social integration aspect of social relationships, which brings positive psychological states that induce health-benefiting physiological responses, and provides information, motivation and pressure for individuals to care for themselves. Thoits (2011) highlights everyday supportive actions that promote health through

sustaining a sense that one matters to significant others, making everyday tasks easier and thus maintaining a sense of control over life, and preventing stressors from occurring or helping appraise situations as less threatening.

Social support that buffers against stress is support that is effective in helping the person cope with a stressful situation (Cohen, 2004; Thoits, 2011). As such, it differs qualitatively from everyday supportive actions (Thoits, 2011). Cohen and colleagues' matching theory of social support (Cohen & McKay, 1984; Cohen & Wills, 1985) posits that stress-buffering effects are found when the social support measure captures resources needed to cope with the stressor. They suggested that emotional and appraisal support is needed for a broad range of stressful events, while instrumental support and social companionship buffer stress only when they match the specific requirements of a stressful situation; and that the size of a person social network (e.g., number of social ties) is less likely to have stress-buffering effects than a confidant relationship. Thoits' (2011) theory on stress-buffering social support matches the type of support to the source of support. The theory distinguishes two categories of support providers: *significant others* (who are close to the person but may not have experienced the same kind of stress) and *similar others* (who have experienced the same kind of stress but may not be close to the person), and asserts that the kinds of support needed from them to buffer stress differ. Significant others should provide love, concern, sympathy (for *emotional sustenance*) and instrumental support (for *active coping*); similar others could provide empathic understanding, support for ventilation and validation of feelings and concerns (for *emotional sustenance*), threat reappraisal, information, advice, and coping encouragement

(for *active coping*), as well as role modeling and hope inspiration (positive *social influence*).

The support matching concept in both these theories is relevant to the study of social support and sexual minority stress. One of the studies previously mentioned that found a stress-buffering effect (Doty et al., 2010) matched the social support measure to the stressor based on Cohen's theory – it evaluated sexuality-related support as a buffer of sexuality-related stress. In the study by Szymanski (2009) which did not find a stress-buffering effect, the investigator noted that the social support measure was not specific to the stressor of interest, heterosexist events.

Thoits' distinction between support from significant others and from similar others is corroborated by several studies. Sexual minority youth have repeatedly reported receiving less support from their families than from people outside their families (Mufioz-Plaza, Quinn, & Rounds, 2002; Nesmith, Burton, & Cosgrove, 1999). In Mufioz-Plaza et al.'s study, LGBT high school students reported receiving support from both heterosexual and LGBT peers and non-family adults, but the emotional support from heterosexual peers was more limited. In the Doty et al. study, young LGB adults reported that support from family and heterosexual friends for sexuality-related stress was less available than their support for other stressors. Both studies found that LGBT persons were better placed to provide some forms of support, namely information and appraisal support (Mufioz-Plaza et al., 2002) and sexuality-related support (Doty et al., 2010). Other studies suggest there are certain support needs that might best be met by other sexual minority persons. Studying social support and life satisfaction in women, Wayment and Peplau's (1995) found that after accounting for the effect of global social

support (a latent construct reflected in several support domains), for lesbian but not heterosexual women, one of the support domains – reassurance-of-worth support – had an additional effect on life satisfaction. This suggests that lesbian women may face more threat to their sense of self-worth, and thus benefit more from reassurance-of-worth support, a kind of support that may be more available from other sexual minority persons who face the same kind of threat. In a sample of Chinese homosexual men, Liu and colleagues (2011) found a positive association between self-stigma and perceived social support from sex partners, but not from other people. Possible explanations include (a) sex partners of homosexual men high in self-stigma provided them with more support to help them cope with self-stigma; and (b) compared to homosexual men low in self-stigma, those high in self-stigma derived more benefit from the support provided by sex partners – both of which endorse the importance of matching support and support provider to the coping needs.

Stress affecting social support: Mediation models

The moderation model is prominent in stress buffering research, as it is relevant to a broad range of coping resources including social support as well as personal traits. However, a support by stressor interactive effect on well-being is not required to determine that social support is effective in helping a person cope with stress. It is possible that as individuals encounter a stressful situation, their social network mobilizes, or they mobilize the social network, to provide more support – of the kinds needed, from the appropriate people – which effectively helps them cope with stress and maintain well-being. In that case individuals with higher stress exposure would report higher levels of social support, and the maintenance of well-being (or reduction in the harms of stress) for

them results from the higher social support that has been mobilized. This effect could simply be a main effect, with social support not necessarily modifying the effect of stress. The model of stress leading to higher social support, which in turn reduces distress, has previously been described and named the *additive stress-buffering* model (Wheaton, 1985) (see Figure 2.1), distinguishing it from the interactive stress-buffering model.

The testing of this model has been limited, but data from some settings suggest that it may have some validity. In a Chinese American sample, stressful life events positively predicted social support, which in turn was negatively associated with psychological distress (Lin, Ensel, Simeone, & Kuo, 1979). In a sample of caregivers of dementia patients (Cho, 2006), caregiver role overload was associated with mobilization of support from others, which in turn predicted reduction in caregiver anger. The author of this dissertation was not aware of any studies that tested this model in LGBT populations, but some findings suggest there may be an influence of stress on social support. Berger and Mallon (1993) found in a sample of gay men that those not in a committed relationship were more likely to report loneliness and to talk to network members more often, suggesting that non-partner connections were used to compensate for the lack of a partner relationship. In a qualitative study with LGB youth, a major theme was seeking parental figures among other LGBs, especially for youth who had troubled relationships with their parents (Nesmith et al., 1999).

Beside a support-mobilizing effect, stress could also have a support-dampening effect (see Figure 2.1). In a study of adult adjustment, Runtz and Schallow (1997) found that childhood physical abuse predicted lower perceived social support from friends and family. In people living with HIV in Hong Kong, HIV self-stigma predicted lower

perceived availability of social support (Mak et al., 2007). In a sample of sexual minority women, homophobic victimization and internalized homophobia negatively predicted social-psychological resources, a measure including social support (Lehavot & Simoni, 2011). In all these studies, while it is possible that both the predictor (childhood abuse, HIV self-stigma and sexual minority stress) and the response variable (perceived social support) shared common causes (e.g., hostility in the social environment), it is also possible that the experience of violence, prejudice and internalized-stigma either (i) cause people to perceive their social connections more negatively; or (ii) shape their interactions with others in such ways that reduce the actual availability of support – examples of the latter may include concealing sexual identity, or keeping an emotional distance from others.

Analytically, the additive stress-buffering model and the support-suppressing model are the same mediation model, the only difference being the hypothesized sign of the stress-to-support path. Also, the mediation and moderation models are not mutually exclusive (Wheaton, 1985); it could be the case that stress influences the level of social support as well as social support modifies the effect of stress.

Another aspect of social connections: Social influence

Thoits' theory summarized above mentions positive social influence, in the form of role modeling and inspiring hope. One example of this is the parental figures in Nesmith and colleagues' (1999) study, who provided advice and acted as role models. Yet not all social influence is positive. Social norms in some American lesbian communities (e.g., athleticism, strictly identifying as lesbian and having sex only with women, achieving high education and financial independence), for example, were

associated with depression and anxiety among young sexual minority women who do not live up to these standards (Boyle & Omoto, 2014).

Social influence may be a factor contributing to elevated rates of substance use in sexual minority populations, in addition to sexual minority stress. Analyzing data from the 2000 National Alcohol Survey in the US, Trocki and colleagues (2005) found that sexual minority women spent more time than exclusively heterosexual women in bars and at parties – venues conducive to substance use – and gay men spent more time in bars than other groups of men. In a qualitative study, sexual minority women were more likely than heterosexual women to talk about substance use as a means to build community connection (Drabble & Trocki, 2013). Baiocco and colleagues (2010) surveyed young lesbian and gay adults in Italy and found that high connectedness to the gay community predicted heavy drinking as opposed to just social drinking. A survey of young lesbian and bisexual (LB) women found that drinking norms (the number of alcoholic drinks a person believed a typical LB woman consumed per week) was associated with drinking behavior (number of drinks the person consumed) (Gilmore et al., 2014).

Relevance to this dissertation

Based on the literature review above, this dissertation research tested main effects as well as both moderation (interactive stress-buffering) effects and mediation (additive stress-buffering) effects of social support. It tests the hypotheses that (i) social support is beneficial to well-being (main effects); (ii) social support reduces the effects of negative family treatment on well-being (moderation effects); (iii) social support is in the causal pathway, i.e., negative family treatment predicts higher social connections/support, which in turn predicts higher well-being.

With regard to substance use, there could be a stress-buffering effect (social support reducing the use of substances as self-medication to deal with stress) as well a social influence effect (knowing other sexual minority women who smoke and drink making one more likely to smoke and drinking) or contextual effect (sexual minority women socializing at venues conducive to smoking and drinking). The main, moderation and mediation effects model were also evaluated, but hypotheses were more complex, with social support measures expected to have a reducing or neutral effect on smoking and drinking, and connections with other sexual minority women to have a neutral or increasing effect on smoking and drinking.

Drawing from the matching concept in both Cohen and colleagues' (Cohen & McKay, 1984; Cohen & Wills, 1985) and Thoits' (2011) theories, this dissertation selected support variables with the intention to match social support measures to the stressor. One measure, *perceived non-family support received*, was based on/captured respondents' ratings of support received from friends, from other sexual minority women and from LGBT internet forums. It matches with negative family treatment in two ways: (i) the support came from outside the family, which was juxtaposed with the stressful situation in the family; and (ii) friends, other sexual minority women and LGBT internet forums are the most important sources of support for same-sex sexuality that is rejected by the family (Nguyen et al., 2010). Another measure, *perceived availability of sexuality/stigma-related support*, which covers availability of someone to talk to or give advice about relationship problems or problems with stigma in or outside the family, is matched directly in content (stigma-related support matched with stigma experience in the family).

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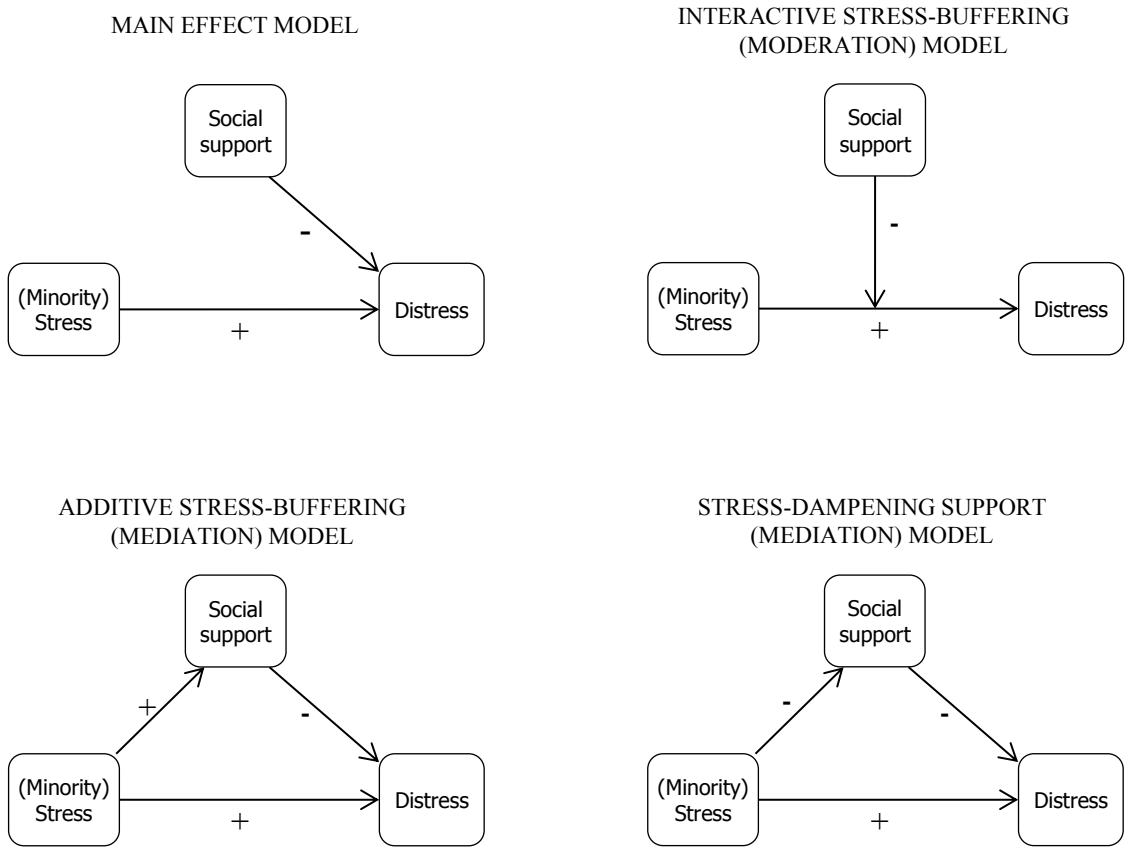
Figure 2.1. Models for the associations among stress, social support and distress



CHAPTER 3: METHODOLOGY

This chapter describes the study design and procedures, details the variables, and explains the analyses that are part of this dissertation.

Study Design and Procedures

This dissertation was based on a survey that was jointly carried out by the Institute for Studies of Society, Economy and Environment (iSEE—a Vietnamese research organization focusing on social minority groups), ICS Center (a Vietnamese LGBT activist group), and Johns Hopkins Bloomberg School of Public Health (i.e., the author of this dissertation and Dr. Amy Knowlton, her advisor).

Study populations

The primary target population of the survey was adult Vietnamese sexual minority women, defined as women who have had romantic/sexual attraction to or relationship(s) with other women, regardless of sexual identity. This broad category was used in defining the population instead of specific identities (such as lesbian and bisexual) because the Nguyen et al. (2010) qualitative study encountered some women who were in relationships with another woman but identified as straight. The broad category in this survey aimed to capture women who were non-heterosexual in sexual identity, attraction, or behavior.

The survey team were aware that some people in the "lesbian community" in Viet Nam may identify as men or "transguys" (a term used in the community for individuals assigned female sex who identify with the opposite sex), either openly to others in the community, or privately to themselves, and this may or may not correspond with their gender appearance. The survey thus included a question about self-identity with focus on

sexual identity of sexual minority women (with response options: female-homosexual, female-bisexual, female-heterosexual and female-unsure) but also including a male/transguy identity (through response option: I consider myself a man/transguy), as well as an "other identity". Given this choice, about 20% of responses (complete and incomplete) indicated a male/transguy identity (herein referred to as "transman"). The mixed sample allowed this dissertation to examine both groups, sexual minority women and transmen.

Study design

This dissertation is based on web-based one-time survey with non-probability sampling. Several considerations were made that resulted in this design. Since the study population is hidden, they cannot be enumerated and thus no frame is available for probability sampling. This means the sample acquired is not representative and does not provide unbiased estimates of negative family treatment, social support or well-being. Respondent-driven sampling (RDS) was considered, as it would allow some adjustment for variation in sampling probability. However, this would require significant effort by respondents—not only to respond to the survey but also to recruit others. Incentives would have to be at a level commensurate of the effort in order to achieve sufficient sample size, but large incentives could be coercive and encourage untrue responses (multiple responses from the same persons, or responses from persons outside of the study population). Considering these risks, RDS was not used. Caution was taken, however, not to extrapolate the results (associations tested) to segments of the study population that the sample does not capture (e.g., sexual minority women and transmen

who do not use computers or the internet), and only to interpret any prevalence documented as sample prevalence, not population prevalence.

The anonymous web-based design allowed respondents to participate without having to disclose their sexual identity. This may have helped improve coverage of sexual minority women and transmen who were less out, and help the survey reach a large sample size. While avoiding one selection bias, this survey suffers from another: respondents were those that used computers and the internet, thus were likely to be younger and live in cities. Given the tremendous challenge of recruiting sexual minority women for in-person interviews (which was experienced in the formative qualitative study), the anonymous online format was chosen. Online survey has been used by several researchers to study men who have sex with men in Viet Nam. It has also been used to research lesbians in Taiwan and Japan (Kuang & Nojima, 2003; 2005). The proposed study was the first large scale online survey with sexual minority women and transmen in Viet Nam.

The anonymous design precluded the possibility of a longitudinal study. The study was thus a one-time survey, which means associations can be examined, but causal inferences cannot be made. This dissertation is thus an exploratory study in nature; other studies are needed in the future to provide conclusive evidence about the causal relationships of interest.

Survey development

Survey development was a collaborative and consultative process. The survey development team included the author of this dissertation, iSEE researchers, and ICS staff and volunteers. The team identified the topics to be covered by the survey. The

author of this dissertation reviewed the literature, searched for existing instruments, and took the lead in adapting them or developing new instruments and questions. iSEE researchers helped search for instruments available in Vietnamese language. ICS staff suggested content to be included, and commented on the appropriateness of questions. Sections of the questionnaire were revised multiple times following several rounds of consultation.

Sampling and recruitment

An advertisement with an anonymous link to the survey webpage was placed on five internet forums catering to Vietnamese women who are interested in women, and one internet forum explicitly catering to sexual minority women and transmen. On the survey webpage, a visitor was asked if three statements were true: "You are female", "You currently or previously have loved a woman (/women)" and "You are over 18 years old". It is important to note that the Vietnamese word "yêu" (love) implies either having had romantic/sexual feelings for, or having been in a relationship with, someone. If the visitor indicated that all three statements were true, another page appeared with informed consent material, including information about the survey and rights of participants including the right to refuse to answer any question. Those who indicated at least one of the screening statements was not true, or refused consent, were exited from the webpage with a thank you note.

Payment

No payment was provided to individual respondents. Instead, as an incentive, for each completed questionnaire, 30,000 VND (equivalent to 1.44 USD) was contributed, on the respondent's behalf, to an internet forum selected by the respondent, out of the

five internet forums that helped with survey recruitment. This incentive was designed to capitalize on respondents' altruism—doing something good for their communities—which might also have encouraged them to complete the questionnaire and provide true and thoughtful answers. This incentive amount was small enough that it was unlikely to be coercive or to induce respondents to fill out the survey multiple times.

Timing of data collection

The web-based survey was launched on March 14 and closed on July 10, 2012.

Quality control

Since no interviewers were involved, a phone number and an email address dedicated to the survey was provided on the survey website as well as on the internet forums where the survey was advertised, so respondents and other members of the study population could contact the study team to ask questions. On each of the five internet forums, a discussion topic concerning the survey was created and maintained for the full period of data collection. In this thread, forum members posted comments and asked questions about the survey, which were addressed by the study team. Efforts were made to keep open and respectful communication with the community, so as to encourage serious and quality response.

Another method of quality control was to follow the survey closely inside the Qualtrics system, which was used to administer this survey. Qualtrics is capable of reporting real time data on duration of survey and number of respondents answering each question. This was expected to help identify whether any questions seemed problematic. For example, it was noticed after the first couple of days that some respondents were not answering the question about age, and inspection of the online questionnaire revealed an

unintended feature of the setup of the question which allowed participants to skip the question without giving an error message. This was fixed so that respondents had to select one of the response questions, which included “refuse to answer”, before going on to the next page. This greatly reduced missing age information afterwards.

The number of clicks from referral websites were tracked using bitly.com. This revealed in real time which advertisement channels were reaching more people than others. In one instance, this allowed the team to negotiate with a forum to change the location of one ad which was not drawing many clicks.

Data cleaning

To ensure data safety, data download and cleaning was conducted solely by the author of this dissertation. After the close of the survey, data were downloaded from Qualtrics in an excel file format and stored in a password-protected virtual drive on the computer of the author of this dissertation, which was also password-protected. Data cleaning started with trimming records from the data file based on screening questions not being answered, screening out, not consenting, and consenting but not answering any survey question. The data file retained 4018 records with answers to at least one survey question. Of these 2700 completed filling out the survey questionnaire, and 1318 did not complete.

IP addresses were examined next. It was expected that some IP addresses would repeat for a number of reasons: (i) several respondents could have got together at one person’s home and used the same computer to answer the survey; (ii) respondents could have used a computer in an internet shop which could be used by more than one person; and (iii) some internet service providers use dynamic IP addresses, assigning a small

number of IP addresses to multiple users only as they go online. As expected, 78 IP addresses were found with two responses (156 responses), 10 with three responses (30 responses), 12 with four responses (48 responses), and 8 with five to eight responses (50 responses), totaling 284 responses. Responses for each repeat IP address were then compared; it was found that they were not very similar to one another, and that they made plausible sense as real responses. The decision was thus made to not exclude any of these records. IP addresses were then deleted from the dataset.

The next step data cleaning focused on the answers to the questions. All the changes made to the data at this stage were documented, with explanations justifying the changes. Several questions were multiple-choice with an "other – please specify:" option. Each response in the "please specify" box was read and if it corresponded with one of the given responses, the answer was recoded to the correct response category. An example is the question on sexual/gender identity. Some respondents selected "other" and then specified "fem", these were recoded to the lesbian category, because "fem" is one of the lesbian gender categories that members of the Vietnamese lesbian community identify with. One respondent specified, "I look soft-butch on the outside but inside I am truly a transguy", this response was recoded to transman identity. Several respondents specified "pansexual"; they were recoded to the closest category "bisexual".

Some survey questions provided a space for respondents to type in the answer, even though the answer was expected to be a numeric value, so as to not lead respondents to feel a certain range of answers were normative. These responses were examined very carefully and converted to numeric form or assigned a missing value as appropriate. For example, to the question "Have you ever attempted suicide?", one of the respondent

answered yes, and then when asked "How many times have you attempted suicide?" and given a blank space, answered: "I only thought about it and intended to do it but did not do it and will not do it (because of my family)". Another respondent wrote "1-2 times but I did not have enough courage to do it, and I had second thoughts and stopped in time." Both of these persons' responses were recoded to zero. Five other respondents, on the other hand, stated "many" or "many times" but did not give a specific number; these responses were recoded to 2 to signify that they attempted suicide more than one time. In this dissertation, the binary indicators of any suicide attempt and more than one suicide attempt were used, not a specific number of times.

Ethical Considerations and Ethics Review

A major concern in doing research with sexual minorities is risk of disclosure of the respondent's sexual identity/orientation/behavior as a result of her participation. The survey's web-based anonymous design significantly mitigated this risk. The respondent could respond to the survey in private, without anyone knowing, and without disclosing sexual/gender identity/behavior to anyone. To minimize the residual risk that someone else might see a question on the computer screen, an inconspicuous survey screen was used—not displaying the survey title at the top of the page and using a small font size that was hard to read from a distance—and the respondent was advised up front to answer the survey in private. Respondents were also cautioned to ensure they did not inadvertently disclose their own or others' sexual identity if they shared information about the survey on Facebook or other social media (e.g., not to tag friends when posting on one's page, and not to post on friends' pages).

Another risk considered was emotional risk, since questions about stigma and discrimination might cause respondents to feel sad. To minimize this risk, efforts were made to balance positive, neutral and negative items in the survey, and order survey sections so that positive and neutral questions were asked at the end.

Before implementation, a proposal for the survey was submitted to the Institutional Review Board at Johns Hopkins Bloomberg School of Public Health for review. The Board granted an Exempt determination based on an assessment of minimal risk due to the anonymous design, and approved implementation (decision FWA #00000287, dated January 20, 2012).

The Sample

This dissertation used data from a sample of 2664 survey respondents (including 543 transmen) who reported living in Viet Nam (i.e., excluding respondents who were Vietnamese but living overseas) and who answered a set of 19 questions about negative family behaviors. The full survey dataset actually includes more records with responses to these questions. However, since the questions were set up as "check all items that apply", for respondents who did not check any items, it was unclear from these questions alone whether they answered no to all the items (by not checking any) or they had dropped out (and did not answer the question). The sample was thus restricted to those who answered a question after this section that required selecting a response option, in order to avoid overestimating the proportions of respondents who reported negative family behaviors.

Measures

Family treatment

Family treatment was conceptualized as a latent categorical variable based on responses to 19 yes/no questions that captured the respondent's experience to date of negative behaviors by parents or other family members, resulting from their disapproval of the respondent's (known or suspected) same-sex sexuality or non-conformity to traditional expectations of femininity. These questions were developed based on findings from the Nguyen et al (2010) study, and were expanded with discussion with the research team in Viet Nam. The items captured general disapproval and pressure to conform to heteronormativity and traditional femininity, and aggressive behaviors to force the respondent to change including behaviors targeting the respondent, the respondent's girlfriend, or both (see Table 3.1).

Outcome variables: Life satisfaction

Life satisfaction was measured using an adapted version of the personal well-being index for adults (PWI-A) (The International Wellbeing Group, 2006) with nine items capturing satisfaction with standards of living, health, achievement in life, personal relationships, love life, safety, work or school, community integration, and future life prospects. The construct validity of this measure was established through regression analysis predicting a single item measuring satisfaction with life as a whole, and correlation with the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Details of validation analysis are included in the Appendix to this chapter. The eight items, which were rated on a scale from 0 (very dissatisfied) to 10 (very satisfied), were summed and rescaled to a life satisfaction variable with a possible range of 0 to 100.

Outcome variables: Mental well-being

Three variables reflect poor mental well-being. Anxiety symptoms and depressive symptoms were measured using adapted versions (Nguyen et al., 2013) of the GAD-7 (Spitzer, Kroenke, Williams, & Löwe, 2006) and the PHQ-9 (Spitzer, Kroenke, & Williams, 1999). Items were summed to form severity scores with possible 0-21 range for the GAD-7 and 0-28 range for the PHQ-9. Probable depression was a binary variable constructed based on answers to the PHQ-9 using the DSM-IV symptom count algorithm (Spitzer et al., 1999); this measure did not take into account whether there was functioning impairment due to symptoms, which was not captured by the survey.

Outcome variables: Suicidality

Respondents were asked if they had ever attempted suicide, and if the answer was yes, how many times they had attempted suicide. This study used two binary variables: any-suicide-attempt (1=having ever attempted suicide, 0=never) and repeat-suicide-attempt (1=having had more than one suicide attempt, 0=otherwise).

Outcome variables: Substance use

The survey asked about the use of cigarettes and alcohol. This study examined two outcome variables: current smoking (1=currently smoking, regardless of frequency, 0=currently not smoking); and recent heavy drinking (1=consumed four or more alcoholic drinks on at least one day in the past 30 days, 0=zero such days in the past 30 days).

Social support and social connections

Social support and social connections entered into the analysis for Aim 3. Two measures of perceived social support were considered, namely perceived non-family

support received (SR) and perceived availability of sexuality/stigma-related support (SA). These were conceptualized as latent normal continuous variables. SR was measured with three indicators: support received from friends, from other sexual minority women, and from LGBT internet forums, rated on a scale from 0=very little to 8=very much; because of their non-normal distributions with large masses at the two extreme, these variables were treated as ordinal variables. SA was measured with four ordinal indicators, rated on a 5-point scale from strongly disagree to strongly aggree, which tapped into emotional support (having someone to talk to) and appraisal support (having someone to ask advice from) about problems related to love or to sexual stigma. The measurement models for SR and SA were ordinal logistic.

The study considered connection to other sexual minority women, through a latent normal continuous variable termed sexual minority women network connection (WN). WN was measured with three count indicators: numbers of other sexual minority women the respondent knew, considered friends, and was in contact with in the previous two weeks. The measurement model for WN was Poisson.

Potential predictors of negative family treatment

Potential predictors of negative family treatment considered included: (i) two individual characteristics age and sexual/gender identity; (ii) one individual characteristic that is considered proxy for family characteristics, religion; (iii) two family characteristics, family economic status and parent awareness of respondent's romantic attraction to/involvement with women; and (iv) two contextual variables, urbanicity and geographical region.

Age was a three-variable indicating age groups 18-20 years, 21-25 years and 26 years or older. Gender identity included transmen, those who did not identify as transmen, and a small number of those who selected "other" but did not provide an answer suggestive of gender identity. Sexual identity (among sexual minority women) included lesbian, bisexual, heterosexual and unsure of sexual identity. Religion included four categories: no religion, Buddhist, Christian (a combination Christian faiths), and other religion. Family economic status was rated by respondent as very rich, rich, middle-class/comfortable, sufficient, poor and very poor, and recoded into four categories rich, middle-class/comfortable, sufficient and poor. Parent awareness was coded based on answers to two questions about whether the respondent's mother or father knew or suspected that he/she were romantically attracted to/involved with women; this variable included three categories: at least one parent knew, at least one parent suspected, and neither parents knew (herein referred to as parents-knowing, parents-suspecting and parents-not-knowing). Urbanicity is a variable indicating whether the respondent lived in one of the country's five major cities (Ha Noi, Hai Phong, Da Nang, Ho Chi Minh City and Can Tho) or outside of these cities. Geographic region indicated one of six areas: the northern mountainous regions (including the north-east and north-west mountainous areas), the Red river delta, central regions (including northern and southern central regions and the central highlands), the South-East region, and the Mekong delta; due to small numbers, some of the regions were collapsed into two categories (northern mountainous and central).

These variables were selected such that they were not likely to have been caused by family treatment. Respondent's education attainment was thus not included because

rejection by family could lead to poor school performance or school dropout. Whether a person lives with their family or not was also not included because the relationship could be bi-directional where a person living with family may be more likely to have encountered negative treatment because family members were more likely to find out, but on the other hand negative treatment by family members may have driven a person to live away from them.

Ideally, an examination of predictors of negative family treatment would benefit from more data on the family and the contextual environment. With respect to the family, socio-economic status (e.g., parent education attainment, parent occupation) and family/household composition (e.g., number of generations living together, age of parents) might be predictive of family treatment, but unfortunately were not available from the survey. With respect to the contextual environment, the initial intention was to bring in data from the 2009 Survey Assessment of Vietnamese Youth (SAVY2), specifically rates of youth finding homosexuality acceptable, as a province-level measure of acceptance/prejudice. However, the variation in these rates across provinces was limited, and in the current study the number of respondents in most provinces were small, leading to the decision to drop this plan.

Control variables

Of the seven potential predicators of negative family treatment examined above, six were controlled for in analyses relating negative family treatment to health outcomes. Such analyses did not control for parent awareness, because the interest was in the effect of negative family treatment on the outcomes, not on the conditional effect of negative family treatment on the outcomes holding parent awareness constant. These analyses thus

allowed those with different types of family treatment experience to differ in the distribution of parent awareness.

Data Analysis

As the exposure variable of interest in this study is a latent categorical variable, latent class modeling methods were used for all three aims, including latent class analysis and latent class regression with predictors for Aim 1 and latent class modeling with distal outcome for Aims 2 and 3. Analyses were implemented using Mplus version 7.11. All analyses used the MLR estimator, the default for mixture modeling, which is based on likelihood maximization and robust estimation of standard errors.

Data analysis for Aim 1

Latent class analysis (LCA) was conducted on the 19 negative family behavior items. Models with one to eight classes were examined. The final number of classes were decided based on comparing fit statistics including Akaike's information criterion (AIC), Bayesian information criterion (BIC), consistent Akaike's information criterion (CAIC), approximate weight of evidence criterion (AWE), approximate Bayes factor (BF) and approximate correct model probability (cmP), and likelihood ratio tests including the Vuong-Lo-Mendel-Rubin (VLMR), the adjusted Lo-Mendel-Rubin (adjusted LMR) and the bootstrapped likelihood ratio test (BLRT) (see Masyn, 2013 for an explanation), and examining the meaning of the classes and the degree of class separation in each model. Since data were sparse due to the large number of items, this class enumeration exercise was conducted using the full set and using six 9-item subsets of the 19 items, to verify that the data support the classes extracted.

To evaluate predictors of family treatment classes, latent class regression (LCR) was used to relate class membership to the potential predictors in a multinomial logistic regression. To address uncertainty in class membership (i.e., individuals having probabilities of being in different classes), three-step LCR with Vermunt's (2010) correction for error in class assignment was implemented, based on code provided in Mplus Webnote 15 (Asparouhov & Muthén, 2013). Essentially, in this three-step method, step 1 is to conduct LCA ignoring covariates; step 2 is to ascertain each individual's most likely class (modal class) and the average classification error probabilities (e.g., probability of being in latent class 2 given modal class 1) based on LCA results; and step 3 is to implement LCR using modal class (instead of the original family behavior items) as the only indicator of the latent class variable, but specifying classification error rates and building them into the likelihood function that is maximized.

Coefficients from this multinomial regression model, when exponentiated, provided adjusted odds ratios (AORs) for being in each class versus a reference class comparing predictor levels (e.g., odds ratio of being in a negative treatment class versus reference class comparing the 18-20 to the 26-or-older age group adjusting for the other predictors). While odds ratios are meaningful, they ignore people who are in classes other than the pair being compared. To facilitate more complete interpretation of results, we also computed adjusted risk ratios (ARRs) for being in one or a combination of negative treatment classes, comparing levels of each predictor.

The computation of ARRs is best explained through an example. The ARR of being in a certain class comparing the 18-20 to the 26-or-older age group was the ratio of two adjusted conditional class prevalences: prevalence of the class of interest conditional

on being 18-20 years old (numerator) and conditional on being 26 or older (denominator), both adjusting for the other predictors. Adjusted conditional class prevalences were estimated by first computing predicted class probabilities for all records in the dataset, fixing (i.e., conditioning on) age group at one level (e.g., 18-20) and keeping (i.e., adjusting for) the actual values of all the other predictors; and then averaging class probabilities over all records. This is the g-computation method defined by Robins (1986). It is based on the potential outcome framework for causal inference – where we think of each person as potentially existing in two different worlds: in one world he/she is in the 18-20 age group, in the other he/she is in the 26-or-older age group, and in both worlds the other predictors have their actual values from the data. In each world, the person has a different potential set of class membership probabilities. G-computation was used here as a way to adjust for the other predictors by averaging over the empirical distribution of those predictors. Confidence intervals for the ARRs were obtained through bootstrapping with 500 bootstrap samples.

Data analysis for Aim 2

The method of analysis was latent class with distal outcome modeling (LCD), using the family treatment latent class variable to predict the outcome variables. Three-step LCD with Vermunt's correction for class uncertainty was used – the same correction as used in analysis for Aim 2 (Vermunt, 2010), which was extended to models relating a latent class variable to a distal outcome (Asparouhov & Muthén, 2013; Bakk, Tekle, & Vermunt, 2013) and shown to perform well even when class separation was modest (entropy=0.5) (Asparouhov & Muthén, 2013). Class separation from LCA with this

sample was good, with entropy = 0.856 and correct classification probabilities 0.82 to 0.99 (see Chapter 4), suggesting the method was appropriate.

First, to assess the adjusted associations between family treatment and the outcomes, outcome variables were regressed on family treatment and covariates. To achieve this in the latent class setting, in each LCD model, the outcome was regressed on the covariates, with covariate–outcome coefficients constrained equal across classes. The differences in the intercepts (which vary across classes) represent the association between family treatment and the outcome. The difference in intercept between the *severe* class, for example, and the *peace* class (designated as the reference class), is a beta regression coefficient. For a continuous outcome, it represents the adjusted difference between the two classes in outcome mean. For a binary outcome, the exponentiated beta represents the adjusted odds ratio (OR) of the outcome comparing the two classes. Since life satisfaction, depressive and anxiety symptoms were skewed, bootstrapping (with 500 samples) was used to obtain confidence intervals for their coefficients.

The above analysis assumed the same family treatment effects for sexual minority women and transmen. To examine whether negative family treatment has different effects in these two groups, we assessed interactions between family treatment classes and transman identity. This was implemented by letting the regression coefficient on transman identity vary across the latent classes. The difference between the transman coefficients in the *extreme* class and in the *peace* class, for example, is essentially the coefficient of an *Extreme* Class × transman interaction term. For a continuous outcome, this represents the difference between two differences: (a) the difference in outcome means comparing *extreme* to *peace* class in transmen; and (b) the corresponding

difference in sexual minority women. For a binary outcome, this quantity exponentiated represents the ratio between two ORs: (a) the OR of the outcome comparing *extreme* to *peace* class in transmen; and (b) the corresponding OR in sexual minority women.

With respect to missing data, life satisfaction, depressive symptoms, probable depression, anxiety symptoms and internalized homophobia had minimal missing (0.4%, 0.4%, 0.8%, 0.2% and 0.4%). Suicidality and substance use questions were activated mid-survey; data missing prior to activation were missing by design which generally does not lead to biased estimates (Little, Jorgensen, Lang, & Moore, 2013). Among participants whose questionnaire included suicidality questions (2069) and substance use questions (2030), missingness for any-suicide-attempt (3.7%), repeat-suicide-attempt (4.3%), current smoking (0.8%) and recent heavy drinking (1.5%) were small. Models were estimated using full-information maximum likelihood (FIML) which adjusts for missingness conditional on other variables in the analysis (Raykov, 2005).

Data analysis for Aim 3

First, the *base* model was implemented (with family treatment, but not SR, SA or WN, predicting the outcomes), using linear regression for life satisfaction and depressive symptoms, and logistic regression for smoking and drinking. *Main effects* models were next implemented, adding SR, SA, WN, and all three, as predictors. For *moderation* analysis, Family Treatment × SR/SA/WN interaction was added. Since the purpose was to evaluate whether any of the SR, SA and WN constructs played a moderator role, these variables were examined separately in different models. For *mediation* analysis, structural equation models were used to estimate path A (family treatment affecting SR/SA/WN) and path B (SR/SA/WN affecting outcome variables) effects simultaneously, including

three single-mediator models and a model with SR, SA and WN combined. All models (for outcomes and mediators) adjusted for the control variables.

These models were implemented using two methods that address class uncertainty. The first was to represent the latent class variable using individuals' class membership probabilities (predicted by the LCA); the outcome was regressed on m-1 variables representing the person's probabilities of being in the first m-1 classes (instead of m-1 dummy variables representing the m classes). This method (probability regression) has been shown to perform well in relating latent class to distal outcomes given moderate class separation, i.e., entropy > 0.70 (Schuler & Stuart, 2014). The second method was to apply Vermunt's correction for class uncertainty (Bakk et al., 2013; Vermunt, 2010). In addition, as a third method, modal class was used as proxy for latent class, simply regressing the outcome on the categorical modal class variable, with no class uncertainty correction. Results from the three methods were compared, which were very similar (see Chapter 6). Estimates from probability regression were presented; this method allowed for the latent variables SR, SA and WN to be standardized over the full sample, thus providing standardized estimates to facilitate interpretation, while keeping each on the same scale for all the classes.

In models examining SR, SA and WN separately, SR, SA and WN were treated as latent factors. In the main effect and mediation models with SR, SA and WN combined, to reduce computation load, factor scores were used instead of the latent factors; these factor scores were generated separately from single-factor models using the mean of the posterior distribution of the factor.

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CHAPTER 4: MANUSCRIPT 1

Negative Family Treatment of Sexual Minority Women and Transmen in Viet Nam: Latent Classes and Their Predictors

Abstract

Quantitative research on parental/family disapproval and rejection of sexual or gender minority persons has often measured family rejection as a single variable, or as several variables representing specific behaviors or dimensions of behaviors. Absent from this literature is analysis using a person-oriented approach, examining whether there is heterogeneity across individuals in the types of family treatment experience. Using data from 2664 adult sexual minority women and transmen in Viet Nam, latent class analysis was conducted on 19 items representing negative family behaviors. A six-class solution best fit the data, including one non-negative class (*peace*, 36.7% of the sample) and five negative classes (*pressure,* 34.0%; *aggressive to respondent and girlfriend*, 10.3%; *aggressive to respondent*, 8.1%; severe, 6.0%; and *extreme*, 4.7%). Latent class membership was regressed on individual, family and contextual variables. Younger age, transman identity, religious affiliation, and parent awareness of same-sex sexuality predicted being in worse family treatment classes. This study shows that latent class methods can be used to shed light on types of family treatment of sexual/gender minority persons. Findings on predictors suggest research separating potential cohort and age effects and examining developmental trajectories is needed. Also important is research on the effects of family treatment classes on health and well-being. The study calls for interventions to prevent and reduce negative family behaviors, services to support sexual/gender minority persons to deal with ongoing conflict and/or overcome the effects of such treatments on their lives, and support for the parents and other family members to deal with the pain they experience, which may lead to negative behaviors.

Key words

sexual minority, lesbian, transgender, family rejection, family reactions, latent class analysis

Introduction

Anti-gay victimization has been linked to poorer mental health outcomes among sexual and gender minority populations (for a review, see Institute of Medicine, 2011). Most of this research has focused on victimization by people outside the family or victimization in general (e.g., Herek, Gillis, & Cogan, 1999; Herek, 2009; Mills et al., 2004; Otis & Skinner, 1996; Szymanski, 2005). It is essential to understand victimization by family members, as family relations and parental attachment are important for human development (Crosbie-Burnett, Foster, Murray, & Bowen, 1996; Steinberg & Duncan, 2002), and disapproval, rejection and violence by parental family may cause psychological distress and have negative impact on sexual minority persons' mental well-being (Bouris et al., 2010). Gay, lesbian, bisexual (GLB) young adults who reported higher levels of family rejection during adolescence are more likely to have attempted suicide, to report high levels of depression, use illegal drugs and engage in unprotected sex (Ryan et al., 2009). Lack of family support has been found to be associated with depression for GLB individuals, with lifetime illicit drug use for lesbian and bisexual females, and with binge drinking for gay and bisexual males (Rothman, Sullivan, Keyes, & Boehmer, 2012).

Existing evidence, primarily from studies conducted in western countries, suggests negative family treatment is a common experience among sexual minority persons. In a sample of American LGB youth living at home, D'Augelli, Hershberger and Pilkington (1998) reported that among female youth who had come out to their families, proportions who experienced negative treatment from mothers and fathers were 38% and 19% (respectively) for verbal abuse, 10% and 10% for physical threat, and 10% and 5%

for physical attack. Among male youth, these proportions were 24% and 19% for verbal abuse, 3% and 2% for physical threat, and 3% and 2% for physical attack. Savin-Williams (1990) reported from another sample of American sexual minority youth whose parents knew of their sexuality that 10% of mothers and 22% of fathers were rejecting, and 58% of mothers and 55% of fathers were somewhere between rejecting and accepting (but not accepting). Based on Italian survey data, Bertone (2003) reported that about 10% of gay and lesbian respondents experienced "strong, even violent, reactions" by parents, and about half of respondents whose sexuality was known to their families reported negative reactions ranging from "violent refusal", to "request to seek help from a psychologist" to "recover" to heterosexuality, to parent self-blaming (p. 7).

Little research has been done outside of North America or Europe to quantify negative family treatment of sexual and gender minorities, especially sexual minority women and female-to-male transgender persons (transmen). Qualitative research suggests negative family treatment is a major issue. In Ha Noi, Viet Nam, many sexual minority women who participated in a qualitative study (Nguyen, Nguyen, Le & Le, 2010) considered their relationships with their parents the biggest challenge in their lives as women who love women, as they struggled with issues such as how to conceal their sexuality from their parents, whether to let them know, how to cope with their reactions, and how to protect them from pain and suffering. The study reported a range of negative treatment by parents and family members who knew or suspected respondents' same-sex attraction or relationships, including general disapproval and pressure to conform to heteronormativity, specific behaviors targeting respondent (e.g., verbal abuse, threats, limitation of personal liberty, seeking help from doctors and shamans, physical attacks,

cutting financial and other support), behaviors targeting the respondent's girlfriend (e.g., asking her to stop the relationship, insulting or physically attacking her, or telling her parents about the relationship), and solicitation of help from their schools/workplaces and from local authorities to intervene with the relationship. Building on this qualitative research, the present study quantitatively assessed negative family treatment of sexual minority women and transmen in Viet Nam.

Methodologically, two approaches have been used in the literature to quantitatively measure negative family treatment of sexual/gender minority persons. Some studies combine the complexity of family treatment in one measure showing a continuum from rejection to acceptance, for example, Savin-Williams' (1990) study categorized parents into three categories of accepting, rejecting and somewhere in between; and Ryan and colleagues (2009) summed 51 family behavior items into a composite continuous measure of family rejection. Other studies used a variable-centered approach, quantifying specific behaviors (e.g., Bertone, 2003), or dimensions of family behavior (e.g., D'Augelli et al., 1998 – capturing verbal abuse, physical threat and physical attack).

Currently absent from this literature is a person-centered approach, which would help discern patterns of family treatment experienced by individuals. For example, with data capturing verbal abuse, physical threat and physical attack (e.g., in D'Augelli et al., 1998), it is possible that some individuals experience only one and others experience different combinations of these treatments. Similarly for data recording a detailed list of family behaviors (e.g., Ryan et al., 2009), there might be one subgroup that experiences one subset of these behaviors, another subgroup that experiences another subset, and yet

another that experiences a combination. The person-centered approach could make meaningful contributions to the literature, as it would allow segmenting the sample/population into groups with different patterns of experience, document their prevalence, examine whether and how they differ in individual and family characteristics and contextual factors, and evaluate if their health outcomes differ; all such information is useful for the design and targeting of interventions for the potentially different groups of individuals and families.

Latent class analysis (LCA) is a statistical method commonly used for the person-centered approach. It helps identify subgroups (latent classes) of respondents with similar patterns of responses to a set of variables. While LCA has not been used in LGBT research to study parental reactions or the family environment, it has been applied in child and adolescent research for similar purposes. Studying infant development, Lanza, Rhoades, Greenberg and Cox (2011) found support for five latent classes of family risk environment; these were associated with quality of infant care. Studying adolescent protective environments, Syvertsen, Cleveland, Gayles, Tibbits and Faulk (2010) extracted six latent classes of adolecents with combinations of adequate and inadequate protection of different types; these were associated with adolescent cigarette and alcohol use. LCA of drug treatment services for adolescents conducted by Schuler, Griffin, Letourneau and Stuart (2014) suggested four classes of youth service use; these were found to match with the youth's risk profiles.

The present study used LCA to examine whether there are distinct patterns (latent classes) of family treatment experienced by sexual minority women and transmen in Viet Nam, and documented the prevalence of such classes in the sample. Latent class

regression (LCR) was used to assess potential predictors of these family treatment classes including individual and family characteristics (age, sexual/gender identity, religion, family economic status, parent awareness of non-heterosexuality) and contextual factors (urbanicity and geographical region). It was hypothesized that transman identity, affiliation with Christian religions (which generally including teachings against homosexuality), and parents' awareness of non-heterosexuality were positively associated with experience of negative family treatment.

Methods

Data source

This study was part of a research project on sexual stigma and social support among Vietnamese adult (aged 18 and older) sexual minority women (defined as women who have had romantic/sexual attraction to or relationship(s) with other women, regardless of sexual identity) and transmen (defined as biological female persons who identified as men or as "transguys", who in this project also indicated having been in love/relationship with women). Respondents were recruited through several Vietnamese websites catering to women who are interested in women and one catering to both sexual minority women and transmen, and were directed to the survey website. They reviewed information about the study and their rights, and once they indicated consent, were asked to anonymously fill out an online survey. Data were collected from mid-March to early July 2012. The survey was approved by the Institutional Review Board at Johns Hopkins Bloomberg School of Public Health after a determination of minimal risk due to the survey's anonymous nature. Data used in this study came from 2664 sexual minority

women and transmen living in Viet Nam who answered a list of questions about their experience of negative family treatment.

Measures

Latent class indicators

Negative family treatment was measured through 19 yes/no questions that captured the respondent's experience to date of negative behaviors by parents or other family members, resulting from their disapproval of the respondent's (known or suspected) same-sex sexuality or non-conformity to traditional expectations of femininity. These items were developed based results of the prior qualitative study with sexual minority women in Ha Noi (Nguyen et al., 2010), and expanded in discussion with lesbian research team members during the development of the survey instrument. The items captured general disapproval and pressure to change, and aggressive items targeting the respondent and the respondent's girlfriend(s) (see detailed item wording in Table 4.1). In this paper, these items are referred to as "family behaviors" or "family actions", but it should be noted that they may refer to actions/behaviors of only one or a few family members; as such, they may not reflect the behavior of the entire family.

Potential predictors

Two individual characteristics were included as potential predictors: age (18-20 years old, 21-25 years old, and 26 years or older) and sexual/gender identity (lesbian, bisexual, unsure of sexual identity, transmen, and other). Religion (no religion, Buddhist, Christian, and other religions) was measured as an individual characteristic but could be considered a proxy for parent/family religious affiliation. Two other family characteristics were considered: self-rated family economic status (rich, middle-

class/comfortable, sufficient, and poor) and parent awareness of respondent's sexuality (at least one parent knows, at least one parent suspects, and parents don't know or respondent is unclear whether they know or suspect at all – herein referred to as parents-knowing, parents-suspecting and parents-not-knowing). Two contextual variables were included: urbanicity (living in or outside of the country's five major cities) and geographical region (northern mountains, Red river delta, central region, south-east region, and Mekong delta).

Analyses

Latent class analysis

Latent class analysis (LCA) was conducted on the 19 negative family action items. Models with one to eight classes were examined. The final number of classes were decided based on comparing fit statistics including Akaike's information criterion (AIC), Bayesian information criterion (BIC), consistent Akaike's information criterion (CAIC), approximate weight of evidence criterion (AWE), approximate Bayes factor (BF) and approximate correct model probability (cmP), and likelihood ratio tests including the Vuong-Lo-Mendel-Rubin (VLMR), the adjusted Lo-Mendel-Rubin (adjusted LMR) and the bootstrapped likelihood ratio test (BLRT) (see Masyn, 2013 for an explanation), and examining the meaning of the classes and the degree of class separation in each model. Since data were sparse due to the large number of items, this class enumeration exercise was conducted using the full set and using six 9-item subsets of the 19 items, to verify that the data support the classes extracted. LCA was implemented using Mplus version 7.11.

Latent class regression

To evaluate predictors of family treatment classes, latent class regression (LCR) was used to relate class membership to the potential predictors in a multinomial logistic regression. To address uncertainty in class membership (i.e., individuals having probabilities of being in different classes), three-step LCR with Vermunt's (2010) correction for error in class assignment was implemented, based on code provided in Mplus Webnote 15 (Asparouhov & Muthén, 2013). Essentially, in this three-step method, step 1 is to conduct LCA ignoring covariates; step 2 is to ascertain each individual's most likely class (modal class) and the average classification error probabilities (e.g., probability of being in latent class 2 given modal class 1) based on LCA results; and step 3 is to implement LCR using modal class (instead of the original family behavior items) as the only indicator of the latent class variable, but specifying classification error rates and building them into the likelihood function that is maximized.

Coefficients from this multinomial regression model, when exponentiated, provided adjusted odds ratios for being in each class vs. a reference class comparing predictor levels (e.g., odds ratio of being in a negative treatment class vs. reference class comparing the 18-20 to the 26-or-older age group adjusting for the other predictors). While odds ratios are meaningful, they ignore people who are in classes other than the pair being compared. To facilitate more complete interpretation of results, adjusted risk ratios (ARR) for being in one or a combination of negative treatment classes, comparing levels of each predictor, were also computed. (The Appendix provides a detailed explanation why both these measures are needed in certain cases to fully understand the association.)

The computation of ARRs is best explained through an example. The ARR of being in a certain class comparing the 18-20 to the 26-or-older age group was the ratio of two adjusted conditional class prevalences: prevalence of the class of interest conditional on being 18-20 years old (numerator) and conditional on being 26 or older (denominator), both adjusting for the other predictors. Adjusted conditional class prevalences were estimated by first computing predicted class probabilities for all records in the dataset, fixing (i.e., conditioning on) age group at one level (e.g., 18-20) and keeping (i.e., adjusting for) the actual values of all the other predictors; and then averaging class probabilities over all records. This is the g-computation method defined by Robins (1986). It is based on the potential outcome framework for causal inference – where we think of each person as potentially existing in two different worlds: in one world he/she is in the 18-20 age group, in the other he/she is in the 26-or-older age group, and in both worlds the other predictors have their actual values from the data. In each world, the person has a different potential set of class membership probabilities. G-computation was used here as a way to adjust for the other predictors by averaging over the empirical distribution of those predictors. Confidence intervals for the ARRs were obtained through bootstrapping with 500 bootstrap samples.

Results

Prevalence of negative family actions

Table 1 presents the numbers and proportions of respondents who reported having experienced each of the 19 negative family actions. The first three items are about general disapproval and pressure to change; 70.5% of the sample reported having experienced at least one of these. Among specific aggressive actions targeting

respondents, the most common were insults, monitoring their activities and asking others to persuade them to change (38.0% had experienced at least one of these actions). Nearly one fourth (24.3%) had experienced at least one of several oppressive family actions including locking them up, asking a doctor/hospital to treat their homosexuality, asking a shaman to perform rituals to get rid of homosexuality, beating them up, disowning them, and threatening suicide or actually attempting suicide (as a way to pressure them to change). For 16.3% of respondents, financial or other support from family had been reduced or cut off. Nearly one fourth (23.1%) reported their family had taken at least one of the four aggressive actions towards their girlfriend(s) – asking her to stop the relationship, insulting her, beating her up, or telling her family. Eight percent had experienced their family soliciting help from their or their girlfriend's school or workplace, or local authorities, to stop them from seeing each other.

Latent family treatment classes

Table 2 presents fit statistics for and likelihood ratio tests comparing models with one to eight classes (the nine-class model was not estimable). CAIC, VLMR and adjusted LMR favored five classes. BIC, BF and cmP favored the six-class model; cmP also suggested considering the seven-class model (cmP>0.1, based on Masyn, 2013). AIC and sample-size-adjusted BIC did not reach a minimum, and BLRT did not reach non-significance. After examining the meanings of the classes and class separation in models with four to seven classes, the five- and six-class models were considered candidate models. Analyses using nine-item subsets of the 19 items provided support for both five- and six-class solutions, with preference for six classes (see details in the Appendix). The six class model was thus the final model. With this model, classification accuracy was

good, with entropy 0.856, and correct classification probabilities ranging from 0.82 to 0.99.

The six classes and probabilities of having encountered each negative family behavior for each class are presented in Figure 1. The classes were named: *peace* (having relative peace, i.e., almost no negative treatment – 36.7% of the sample), *pressure* (being pressured to change, but having encountered almost no aggressive family behavior – 34.0% of the sample), *aggressive R&G* (pressure plus some aggressive family behaviors, targeting both respondent and girlfriend – 10.3%), *aggressive R* (pressure plus more aggressive behavior targeting respondent, but minimal aggression towards girlfriend, 8.1%), *severe* (many aggressive family behaviors – 6.0%), and *extreme* (very high probability of having encountered all of the 19 negative behaviors – 4.7%).

Predictors

Due to missing data on predictors, LCR analysis was restricted to 2,459 respondents (92.3% of the sample) who had data on all seven predictors. Table 1 presents predictor frequencies and proportions in this sample. The sample consisted of predominantly young adults aged 18-25. The largest identity group was lesbians, followed by transmen, bisexual women and women unsure of their sexual identity. About half of respondents reported no religious affiliation, over one third were Buddhist, and Christians were a minority. A majority of the sample reported that their families earned a sufficient living, followed by those reporting middle-class, and only small proportions considered their families rich or poor. One fourth of the sample were in the parents-knowing group, another fourth in the parents-suspecting group, and about half in the parents-not-knowing group. Three-fourths of the sample lived in big cities. A majority

lived in the south-east region, followed by residents of the Red river delta, the Mekong delta, the central region and the northern mountains region.

Adjusted associations between predictors and family treatment

Table 3 presents adjusted odds ratios for being in each negative family treatment class versus the *peace* class, comparing categories/levels of each predictor, adjusting for the other predictors. Table 4 presents adjusted risk ratios for being in (i) the *extreme* class, (ii) the *extreme* and *severe* classes combined, (iii) the *extreme*, *severe* and *aggressive (R and R&G)* classes combined, and (iv) the *peace* class, comparing categories/levels of each predictors, adjusting for the other predictors. Figure 2 presents adjusted conditional class prevalences.

Age was strongly associated with class membership, when adjusting for the other predictors. Compared to respondents in the 26-plus age group, respondents aged 18-20 had statistically significantly higher odds of being in the *extreme*, *severe*, *aggressive R* and *aggressive R&G* classes versus the *peace* class (AORs=3.12, 4.05, 2.57 and 2.36, all p-values<0.01); respondents in the 21-25 age group had higher odds of being in the *aggressive R&G* class vs. the *peace* class (AOR=1.96, p-value<0.05). Examining risk ratios, respondents in the 18-20 age group were statistically significantly more likely than the 26-plus age group to be in the *extreme* class, in the *extreme* and *severe* classes combined, and in the *extreme*, *severe* and *aggressive* classes combined (ARR=2.21, 2.54 and 1.96, all 99% CIs not including 1); and less likely to be in the *peace* class (ARR=0.74; 99% CI not including 1). Respondents in the 21-25 age group were more likely than the 26-plus age group to be in the *extreme*, *severe* and *aggressive* classes

combined (ARR=1.33, 95% CI not including 1); and less likely to be in the *peace* class (ARR=0.81, 95% CI not including 1).

Adjusting for the other predictors, gender identity, but not sexual identity, was associated with class membership. Using lesbians as the reference group, transmen had higher odds of being in the *severe*, *aggressive R* and *pressure* classes vs. the *peace* class (AOR=1.80, 2.90 and 1.66, p-value<0.05, <0.01 and <0.01). In addition, transman identity increased the odds of being in the *aggressive R* class vs. the *aggressive R&G* class (AOR=2.14, p-value<0.05), compared to lesbians (result not shown in Table 3). Examining risk ratios, transmen were more likely than lesbians to be in the *extreme*, *severe* and *aggressive* classes combined (ARR=1.23, 99% CI not including 1) and less likely to be in the *peace* class (ARR=0.71, 99% CI not including 1). AORs and ARRs comparing bisexual women and unsure respondents to lesbians were non-significant.

Religion was associated with class membership in adjusted analysis. Compared to those with no religion affiliation, Buddhists had higher odds of being in the *severe* class versus the *peace* class (AOR=1.65, p-value<0.05). Examining risk ratios, both Buddhists and Christians were more likely than respondents with no religion to be in the *extreme* and *severe* classes combined (ARR=1.53, 99% CI not including 1 for Buddhists, ARR=1.62, 95% CI not including 1 for Christians).

The adjusted association of family economic status with class membership was weak. Compared to respondents whose families earned a sufficient living, those in both rich and poor families had higher odds of being in the *extreme* class versus the *peace* class (AOR=2.33 and 2.40, p-values<0.05). However, risk ratios were not statistically

significant; the ARR (=2.22) for being in the extreme class for the rich group compared to the sufficient group had a 95% CI that covered 1 (but the 90% CI did not).

Parent awareness of respondent's non-heterosexuality was strongly associated with class membership in adjusted analysis. Using the parents-not-knowing category as the reference group, respondents in the parents-knowing group had higher odds of being in the *severe*, *aggressive R*, *aggressive R&G*, and *pressure* classes versus the *peace* class (AOR=2.65, 3.63, 5.09 and 1.70, all p-values<0.01). For the parents-suspecting group, these AORs were 2.65, 5.17, 4.29 and 3.26, all p-values<0.01. The AORs of being in the *extreme* class versus *peace* class for both the parents-knowing and parents-suspecting groups (compared to parents-not-knowing) were slightly greater than 1, but not statistically significant. Risk ratios provided additional information. Compared to the parents-not-knowing group, both parents-knowing and parents-suspecting groups were more likely to be in the *extreme*, *severe* and *aggressive* classes combined (ARR=1.85 and 1.48, 99% CIs not including 1) and less likely to be in the *peace* class (ARR=0.60 and 0.47, 99% CIs not including 1), which is consistent with odds ratios results. However, the ARRs also revealed that compared to the parents-not-knowing group, respondents in the parents-suspecting group were less likely to be in the *extreme* class (ARR=0.51, 99% CI not including 1); respondents in the parents-knowing group also had an ARR smaller than 1 (=0.71) for this class, but it was not statistically significant.

After adjusting for the other predictors, urbanicity was not statistically significant. The AOR for being in the *extreme* class vs. the *peace* class comparing those living outside to those living in big cities was not small (1.47) but p-value>0.1. ARRs were also non-significant, but there was a trend of association, such that the two ARRs for being in

the *extreme* class (1.47) and the *extreme* and *severe* classes combined (1.34) had 90% CIs that did not include 1.

In adjusted analysis, geographical region did not significantly signal differences for class membership, except the only difference being AOR and ARR of zero comparing the northern mountains region to the Red river delta and any other regions for being in the *extreme* class, due to the fact that no respondent in this region was in the *extreme* class. This could reflect true lower risk, or it could be an artifact due to small sample size (only 55 respondents lived in the northern mountains region).

Discussion

The first aim of the study was to identify subgroups with distinct patterns of family treatment experience based on 19 family behaviors. LCA suggested six latent classes, which we named *peace, pressure, aggressive R&G, aggressive R, severe,* and *extreme*. These latent classes consist of individuals who were similar within class but differed across classes in probabilities of being pressured to change (i.e., stop loving women, get a boyfriend or get married, and be more feminine) and probabilities of encountering each of 16 aggressive behaviors to try to get them to change. This way of organizing the data helped estimate the sample proportions with each type of experience: 4.7%, 6.0%, 8.1%, 10.3%, 34.0% and 36.7% for the *extreme*, *severe*, *aggressive R*, *aggressive R&G*, *pressure*, and *peace* classes, respectively, providing a clearer picture of the problem of negative family treatment.

It should be noted that the majority of the sample faced negative family treatment. The *extreme* and *severe* classes, while having somewhat small proportions (4.7% and 6%), represent significant numbers of people in the sample (126 and 161). These two

classes combined with the two *aggressive* classes account for nearly 30% of the sample. In addition, another third of the sample experienced opposition and pressure to change. Interventions are needed to prevent and reduce such negative family behaviors, and services are needed to support these individuals to deal with ongoing conflict and/or overcome the effects of such treatments on their lives. Support is also needed for the parents and other family members to deal with the pain they experience, which may lead to negative behaviors.

On the other hand, that 27.7% of respondents in the parents-knowing group were in the *peace* class, suggesting their knowing parents were accepting, at least to some extent. It could be argued that perhaps the parents who knew were different from the other parents (e.g., more perceptive so they found out, or more liberal so they were told), so this proportion could be higher than what those in the parents-not-knowing group might be able to expect if their parents became aware. Nonetheless, the fact that there were accepting families is promising; research should be done to understand who these families are and how they manage to be neutral or supportive. They could potentially be used to model, and thereby introduce new norms of, accepting behaviors to unaccepting or rejecting families.

The second aim of the study was to evaluate predictors of family treatment classes. From among a combination of individual, family and contextual factors, overall younger age, transman identity, religion affiliation (both Buddhist and Christian), and higher parent awareness predicted being in worse family treatment classes.

The strong association with age deserves attention. Younger sexual minority women and transmen were disproportionately subject to negative family treatment,

during adolescence or in early adulthood when traditionally people rely heavily on family for support. It is clear that interventions are needed to reduce such negative treatment, support the young person to cope with it and support families to come to terms with a child/sibling's minority sexuality.

Further research is needed to understand factors that contribute to this excess burden of negative family treatment on younger people. If it is assumed that families of older and younger people have similar awareness of their non-heterosexuality over the life course (e.g., all starting at similar ages) and react similarly, older respondents would have accumulated more experience of negative family treatment. This study, however, found the opposite, that younger respondents had experienced more negative family treatment. This is means either that (1) younger individuals' families were more aware of their non-heterosexuality, or became aware at an earlier age, than families of older respondents; or (2) family reactions were more negative with younger persons given similar awareness; or both. Related to the first point, though the study controlled for parent awareness, the parent awareness variable did not capture: how long parents had known, how old the respondent was when parents became aware, and the awareness of non-parent family members.

The first proposition – that younger individuals' families were more aware – would be supported if younger cohorts are becoming open about their minority sexual/gender identities, or their identities are becoming recognizable, at an earlier age, compared to older cohorts. In Western cultures, there seems to be a trend of younger generations of lesbian and gay people coming out to their parents earlier, in their teens (D'Augelli, 2005). Whether a similar trend is present in non-Western cultures is unclear.

In Viet Nam, Nguyen et al. (2010) found that young lesbian women advised each other to not let their parents know too early, before they have the emotional strength to deal with the crisis and before they can support themselves financially. In the past few years, however, sexual/gender minorities have become more visible in Vietnamese society. The internet has facilitated the development of new communities that are accessible to greater numbers of sexual/gender minority individuals, especially young adults and teens (unpublished findings from the first author's qualitative research in Ha Noi in 2009). Therefore even if a young woman intends to conceal her sexual minority identity from her family, she may run a higher risk of her family finding out due to her interactions with other sexual minority women. In addition, the subject of homosexuality has become increasingly covered by the press since the mid-2000s (Institute for Studies of Society Economy and Environment & Academy of Journalism and Communication, 2010). With this exposure to the topic, younger parents may be more sensitive to signs of homosexuality in their adolescent or young adult child, whereas many older parents might have been oblivious to such signs when their child was young.

The second proposition – that families react more negatively to a child/sibling's non-heterosexuality if the person is younger – has some theoretical support. Savin-Williams and Dubé (1998) suggest that when a child discloses his/her homosexuality as an adolescent, parents are more likely to believe that is just a phase and that it may go away. Given this, it may be more difficult for parents of an adolescent or even young adult child to accept his/her sexual/gender minority identity. This, in combination with a tendency of parents and elders to "fix" or discipline a child/sibling who is considered "still a kid" and "doing something wrong", may lead to the use of aggressive actions that

are less likely to be employed for an older child/sibling who is considered an adult. It is also possible that persons of younger cohorts are less willing to acquiesce to family pressure or more likely to challenge parent/elder authority, which may prompt more negative reactions. Further research is needed to assess the contributions of these and other plausible explanations to the association between negative family treatment and age; such research will need to differentiate age cohorts, age at family awareness and age at negative treatment.

As expected, compared to lesbian women, transmen were less likely to be in the *peace* class and were generally more likely to be in negative family treatment classes, suggesting that on average families have a harder time dealing with child/member who is non-conforming not only in romantic attraction and coupling behavior but also in gender expression and identity. It is interesting that compared to lesbians, transmen had higher odds of being in the *aggressive R* class versus the *aggressive R&G* class. At first glance, the difference that stood out between these two classes is that the latter involves experience of aggressive behaviors towards both respondent and girlfriend(s), suggesting that this class represents more negative treatment than the *aggressive R* class. On closer inspection, it became clear that respondents in the *aggressive R* class on average experienced more negative treatment targeted at themselves than respondents in the *aggressive R&G* class (see higher probabilities of endorsing items *insult*, *monitor*, *lockup*, *doctor*, *shaman*, *disown*, *suicnun* and *cutsupp*). It makes sense that the emphasis of negative family treatment of a transman may be more about rejecting his identity as a person, whereas the emphasis of negative family treatment of a non-heterosexual woman may be more about rejecting her same-sex relationships. It is also possible that a

transman's family may blame him for being "deviant" and for the "deviant" relationship, but not blame the girlfriend for causing him to be deviant, therefore is not aggressive towards the girlfriend. An unaccepting family of a sexual minority woman may blame both her and her girlfriend for the "deviant" relationship, or may blame the girlfriend for making her "deviant", and thus be aggressive towards them both.

Compared to respondents with no religion, respondents of Christian faiths were more likely to be in the *extreme* and *severe* classes combined. This was consistent with the hypothesis that Christian families would be more likely to be intolerant of same-sex relationships. However, Buddhist respondents experienced similar levels of negative family treatment. This may mean that it is not Christianity, but rather conservatism in general (for which religious affiliation could be a proxy) that explains intolerance, as conservatism has been found to be associated with intolerance of homosexuality in our analysis of a Vietnamese youth survey (data not known).

As expected, respondents in the parents-knowing and parents-suspecting groups were more likely to be in the negative family treatment classes combined. What was not expected was that the risk of being in the *extreme* class was highest for the parents-not-knowing group. This group thus may be a mixture of individuals whose parents and other family members did not know and individuals whose parents did not know but some other family members did. This highlights the fact that the extended family includes siblings, grandparents, aunts and uncles and other relatives, and in some families some non-parent members may play an important role in shaping the family's response to a person's sexuality.

Urbanicity and geographical region were not significant predictors in adjusted analysis. However, there were still some differences with AORs and ARRs departing from 1; their lack of statistical significance could be due to lack of power.

As mentioned above, further research is needed to tease apart cohort effects (varying experience of different age groups) and cross sectional age effects (family treatment varying depending of age of the child) in the association between age and negative family treatment. Also relevant would be research from a life-course perspective, using longitudinal data that track the experience of family treatment over time. With cumulative experience classes (as in this study), it would be useful to know whether some individuals move from a less negative to a more negative class over time and others stay consistently in a less negative class; and what determines such different trajectories. If the classes are defined based on current experience, it would be relevant to explore whether there are people that stay consistently in a negative class – in addition to people who move from more negative to less negative classes over time as families tend to become more accepting – and what determines this experience.

This study has several limitations. The first limitation is the non-probability sample that does not represent all sexual minority women and transmen in Viet Nam. The majority of the sample were young and living in big cities, and all of them used the internet. This means the findings are less generalizable to sexual minority women and transmen who are older, live in small towns and rural areas, and do not use the internet. The first of these factors, age, may have biased results towards more negative family treatment, the latter two factors, urban residence and internet use, may have biased results toward less negative family treatment. Second, ideally the evaluation of predictors of

family treatment types should make use of more variables about the families – for example, parent education, which is not available from the data, could potentially be a predictor of family treatment. Future research should examine this variable and other family characteristics. Third, the analysis sample includes both sexual minority women and transmen, which assumes that the effect of all variables other than sexual/gender identity was the same for these two groups. Ideally, stratified analysis should be conducted, or interaction effects should be tested. However, due to small sample sizes in some Gender Identity × Family Treatment subgroups, to preserve power, stratification and interaction was not used. Future research should seek samples of transmen large enough to examine how these variables predict family treatment among transmen only.

In this study the application of latent class analysis to negative family behavior data resulted in distinct classes that characterize different types of experience of family treatment among Vietnamese sexual minority women and transmen. Latent class regression revealed the effects of several individual, family and contextual variables in predicting these types of experience. In addition to contributing new insights to research on negative family treatment of sexual/gender minority individuals, this study shows that latent class models are appropriate and useful methods to be applied to this topic.

In summary, this is the first study that uses latent class methods to explore the heterogeneity of family treatment experience in a sample of sexual minority women and transmen. Its findings raise questions for future research, and highlight the need to interventions targeting the families of LGBT persons to promote understanding, acceptance and support, and prevent and reduce negative treatment.

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Table 4.1. Sample description

Latent class indicators – negative treatment by parents, siblings or others in the extended family (N=2664)	**n**	**(%)**	**Abbreviation**
1. Opposed to loving women	1503	(56.4%)	AGAINST
2. Pressured to have boyfriend or get married	1294	(48.6%)	HETERO
3. Pressured to be more feminine	1416	(53.2%)	FEMININE
4. Insulted	654	(24.5%)	INSULT
5. Followed or monitored time, or kept money/bike/papers (to prevent from seeing girlfriend)	541	(20.3%)	MONITOR
6. Locked up or taken to live somewhere else (to prevent from seeing girlfriend)	311	(11.7%)	LOCKUP
7. Asked a hospital, or doctor, or healer to give "treatment" to stop loving women	348	(13.1%)	DOCTOR
8. Asked a shaman to perform ritual to help stop loving women (or to help get married)	231	(8.7%)	SHAMAN
9. Beat up	296	(11.1%)	BEATUP
10. Disowned or threw out of the house	322	(12.1%)	DISOWN
11. Threatened to commit suicide or to join a monastery (if respondent would not change), or actually attempted suicide or joined a monastery	344	(12.9%)	SUICMON
12. Asked other person(s) to persuade respondent to change	718	(27.0%)	ASKOTHER
13. Stopped or reduced support for respondent (support examples: financial support, support for respondent's education or business, gift of property, or inheritance)	434	(16.3%)	CUTSUPP
14. Asked respondent's girlfriend to stop the relationship	546	(20.5%)	GFSTOP
15. Insulted or threatened respondent's girlfriend	374	(14.0%)	INSULTGF
16. Beat up respondent's girlfriend	165	(6.2%)	BEATUPGF
17. Told respondent's girlfriend's family	335	(12.6%)	GFFAMILY
18. Reported to the school or workplace of respondent or girlfriend	194	(7.3%)	SCHLWORK
19. Asked local authority or police to intervene to respondent and girlfriend's relations	157	(5.9%)	POLICE

Potential predictors (N=2459)	**n**	**(%)**
Age:		
18-20 years old	1003	(40.8%)
21-25 years old	1018	(41.4%)
26 or older	438	(17.8%)
Sexual/gender identity:		
lesbian	1020	(41.5%)
bisexual	541	(22.0%)
unsure	279	(11.3%)
transman	543	(22.1%)
other[#]	76	(3.1%)
Religion:		
no religion	1243	(50.5%)
Buddhist	902	(36.7%)
Christian	294	(12.0%)
other	20	(0.8%)
Family economic status:		
rich	89	(03.6%)
middle-class	727	(29.6%)
sufficient	1474	(59.9%)
poor	169	(6.9%)
Parent awareness:		
parents knowing	632	(25.7%)
parents suspecting	619	(25.2%)
parents not knowing	1192	(48.5%)
no parents	16	(0.7%)
Urbanicity:		
in big cities	1853	(75.4%)
outside big cities	606	(24.6%)
Geographical region:		
northern mountains	55	(2.2%)
Red river delta	394	(16.0%)
central region	222	(9.0%)
south-east region	1478	(60.1%)
Mekong delta	310	(12.6%)

Note: [#] The 'other' category in the sexual/gender identity variable was a mixture of small numbers of respondents who reported heterosexual or pansexual identities, and respondents who gave descriptions of their attraction or relationships without reporting an identity. Due to the small numbers, these respondents were put in an 'other' class simply to preserve sample size, not for the purpose of infering associations.

Table 4.2. Comparing LCA models with different numbers of classes, using the full indicator set

model	log likelihood	AIC	BIC	sample size adjusted BIC	CAIC	AWE	BF (k,k+1)	cmP	VLMR p-value (k,k-1)	adjusted LMR p-value (k,k-1)	BLRT p-value (k,k-1)
1-class	-22141.34	44321	44433	44372	44452	44732	0.000	0.000			
2-class	-15611.29	31301	31530	31406	31569	32145	0.000	0.000	<0.0001	<0.0001	<0.0001
3-class	-14034.26	28187	28534	28346	28593	29465	0.000	0.000	<0.0001	<0.0001	<0.0001
4-class	-13376.28	26911	27376	27125	27455	**28622**	0.000	0.000	0.0003	0.0003	<0.0001
5-class	-13144.48	26487	27070	26755	**27169**	28632	0.004	0.003	**0.0070**	**0.0073**	<0.0001
6-class	-13060.07	26358	**27059**	26681	27178	28936	**6.903**	**0.871**	0.1299	0.1318	<0.0001
7-class	-12983.13	26244	27063	26621	27202	29255	237576444	**0.126**	0.0504	0.0514	<0.0001
8-class	-12923.54	26165	27101	26596	27260	29609		0.000	0.4302	0.4323	<0.0001

Notes: AIC = Akaike's information criterion; BIC = Bayesian information criterion; CAIC = consistent Akaike's information criterion; AWE = approximate weight of evidence criterion; BF = approximate Bayesian factor comparing a model to model with one extra class; cmP = approximate correct model probability; VLMR, adjusted LMR and BLRT = three types of likehood ratio tests comparing one model with the model with one fewer class.

Figure 4.1. Item-endorsement probabilities for each of the six family treatment latent classes (class prevalence in percent and number)

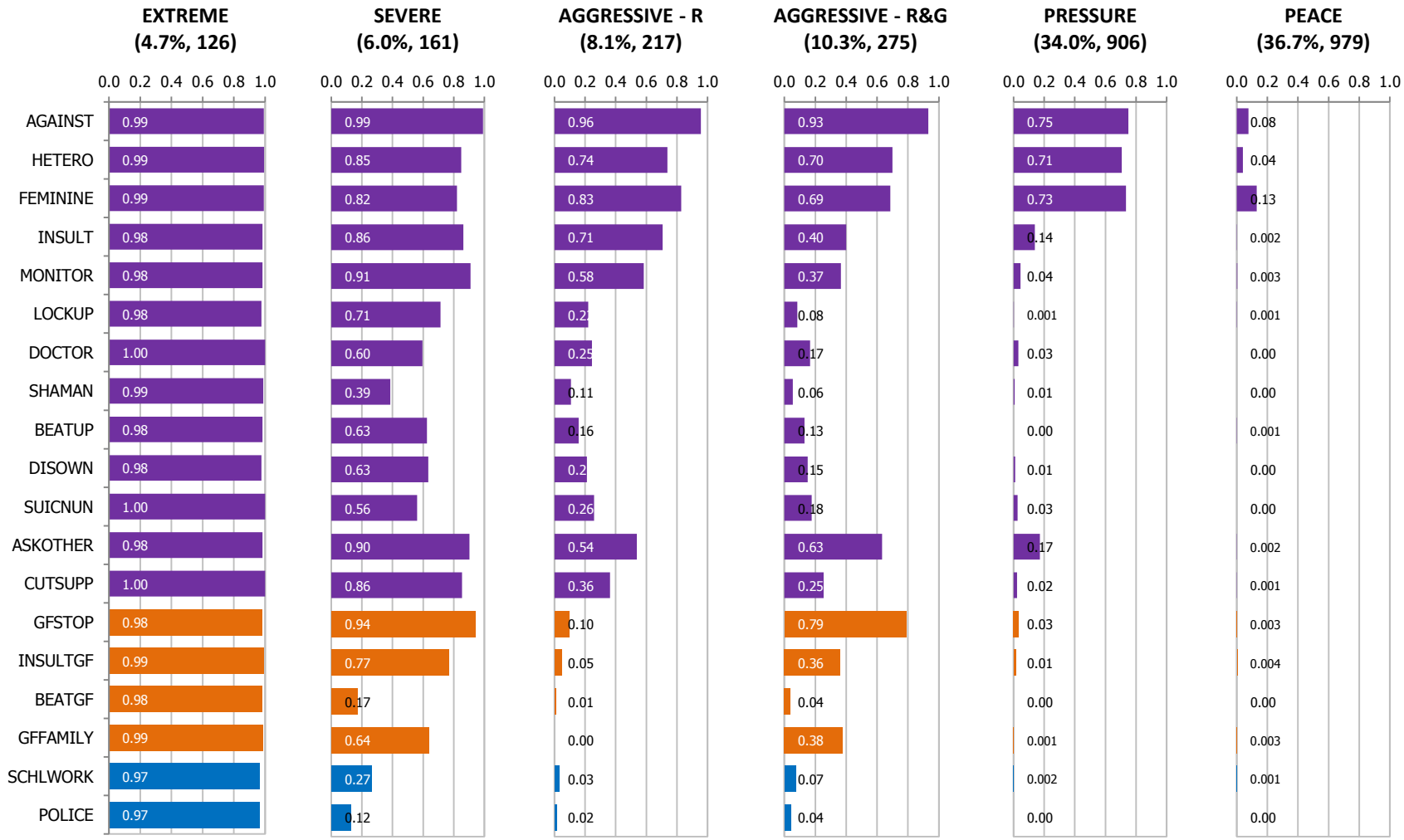


Table 4.3. Adjusted odds ratios (95% confidence intervals) for being in each negative family treatment class versus the *peace* class, comparing categories/levels of each predictor

		Extreme vs. peace		**Severe vs. peace**		**Aggressive – R vs. peace**		**Aggressive – R&G vs. peace**		**Pressure vs. peace**	
		AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)	AOR	(95% CI)
Age:	26 years or older	ref.		ref.		ref.		ref.		ref.	
	18-20 years old	**3.12 ****	**(1.60,6.07)**	**4.05 ****	**(2.11,7.77)**	**2.57 ****	**(1.37,4.85)**	**2.36 ****	**(1.39,4.01)**	1.14	(0.83,1.59)
	21-25 years old	1.29	(0.62,2.65)	1.67	(0.84,3.33)	1.69	(0.88,3.22)	**1.96 ***	**(1.16,3.30)**	**1.36 ǂ**	(1.00,1.86)
Sexual/gender identity:											
	lesbian	ref.		ref.		ref.		ref.		ref.	
	bisexual	0.70	(0.39,1.26)	1.19	(0.71,2.00)	0.98	(0.54,1.76)	1.11	(0.71,1.74)	0.87	(0.64,1.17)
	unsure	0.65	(0.30,1.40)	0.78	(0.36,1.69)	0.92	(0.42,2.00)	0.93	(0.50,1.75)	1.00	(0.69,1.45)
	transman	1.37	(0.79,2.39)	**1.80 ***	**(1.09,2.97)**	**2.90 ****	**(1.79,4.69)**	1.35	(0.85,2.16)	1.66 **	(1.19,2.32)
Religion:	no religion	ref.		ref.		ref.		ref.		ref.	
	Buddhism	1.33	(0.83,2.12)	**1.65 ***	**(1.06,2.56)**	0.82	(0.53,1.26)	0.76	(0.51,1.11)	0.95	(0.73,1.22)
	Christian religions	1.32	(0.66,2.62)	1.55	(0.84,2.87)	**0.51 ǂ**	(0.24,1.06)	0.90	(0.53,1.53)	0.74	(0.50,1.09)
Family economic status:											
	sufficient	ref.		ref.		ref.		ref.		ref.	
	rich	**2.33 ***	**(1.01,5.40)**	1.12	(0.41,3.02)	0.66	(0.16,2.66)	1.04	(0.44,2.48)	0.93	(0.49,1.77)
	middle-class	0.83	(0.50,1.38)	1.23	(0.81,1.88)	**1.53 ǂ**	(1.00,2.33)	0.95	(0.64,1.40)	1.01	(0.78,1.31)
	poor	**2.40 ***	**(1.16,4.95)**	1.36	(0.59,3.10)	**1.92 ǂ**	(0.90,4.07)	1.14	(0.55,2.38)	1.38	(0.84,2.27)
Parent awareness:											
	don't know	ref.		ref.		ref.		ref.		ref.	
	at least one knows	1.23	(0.71,2.11)	**2.65 ****	**(1.64,4.28)**	**3.63 ****	**(2.16,6.12)**	**5.09 ****	**(3.31,7.83)**	**1.70 ****	**(1.25,2.31)**
	at least one suspects	1.12	(0.62,2.02)	**2.65 ****	**(1.61,4.37)**	**5.17 ****	**(3.11,8.58)**	**4.27 ****	**(2.71,6.73)**	**3.26 ****	**(2.41,4.41)**
Urbanicity:	in big cities	ref.		ref.		ref.		ref.		ref.	
	outside big cities	1.47	(0.86,2.52)	1.26	(0.74,2.13)	1.09	(0.63,1.88)	0.93	(0.57,1.52)	0.86	(0.62,1.21)
Geographical region:											
	Red river delta	ref.		ref.		ref.		ref.		ref.	
	Northern mountains	**0.00 ****	**(0.00,0.00)**	2.44	(0.65,9.13)	2.13	(0.48,9.45)	2.33	(0.71,7.70)	1.99	(0.79,5.00)
	Central region	1.78	(0.73,4.37)	1.35	(0.58,3.13)	1.54	(0.61,3.90)	0.84	(0.37,1.93)	0.97	(0.58,1.62)
	South-east region	1.24	(0.61,2.54)	1.27	(0.69,2.32)	**1.85 ǂ**	(0.97,3.52)	1.09	(0.67,1.79)	1.01	(0.73,1.40)
	Mekong delta	**2.23 ǂ**	(0.96,5.18)	0.92	(0.38,2.23)	1.83	(0.77,4.34)	1.59	(0.81,3.10)	1.14	(0.71,1.83)

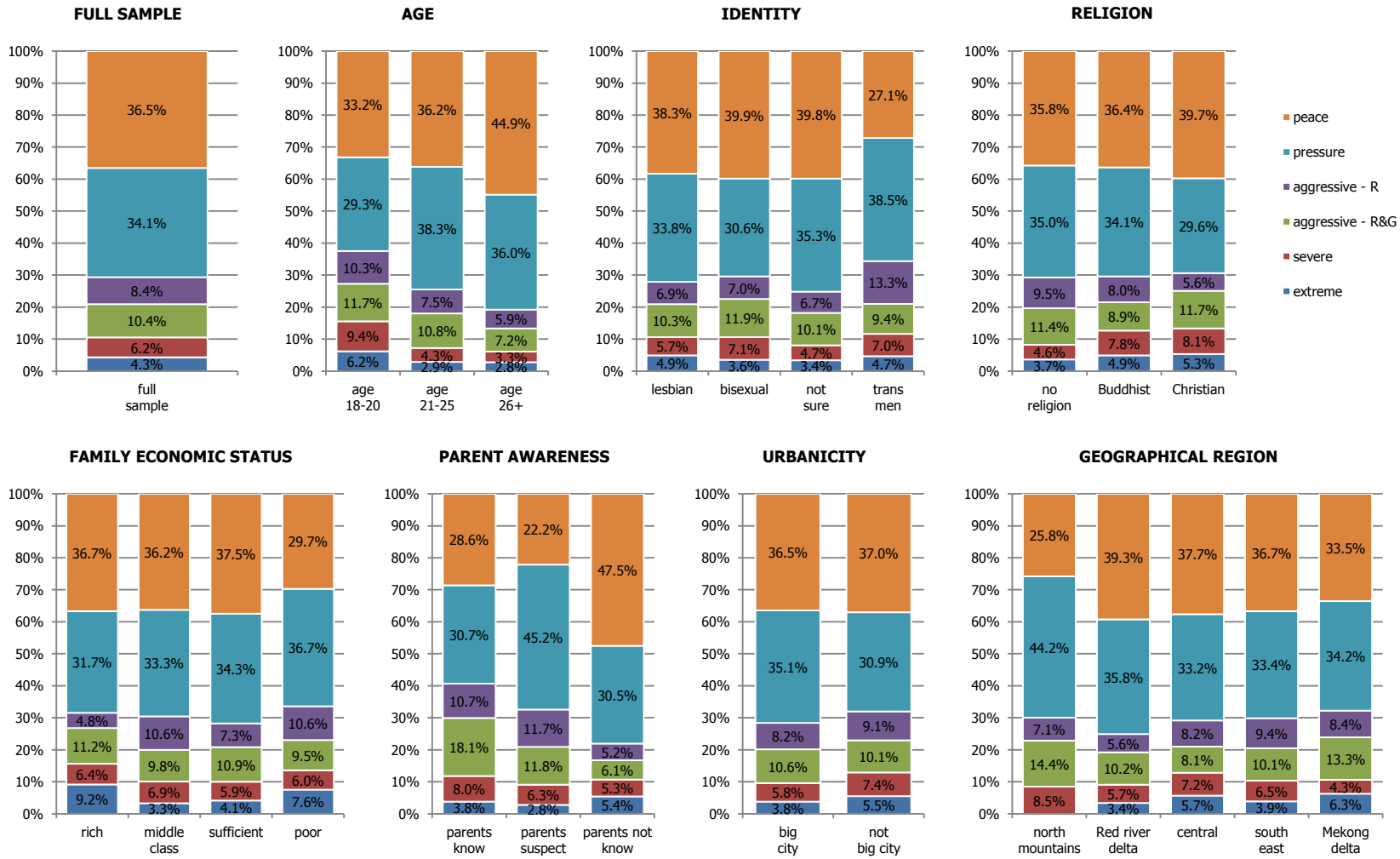
Notes: ǂ, *, ** mean p-value < 0.10, 0.05 and 0.01.

Table 4.4. Adjusted risk ratios (95% confidence intervals) for being in (i) the *extreme* class, (ii) the *extreme* or *severe* classes, (iii) the *extreme*, *severe* and *aggressive* (*R&G* or *R*) classes, and (iv) the *peace* class – comparing categories/levels of each predictor

	Extreme		**Extreme/severe**		**Extreme/severe/aggressive**		**Peace**	
	ARR	(95% CI)	ARR	(95% CI)	ARR	(95% CI)	ARR	(95% CI)
Age:								
26 years or older	ref.		ref.		ref.		ref.	
18-20 years old	**2.21** **	**(1.25,4.56)**	**2.54** **	**(1.77,4.03)**	**1.96** **	**(1.55,2.55)**	**0.74** **	**(0.64,0.87)**
21-25 years old	1.02	(0.53,2.17)	1.17	(0.78,1.87)	**1.33** *	**(1.06,1.74)**	**0.81** *	**(0.70,0.94)**
Sexual/gender identity:								
lesbian	ref.		ref.		ref.		ref.	
bisexual	0.73	(0.38,1.19)	1.00	(0.72,1.35)	1.06	(0.87,1.28)	1.04	(0.90,1.20)
unsure	0.69	(0.27,1.23)	0.76	(0.44,1.16)	0.89	(0.68,1.13)	1.04	(0.85,1.24)
transman	0.96	(0.53,1.53)	1.10	(0.79,1.48)	**1.23** **	**(1.05,1.48)**	**0.71** **	**(0.57,0.84)**
Religion:								
no religion	ref.		ref.		ref.		ref.	
Buddhism	1.34	(0.87,1.17)	**1.53** **	**(1.19,2.03)**	1.01	(0.87,1.17)	1.02	(0.90,1.16)
Christian religions	1.45	(0.74,2.61)	**1.62** *	**(1.11,2.29)**	1.05	(0.86,1.27)	1.11	(0.91,1.31)
Family economic status:								
sufficient	ref.		ref.		ref.		ref.	
rich	**2.22** ǂ	(0.81,4.20)	1.56	(0.84,2.48)	1.12	(0.77,1.51)	0.98	(0.71,1.25)
middle-class	0.79	(0.45,1.26)	1.01	(0.77,1.34)	1.08	(0.92,1.27)	0.97	(0.83,1.09)
poor	1.83	(0.86,3.10)	1.36	(0.81,2.04)	1.19	(0.90,1.50)	0.79	(0.55,1.05)
Parent awareness:								
don't know	ref.		ref.		ref.		ref.	
at least one knows	0.71	(0.42,1.14)	1.11	(0.81,1.53)	**1.85** **	**(1.57,2.23)**	**0.60** **	**(0.50,0.70)**
at least one suspects	**0.51** **	**(0.26,0.81)**	0.85	(0.62,1.14)	**1.48** **	**(1.26,1.77)**	**0.47** **	**(0.37,0.55)**
Urbanicity:								
in big cities	ref.		ref.		ref.		ref.	
outside big cities	**1.47** ǂ	(0.92,2.21)	**1.34** ǂ	(0.98,1.82)	1.13	(0.94,1.33)	1.02	(0.86,1.19)
Geographical region:								
Red river delta	ref.		ref.		ref.		ref.	
Northern mountains	**0.00** **	**(0.00,0.00)**	0.94	(0.15,2.18)	1.21	(0.62,1.90)	**0.66** ǂ	(0.32,1.04)
Central region	1.67	(0.73,4.32)	1.41	(0.85,2.41)	1.17	(0.87,1.52)	0.96	(0.74,1.22)
South-east region	1.15	(0.60,2.73)	1.15	(0.78,1.76)	**1.20** ǂ	(0.98,1.49)	0.94	(0.82,1.09)
Mekong delta	1.85	(0.86,4.45)	1.17	(0.67,1.96)	**1.30** ǂ	(0.97,1.66)	0.85	(0.68,1.06)

Notes: Confidence intervals were obtained through 500 bootstrapped samples. ǂ, *, ** mean the 90%, 95%, 99% CI does not include 1.

Figure 4.2. Adjusted conditional class prevalence – predicted class prevalence conditional on each predictor's categories/levels, adjusting for the others (N=2459)



CHAPTER 5: MANUSCRIPT 2

Negative family treatment and mental well-being, life satisfaction, suicidality and substance use among sexual minority women and transgender men in Viet Nam: An application of latent class with distal outcome model

Abstract

The literature linking negative family treatment to sexual/gender minority health is mostly limited to Western samples, with under-representation of transgender persons, and often using a simple measure of negative family treatment. This study examined the effects of negative family treatment in a sample of sexual minority women and transmen in Viet Nam (N=2496). Family treatment was characterized by a latent class variable consisting of one non-negative class and five negative classes. This sample had very high levels of depressive symptoms, suicide attempts, smoking and drinking, highlighting the need for prevention efforts with these populations. Overall, negative family treatment predicted lower life satisfaction, poorer mental well-being and increased suicidality and substance use. There were two differences by gender identity: (i) among sexual minority women only the most negative class had elevated risks of smoking and drinking, but for transmen three negative classes had elevated risks; and (ii) life satisfaction and probable depression in sexual minority women roughly followed the trend of 'the more negative the treatment, the worse the outcome', but among transmen only the second most negative class was predictive of lower life satisfaction and higher probable depression. In the full sample, three negative classes had elevated odds of suicide attempts; unexpectedly, the second most negative class, not the most negative one, had the highest odds. Questions about selection bias are discussed. The findings call for interventions to improve family acceptance and to help sexual minority women and transmen cope with family disapproval.

Key words

LGBT, family rejection, mental health, suicidality, substance use, latent class with distal outcome

Introduction

Research in the United States and other Western countries indicates that lesbian, gay, bisexual and transgender persons (LGBT) have higher risk of depression, anxiety, suicidality and substance use than heterosexuals. The evidence is strong for lesbian, gay and bisexual people (LGB), based on meta-analyses comparing LGB to heterosexuals (King et al., 2008; Marshal et al., 2011; Meyer, 2003). Research comparing transgender to non-transgender persons is limited, but studies with transgender only samples found high prevalence of depression and suicide (Clements-Nolle et al., 2001; Grossman & D'Augelli, 2007; R. M. Mathy, 2003). In Asia, several studies have found lower quality of life and higher depression, substance use, and suicidality in lesbians and gay men (LG) (Hidaka et al., 2008; Kuang & Nojima, 2003, 2005; Lam et al., 2004; van Griensven et al., 2004).

The minority stress model (Meyer, 1995, 2003) posits that LGB persons experience stressors related to their minority status, including prejudice events (enacted stigma) and expectations of rejection (perceived stigma), which increase risk of negative health outcomes. Empirical research supports this model, linking poor mental health and suicidality to experience of sexuality related discrimination (Mays & Cochran, 2001), threats, verbal abuse, assaults and hate crimes (Otis & Skinner, 1996), perceived stigma and anticipated social rejection (Hatzenbuehler et al., 2008; Ross, 1985). This model is also supported by findings in transgender samples, which has associated suicide attempts with gender-identity-based discrimination, verbal abuse and physical victimization (Clements-Nolle et al., 2006), and psychological distress with enacted stigma and perceived stigma (Bockting et al., 2013).

LGBT individuals experience sexual stigma in different social environments, including family and family-related social network, neighborhood, peers, school and work place (D'Augelli, 2005). A review by the Institute of Medicine (2011) noted, however, that health research with LGBT youth has largely focused on the school environment, with limited family-focused research. This situation has led some authors to call for research of LGBT youth to pay greater attention to parents and family systems (Bouris et al., 2010; D'Augelli, 2005; Garofalo et al., 2008; Horn et al., 2009). In studies of adult LGBT, families-of-origin receive even less attention – a review of LGBT health in early and middle adulthood by the Institute of Medicine (2011) did not reference any studies that examined the roles of family-of-origin when discussing stigma, discrimination and victimization, or protective factors.

Negative family influences on LGB mental well-being, suicidality and substance use

A recent review of family influence on LGBT health (Bouris et al., 2010) found two studies that reported associations between family rejection of LGB identity and mental health. In a sample of American and Canadian LGB youth, family rejection was associated with higher mental health symptoms (D'Augelli, 2002). In a sample of white and Latino LGB young adults in California (Ryan et al., 2009), family rejection during adolescence was associated with elevated depressive symptoms at present. A third study found that in LGB adolescents in New York, parent discouragement of gender atypicality was associated with mental health and trauma symptoms (D'Augelli et al., 2006). Also related to well-being but not specific to mental health, in a study by Savin-Williams (1989), parent acceptance (as opposed to rejection) predicted being comfortable with one's sexual orientation in young lesbians and in young gay men who considered parents

important to their self-worth; and being comfortable with sexual orientation was associated with gay men's self-esteem. Willoughby, Doty and Malik (2010) found that family rejection predicted negative LGB identity, a construct related to internalized homophobia.

Several studies have also examined associations between negative family treatment and suicidality. In a sample of American, Canadian and New Zealander LGB youth (D'Augelli et al., 2001), father's rejection or intolerance was associated with past suicide attempts. A study of LGB adolescents in New York (D'Augelli et al., 2005) found that psychological abuse by parents and parent discouragement of gender atypical behavior were associated with sexual-orientation-related suicide attempts. In the white and Latino LGB young adults study mentioned above (Ryan et al., 2009), family rejection was associated with suicidal ideation and suicide attempts.

Effects of family treatment on substance use have also been examined. The same study of white and Latino LGB young adults (Ryan et al., 2009) found that family rejection predicted illicit substance use (but not heavy drinking) and substance/alcohol-related social or legal problems. Padilla, Crisp and Rew (2010) found that mother's positive or neutral reaction to sexual identity disclosure (as opposed to negative reaction or non-disclosure) was negatively associated with illegal drug use. In addition to these studies, Rosario, Schrimshaw and Hunter (2009) found that the number of important persons (family and others) who reacted negatively to disclosure was predictive of alcohol, cigarette and marijuana use in LGB youth.

Negative family influences on mental health, suicidality and substance use in transgender persons

The literature on family treatment of transgender persons is more limited, but suggestive of negative consequences. In a sample of 55 transgender youth in New York, childhood parental verbal and physical abuse related to gender identity or gender-nonconforming behavior was predictive of suicide attempts (Grossman & D'Augelli, 2007). Data from the National Transgender Discrimination Survey suggest an effect of family rejection and family violence: 51% of those who experienced family rejection and 65% of those who experienced family violence had attempted suicide, much higher than the 32% among those with accepting families; lifetime alcohol/drug use prevalence was 47% among those who experienced family violence, 32% among those who experienced family rejection, and 19% among those with accepting families (Grant et al., 2011).

In short, there is growing evidence in the literature that negative family treatment is harmful to LGBT mental health and substance use. However, the number of studies on this topic remains small; the samples are limited to Western cultures and mostly focused on the US; and transgender populations are under-represented.

Measurement of family rejection/negative treatment

This literature predominantly measures family rejection using either a binary or a continuous scale. Quite a few studies used a single ordinal rating of parent/family reactions from accepting to rejecting or a binary variable based on such rating (D'Augelli et al., 2001; D'Augelli, 2002; Padilla et al., 2010; Savin-Williams, 1989), which, while valid, does not reflect the potentially complex nature of negative family treatment. Willoughby and colleagues (2010) used a multiple-item measure drawn from the Family

Reaction subscale of the Measure of Gay-related Stress (Lewis et al., 2002), which is likely an improvement in reliability over a single-item, but is similar in that it measures family rejection on a continuous scale. Ryan and colleagues (2009) used an instrument that captures the complexity of family treatment by recording frequency of 51 negative reactions. In the analysis, however, they used the count of items positively answered as a continuous variable, noting that this was a simplification.

Absent from this literature is an examination of family rejection from a categorical perspective, capturing heterogeneous types of family treatment experience and their effects on health and well-being. Using data that are similar to Ryan and colleagues' (a set of variables representing negative family behaviors), results from a latent class analysis ([manuscript 1]) suggests six distinct classes of family treatment experience in a sample of Vietnamese sexual minority women and female-to-male transgender persons (transmen).

The present study

This study aims to contribute to this literature by answering the question "How does negative parent/family treatment – based on disapproval of same-sex attraction/relationships or non-conformity to traditional expectations of femininity – affect life satisfaction, mental health, suicidality and substance use?" in a non-Western sample, specifically Vietnamese sexual minority women and transmen. The hypothesis was that negative family treatment (characterized with a latent class variable) would predict worse well-being and higher risk of suicide attempts and substance use. The study also examined whether these associations differ between transmen and sexual minority women.

Methods

Data source

The data are from a web-based survey study on sexual stigma and social support among adult sexual minority women (defined as women who have had romantic/sexual attraction to or relationship(s) with other women, inclusive of different sexual identities) and transmen (defined as biological females who identified as a man or "transguy") in Viet Nam. Respondents were recruited through five Vietnamese websites catering to women who are interested in women, and one website catering to both sexual minority women and transmen. Respondents were screened on the survey website, based on three inclusion criteria: being female, being 18 or older and having loved with another woman; the Vietnamese word "yêu" (love) means either having had romantic/sexual love feelings for, or having been in relationship(s), with someone. Those who met these criteria went through an informed consent process and if they consented, were asked to fill out an anonymous online survey. Although all answered positively to the screening question about being female, a proportion indicated a male or "transguy" gender identity via a question in the survey; this was expected as sexual minority women and persons who identify as transmen (either privately or to others) tend to mingle in the same communities. Data collection took place from mid-March and to early July 2012. This study was approved by the Institutional Review Board at Johns Hopkins Bloomberg School of Public Health, based on a determination of minimal risk due to its anonymous design.

The prior latent class analysis of family treatment experience was conducted using data from 2664 respondents living in Viet Nam who answered a set of 19 questions

about negative family behaviors. The present study included data from 2,496 (93.7%) of the original respondents, who reported on all the covariates considered in the current analysis.

Measures

Family treatment was a latent class variable with six classes: *peace* (having experienced almost no family pressure to conform to heteronormativity and none of the 16 listed aggressive family behaviors); *pressure* (pressure to conform but almost no aggressive behaviors); *aggressive R&G* (pressure plus some aggressive behaviors targeting respondent and respondent's girlfriend(s)); *aggressive R* (pressure plus some aggressive behaviors targeting respondent but not girlfriend); *severe* (high pressure plus many aggressive behaviors); and *extreme* (high probabilities of all aggressive behaviors) ([manuscript 1]). For a detailed description of these classes, see Figure 5.A.1 in the Supplemental Material for this paper (see the Appendix to this chapter).

The study controlled for covariates which have been assessed as predictors of family treatment in this sample, including age, sexual identity (lesbian, bisexual, or unsure) of sexual minority women, gender identity (differentiating transmen and sexual minority women), religion, family economic status, urbanicity (residing in or outside of the country's five big cities), and geographical region ([manuscript 1]).

Several outcome variables reflect mental well-being. *Depressive symptoms* and *anxiety symptoms* were measured using Vietnamese versions (T. Q. Nguyen et al., 2013) of the PHQ-9 (Spitzer, Kroenke & Williams, 1999) and the GAD-7 (Spitzer, Kroenke, Williams, & Löwe, 2006); items were summed to form scores. *Probable depression* is a binary variable constructed based on answers to the PHQ-9 using the DSM-IV symptom

count algorithm (Spitzer et al., 1999); this measure did not take into account whether there was functioning impairment due to symptoms, which was not captured by the survey.

Life satisfaction was measured using an adapted version of the personal well-being index for adults (PWI-A; The International Wellbeing Group, 2006) with nine items capturing satisfaction with standards of living, health, achievements in life, personal relationships, love life, safety, work or school, community integration, and future prospects; the items were averaged and rescaled to form an index on a 0-to-100 scale.

We examined two suicidality dependent variables: *any-suicide-attempt* (1=ever attempted suicide, 0=never) and *repeat-suicide-attempt* (1=having had more than one suicide attempt, 0=otherwise); and two substance use variables: *current smoking* (1=currently smoke, 0=not currently smoke or never smoked) and *recent heavy drinking* (1=consumed four or more alcoholic drinks on at least one day in the past 30 days, 0=zero such days in the past 30 days).

Statistical analyses

The method of analysis was latent class with distal outcome modeling (LCD), using the family treatment latent class variable to predict the outcome variables. Three-step LCD was used with Vermunt's correction for class uncertainty, which was developed for the regression of a latent class variable on predictors (Vermunt, 2010), and extended to models relating a latent class variable to a distal outcome (Asparouhov & Muthén, 2013). Essentially, based on the LCA previously conducted, individuals' most likely class (modal class) was predicted, and average classification error probabilities

(e.g., probability of being in class 2 given modal class 1) were estimated. In the LCD model predicting the outcome, modal class was used as the only indicator of the latent class variable, and classification error probabilities were built into the likelihood function to be maximized. This was implemented in Mplus version 7.11.

First, to assess the adjusted associations between family treatment and the outcomes, the outcome variables were regressed on family treatment and covariates. To achieve this in the latent class setting, in each LCD model, the outcome was regressed on the covariates, with covariate–outcome coefficients constrained equal across classes. The differences in the intercepts (which vary across classes) represent the association between family treatment and the outcome. The difference in intercept between the *severe* class, for example, and the *peace* class (designated as the reference class), is a beta regression coefficient. For a continuous outcome, it represents the adjusted difference between the two classes in outcome mean. For a binary outcome, the exponentiated beta represents the adjusted odds ratio (OR) of the outcome comparing the two classes. Since life satisfaction, depressive and anxiety symptoms were skewed, bootstrapping (with 500 samples) was used to obtain confidence intervals for their coefficients.

The above analysis assumed the same family treatment effects for sexual minority women and transmen. To examine whether negative family treatment has differential effects on transmen and sexual minority women, interactions between family treatment classes and transman identity were assessed. This was implemented by letting the regression coefficient on transman identity vary across the latent classes. The difference between the transman coefficients in the *extreme* class and in the *peace* class, for example, is essentially the coefficient of an *Extreme* Class × Transman interaction term.

For a continuous outcome, this represents the difference between two differences: (a) the difference in outcome means comparing *extreme* to *peace* class in transmen; and (b) the corresponding difference in sexual minority women. For a binary outcome, this quantity exponentiated represents the ratio between two ORs: (a) the OR of the outcome comparing *extreme* to *peace* class in transmen; and (b) the corresponding OR in sexual minority women.

With respect to missing data, anxiety symptoms, depressive symptoms, probable depression and life satisfaction had minimal missing (0.2%, 0.4%, 0.8% and 0.4%). To limit the length of the questionnaire for each respondent, the survey was designed so that one section was included only early in the data collection period and some other sections were included later. Suicidality and substance use questions were in the latter, and thus activated part-way through the data collection period. Data missing on these questions prior to activation were missing by design, which generally does not lead to biased estimates (Little et al., 2013). Among participants whose questionnaire included suicidality questions (2069) and substance use questions (2030), missingness for any-suicide-attempt (3.7%), repeat-suicide-attempt (4.3%), current smoking (0.8%) and recent heavy drinking (1.5%) were small. Models were estimated using full-information maximum likelihood (FIML) which adjusts for missingness conditional on other variables in the analysis (Raykov, 2005).

Results

Sample description

Table 5.1 presents the sample characteristics. In this sample, an estimated 36.8% (equivalent to 918 individuals) were in the *peace* class; 34% (849) in the *pressure* class;

10.4% (260) in the *aggressive R&G* class; 8.3% (208) in the *aggressive R* class; 6.1% (152) in the *severe* class; and 4.4% (106) in the *extreme* class. Regarding gender identity, 547 respondents (21.9% of the sample) identified as transmen. There were 1035 lesbian-identified (41.5%) and 546 bisexual-identified (21.9%) respondents. A minority (11.6%) was unsure about their identity. The "other" category was a mixture of small numbers who identified as heterosexual or described their attraction or relationships but did not report an identity; it was included to preserve sample size. The sample was predominantly young and urban.

Mean life satisfaction index was 59.8 (standard deviation – SD=18.2; range 0 to 100), mean depressive symptoms score 9.11 (SD=6.17; range 0 to 27), mean anxiety symptoms score 6.38 (SD=5.29; range 0 to 21). Eighteen percent of respondents were classified as probably depressed. Suicidality and substance use were common: 17.8% reported having ever attempted suicide; 8.4% had repeat attempts; 20.4% currently smoked; 32.4% recently drank heavily.

Results for mental well-being and life satisfaction

Table 5.2 presents models without interaction (A, B, C, D, E, F, G, and H) and models with significant Family Treatment × Transman interaction terms (C2, D2, G2 and H2). For the former set of models, only coefficients/ORs associated with family treatment are shown; for the latter set, the coefficient/OR for transman identity (which compares this group to lesbians as the reference group) and the coefficients/ORs of the interaction terms are also presented. The full results from these models can be found in Table 5.A.1 in the Supplemental Material for this paper (see the Appendix to this chapter). Figure 5.1

plots the adjusted associations of family treatment with the outcomes based on these models.

Overall, negative family treatment was associated with worse mental health and life satisfaction. Combining the three mental well-being and one life satisfaction related models without interaction (A, B, C and D), out of the 20 adjusted betas/ORs, 16 were statistically significant and in the hypothesized directions. Among these, differences in mean anxiety symptoms ranged from 0.63 to 2.70 points (on a total 0-21 scale), differences in mean depressive symptoms ranged from 1.10 to 3.06 points (on a total 0-28 scale), odds ratios of probable depression ranged from 1.37 to 2.21, and differences in mean life satisfaction ranged from -2.5 to -7.3 points (on a total 0-100 scale).

The patterns for these outcomes were similar, with a 'the more negative the family treatment, the worse the well-being' trend. An exception was that respondents in the *aggressive R&G* class were not worse off than the *peace* class – their differences in mean life satisfaction, depressive and anxiety symptoms, and odds ratio of probable depression (relative to the *peace* class), were non-significant, and closer to the null value than those of the *pressure* class.

It was also noted that the *extreme* class were not worse off than the *severe* class. Probable depression and life satisfaction models with interaction terms (C2 and D2) revealed more information: for sexual minority women the effect of *extreme* treatment was worse than that of *severe* treatment, but among transmen only the *severe* class was statistically significantly worse off than the *peace* class, while the other negative classes were all non-significant. Family Treatment × Transman interaction was non-significant in predicting depressive and anxiety symptoms; these models (not shown), however,

showed the same pattern as the interaction models predicting life satisfaction and depressive symptoms.

Mental well-being and life satisfaction were also associated with several covariates: age, sexual identity, family economic status, and geographical region. Compared to lesbians, bisexual women had higher depressive symptoms; both bisexual and unsure respondents had higher odds of probable depression; and the unsure group also had lower life satisfaction.

Results for suicidality

Regarding history of suicide attempts, the *pressure* and *aggressive R&G* classes did not statistically significantly differ from the *peace* class. The *extreme*, *severe* and *aggressive R* classes had higher odds for both suicide attempt variables, with the highest ORs associated with the *severe* class (3.70, 95% CI=2.30-5.94 for any-suicide-attempt; 3.75, 95% CI=2.07-6.77 for repeat-suicide-attempt). Family Treatment × Transman interaction was non-significant; this was unlikely to be a statistical power issue, because the group-specific associations between family treatment and suicidality (estimated by interaction models) were similar between sexual minority women and transmen.

Suicidality was also associated with sexual identity: among sexual minority women, lesbians had the highest odds of both having attempted suicide, at least once or more than once.

Results for substance use

In non-interaction models (G and H), only the *extreme* class was associated with elevated odds of current smoking and recent heavy drinking. In interaction models (H2 and I2), this pattern remained for sexual minority women but not for transmen. For

transmen, those in both the *extreme* and *severe* classes had higher odds of current smoking, and those in the *extreme*, *severe* and *aggressive R* classes had higher odds of recent heavy drinking (although the effect of the *extreme* class did not reach statistical significance for both outcomes).

Substance use was also associated with age, sexual and gender identity, religion, economic status and geographical region. Among sexual minority women, lesbians were most likely to smoke, but did not differ from others in heavy drinking. Transmen were more likely than lesbians to smoke and engage in heavy drinking.

Discussion

This study revealed high levels of mental health concerns among sexual minority women and transmen, relative to the general population in Viet Nam. Eighteen percent of the sample was categorized as probably depressed, which is much higher than prevalence of elevated depressive symptoms in the general population, ranging from 0.9% in a rural sample (Esposito, Steel, Gioi, Huyen, & Tarantola, 2009) to 8.4% in an urban sample (N.-L. D. Nguyen, Hunt, & Scott, 2005). A similar proportion (17.8%) reported having attempted suicide, much higher than the average 0.5% prevalence in a national youth sample and almost triple the highest subgroup prevalence – 6.4% in urban males aged 18-21 (Vuong, Van Ginneken, Morris, Ha, & Busse, 2011). One in five respondents (20.4%) were current smokers and 5.3% smoked daily; these rates are lower than the 47.4% and 38.7% in general Vietnamese men, but substantially higher than the 1.4% and 1.2% in general Vietnamese women (GATS Viet Nam Working Group 2010). Given that sexual minority women and transmen have received little public health attention in Viet Nam, these findings serve as the first call on health policy makers, practitioners and donors to

include these populations among the vulnerable groups indicated for prevention and care efforts.

Study results suggest that family disapproval of non-conforming sexual/gender identity and behavior and the negative behaviors it entails adversely affect mental well-being and increases suicidality and substance use among sexual minority women and transmen. This provides support for the hypothesis of the harms of negative family treatment in a non-Western sexual and gender minority sample; it also is consistent with the minority stress model more broadly. Overall, there was a general 'the more negative the treatment, the worse the outcome' trend, and the three classes *extreme*, *severe* and *aggressive R* seem to be those with the most harmful effects.

One departure from this general trend is that the *aggressive R&G* class was associated with non-significant differences in life satisfaction, depressive symptoms, anxiety symptoms and probable depression odds compared to the *peace* class, and these differences were smaller than those of the *pressure* class, which is a less negative class. One possible explanation is different expectation of future family behavior: some respondents in the *pressure* class might have experienced few negative family behaviors because their identity/attraction/relationship was not yet open knowledge in their families, and they might expect more negative family behavior when more family members find out; on the other hand, certain respondents in the *aggressive R&G* class may have experienced negative behaviors targeting both themselves and their girlfriends because their families were more aware of their relationships, and thus they might not expect worse treatment in the future. Future research needs to incorporate both experience and anticipation of negative treatment; this would be consistent with the

minority stress model, which includes both enacted and perceived stigma as components of minority stress. An alternative explanation is difference in personality and personal strength: some respondents in the *aggressive R&G* class may have self-selected into that class, in the sense that they were more confident, more positive and more "out", which would lead to more family reactions, but also could have protected them from poor mental health.

The study revealed differences in the effects of negative family treatment on transmen and sexual minority women with regards to life satisfaction and probable depression. The effects on sexual minority women more or less follow the trend of 'the more negative the treatment, the worse the outcome'. Yet among transmen only the *severe* class was predictive of lower life satisfaction and higher odds of probable depression; the *extreme* class was not worse off than the *peace* class. This unexpected finding could have been due to small sample size (only an estimated 26 transmen were in the *extreme* class). It is also possible that the transmen in the *extreme* class in the sample were not representative of transmen in the population that experienced *extreme* family treatment. Compared to a sexual minority woman with similar family treatment, a transman may experience more stress overall, due to living in a body not consistent with one's gender identity and/or due to transphobia on top of homophobia. Thus transmen with *extreme* family treatment may on average be under more stress than sexual minority women in the same class. The high level of disadvantage may have affected these transmen in such ways that substantially reduced their probability of participating in the survey – e.g., causing severe psychological distress and/or low socio-economic status (for example, homelessness) leading to lack of information and internet access as well as lack

of interest in participation. This means that the transmen with *extreme* family treatment who participated in the survey might have been a special group in several ways, e.g., more resilient to stress, or having experienced little stigma outside the family, or having more resources to buffer against stress, or having been more effective in mobilizing support from sexual/gender communities. If this were the reason behind the finding, this could be considered "happy participant bias", similar to survivor bias or healthy participant bias (Rothman et al., 2008). To reduce this bias in research on the effects of family treatment affects transmen, in addition to internet samples, community samples with better representation of disadvantaged transmen are needed. Also, studies should adjust for other sources of minority stress including stigma in non-family settings.

The three classes *extreme*, *severe* and *aggressive R* had elevated odds of past suicide attempts. Unexpectedly, the *extreme* class fared better than the *severe* class, and this pattern applied to the whole sample, with no significant difference between sexual minority women and transmen. Again, this raises the "happy participant bias" hypothesis: there may be a more monotone effect in the population, but among people with *extreme* family treatment, those who participated in the survey tended to be the happier ones – more robust, more healthy, and/or less disadvantaged in matters other than family rejection. Since the variables here are about suicide attempts, an unavoidable question is about survivor bias in the literal sense (i.e., whether the suicide attempts of persons with *extreme* family treatment were more serious on average and thus more likely to have succeed), as those who had ended their lives had zero probability of participating in the survey. It is important to explore whether this pattern replicates in other sexual/gender

minority samples, and if it does, whether one or both these types of bias, or other reasons, explain it.

Findings suggest that the threshold of negative family treatment associated with increased smoking and heavy drinking is lower for transmen (starting with *severe* class for smoking and *aggressive R* class for drinking) than sexual minority women (starting at the most negative class – *extreme* – for both smoking and heavy drinking). This is consistent with the gendered nature of smoking and drinking behavior in Viet Nam, where men are more likely than women to smoke and drink, and to smoke frequently and drink heavily. It is therefore not surprising that transmen are more likely to respond to stress with smoking and drinking at lower levels of negative family treatment compared to sexual minority women. Combining this result with the significant positive effect of transmen identity in non-interaction analysis, an equivalent interpretation is that compared to sexual minority women, transmen are at higher risk for smoking and drinking, and such risk is exacerbated by negative family treatment. The practical implication of this finding is that interventions aiming to prevent and reduce smoking and drinking should be sensitive to the higher risks for these behaviors among transmen.

This study has several limitations. It is based on a non-probability sample that was predominantly young and urban, and all used the internet; findings thus are less generalizable to sexual minority women and transmen who are older, live in small towns and rural areas, and do not use the internet. Even though the N=2,496 sample size was substantial, there may have been an issue of low power for the *extreme* class (estimated n=106), and especially low power for interaction analyses as the transmen subgroup in the *extreme* class was very small (estimated n=26). The cross-sectional nature of the data

should also be noted. The predictor–outcome temporal order for mental well-being and substance use is not an issue, since the outcome variables are about the present, while the exposure variable is about lifetime experience. However, the assumed temporal order for the suicidality variables could be violated; a person could have attempted suicide before experiencing negative family treatment. Another limitation is with measurement: while a set of 19 yes/no family behavior items is a significant improvement in detail compared to a single rating from accepting to rejecting, it is still a rough measure, as it does not capture the frequency or intensity of the behaviors. If data were collected on these aspects of family behaviors, similar methods could be used, replacing latent class analysis with latent profile analysis, and results could be compared between the two methods to assess if there is additional benefit (e.g., better outcome prediction) from using higher resolution data.

This study shows that a categorical analysis of negative family treatment revealed interesting findings that would not be captured by analysis using a binary or continuous family rejection variable; these include the non-significant findings for the *aggressive R&G* class, the only significant effect of the *severe* class among transmen for life satisfaction and probable depression, the lower odds of suicide attempts in the *extreme* compared to the *severe* class, and the higher odds of substance use only for the *extreme* class in sexual minority women. A related strength of the study was that its method incorporates class uncertainty to improve accuracy of estimated associations. Applied research has commonly used modal class without considering class uncertainty. Recently, several methods have been developed to address this issue including the one used in this study (Vermunt, 2010) and others (e.g., Lanza, Tan, & Bray, 2013; Petersen & Bandeen-

Roche, 2012), some of which are easily implemented in Mplus and SAS. Latent class models therefore should be used more often in analyzing phenomena that could be conceptualized as consisting of unknown discrete categories. In cases where the categories are ordered, and if the relationship with a second variable is mostly monotone, approximation using an assumed continuous measure is appropriate. Yet if statistical power is not an issue, a categorical analysis is likely to provide more detailed information which may give rise to new insights or questions for further research.

In summary, this study found high levels of psychological distress, probable depression, suicide attempts, smoking and drinking in this sexual minority women and transmen sample, relative to the general Vietnamese population. The findings provide evidence supporting the minority stress hypothesis that negative family treatment is harmful to mental health and contributes to substance use and suicidality. This calls for special attention to the mental well-being of sexual and gender minority persons, to provide them support in coping with family negativity and to intervene with their families to increase family acceptance or tolerance and prevent family maltreatment and violence. The study also revealed that transmen and sexual minority women differ in some of the effects of negative family treatment on mental well-being and substance use, calling for further research. Methodologically, the study demonstrates how latent class methods are useful in studying the relationship between different types of negative family treatment experience and health outcomes.

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Table 5.1. Sample description (N=2496)

		number (%) or mean (SD)	
FAMILY TREATMENT LATENT CLASSES			
	PEACE	918	(36.8%)
	PRESSURE	849	(34.0%)
	AGGRESSIVE – R&G	260	(10.4%)
	AGGRESSIVE – R	208	(08.3%)
	SEVERE	152	(06.1%)
	EXTREME	110	(04.4%)
OTHER COVARIATES			
Age:	18-20 years old	1020	(40.9%)
	21-25 years old	1030	(41.3%)
	26 or older	446	(17.9%)
Sexual/gender identity:	lesbian	1035	(41.5%)
	bisexual	546	(21.9%)
	unsure	289	(11.6%)
	transman	547	(21.9%)
	other	79	(3.2%)
Religion:	no religion	1263	(50.6%)
	Buddhist	915	(36.7%)
	Christian	298	(11.9%)
	other	20	(0.8%)
Family economic status:	rich	90	(03.6%)
	middle-class	739	(29.6%)
	sufficient	1495	(59.9%)
	poor	172	(06.9%)
Urbanicity:	in big cities	1882	(75.4%)
	outside big cities	614	(24.6%)
Geographical region:	northern mountains	56	(02.2%)
	Red river delta	400	(16.0%)
	central region	226	(09.1%)
	south-east region	1498	(60.0%)
	Mekong delta	316	(12.7%)
MENTAL WELL-BEING			
Anxiety symptoms (GAD-7, range 0-21)		6.38	(5.29)
Depressive symptoms (PHQ-9, range 0-27)		9.11	(6.17)
Probable depression		446	(18.0%)
LIFE SATISFACTION			
Life satisfaction (PWI-A-V, range 0-100)		59.8	(18.2)
SUICIDALITY (N=2069)			
Ever suicide attempt		354	(17.8%)
Repeat suicide attempt		167	(08.4%)
SUBSTANCE USE (N=2030)			
Current smoking		411	(20.4%)
Recent heavy drinking		647	(32.4%)

Note: Sample sizes for suicidality and substance use were smaller because these questions were activated mid-way through the data collection period.

Table 5.2. Models examining associations between the outcome variables and negative family treatment and other covariates

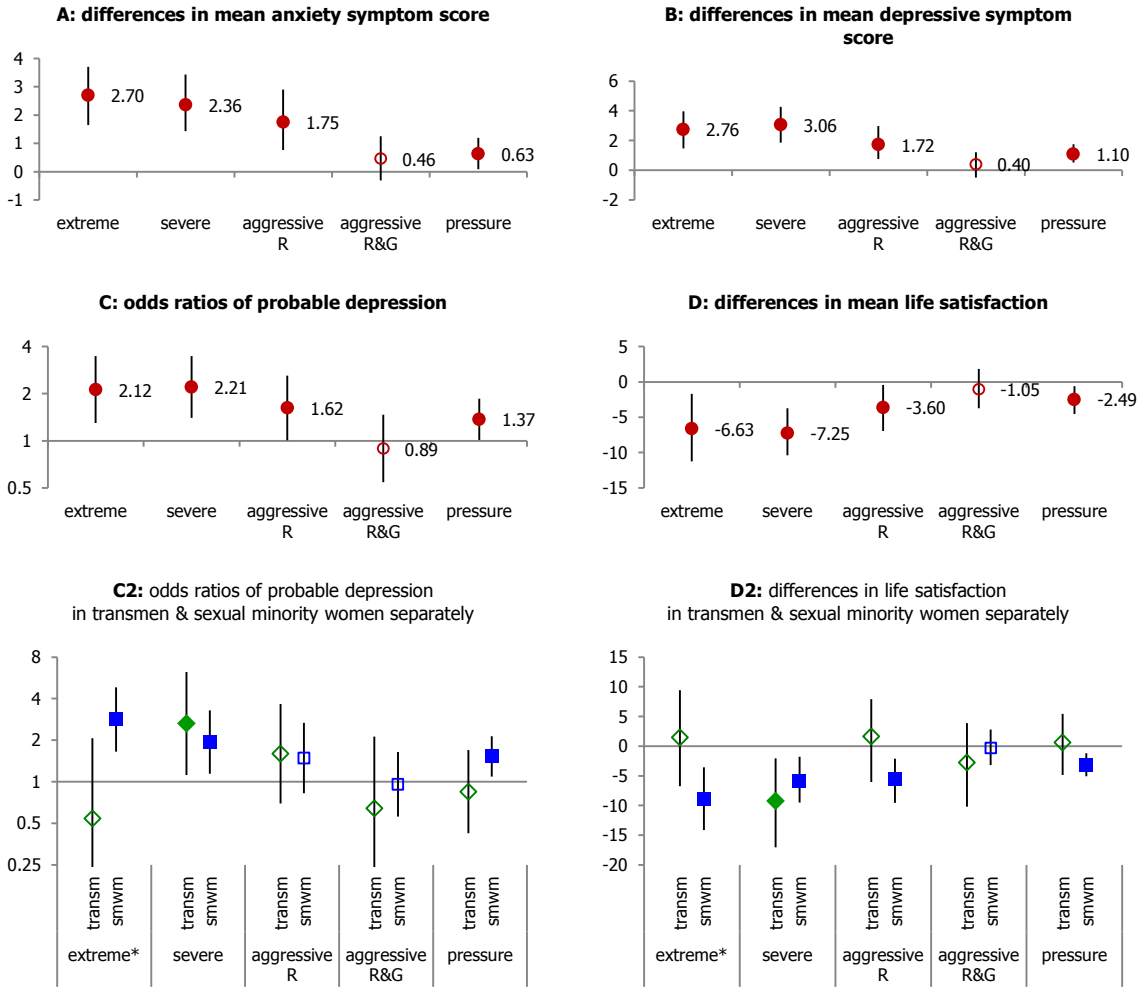
	MENTAL WELL-BEING				LIFE SATISFACTION	
	Anxiety symptoms	Depressive symptoms	Probable depression			
	model A	**model B**	**model C**	**model C2**	**model D**	**model D2**
Family treatment:	beta (95% CI)	beta (95% CI)	AOR (95% CI)	AOR (95% CI)	beta (95% CI)	beta (95% CI)
peace	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
pressure	**0.63** (0.08,1.19)	**1.10** (0.52,1.74)	**1.37** (1.01,1.86)	**1.53** (1.09,2.14)	**-2.5** (-4.6,-0.6)	**-3.2** (-5.1,-1.2)
aggressive – R&G	0.46 (-0.31,1.25)	0.40 (-0.49,1.20)	0.89 (0.54,1.47)	0.95 (0.56,1.64)	-1.1 (-3.8, 1.8)	-0.3 (-3.2, 2.8)
aggressive – R	**1.75** (0.77,2.91)	**1.72** (0.75,2.97)	**1.62** (1.01,2.61)	1.48 (0.82,2.67)	**-3.6** (-6.9,-0.4)	**-5.5** (-9.6,-2.1)
severe	**2.36** (1.44,3.44)	**3.06** (1.85,4.27)	**2.21** (1.40,3.47)	**1.94** (1.14,3.29)	**-7.3** (-10.4,-3.8)	**-6.0** (-9.5,-1.8)
extreme	**2.70** (1.65,3.70)	**2.76** (1.46,3.96)	**2.12** (1.30,3.47)	**2.83** (1.66,4.83)	**-6.6** (-11.3,-1.7)	**-8.9** (-14.1,-3.6)
Transman vs. lesbian				1.21 (0.71,2.08)		-2.5 (-6.6,1.5)
Interactions:				OR ratio (95% CI)		
pressure X transman				0.55 (0.26,1.20)		3.8 (-1.8,9.0)
aggressive R&G X transman				0.67 (0.18,2.48)		-2.4 (-10.9,4.4)
aggressive R X transman				1.08 (0.39,2.96)		7.2 (-0.8,13.9)
severe X transman				1.36 (0.50,3.72)		-3.3 (-11.4,4.5)
extreme X transman				**0.19** (0.05,0.81)		**10.4** (1.0,19.2)

	SUICIDALITY		SUBSTANCE USE			
	Ever attempt	Repeat attempt	Current smoking		Recent heavy drinking	
	model E	**model F**	**model G**	**model G2**	**model H**	**model H2**
Family treatment:	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
peace	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
pressure	0.99 (0.69,1.43)	0.80 (0.46,1.40)	0.86 (0.62,1.20)	0.89 (0.61,1.31)	1.11 (0.84,1.47)	1.14 (0.83,1.56)
aggressive – R&G	1.32 (0.80,2.17)	1.34 (0.68,2.66)	1.10 (0.69,1.75)	0.90 (0.41,1.94)	1.25 (0.85,1.85)	1.50 (0.97,2.31)
aggressive – R	**2.81** (1.72,4.57)	**2.87** (1.55,5.32)	0.96 (0.55,1.66)	1.19 (0.68,2.06)	1.51 (0.97,2.36)	1.15 (0.65,2.04)
severe	**3.70** (2.30,5.94)	**3.75** (2.07,6.77)	1.47 (0.92,2.33)	0.85 (0.43,1.73)	1.32 (0.85,2.04)	0.91 (0.52,1.60)
extreme	**1.94** (1.13,3.34)	**2.24** (1.11,4.54)	**2.01** (1.17,3.43)	**1.88** (1.02,3.49)	**2.26** (1.37,3.72)	**2.37** (1.37,4.08)
Transman vs. lesbian				1.62 (0.98,2.69)		1.33 (0.82,2.17)
Interactions:				OR ratio (95% CI)		OR ratio (95% CI)
pressure X transman				0.94 (0.45,1.95)		0.95 (0.48,1.89)
aggressive R&G X transman				0.84 (0.30,2.29)		0.51 (0.19,1.38)
aggressive R X transman					1.21 (0.39,3.77)	
severe X transman					**3.77** (1.30,10.88)	
extreme X transman					1.37 (0.39,4.78)	

Notes: Models adjusted for age, sexual/gender identity, family economic status, parent awareness, urbanicity and geographical region. Full results are included in the Supplemental Material Table 5.A.1 (see the Appendix to this chapter). Bold face denotes statistical significance (at α=0.05).

Figure 5.1. Family treatment's adjusted associations with the outcome variables: differences in means and odds ratios (95% CI) comparing negative classes to the *peace* class – part 1

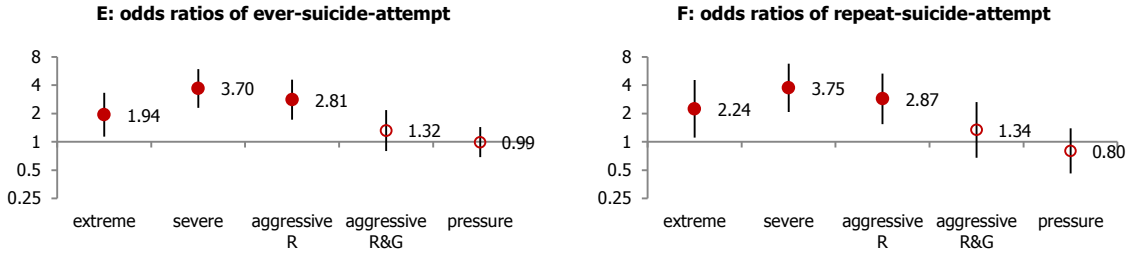
MENTAL WELL-BEING and LIFE SATISFACTION



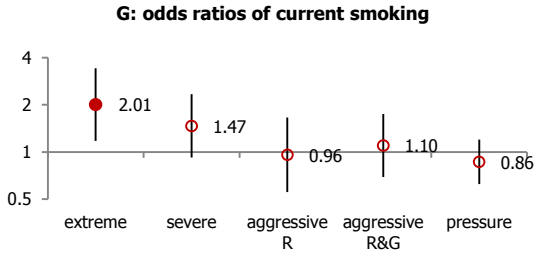
Red circles represent estimates for full sample (from models without interactions); blue squares and green diamonds represent estimates for sexual minority women and transmen (from models with class X transman interactions). Estimates in solid shapes are statistically significant; those in hollow shapes are non-significant (at alpha=0.05 level). "transm" and "smwm" stand for transmen and sexual minority women.
* denotes family treatment classes whose interaction with transman identity was statistically significant.
All models adjusted for age, sexual/gender identity, religion, family economic status, urbanicity and geographical region.

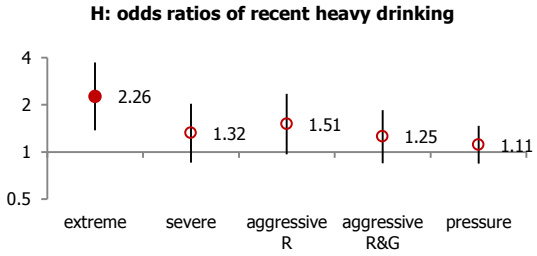
Figure 5.1. Family treatment's adjusted associations with the outcome variables: differences in means & odds ratios (95% CI) comparing negative classes to the *peace* class – part 2

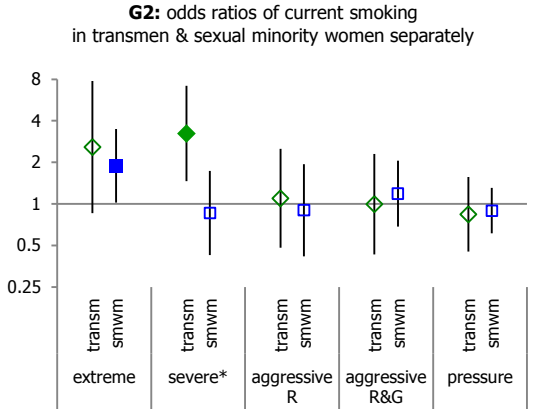
SUICIDALITY

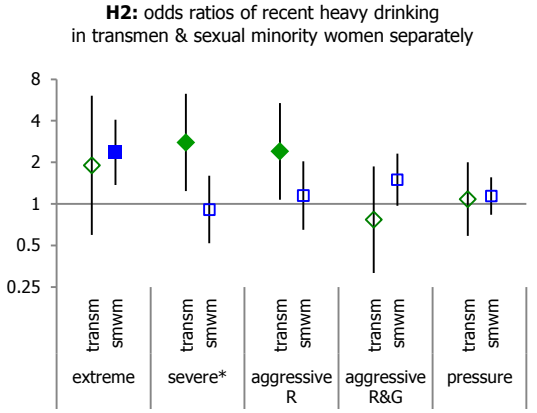


SUBSTANCE USE









Red circles represent estimates for full sample (from models without interactions); blue squares and green diamonds represent estimates for sexual minority women and transmen (from models with class X transman interactions). Estimates in solid shapes are statistically significant; those in hollow shapes are non-significant (at alpha=0.05 level). "transm" and "smwm" stand for transmen and sexual minority women.
* denotes family treatment classes whose interaction with transman identity was statistically significant.
All models adjusted for age, sexual/gender identity, religion, family economic status, urbanicity and geographical region.

CHAPTER 6: MANUSCRIPT 3

Do sexuality-related social support and social connections moderate or mediate the effect of negative family treatment on sexual minority women's well-being and substance use?

Abstract

Parental/family disapproval and rejection has been linked to poor mental health and substance use in sexual minority populations. Of interest is the role of social support and social connections in potentially protecting sexual minority persons' well-being and buffering against the harms of negative family treatment. Informed by the minority stress model and social support theories, this study examined, in Vietnamese sexual minority women (n=1949), perceived social support (including non-family support received [SR] and availability of sexuality/stigma-related support [SA]) and sexual minority women network connection (WN), as moderators and mediators of the associations between negative family treatment and measures of well-being (specifically life satisfaction and depressive symptoms) and substance use (smoking and heavy drinking). Results indicated that SR, SA and WN were predictive of well-being, with stronger associations for social support (SR and SA). WN was positively associated with substance use, suggesting possible social influence. The data did not support the moderation (or interactive stress-buffering) hypothesis. There was some evidence supporting the additive stress-buffering hypothesis, with negative family treatment being predictive of WN, which in turn predicted well-being. WN also partially mediated the relationship between negative family treatment and substance use, as WN predicted smoking and drinking. In addition to the contribution to theory, the study calls attention to effects of family stressors on the study population's health outcomes and underscores the need for interventions that help SM women provide more effective support to one another and that make available additional support services through their communities.

Key words

sexual minority women, lesbian, family rejection, social support, social connection, social influence, stress buffering, resilience, mental health, substance use, Vietnam

Introduction

Sexual minorities commonly face disapproval and rejection from parents and other family members. Like other forms of sexual minority stress (Meyer, 1995, 2003), parental/family negative treatment has been linked to a range of poor outcomes including negative sexual minority identity, lower self-esteem, lower life satisfaction, psychological distress, suicidality, and substance use (D'Augelli, 2002; D'Augelli et al., 2005, 2006, 2001; [manuscript 2]; Padilla et al., 2010; Rosario et al., 2009; Ryan et al., 2009; Savin-Williams, 1989; Willoughby et al., 2010). In addition to being a stressor, disapproval may disrupt or reduce the family nurturing and support important for human development. Of interest are questions about what social resources are available, and how effective they are, in protecting sexual minority individuals' well-being and buffering against the harmful effect of negative family treatment; this has been an under-researched topic. This study examined, in a sample of sexual minority women in Viet Nam, the effects of social support and social connections with respect to negative family treatment's harmful effects on well-being and substance use. The study drew from the broader literature on the roles of social connections in promoting health and buffering against stress, and empirical evidence related to sexual minority stress in general.

Stress, social support and health: Main effects, stress-buffering effects, and matching theories of social support

Social connections and social support have been linked to mental and physical health by many studies (Berkman, 1995; Cohen & Wills, 1985; Kessler et al., 1985; Uchino et al., 1996). In sexual minority health research, social support has been found to be positively correlated with life satisfaction (Wayment & Peplau, 1995), self-esteem

(Yakushko, 2005), psychological well-being (Detrie & Lease, 2007), positive sexual identity and positive sexual-and-ethnic identity (L. Vu et al., 2011); and with lower risk of anxiety (Sivasubramanian et al., 2011), depression and suicidality (Sivasubramanian et al., 2011; Teasdale & Bradley-Engen, 2010).

The minority stress model theorizes that social support ameliorates the negative impact of minority stressors on mental well-being (Meyer, 1995, 2003). This *stress-buffering* model, which is dominant in the stress literature, is operationalized through a Social Support × Stress interaction term, expected to be positively associated with mental health and negatively associated with distress (Cohen & McKay, 1984); it is also called the *stress moderation* model, or the *interactive stress-buffering* model. The model has some support from lesbian, gay and bisexual (LGB) research. In LGB adolescents, it has been found that having sexual minority friends moderates the effects of interpersonal problems at school and arguments at home on psychological distress (Ueno, 2005), and family support reduces the negative effect of antigay abuse on mental health (Hershberger & D'Augelli, 1995). In LGB young adults, sexuality-related social support (specifically perceived availability of emotional support and advice for dealing with sexuality-related stress) has been found to lower the effect of sexuality-related stress on emotional distress (Doty et al., 2010).

The evidence is not uniform, however. Several studies tested but did not find an interactive effect of social support and sexual minority stress. In a study of gay male youth (Friedman et al., 2006), peer and parental support contributed to lower suicidality, but did not moderate the association between bullying and suicidality. In South Indian men who have sex with men, perceived social support was associated with lower

depression, but did not moderate the influence of gender non-conforming stigma or HIV stigma on depression (Logie et al., 2012). Szymanski (2009) found that social support neither had a direct effect nor moderated the effect of heterosexist events on psychological distress in gay and bisexual men. These findings reflect a theme in the broader stress literature, that the evidence for the stress-buffering hypothesis is inconsistent (Thoits, 2011).

Scholars who study stress and coping have theorized about mechanisms for the *stress-buffering* versus *main* (i.e., non-stress-buffering) effects of social support, which may shed light on these inconsistent findings. According to Cohen (2004) main effects result from the social integration aspect of social relationships, which brings positive psychological states that induce health-benefiting physiological responses, and provides information, motivation and pressure for individuals to care for themselves. Thoits (2011) highlighted everyday supportive actions that promote health through sustaining a sense that one matters to significant others, making everyday tasks easier and thus maintaining a sense of control over life, and preventing stressors from occurring or helping appraise situations as less threatening.

Social support that buffers against stress is support that is effective in helping the person cope with a stressful situation (Cohen, 2004; Thoits, 2011). As such, it differs qualitatively from everyday supportive actions (Thoits, 2011). Cohen and colleagues' matching theory of social support (Cohen & McKay, 1984; Cohen & Wills, 1985) posits that stress-buffering effects are found when the social support measure captures resources needed to cope with the stressor. They suggested that emotional and appraisal support is needed for a broad range of stressful events, while instrumental support and social

companionship buffer stress only when they match the specific requirements of a stressful situation; and that the size of a person's social network (e.g., number of social ties) is less likely to have stress-buffering effects than the presence of a confidant relationship. Thoits' (2011) theory on stress-buffering social support matches the type of support to the source of support. The theory distinguishes two categories of support providers: *significant others* (who are close to the person but may not have experienced the same kind of stress) and *similar others* (who have experienced the same kind of stress but may not be close to the person), and asserts that the kinds of support needed from them to buffer stress differ. Significant others should provide love, concern, sympathy (for *emotional sustenance*) and instrumental support (for *active coping*); similar others could provide empathic understanding, support for ventilation and validation of feelings and concerns (for *emotional sustenance*), threat reappraisal, information, advice, and coping encouragement (for *active coping*), as well as role modeling and hope inspiration (positive *social influence*).

The support matching concept in both these theories is relevant to the study of social support and sexual minority stress. One of the studies previously mentioned that found a stress-buffering effect (Doty et al., 2010) matched the social support measure to the stressor based on Cohen's theory – it evaluated sexuality-related support as a buffer of sexuality-related stress. In the study by Szymanski (2009) which did not find a stress-buffering effect, the investigator noted that the social support measure was not specific to the stressor of interest, heterosexist events.

Thoits' distinction between support from significant others and from similar others is corroborated by several studies. Sexual minority youth have repeatedly reported

receiving less support from their families than from people outside their families (Mufioz-Plaza et al., 2002; Nesmith et al., 1999). In Mufioz-Plaza et al.'s study, LGB and transgender (LGBT) high school students reported receiving support from both heterosexual and LGBT peers and non-family adults, but the emotional support from heterosexual peers was more limited. In the Doty et al. study, young LGB adults reported that support from family and heterosexual friends for sexuality-related stress was less available than their support for other stressors. Both studies found that LGBT persons were better placed to provide some forms of support, namely information and appraisal support (Mufioz-Plaza et al., 2002) and sexuality-related support (Doty et al., 2010). Other studies suggest there are certain support needs that might best be met by other sexual minority persons. Studying social support and life satisfaction in women, Wayment and Peplau's (1995) found that after accounting for the effect of global social support (a latent construct reflected in several support domains), for lesbian but not heterosexual women, one of the domains – reassurance-of-worth support – had an additional effect on life satisfaction. This suggests that lesbian women may face more threat to their sense of self-worth, and thus benefit more from reassurance-of-worth support, a kind of support that may be more available from other sexual minority persons who face the same kind of threat. In a sample of Chinese homosexual men, Liu and colleagues (2011) found a positive association between self-stigma and perceived social support from sexual partners, but not from other people. Possible explanations include (a) sexual partners of homosexual men high in self-stigma provided them with more support to help them cope with self-stigma; and (b) compared to homosexual men low in self-stigma, those high in self-stigma derived more benefit from the support provided by

sexual partners – both of which endorse the importance of matching support and support provider to the coping needs.

Stress affecting social support: Mediation models

The moderation model is prominent in stress buffering research, as it is relevant to a broad range of coping resources including social support as well as personal traits. However, a support by stressor interactive effect on well-being is not required to determine that social support is effective in helping a person cope with stress. It is possible that as individuals encounter a stressful situation, their social network mobilizes, or they mobilize the social network, to provide more support – of the kinds needed, from the appropriate people – which effectively helps them cope with stress and maintain well-being. In that case individuals with higher stress exposure would report higher levels of social support, and the maintenance of well-being (or reduction in the harms of stress) for them would from the higher social support that has been mobilized. This effect could simply be a main effect, with social support not necessarily modifying the effect of stress. The model of stress leading to higher social support, which in turn reduces distress, has previously been described and named the *additive stress-buffering* model (Wheaton, 1985), distinguishing it from the interactive stress-buffering model.

The testing of this model has been limited, but data from some settings suggest that it may have some validity. In a Chinese American sample, stressful life events positively predicted social support, which in turn was negatively associated with psychological distress (Lin et al., 1979). In a sample of caregivers of dementia patients (Cho, 2006), caregiver role overload was associated with mobilization of support from others, which in turn predicted reduction in caregiver anger. The authors of this paper are

unaware of any studies that tested this model in LGBT populations, but some findings suggest there may be an influence of stress on social support. Berger and Mallon (1993) found in a sample of gay men that those not in a committed relationship were more likely to report loneliness and to talk to network members more often, suggesting that non-partner connections were used to offset for the lacking of a partner relationship. In a qualitative study with LGB youth, a major theme was seeking parental figures among other LGBs, especially for youth who had troubled relationships with their parents (Nesmith et al., 1999).

Beside a support-mobilizing effect, stress could also have a support-dampening effect. In a study of adult adjustment, Runtz and Schallow (1997) found that childhood physical abuse predicted lower perceived social support from friends and family. In people living with HIV in Hong Kong, HIV self-stigma predicted lower perceived availability of social support (Mak et al., 2007). In a sample of sexual minority women, homophobic victimization and internalized homophobia negatively predicted social-psychological resources, a measure including social support (Lehavot & Simoni, 2011). In all these studies, while it is possible that both the predictor (childhood abuse, HIV self-stigma and sexual minority stress) and the response variable (perceived social support) shared common causes (e.g., hostility in the social environment), it is also possible that the experience of violence, prejudice and internalized-stigma either cause people to perceive their social connections more negatively, or shape their interactions with others in such ways that reduce the actual availability of support – examples of the latter may include concealing sexual identity, or keeping an emotional distance from others.

Analytically, the additive stress-buffering model and the support-suppressing model are the same mediation model, the only difference being the hypothesized sign of the stress-to-support path. Also, the mediation and moderation models are not mutually exclusive (Wheaton, 1985); it could be the case that stress influences the level of social support as well as social support modifies the effect of stress.

Another aspect of social connections: Social influence

Thoits' theory summarized above mentions positive social influence, in the form of role modeling and inspiring hope. One example of this is the parental figures in Nesmith and colleagues' (1999) study, who provided advice and acted as role models. Yet not all social influence is positive. Social norms in some American lesbian communities (e.g., athleticism, strictly identifying as lesbian and having sex only with women, achieving high education and financial independence), for example, were associated with depression and anxiety among young sexual minority women who do not live up to these standards (Boyle & Omoto, 2014).

Social influence may be a factor contributing to elevated rates of substance use in sexual minority populations, in addition to sexual minority stress. Analyzing data from the 2000 National Alcohol Survey in the US, Trocki and colleagues (2005) found that sexual minority women spent more time than exclusively heterosexual women in bars and at parties – venues conducive to substance use – and gay men spent more time in bars than other groups of men. In a qualitative study, sexual minority women were more likely than heterosexual women to talk about substance use as a means to build community connection (Drabble & Trocki, 2013). Baiocco and colleagues (2010) surveyed young lesbian and gay adults in Italy and found that high connectedness to the gay community

predicted heavy drinking as opposed to just social drinking. A survey of young lesbian and bisexual (LB) women found that drinking norms (the number of alcoholic drinks a person believed a typical LB woman consumed per week) was associated with drinking behavior (number of drinks the person consumed) (Gilmore et al., 2014).

The present study

The present study examined, in a sample of Vietnamese sexual minority women (SMW), the roles of perceived sexuality-related social support and connection to other SMW in relation to the effects of negative family treatment (based on disapproval of same-sex attraction/relationships or non-conformity to traditional expectations of femininity) on SMW's well-being and substance use. For the well-being related outcomes (life satisfaction and depressive symptoms), main effects, moderation (i.e., interactive stress-buffering) and mediation (i.e., additive stress-buffering) hypotheses were tested. The same models were evaluated for substance use outcomes (smoking and heavy drinking), but given the potential duality of effect mechanisms – stress-buffering and social influence, hypotheses were more complex, with social support measures expected to have a reducing or neutral effect, and connection to other SMW expected to have a neutral or increasing effect, on smoking and drinking.

Methods

Data source

Data for this study came from an anonymous online survey of adult (at least 18 years old) Vietnamese sexual minority women (SMW, defined as women who have had romantic/sexual attraction to or relationship(s) with other women, inclusive of different sexual identities) on sexual stigma, social support and mental well-being, conducted in

2012. Respondents were recruited through advertisement on internet forums catering to Vietnamese women who are interested in women. The study was approved by the Institutional Review Board at Johns Hopkins Bloomberg School of Public Health. The study has been described elsewhere ([manuscript 1], [manuscript 2]). The sample used in this analysis is limited to SMW living in Viet Nam who answered a set of questions about negative family behaviors (based on disapproval of same-sex attraction/relationships or non-conformity to traditional expectations of femininity), and for whom data on the control variables were available (N=1,949).

Measures

Family treatment was conceptualized as a latent categorical variable statistically constructed through a previous latent class analysis (LCA) of responses to 19 yes/no questions about negative behaviors that parents or other family members had ever done (based on their disapproval of the respondent's same-sex attraction/relationships or non-conformity to traditional expectations of femininity). This latent variable consists of one non-negative class – termed *"peace"* (having experienced almost no family pressure to conform to heteronormativity) – and five negative classes. The negative class that is least negative is *"pressure"* (high probabilities of pressure to conform to heteronormativity but almost none of the listed aggressive family behaviors); followed by two more negative classes, *"aggressive R&G"* (pressure plus some aggressive behaviors targeting respondent and respondent's girlfriend) and *"aggressive R"* (pressure plus some aggressive behaviors targeting respondent but not girlfriend); an even more negative class *"severe"* (high pressure plus many aggressive behaviors); and the most negative class *"extreme"* (high probabilities of all aggressive behaviors) ([manuscript 1]).

Life satisfaction was measured using a version the personal well-being index for adults (PWI-A – The International Wellbeing Group, 2006), capturing satisfaction with nine domains of life including standards of living, health, achievements in life, personal relationships, love life, safety, work or school, community integration, and future prospects.

Depressive symptoms were measured using a Vietnamese version (Nguyen et al., 2013) of the PHQ-9 (Spitzer, Kroenke & Williams, 1999). *Smoking* was coded 1 if the respondents reported currently smoking, and 0 if the respondent reported not currently smoking or having never smoked. *Heavy drinking* was coded 1 if the respondent reported consuming at least four alcoholic drinks in a day, at least once in the past 30 days, and 0 otherwise. A previous analysis of this dataset ([manuscript 2]) found that negative family treatment (NFT) was associated with well-being (with a general trend of the more negative treatment, the lower life satisfaction and the higher depressive symptoms) and with substance use (with increased odds of smoking and heavy drinking in the *extreme* class).

Based on the matching concept in Cohen's and Thoits' social support theories, the study considered two measures of perceived social support and one measure of social connection that indicate or suggest support for sexuality/stigma-related issues. These three measures, namely *perceived availability of sexuality/stigma-related support* (SA), *perceived non-family support received* (SR), and *connection to sexual minority women network* (WN), were conceptualized as latent normal continuous variables. SA was measured with four ordinal indicators, rated on a 5-point scale from strongly disagree to strongly agree, which tapped into emotional support (i.e., having someone to talk to) and

appraisal support (i.e., having someone from whom to ask for advice) about problems related to love or to sexual stigma. SR was measured with three indicators based on the questions "How much do you feel supported by …friends, …other SMW, …LGBT internet forums?". Each source was each rated on a scale from 0=very little support to 8=very much support; because of their non-normal distributions with large masses at the two extremes, these variables were treated as ordinal variables. WN was measured with three count indicators: numbers of other SMW the respondent knew, considered friends, and had been in contact with in the previous two weeks. The measurement models for SR and SA were ordinal logistic, and that for WN was Poisson.

The study controlled for six variables: age (18-20, 21-25 and 26 or older); sexual identity (lesbian, bisexual, unsure of sexual identity, and other – the 'other' category was a mixture of small numbers who identified as heterosexual or who selected 'other identity' and did not specify an identity); religion (no religion, Buddhist, Christian, and other); self-rated family economic status (rich, middle-class/comfortable, sufficient and poor); urbanicity (residing in one of the country's five major cities, or not); and geographical region.

Statistical analyses

First, the *base* model was run using family treatment (but not SR, SA or WN) to predict the outcomes (using linear regression for life satisfaction and depressive symptoms, and logistic regression for smoking and drinking). *Main effects* models were next implemented, adding SR, SA, WN, and all three, as predictors. For *moderation* analysis, Family Treatment × SR/SA/WN interaction was added. Since the purpose was to evaluate whether any of the SR, SA and WN constructs played a moderator role, these

variables were examined separately in different models. For *mediation* analysis, structural equation models were used to estimate path A (family treatment affecting SR/SA/WN) and path B (SR/SA/WN affecting outcome variables) effects simultaneously, implementing three single-mediator models and a model with SR, SA and WN combined. All models (for outcomes and mediators) adjusted for the control variables.

Given family treatment was a latent class (not observed) variable, these models were implemented using two methods that address class uncertainty. The first was to represent the latent class variable using individuals' class membership probabilities (predicted by the LCA); the outcome was regressed on m-1 variables representing the person's probabilities of being in the first m-1 classes (instead of m-1 dummy variables representing the m classes). This method (*probability regression*) has been shown to perform well in relating latent class to distal outcomes given moderate class separation, i.e., entropy > 0.70 (Schuler & Stuart, 2014). The second method was to apply *Vermunt correction* for class uncertainty (Bakk et al., 2013; Vermunt, 2010), where a latent class with distal outcome model was estimated, using the most likely class (modal class) predicted by the LCA for each individual as the only indicator of the latent class variable, but specifying classification error rates (derived from the LCA) and building them into the likelihood function to be maximized. This method has been shown to perform well in relating latent class to distal outcomes (Asparouhov & Muthén, 2013; Bakk et al., 2013) even when class separation was modest (entropy=0.5). Class separation from LCA with this sample was good, with entropy = 0.856 and correct classification probabilities 0.82 to 0.99 ([manuscript 1]), suggesting both methods were appropriate. In addition, as a

third method, *modal class* was used as proxy for latent class, simply regressing the outcome on the categorical modal class variable, with no class uncertainty correction.

In models examining SR, SA and WN separately, SR, SA and WN were treated as latent factors. In the main effect and mediation models with SR, SA and WN combined, to reduce computation load, factor scores were used instead of the latent factors; these factor scores were generated separately from single-factor models using the mean of the posterior distribution of the factor. All models were implemented using Mplus v7.11, with the MLR estimator.

Results

Table 6.1 summarizes sample characteristics. In terms of family treatment, the two largest classes were *peace* (40.0%) and *pressure* (33.4%); followed by *aggressive R&G* (9.9%), *aggressive R* (6.8%), *severe* (5.5%) and *extreme* (4.3%). The mean life satisfaction was 59.9 out of a range of 0-100, mean depressive symptoms score was 9.15 on the PHQ-9 ranging 0-27. Substantial proportions reported current smoking (17.1% – much higher than general population rates in Viet Nam [[manuscript 2]]) and recent heavy drinking (30.6%). The sample was predominantly young (79.8% aged 18-25) and urban (76.7% living in big cities). Over half (53.1%) identified as lesbian, 28% as bisexual and 14.8% were unsure of their sexual identity.

Results were very similar across the three methods. This paper presents estimates from probability regression, which provides some correction for class uncertainty and allows standardization of latent factors (SR, SA and WN) over the full sample so that effects could be presented as per standard deviation (SD) difference in SR/SA/WN; the Vermunt method with multi-group models does not allow standardizing latent factors

over the full sample. Results from Vermunt correction and modal class methods can be found in the Supplemental Material for this paper (see the Appendix to this chapter).

Results from base models and main effect models

Table 6.2 presents estimates from the base model and main effect models. In main effect models examining SR, SA and WN separately, all three measures were associated positively with life satisfaction and negatively with depressive symptoms; SA and WN were positively associated with current smoking and recent heavy drinking. In the model with SR, SA and WN combined, SR and SA, but not WN, remained statistically significantly associated with life satisfaction; all three were statistically nonsignificant for depressive symptoms; and only WN remained positively associated with smoking and drinking.

Results from moderation models

Figure 6.1 plots predicted means (of life satisfaction and depressive symptoms) and proportions (of current smoking and recent heavy drinking) based on moderation models. Several SR/SA/WN × Family Treatment Class terms were statistically significant. However, these were isolated and did not represent any general trend that the effect of NFT were modified in a particular direction. As the family treatment classes are roughly ordered from most negative (left) to least negative (right), the moderation effect hypothesis predicts a general trend of change in the "slope of the curve" relating NFT to the outcome, when switching from low to average to high SR/SA/WN. Such a "change in slope", however, is not observed in Figure 6.1. (For detailed coefficient estimates from these models, see Table 6.A.1 in the Appendix to this chapter.)

Results from mediation models

Figure 6.2 presents results from mediation models. Path A effects compare SR/SA/WN levels between negative treatment classes and the *peace* class. For SR, one difference – between *aggressive R&G* and *peace* classes – was statistically significant, but there was no general trend. All the differences in SA were nonsignificant. For WN, four differences – comparing *pressure, aggressive R&G, aggressive R* and *severe* to *peace* – were positive and statistically significant; the difference between *extreme* and *peace* was positive but nonsignificant. There seems to be a general trend of NFT associated with greater WN. Results for path B effects are similar to results from main effects models. (For detailed coefficient estimates from mediation models, see Table 6.A.2 in the Appendix to this chapter.)

Figure 6.3 summarizes results from all three types of models for two types of outcome (well-being and substance use) and three intervening variables (SR, SA and WN). Although mediation and moderation are not mutually exclusive, mixed mediation-moderation models were not of interest, because there was no clear support for moderation effects.

Discussion

Social support and social connections with well-being outcomes

Consistent with prior research, social support and connections were found to be important to well-being. In main effects models with only one of the three social support/social connection variable (adjusting for family treatment and covariates), SR, SA and WN all predicted higher life satisfaction and lower depressive symptoms. When all three variables were included in the same model, results differed for life satisfaction

and depressive symptoms. For life satisfaction, both perceived social support variables (SR and SA) remained statistically significant but the effect of WN disappeared, suggesting that it is the functional support aspect of social connections (and not just having connections) that is important for well-being. While social connections are a source of support, they may also be a source of stress, for example demanding the individual to provide support, or vicariously experience of stress of others. In the model for depressive symptoms with SR, SA and WN combined, all three variables had similar negative (albeit statistically non-significant) coefficients, suggesting that the depression-ameliorating effect of social connections is related, but not confined, to perceived social support. Comparing the positive outcome (life satisfaction) and the negative outcome (depressive symptoms), it seems that social connections to other SMW may help reduce depressive symptoms, but it is having support (either having received support or perceiving availability of support) that is associated with a sense of well-being.

Does social support/social connections moderate the negative family treatment and well-being relationship?

The study did not find evidence of interactive stress buffering, i.e., SR, SA and WN did not reduce the effect of negative family treatment on well-being. While this was expected for WN, which was not a measure of support specifically, the same finding for SR and SA is noteworthy. As SA and SR were matched to the stressor of interest, this result is inconsistent with Doty et al.'s (2010) finding that sexuality-related social support buffered against the harmful effect of sexuality-related stress.

This finding is unlikely to be due to lack of variation in either family treatment or social support variables in this sample. While the sample did not capture individuals with

absolutely no connection to the SMW community and no sexuality-related support, it has substantial variability in all of the support/connection measures, with responses spanning the full scales allowed for all the questions. In the first author's prior qualitative research in Ha Noi in 2009, some respondents mentioned being silent observers on lesbian internet forums for a long time before participating in forum content and before reaching out to establish connections with others (unpublished results). The survey, therefore, is likely to include individuals with a good (albeit not full) range of connectedness, support access and support experience.

With regard to SA, which was matched directly in content to the stressor (perceived availability sexuality/stigma-related support matched to sexual stigma experience in the family), a possible explanation for the null finding might have been a mismatch in time. SA may have captured current or recent coping resources, while the stressor – negative family treatment ever experienced – for some respondents, may have been experienced in the far past, when such support might not have been available to help them cope with the situation. In retrospect, it was noted that the Doty et al. (2010) study and the study by Ueno (2005), which found that having SM friends moderated the effect of arguments at home on psychological distress, both evaluated a measure of current support/coping resource against a recent (past 12 months) stressor.

Nevertheless, time mismatch might not be a major issue in this study, because the majority of respondents were young, and a qualitative study with SMW in Viet Nam suggest quite a few young women have recent or ongoing experience with family disapproval (Nguyen, Nguyen, Le & Le, 2010). As an attempt to improve the time proximity between family treatment and social support measures, the moderation analysis

was re-done excluding respondents aged 26 or older (who are more likely to have experienced negative family treatment further in the past), and found that the results did not change. This suggests that the lack of a moderation effect may not be due to a time mismatch.

For SR (perceived non-family support received), time mismatch is less a concern, because perception of being supported is based on the person's experience of support in the past. A possible explanation for the lack of moderation effect of this variable is that the support it measures is not specific enough to the stressor of negative family treatment – the questions asked about how much the respondent felt supported by those who were most likely to provide support for same-sex sexuality, but did not ask specifically about support in dealing with family disapproval. It is possible that support from other SMW and LGBT internet forums might have helped respondents cope with internalized homophobia, and support from friends might have helped with different stressors in life, but none of the three questions captured the support that helps in coping with negative family treatment. This explanation would be consistent with the lack of moderation effect in the Logie et al. (2012) and Szymanski (2009) studies, which used general measures of perceived support not specific to minority stress.

However, the fact that both measures that were matched (not perfectly but in different ways) to the stressor did not show a moderation effect suggests a possibility that the null finding for moderation effect might persist. If this were the case, one possible explanation is that in Viet Nam's family oriented culture, the damage caused by family disapproval and rejection could be deep; while social support may compensate for it by promoting well-being (main effect), it may be much harder for social support to actually

negate the damage (moderation effect). Vietnamese culture, which is influenced by Confucianism, emphasizes duty to one's family, including the duty to love, obey and please one's parents. The emotional pain caused by a sense of guilt towards family, which is likely to be exacerbated by negative family reactions, may be hard to alleviate. Sexuality-related support and support from people who accept the person's non-heterosexuality may help lift the person's mood, create positive moments, and make the person feel better about herself, but may be less effective at addressing the root of the suffering in this cultural context – family rejection and the associated feelings of guilt. This, combined with the cultural norm of not moving out from the family-of-origin household until or even after marriage (except in the case of small town/rural youth migrating to cities for college/jobs) creates a restrictive living situation for individuals with disapproving families. For those brave enough or desperate enough to overstep this norm, there are major economic barriers including low income and high housing prices. To evaluate whether the damage by family disapproval and rejection is truly hard to mitigate in this culture, further research should again test the moderation hypothesis after improving the social support measures. International research is needed to determine whether results are similar in other countries with a strong value of duty to family and parents, and whether the effect of such social support varies across different cultures.

A more general question that these results raise is whether there are other types of support or support providers that help protect SMW against the harmful effects of negative family treatment, either through a main effect or a moderation effect. In this sample both of the social support measures probably captured support that mostly came from people similar in age to the recipients. It has been shown in school research that for

LGBT adolescents, adult support at school predicts a sense of belonging (Darwich, 2001) and feelings of safety (Darwich, 2001; McGuire, Anderson, Toomey, & Russell, 2010), and reduces the effect of victimization on school absenteeism (Darwich, 2001). Perhaps for young adult SMW, support from persons from an older generation – those who play the informal role of aunt or uncle (even if they are not biologically related) or of a part-time stand-in parent – is also important. Such persons might help compensate for the nurturing that is absent from the SMW's family, validate her self-worth which is undermined by negative family treatment, and in some cases maybe even intervene with her family – these types of support also match with lack of family support and negative family treatment. This would mean in addition to *significant others* and *similar others* identified by Thoits (2011), *parent-like others* may be another important category of supporters that help sexual minority individuals' cope with negative family treatment. Future research should examine the degree to which SMW have access to this type of supporter, what roles they play (or may play), and what kind of effect (main effect or moderation effect) their support has on SMW who have to cope with negative family treatment.

Does social support/social connections <u>mediate</u> the effect on negative family treatment on well-being?

The finding that negative family treatment predicted higher SMW network connection suggests that SMW who experienced stressful home situations reached out and established more connections with similar others. This is an important finding, because at least on average, NFT leading to self-isolation was not observed in this sample. Yet the beta coefficient of the *extreme* class in this model, while positive as

expected, was statistically non-significant; this could simply be due to variation in a small sample (n=84 for the *extreme* class), or it could be a signal that with very negative family treatment, some individuals reached out to the sexual minority community but others did not do so. Future research should explore whether this mixture of responses exists, and if yes what factors put people at risk of self-isolating, since those who do may be most in need of support.

On the other hand, perceived social support was not positively predicted by negative family treatment. Compared to those with no negative family treatment, individuals who had experienced negative family treatment had higher SMW network connection on average, but this did not translate into higher perceived support (both non-family support received and availability of sexuality/stigma-related support). This could mean that more connections did not necessarily bring more support. Or there may be a difference between the objective and the subjective aspects of support – those with higher SMW network connection may have received more (objective) support, but did not (subjectively) perceive higher support because this perception could have been influenced by other factors, e.g., the effectiveness of the support, or how the support compared relative to the hardship experienced.

There is some evidence supporting the additive stress-buffering hypothesis. In the single-mediator model with SMW network connection, both path A (negative family treatment influencing connection) and path B (connection influencing well-being) were statistically significant: negative family treatment was positively associated with SMW network connection, which in turn predicted higher life satisfaction and lower depressive symptoms. The picture is more complicated with the three-mediator model, however,

where SMW network connection had a significant path A effect but a non-significant path B effect, and perceived social support (SR and SA) had significant path B but non-significant path A effects. While this makes the evidence for additive stress buffering more tentative, it also suggests a possible path where SMW network connection affects well-being through the perception of support. This hypothesis, which if true would confirm the importance of SMW network connection on well-being and support the additive stress-buffering hypothesis, should be tested in future research.

Social support and social connections with substance use outcomes

With regard to substance use, WN was positively associated with smoking and heavy drinking. This suggests that in addition to the effect of minority stress increasing tobacco and alcohol use as a coping strategy (Rosario, Schrimshaw, & Hunter, 2011), there could be a social influence or contextual effect on smoking and drinking. Seeing other SMW smoke and drink may make it more likely that an individual smokes or drinks. Or perhaps SMW's social spaces are accepting of and/or conducive to women smoking and drinking. An alternative explanation is that when SMW meet, they talk about stressful matters that make them more likely to smoke or drink; in this case, one would expect social support to be positively associated with smoking and drinking, but in this sample SR was not statistically significant, and SA was not significant in models that also included WN.

The first author's qualitative research with SMW in Ha Noi in 2009 suggests that many SMW smoke, and they meet in coffee or tea houses where smoking is common, and many SMW were also not shy about drinking (unpublished findings). This is in contrast to the general Vietnamese population, in which these behaviors are normative for

men, but smoking and heavy drinking or getting drunk are still far from normative for women. The number of ties to other SMW may represent the person's level of integration in the SMW community – a minority community with different rules from those of the majority heteronormative society, including rules about masculinity and femininity, and smoking and drinking, a minority community that is built and maintained based on the support of certain physical/social spaces, which may be accepting of and conducive to smoking and drinking. This study found a positive association between connection with other SMW and the person's smoking and drinking behavior. Qualitative research is needed next to understand factors, processes and places involved in the initiation and development of these behaviors in SMW.

The data suggest that SMW network connection partially mediates the relationship between negative family treatment and substance use; negative family treatment was associated with higher connection with other SMW, which in turn predicted higher smoking and heavy drinking. This result was robust, it was found in both the single-mediator model and the three-mediator model.

Study limitations

The main limitation of this study is that assumptions were made about causal paths that may or may not hold; this should be kept in mind in interpreting the results. All models (main effects, moderation and mediation) assumed temporal orders, such that family treatment, SMW network connection and perceived social support influenced the outcomes and not vice versa. With the family treatment variable representing negative family treatment ever experienced to date and the outcomes variables representing outcomes in the present, the assumption of negative family treatment preceding the

outcomes is likely to hold. Regarding the social support/social connection influencing outcomes assumption, however, it is possible that depressed mood may have caused some respondents to report lower perceived social support or fewer SMW friends, which would have led to an over-estimation of the effects of support and connection on well-being. The mediation hypothesis makes an additional assumption that family treatment influenced the social support and social connection measures. The measure of negative family treatment ever experienced and the SA and SR variables representing perceived social support in the present provide some assurance of the temporality. However, it is possible that some respondents' connections to other SMW had existed for a while and these connections prompted their families' disapproval and rejection. Analysis of longitudinal data is needed to provide conclusive evidence on causal associations among these variables.

The study has several other limitations. One is its non-probability sample recruited through the internet. Most respondents were young, urban and more educated than the general population. Results therefore may not apply to SMW who are older, rural-dwelling and not connected to the internet. With no data available, it is unknown whether those SMW are subject to more negative family treatment (because they live in more conservative communities) or less negative family treatment (because they are likely more closeted and invisible). They are likely to have less connection to other SMW and thus less access to sexuality/stigma-related support, but any connection or support they have could potentially be much more important. Other sampling strategies (e.g., referral-based recruitment) and research methods (e.g., qualitative research to extract rich

data from a small sample) are needed to understand SMW's experience of negative family treatment and support for coping in such contexts.

With regard to measurement, SR, SA and WN were each measured using a small number of items. Though both SA and WN measures had good internal consistency (ordinal alpha=0.96 and 0.89, respectively), the SR measure had less than optimal internal consistency (ordinal alpha=0.69). This latent factor has three indicators: support received from friends, from other SMW and from LGBT internet forums. All three indicators had high factor loadings, but the highest loading by far was of support from other SMW. The latent variable SR should be interpreted as non-family support that was mostly from other SMW.

Implications for practice

Insights from this study are relevant to the work of LGBT community organizations as well as public health and social work professionals serving SMW. The study found that SMW are reaching out to one another and are providing support to and receiving support from SMW networks. Such networks should be targeted to increase (1) the effectiveness of the support that naturally occurs, e.g., training SMW on how to provide support to others in distress, help them cope with rejection, avoid negative health outcomes, reduce self-stigma and build resilience; and (2) the availability of support, e.g., establishing effective support services that SMW could access and refer one another to.

As connection to other SMW is associated with smoking and drinking, in the design of interventions to promote support through SMW network, care needs to be taken to minimize the risk of inadvertently causing initiation or reinforcement of smoking and drinking behavior; for example, the use or creation of non-smoking support or socializing

venues for SMW. Interventions to reduce and prevent substance use by SMW should also be developed, but only after research has shed more light on factors and processes that contribute to substance use behavior in this population.

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Table 6.1. Sample description (N=1949)

FAMILY TREATMENT LATENT CLASSES		number	(%)	
	PEACE	780	(40.0%)	
	PRESSURE	652	(33.4%)	
	AGGRESSIVE R&G	193	(09.9%)	
	AGGRESSIVE R	133	(06.8%)	
	SEVERE	107	(05.5%)	
	EXTREME	84	(04.3%)	
OUTCOMES		mean	(SD)	
Life satisfaction (range 0-100)		59.9	(17.9)	
Depressive symptoms (range 0-27)		9.15	(6.23)	
		number	(%)	
Current smoking (n=1564)		268	(17.1%)	
Recent heavy drinking (n=1553)		475	(30.6%)	
SUPPORT & CONNECTION		mean	(SD)	factor loadings
SR (perceived non-family support received – range 0-8; ordinal alpha=0.69):				
	support from friends	4.19	(2.62)	0.52
	support from other sexual minority women (SMW)	3.99	(2.85)	0.95
	support from LGBT internet forums	3.31	(2.85)	0.56
SA (perceived availability of sexuality/stigma-related support – range 0-4; ordinal alpha=0.96):				
	someone to talk to about love problems	2.87	(1.35)	0.92
	someone to ask advice about love problems	2.72	(1.42)	0.92
	someone to talk to about stigma problems	2.70	(1.41)	0.98
	someone to ask advice about stigma problems	2.60	(1.43)	0.96
WN (connection to sexual minority women network):				
	number of SMW that respondent (R) knew	11.74	(11.79)	1.07
	number of SMW that R considered friends	5.47	(7.70)	1.19
	number of SMW R was in contact with past 2 weeks	3.78	(5.06)	1.13
COVARIATES		number	(%)	
Age (years):	18-20	735	(37.7%)	
	21-25	820	(42.1%)	
	26 plus	394	(20.2%)	
Sexual identity:	lesbian	1035	(53.1%)	
	bisexual	546	(28.0%)	
	unsure	289	(14.8%)	
	other	79	(04.1%)	
Religion:	no religion	1000	(51.3%)	
	Buddhist	698	(35.8%)	
	Christian	231	(11.9%)	
	other	20	(01.0%)	
Family economic status:	rich	71	(03.6%)	
	middle-class	574	(29.5%)	
	sufficient	1175	(60.3%)	
	poor	129	(06.6%)	
Urbanicity:	in big cities	1495	(76.7%)	
	outside big cities	454	(23.3%)	
Geographical region:	northern mountains	37	(01.9%)	
	Red river delta	299	(15.3%)	
	central region	167	(08.6%)	
	south-east region	1203	(61.7%)	
	Mekong delta	243	(12.5%)	

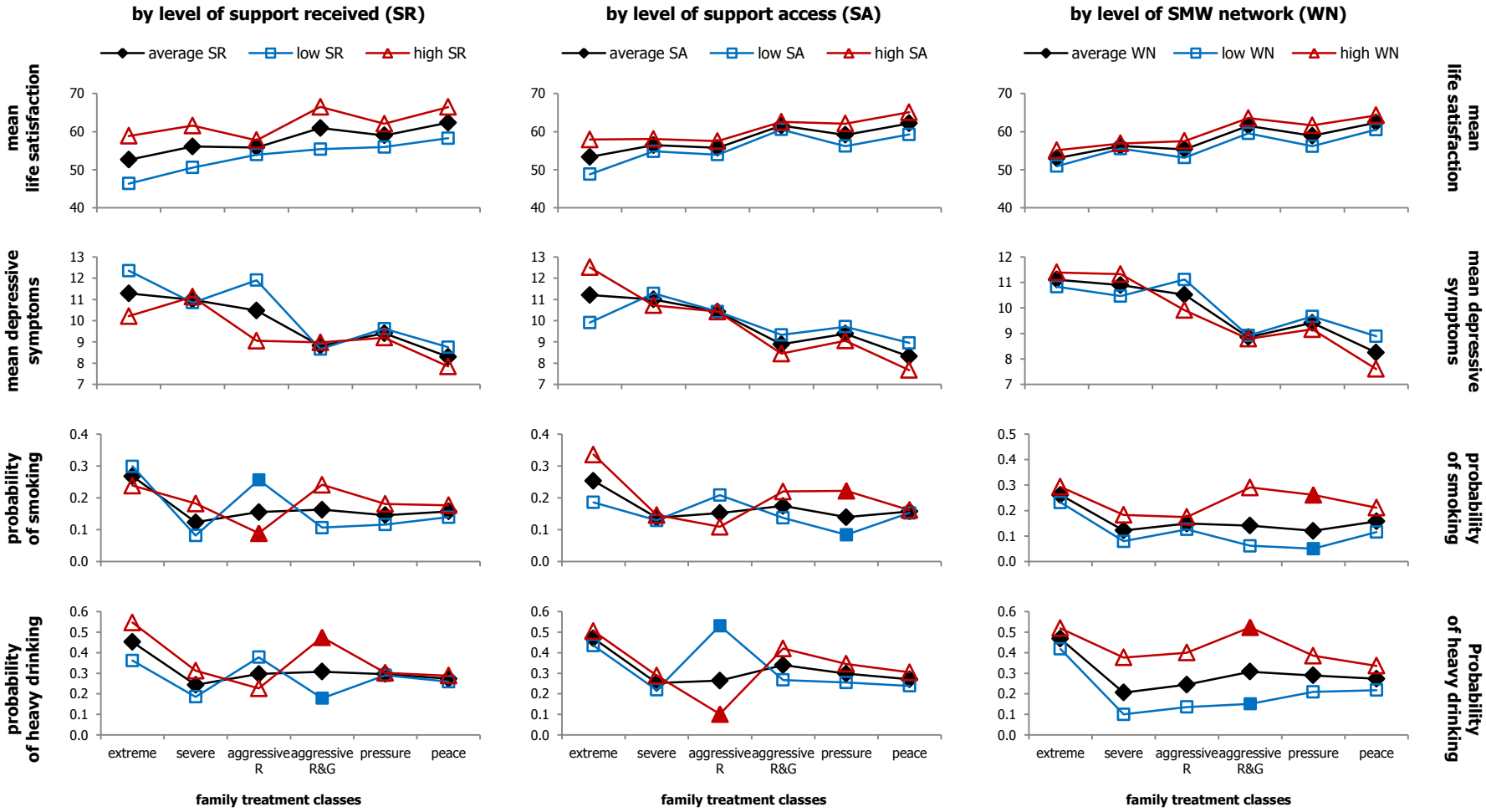
Notes: Sample sizes for smoking and drinking were smaller because these questions were activated mid-survey. Factor loadings for SR, SA and WN were from single-factor models; in these models, SR and SA indicators were ordinal, WN indicators count variables.

Table 6.2. Base and main effects models: Regression coefficients (95% confidence intervals)

	life satisfaction	depressive symptoms	current smoking	recent heavy drinking
Base model (without SR, SA or WN)				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.3** (-5.2,-1.3)	**1.10** (0.37,1.82)	-0.08 (-0.45,0.28)	0.11 (-0.19,0.42)
aggressive R&G	-0.5 (-3.7,2.6)	0.54 (-0.49,1.56)	0.18 (-0.35,0.71)	0.33 (-0.10,0.76)
aggressive R	**-6.5** (-10.0,-2.9)	**2.10** (0.76,3.44)	-0.04 (-0.74,0.67)	0.10 (-0.49,0.68)
severe	**-5.9** (-9.5,-2.3)	**2.69** (1.35,4.03)	-0.17 (-0.85,0.50)	-0.11 (-0.65,0.44)
extreme	**-9.0** (-14.2,-3.8)	**2.85** (1.22,4.47)	**0.64** (0.04,1.24)	**0.86** (0.32,1.40)
Model with SR				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.3** (-5.3,-1.4)	**1.10** (0.38,1.83)	-0.09 (-0.45,0.28)	0.11 (-0.19,0.41)
aggressive R&G	-1.2 (-4.2,1.9)	0.60 (-0.43,1.63)	0.15 (-0.38,0.68)	0.31 (-0.12,0.73)
aggressive R	**-6.7** (-10.1,-3.2)	**2.12** (0.78,3.45)	-0.05 (-0.76,0.66)	0.09 (-0.50,0.68)
severe	**-6.2** (-9.6,-2.7)	**2.72** (1.38,4.06)	-0.19 (-0.87,0.48)	-0.12 (-0.66,0.42)
extreme	**-9.5** (-14.6,-4.4)	**2.90** (1.28,4.52)	**0.62** (0.01,1.22)	**0.84** (0.30,1.38)
SR	**3.8** (2.7,5.0)	**-0.40** (-0.78,-0.02)	0.14 (-0.03,0.31)	0.12 (-0.02,0.26)
Model with SA				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.1** (-5.0,-1.1)	**1.07** (0.34,1.79)	-0.06 (-0.43,0.30)	0.13 (-0.18,0.43)
aggressive R&G	-0.8 (-3.9,2.4)	0.57 (-0.46,1.59)	0.16 9-0.38,0.69)	0.33 (-0.10,0.76)
aggressive R	**-6.5** (-9.9,-3.0)	**2.10** (0.75,3.44)	-0.05 (-0.76,0.67)	0.10 (-0.50,0.69)
severe	**-5.7** (-9.3,-2.2)	**2.67** (1.33,4.00)	-0.16 (-0.84,0.52)	-0.10 (-0.64,0.44)
extreme	**-8.9** (-14.0,-3.8)	**2.83** (1.19,4.47)	**0.65** (0.04,1.25)	**0.87** (0.33,1.41)
SA	**2.7** (1.8,3.6)	**-0.39** (-0.71,-0.08)	**0.22** (0.07,0.37)	**0.13** (0.00,0.25)
Model with WN				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.5** (-5.5,-1.5)	**1.14** (0.42,1.87)	-0.11 (-0.48,0.26)	0.09 (-0.22,0.40)
aggressive R&G	-0.9 (-4.0,2.3)	0.59 (-0.43,1.62)	0.10 (-0.44,0.63)	0.29 (-0.15,0.72)
aggressive R	**-7.1** (-10.6,-3.5)	**2.20** (0.87,3.54)	-0.17 (-0.89,0.55)	-0.03 (-0.62,0.56)
severe	**-6.6** (-10.2,-2.9)	**2.81** (1.47,4.16)	-0.28 (-0.97,0.40)	-0.20 (-0.74,0.34)
extreme	**-9.4** (-14.5,-4.3)	**2.92** (1.29,4.55)	0.52 (-0.11,1.15)	**0.80** (0.24,1.37)
WN	**2.1** (1.2,3.0)	**-0.39** (-0.72,-0.05)	**0.55** (0.38,0.73)	**0.44** (0.30,0.57)
Model with SR, SA and WN combined				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.1** (-5.0,-1.1)	**1.25** (0.49,2.01)	-0.10 (-0.48,0.28)	0.07 (-0.24,0.39)
aggressive R&G	-0.5 (-3.6,2.7)	0.26 (-0.78,1.31)	0.10 (-0.44,0.65)	0.26 (-0.18,0.70)
aggressive R	**-7.1** (-10.8,-3.5)	**2.24** (0.83,3.64)	-0.12 (-0.86,0.61)	-0.02 (-0.61,0.57)
severe	**-6.4** (-10.0,-2.7)	**2.97** (1.59,4.35)	-0.23 (-0.92,0.46)	-0.20 (-0.74,0.34)
extreme	**-5.8** (-11.2,-0.4)	**2.64** (0.84,4.44)	0.59 (-0.06,1.23)	**0.88** (0.30,1.46)
SR	**2.7** (1.7,3.7)	-0.22 (-0.58,0.15)	-0.05 (-0.23,0.13)	-0.03 (-0.17,0.12)
SA	**1.6** (0.7,2.5)	-0.23 (-0.57,0.10)	0.10 (-0.07,0.26)	0.00 (-0.14,0.13)
WN	0.8 (-0.2,1.7)	-0.28 (-0.64,0.08)	**0.54** (0.35,0.73)	**0.42** (0.28,0.56)

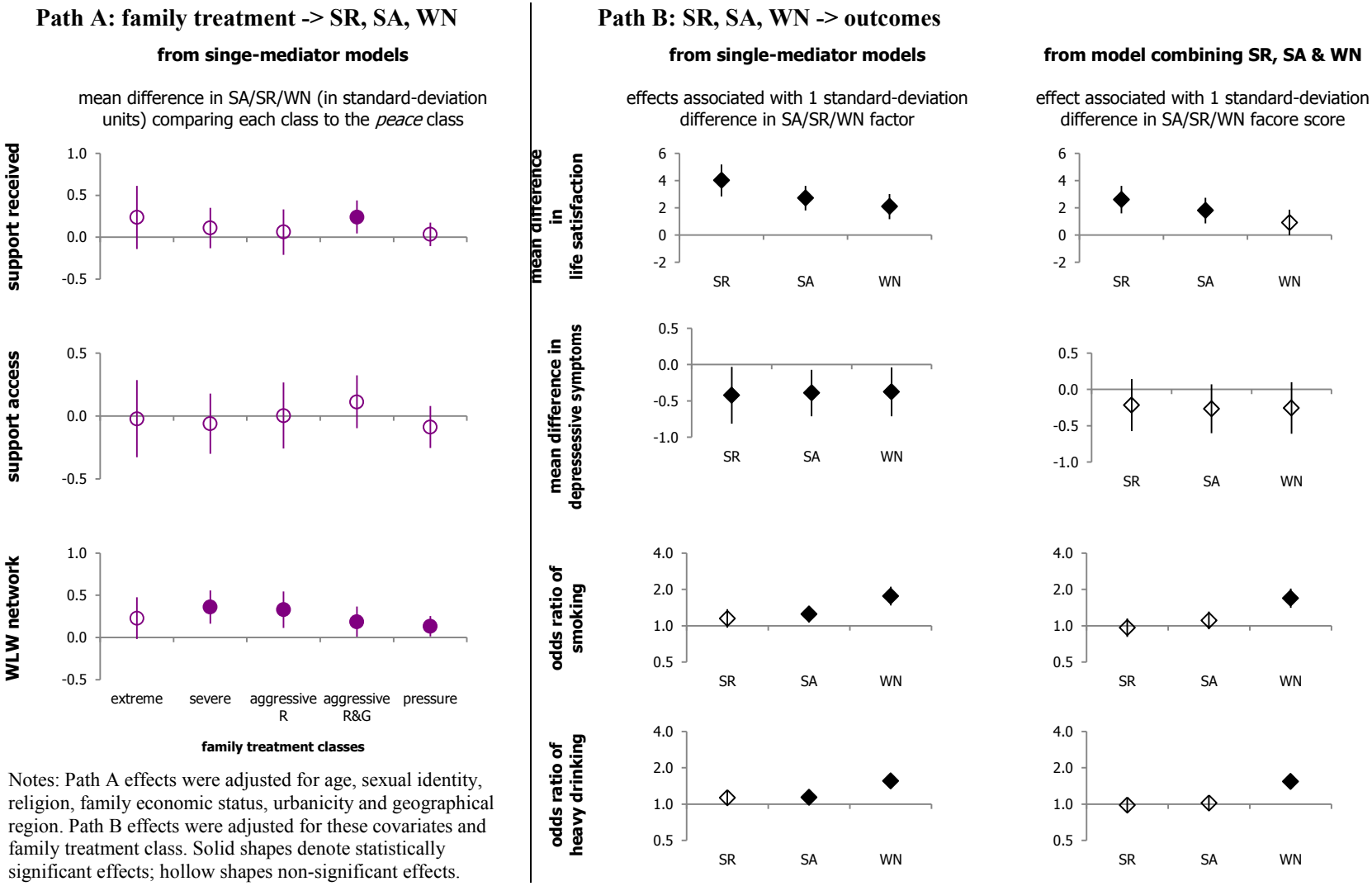
Notes: SR, SA and WN stand for perceived non-family support received, perceived availability of sexuality/stigma-related support, and connection to sexual minority women network. Regression coefficients for SR, SA and WN are per standard deviation difference in the SR/SA/WN factor. Boldface denotes effects statistically significant at α=0.05. All models adjusted for age, sexual identity, religion, family economic status, urbanicity and geographical region.

Figure 6.1. Moderation analysis: Adjusted means/probabilities of outcomes, by family treatment class and level of SR/SA/WN



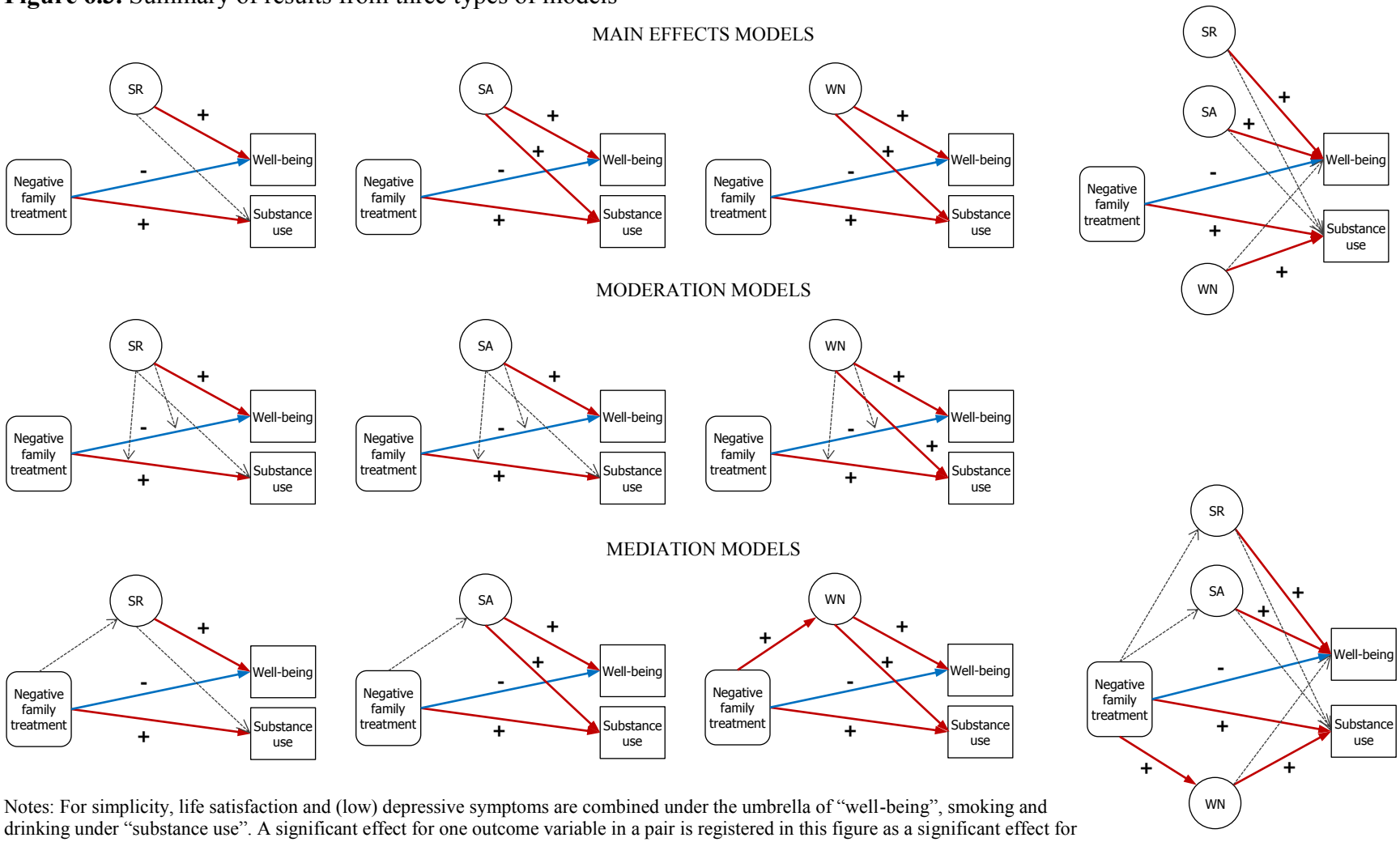
Notes: SR, SA and WN stand for perceived non-family support received, perceived availability of sexuality/stigma-related support, and connection to sexual minority women network. *Average, low* and *high* SR/SA/WN denote the mean and mean ± 1 SD of the factor. Lines connect estimates for the same SR/SA/WN level. Age, sexual identity, religion, family economic status, urbanicity and geographical region were adjusted for and fixed at their means in estimating these means/probabilities. A pair of solid (red) triangle and (blue) square for a family treatment class means that the class's interaction with the support/connection measure was statistically significant.

Figure 6.2. Mediation analysis: Path A and path B effects (95% confidence intervals)



Notes: Path A effects were adjusted for age, sexual identity, religion, family economic status, urbanicity and geographical region. Path B effects were adjusted for these covariates and family treatment class. Solid shapes denote statistically significant effects; hollow shapes non-significant effects.

Figure 6.3. Summary of results from three types of models



Notes: For simplicity, life satisfaction and (low) depressive symptoms are combined under the umbrella of "well-being", smoking and drinking under "substance use". A significant effect for one outcome variable in a pair is registered in this figure as a significant effect for the umbrella construct. (For results regarding each outcome variable, refer to Table 2 and Tables 6.A.1 & 6.A.2 in the Appendix, as well as Figures 6.1 & 6.2.) Bold paths are statistically significant; red bold paths with "+" signs represent positive associations; blue bold paths with "-" signs represent negative associations. Gray dotted paths are statistically non-significant.

CHAPTER 7: CONCLUSIONS

This dissertation had three aims: (1) to explore the heterogeneity in experience of family treatment (in response to same-sex sexual identity/behavior and non-conformity to traditional expectations of femininity) across individuals in a sample of Vietnamese sexual minority women and transmen, and to identify potential predictors of such heterogeneity; (2) to evaluate the associations between types of negative family treatment and a range of outcomes including life satisfaction, mental health, suicidality and substance use among sexual minority women and transmen; and (3) to examine – in the sexual minority women sub-sample – the roles of sexuality-related social support and connection to other sexual minority women in potentially moderating/mediating the effects of negative family treatment on well-being and substance use. This chapter summarizes the study findings, describes the study's limitations and strengths, and discusses implications for future research and for health and social change interventions.

Summary of Findings

Aim 1 (manuscript 1)

Latent class analysis was conducted on data representing negative behaviors by family members based on disapproval of same-sex attraction/relationship or gender non-conforming in sexual minority women and transmen (N=2664). Six classes were extracted, including one non-negative class (termed *peace*) and five negative classes (termed *pressure, aggressive R&G, aggressive R, severe* and *extreme*). Class separation was good (entropy=0.856 and correct classification probabilities ranged from 0.82 to 0.99), suggesting these types (classes) of experience were rather distinct from one another. Prevalence of these classes in the sample – 36.7%, 34.0%, 10.3%, 8.1%, 6.0%

and 4.7% in the *peace, pressure, aggressive R&G, aggressive R, severe* and *extreme*, respectively – revealed that nearly two thirds of the sample had experienced some negative family behavior, and about 30% of the sample had experienced at least some, and in some cases many, aggressive behaviors that aimed to get them to conform to heteronormativity or traditional femininity. Latent class regression (N=2459) found that younger age, transman identity, religious affiliation, and parent awareness of non-heterosexuality were associated with being in worse family treatment classes.

Aim 2 (manuscript 2)

Negative family treatment (represented by the family treatment latent class variable constructed in manuscript 1) was used to predict life satisfaction, mental health, suicidality and substance use (N=2496). Compared to data available from general population samples in Viet Nam, this sample had higher rates of suicide attempts, smoking and drinking. Overall, after controlling for age, sexual/gender identity, religion, family economic status, urban residence and geographical region, negative family treatment predicted lower life satisfaction, poorer mental well-being and increased suicidality and substance use. There were differences by gender identity: Among sexual minority women only the most negative class (*extreme*) had elevated odds of smoking and drinking, but for transmen three negative classes (*extreme, severe* and *aggressive R*) had elevated odds. In sexual minority women, life satisfaction and probable depression followed the trend of 'the more negative the treatment, the worse the outcome', but among transmen only the second most negative class (*severe*) was predictive of lower life satisfaction and higher probable depression. In the full sample, three negative classes (*extreme, severe* and *aggressive R*) had elevated odds of suicide attempts; unexpectedly,

the second most negative class (*severe*) – and not the most negative one (*extreme*) – had the highest odds.

Aim 3 (manuscript 3)

The roles of social support and social connections in relation to the effects of negative family treatment on well-being and substance use were examined in the sexual minority women sub-sample (N=1949). Perceived social support (including perceived non-family support received and perceived availability of sexuality/stigma-related support) and connection to other sexual minority women were predictive of well-being, with stronger associations for social support. Connection to other sexual minority women was positively associated with substance use, suggesting possible social influence. The data did not support the moderation (or interactive stress-buffering) hypothesis. There was evidence supporting the additive stress-buffering hypothesis, with negative family treatment being predictive of connection to other sexual minority women, which predicted well-being. Connection to other sexual minority women partially mediated the relationship between negative family treatment and substance use, with negative family treatment predicting connection to other sexual minority women, which in turn was predictive of smoking and heavy drinking.

Limitations and Strengths

Limitations

This study has a number of limitations that should be kept in mind in interpreting the results. The first limitation is the non-probability sample that does not represent all sexual minority women and transmen in Viet Nam. The majority of the sample were young and lived in big cities, and all of them used the internet. This means the findings

are less generalizable to sexual minority women and transmen who are older, live in small towns and rural areas, and do not use the internet. The first of these variables, age, may have biased results towards more negative family treatment, the latter two, urban residence and internet use, may have biased results toward less negative family treatment. The finding (from analysis for Aim 2) that the most negative family treatment class (*extreme*) did not fare the worst with regard to several outcomes (e.g., suicide attempt history and depressive symptoms in the full sample, and life satisfaction and probable depression in transmen) suggests that there might have been "happy participant" or survivor bias (i.e., where some members of the study population that experienced the worst type of family treatment and were most affected had very low probability of participating in the survey). With regard to connection to other sexual minority women and sexuality/stigma-related social support, this sample is likely to consist of those who had at least some level of connection and support, and thus does not capture the experience of those who are isolated and have no access to such support.

Another limitation is the study's cross-sectional design. Directions of associations among variables were thus only assumed. This is less of an issue with manuscript 1, since the assessment of potential predictors of family treatment selected variables that were not, or were not likely, affected by family treatment. For manuscript 2, two of the outcomes – having ever attempted suicide and having attempted suicide more than once – could have occurred before the experience of negative family treatment. With manuscript 3, social connections and perceived social support were assumed to influence well-being and substance use, but it is also possible a respondent's depressed mood affected her perception of social support and social connections. The mediation hypothesis assumed

further that negative family treatment affected sexual minority women network connections, but such connections could have been fully formed before some respondents experienced negative family treatment.

In addition, there were limitations in the data that were collected. Negative family treatment was based on 19 negative family behaviors; these yes/no items only reflect whether these behaviors had ever been experienced, but did not capture the frequency or intensity of these behaviors. The assessment of potential predictors (in manuscript 1) was limited by the unavailability of variables that might be important predictors of negative family treatment. These include a range of family characteristics such as socio-economic status (e.g., parent education or parent occupation) and family/household composition (e.g., number of generations living in the same household, age of parents, etc.), as well as more meaningful measures of the friendliness or hostility of the broader social environment towards sexual/gender minorities. One of the two measures of social support examined (in manuscript 3) – perceived non-family support received – did not specifically measure support for coping with negative family treatment, and only served as a proxy for sexuality/stigma-related support because the sources had been found in a prior qualitative study to be sources of support for same-sex sexuality.

Another limitation of manuscript 2 is the small sizes of some subgroups (e.g., the *extreme* class was estimated to include only 26 transmen). An alternative for analysis would have been to conduct latent class analysis (LCA) to characterize heterogeneity in negative family treatment for sexual minority women and transmen separately (which would likely result in a smaller number of classes for transmen due to the smaller sample size) and then relating these latent class variables to the outcomes in the two sub-samples.

This strategy was not chosen because the purpose was to examine whether the effects of negative family treatment differ between sexual minority women and transmen.

Strengths

A key strength of the study is that it acquired a uniquely large sample size from this socially marginalized and hard-to-reach population. This was possible due to the web-based and anonymous study design and support from the major internet forums serving the study population. This sample allowed the quantitative study of associations previously suggested by small sample qualitative research. Beyond this dissertation, this sample with its rich dataset will allow further analyses to answer additional research questions about this population.

Another key strength was the application of a person-centered analysis, which complements the variable-centered approach common in the literature. With a *variable-centered* approach, the researcher would be concerned with the variation in the degree of family negativity present in the data; this would lead to the characterization of family negativity as a continuous (or ordinal/dichotomized) variable, or several variables representing degrees on different dimensions of family negativity. In this case, the persons are important because they contribute data, but are not central to the analysis. With a *person-centered* approach, the researcher was interested in heterogeneity across persons, i.e., whether there are different groups with distinct types of experience; this lead to the characterization of negative family treatment as a categorical variable, which segments the sample into latent groups that are different from one another but similar within group with respect to the negative family behaviors experienced. When this latent categorical variable was related to a potential outcome, for example, the interpretation

would be a comparison of the outcome across categories of family treatment experience. This dissertation used the second approach for two purposes: (i) to contribute to the current literature in which this approach had not been used to examine data on family behaviors toward sexual/gender minority persons specifically, and data on enacted stigma more generally; and (ii) to make inference about types of experience and prevalence of such types in this particular population in Viet Nam that was surveyed for the first time.

With this approach, manuscript 1 extracted six latent classes, documented their prevalence in the sample, and made an initial assessment of predictors of such classes. This provided a picture of Vietnamese sexual minority women and transmen's experience of negative family treatment that is informative to both researchers and interventionists interested in this issue in Viet Nam. Regressing life satisfaction, mental health, suicidality and substance use on the family treatment latent class variable, manuscript 2 found a general trend of 'the more negative the treatment, the worse the outcome' for life satisfaction and mental health, which would probably be picked up by a variable-centered analysis. Findings that did not strictly follow this trend, however, such as non-significant effects of the *aggressive R&G* (having experienced aggressive family behaviors targeting self and girlfriend) class, and the second most negative (*severe*) class being worst off on some outcomes, would not have been found without the use of latent class modeling. Effects on substance use and suicidality that started at certain thresholds might be picked up by a variable-centered analysis but with less precision and without the specificity. Latent class models thus provided an understanding of the effects of negative family treatment that is more nuanced than results from a variable-centered analysis, and helped raise questions to be considered by future research.

Implications for Research

This study shows that latent class analysis helped to meaningfully characterize the heterogeneity in experience of negative family treatment in a sexual/gender minority sample, and this representation of negative family treatment was meaningfully related to variables conceptualized as antecedents and consequences of negative family treatment. This expanded the methods applied to examine this phenomenon in the current literature. With these results, it is hoped that this study will motivate other researchers to adopt this method as an additional and useful tool, both in studying the experience of family treatment specifically and the experience of enacted stigma more broadly.

One finding from the analysis of predictors of negative family treatment in manuscript 1, that younger respondents were more likely to be in negative family treatment classes, deserves attention. Due to the cross-sectional nature of the data, it is not known whether this was due to a cohort effect (i.e., families of younger cohorts of sexual minority women and transmen were more aware of their non-heterosexuality or non-conforming gender identity, or became aware at an earlier age, than families of older cohorts) or an age effect (i.e., family reactions were more negative with younger persons given similar awareness), or both. Future research is needed to tease out these effects in this context. Research is also needed with adolescent samples to understand what happens in families with a sexual/gender minority adolescent. These lines of inquiry are important to inform the development and targeting of interventions.

Manuscript 2 contributes to the body of research linking negative family treatment to sexual/gender minority health, specifically bringing evidence from an Asian and lower middle-income country (where less research has been done on sexual/gender

minority health compared to North America or Europe) and from a subsample of people with a transgender identity (adding to the extremely limited research on this topic in transgender populations). As expected, the findings are consistent with the hypothesis that negative family treatment stemming from disapproval of same-sex sexuality or gender non-conforming. There is some evidence to suggest a "happy participant" or survivor bias – i.e., those who experienced the most negative family treatment who participated in the sample might have been individuals who survived, were more resilient to stress or had more resources that buffered them against stress. This highlights the importance of using alternative recruitment methods that target more disadvantaged segments of the study population, e.g., referral-based methods to survey non-internet-using low-education individuals in cities, and special efforts to study the experience of sexual/gender minority individuals in small towns and rural areas starting with qualitative studies.

Manuscript 3 contributes to the literature that examines social support and social connections as resources that help in coping with sexual stigma. There is only one known published study with a sexual minority sample that specifically matched a measure of social support (sexuality-related support) to sexuality-related stress (Doty et al., 2010), based on the matching theory of social support (Cohen & McKay, 1984). Unlike this study, the present study did not find a moderation effect of sexuality-related support on the association between negative family treatment and well-being. While there could be some measurement limitations, this raised a question as to what could explain a null moderation effect. One possibility is that in Viet Nam's family-oriented culture which highly values the duty of individuals to their families and parents, the emotional pain

caused by a sense of guilt towards family, exacerbated by negative family reactions, may be especially hard to alleviate. Sexuality-related support and support from people who accept the person's non-heterosexuality may help improve the person's mood and make the person feel better about herself, but may be less effective at addressing the root of the suffering – family rejection and the associated feelings of guilt. In addition to more research in the same population with improved social support measures to ascertain if the lack of moderation effect persists, international research is needed to determine if results are similar in other countries with a strong value of duty to family and parents, and whether the effect of such social support varies across cultures.

This study also raises a question to be addressed by future research, whether there are other types of support or support providers that help protect sexual minority women against the harmful effects of negative family treatment, either through a main effect or a moderation effect. It is suggested that future research also examine the role of supportive persons of parents' generation, who might compensate for the nurturing that is absent from the sexual minority woman's family, validate her self-worth which is undermined by negative family treatment, and in some cases maybe even intervene with her family. In other words, in addition to the roles of *significant others* and *similar others* identified by Thoits (2011), *parent-like others* may be another important category of support providers that help sexual minority individuals to cope with negative family treatment. Future research should examine the degree to which sexual minority women have access to this type of supporters, what roles they play (or may play), and what kind of effect (main effect or moderation effect) their support has for sexual minority women who have to cope with negative family treatment.

This is the first study, as far as the author is aware, that explicitly tests the *additive stress-buffering* hypothesis in a sexual minority sample, and it found some support for this hypothesis: negative family treatment was predictive of higher sexual minority women network connection, which in turn was predictive of well-being. This is consistent with the idea that individuals who experienced negative family treatment reached out and established more connections with similar others. Interestingly, negative family treatment was associated with sexual minority women network connection, but not with perceived access to sexuality-related social support. Also, when sexual minority women network connection and both measures of social support were included in the same mediation model, sexual minority women network connection was associated with negative family treatment but not with well-being, whereas the two social support measures were associated with well-being but not with negative family treatment. More research is needed to understand the interplay among these variables, including qualitative research to probe specifically what is implied by connections to other sexual minority women and who are the sources of different types of sexuality-related support including support in coping with negative family reactions.

The study also provides evidence suggesting that sexual minority women network connection is predictive of higher rates of smoking and heavy drinking, and partially mediates the association between negative family treatment and smoking and heavy drinking. Future research is needed to better understand this relationship – whether it reflects social influence, or a contextual effect of the social spaces for the social interactions, or both.

Implications for Interventions

This study – the first to quantitatively document negative family treatment experienced by Vietnamese sexual minority women and transmen – highlights the need for interventions to increase family understanding and acceptance and prevent or reduce negative family behaviors, as well as the need for services to support individuals in dealing with ongoing conflict or to overcome the effects of negative treatment on their lives. This is particularly important for younger sexual minority women and transmen who are under family pressure. Support is also needed for parents and other family members to deal with the distress they experience that lead to their negative behaviors.

The study's findings about social connections and social support suggest that social networks of sexual minority women should be targeted to increase both the effectiveness and availability of support. In terms of effectiveness, sexual minority women should be trained in order to strengthen the support that naturally occurs, e.g., on how to provide support to others, help them cope with rejection, avoid negative health outcomes, reduce self-stigma and build resilience. With regard to increasing the availability of support, efforts should focus on establishing effective support services that sexual minority women can access and refer one another to. As connection to other sexual minority women is associated with smoking and drinking, the design of interventions to promote support through sexual minority women networks needs to take care to minimize the risk of inadvertently causing initiation or reinforcement of smoking and drinking behavior, and to promote or create non-smoking social venues for sexual minority women. As factors contributing to these behaviors are studied more in-depth,

the knowledge could contribute to development of substance use reduction and prevention interventions.

The two Vietnamese organizations collaborating in this survey – the Institute for Studies of Society, Economy and Environment (iSEE) and the ICS Center (ICS) – will likely play a large role in future interventions, given that they have spearheaded an LGBT social movement aimed at increasing tolerance and acceptance for LGBT in Vietnamese society and advocating for recognition of LGBT rights. The qualitative research report on sexual minority women's relationships with their parents that this dissertation builds upon (Nguyen, Nguyen, Le, & Le, 2010) helped launch the conversation on the issue of family non-acceptance. Over the past few years, iSEE and ICS have continued to organize meetings and events to help educate and provide a dialogue space for parents to help them come to terms with their children's sexuality; a number of these parents have formed a "Vietnamese PFLAG".

The results of this study will be presented in both Ha Noi and Ho Chi Minh City in June 2014 to audiences that include LGBT, parents and family members, and representatives from the health and social work sectors. The research will help raise awareness among service providers about the harmful practices they should avoid and the positive practices they should adopt when dealing with distraught parents who ask for help to "cure" their children of homosexuality. It will also support ICS and the "PFLAG" to explore opportunities to develop additional services for parents of LGBT and for LGBT undergoing severe family pressure. LGBT participants will be encouraged to continue discussing findings within LGBT communities in order to look for ways to strengthen how members can better support one another, and how additional services can

be developed and maintained to help members in need to cope effectively with stress and avoid negative outcomes.

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APPENDICES

This section includes four appendices: Appendix to Chapter 3, Appendix to Chapter 4 (which is the appendix to manuscript 1), Appendix to Chapter 5 (which is the supplemental material for manuscript 2), and Appendix to Chapter 6 (supplemental material for manuscript 3).

Appendix to Chapter 3: Adaptation and validation of the Personal Wellbeing Index - Adult (PWI-A) for the study population

The Personal Wellbeing Index - Adult (PWI-A)

The measure of quality of life used in this study was an adaptation of the PWI-A (The International Wellbeing Group, 2006), a life-domain-based measure of life satisfaction. The PWI-A includes eight items measuring satisfaction with different life domains, each rated on a scale from 0 (=very dissatisfied) to 10 (=very satisfied). The index is calculated by summing/averaging the items and rescaling to a possible range of 0 to 100. The PWI-A was originally developed in Australia (Cummins, 2003) and has been translated and validated in other countries (e.g., Lau, Cummins, Mcpherson, Social, & Jul, 2005; Loewe, Bagherzadeh, Araya-Castillo, Thieme, & Batista-Foguet, 2013; Smyth, Nielsen, & Zhai, 2009; Tiliouine, Cummins, & Davern, 2006)

The PWI-A's construct validity is commonly evaluated by regressing a single-item measuring satisfaction-with-life-as-a-whole on the domain-specific items, and showing that satisfaction with the domains contribute to explaining the variance of satisfaction-with-life-as-a-whole (The International Wellbeing Group, 2006). Of the eight domains (*standard of living, health, achievements in life, personal relationships, safety, community connection, future security,* and *spirituality/religion*), the validity of the first seven were well established – general population data from Australian showed that they account for 48-52%, and international data showed that they account for 31-76%, of total variation in satisfaction-with-life-as-a-whole. The last domain, *spirituality/religion*, was added in 2006. In Australia, this domain was not found to independently contribute to

satisfaction-with-life-as-a-whole, but it has been found to do so in Colombia (Wills, 2009).

Adaptation of the PWI-A

Of the original eight domains of the PWI-A, the Vietnamese research team was concerned about the *spirituality/religion* domain. Because Viet Nam is a secular society, it is common for people to identify with no religion, and spirituality is not a concept commonly discussed. The concern was that many respondents would not understand the question or would not understand the question the same way, which would result in non-response or responses the meaning of which was unclear. However, this domain was kept in the survey for exploratory purposes.

Considering the special life context of sexual/gender minorities, two additional domains were added as candidates for this version of the index. One domain was *love life*, because sexuality and relationships are important to many members of the study population, given society's intolerance of same-sex relationships. The other domain added was *integration in the sexual minority community*, alongside the existing domain of general *community integration*, since sexual minority communities could be important for sexual minority people but are often separate from what is often thought of as community, i.e., community of people where a person lives. In addition to these domains, anticipating that the sample would likely be young, *work/school* was added as another candidate domain, because this could be an important part of the lives of young adults, as they try to make a living and carve out a place for themselves in society. While this would likely overlap with the domain *achievements in life*, it was not known whether

satisfaction with "what you are achieving in life" would fully capture satisfaction with work/school.

Feedback from the research team and other colleagues in Viet Nam indicated that even though the seven domains of the PWI-A (excluding *spirituality/religion*) were likely relevant, the wording of some of them, e.g., "your personal relationships", "how safe you feel", and "your future security", if translated word-for-word, would be unclear or ambiguous because the translations would not represent familiar concepts that Vietnamese people use. Significant care and consultation went into crafting the Vietnamese wording of the domains. The final instrument and its translation into English are presented in Table 3.A.1.

Selection of domains and establishment of the index's internal construct validity

First, missing data were examined (see Table 3.A.2). As expected, the *spirituality/religion* item had by far the most missing data.

Second, the domains' pairwise correlations and correlations with satisfaction-with-life-as-a-whole were examined (see Table 3.A.2), using data available for each pair of items. All domains were positively correlated with one another and with satisfaction-with-life-as-a-whole. The two domains that had lowest correlations with satisfaction-with-life-as-a-whole were *integration in the sexual minority community* (r=0.24) and *spirituality/religion* (r=0.32).

All domains were then included in a preliminary regression model predicting satisfaction-with-life-as-a-whole. The two domains with the smallest regression coefficients were *spirituality/religion* (beta=0.025) and *integration in the sexual minority community* (beta=-0.023); they also had the largest p-values of all the domains (p=0.03

and 0.047, compared to all other p-values <0.01 and <0.0001). It was noted that these domains were statistically significant, but this could be due to the large sample size.

At this point the evidence was sufficient to support excluding the domain *spirituality/religion*, which was initially included only for exploratory purposes. The domain *integration in the sexual minority community*, however, required further examination. Through regression models first with only this domain as predictor of satisfaction-with-life-as-a-whole and then adding other domains, it was found that this item was confounded by the two items about *love life* and *general community integration*. Each of these items attenuated the positive coefficient on *integration in sexual minority community*, and together they drove this coefficient down under zero and statistically non-significant. *Integration in sexual minority community* was thus removed from the index.

The model with the remaining nine domains (see Table 3.A.3) had every domain contributing independently to satisfaction-with-life-as-a-whole and explained 46.2% of the variation in this dependent variable. The regression coefficients, ordered from the largest to smallest, were for *living standard* (0.14), *achievements in life* (0.13), *future prospects* (0.12), *personal relationships* (0.10), *love life* (0.08), *health* (0.06), *safety* (0.05), *work/school* (0.04) and (general) *community integration* (0.04). Compared to this model, the model with only the seven original domains (see Table 3.A.3) explained slightly less (44.7%) of the variation in satisfaction-with-life-as-a-whole. The nested F-test comparing the two models, however, was highly statistically significant, with F(2 df) = 38.233 and p-value<0.0001. The nine-domain model was therefore considered the final model, and these nine domains were retained in the index.

Since regression coefficients were different across the domains, this means the domains could have different weights in global satisfaction with life. The interest, however, was in assessing the utility of the index as it is calculated (sum/average of domains rescaled to possible range of 0-100) which implies equal weights for all the domains. To do this, it was necessary to compare the index (an unweighted measure) to predicted values of life satisfaction based on regression results (a weighted measure), both to what extent they correlate with each other, and how they compare in correlating with satisfaction-with-life-as-a-whole. These were also compared with the first principle component extracted from the nine items, for a total of three proxy measures of satisfaction-with-life-as-a-whole. Table 3.A.4 lays out their pairwise correlations and all three's correlations with satisfaction-with-life-as-a-whole. All three were extremely highly correlated with one another (r = 0.986 to 0.998). All three had similar correlations with satisfaction-with-life-as-a-whole, with the regression-weighted measure most correlated (r = 0.679) but the others two following very closely behind (r = 0.670). This means the simple unweighted index could be used.

Convergence validity was established through correlation with the Satisfaction with Life Scale (SWLS) (Diener et al., 1985), a single-construct measure of global life satisfaction. Both the index and the single-item satisfaction-with-life-as-a-whole had similar correlations with this scale (r = 0.697 for the index and r = 0.644 for the single-item). The correlation of the single-item measure was actually lower than that of the index, possibly due to its high level of roughness.

External construct validity

In addition to the regression analysis (which addresses internal construct validity), this study examined the external construct validity of the index by correlating it and its items to a range of external constructs including: (i) self-esteem; (ii) aspects of mental well-being (specifically depressive symptoms, anxiety symptoms and self-rated mood); (iii) self-rated health; (iv) log monthly income; and (v) parents' negative attitude about respondent's loving women. Below is a description of these variables, followed by interpretation of correlation results.

Self-esteem was measured using Rosenberg (1965) self-esteem scale (Cronbach's alpha is 0.85 in this sample). Depressive and anxiety symptoms were measured using the PHQ-9 (Spitzer, Kroenke & Williams, 1999) and the GAD-7 (Spitzer, Kroenke, Williams, & Löwe, 2006); these two scales have been validated as symptom severity measures in this population (Nguyen et al., 2013). Self-rated mood and self-rated health were based on the questions "How do you find your mood/health these days? – excellent, very good, good, OK, bad, very bad", which were treated in this analysis as continuous variables. Four measures of parents' negative attitudes about respondent's loving women were used, capturing mother's and father's attitudes at two time points, when they first knew about respondent's loving women and at present. These were rated by the respondent on a scale from 0 (=consider it no problem) to 8 (=very difficult attitude).

Self-esteem was expected to be moderately correlated with the index, and with specific domains that reflect a sense of "achievement" but less so with other domains. It was expected that mental well-being measures (depressive symptoms, anxiety symptoms and self-rated mood) would correlate with the index, because one's mental state may

influence one's perception of one's life and vice versa, and that these correlations would be stronger than the correlations of self-rated health and of income with the index. Among specific domains, self-rated health was expected to be most correlated with the *health* domain, and log income was expected to be most correlated with satisfaction with *living standard*, *work/school*, and perhaps *achievements in life*. If parents' negative attitudes were found to be correlated with the index, it was expected that attitudes at present would have stronger correlations than attitudes in the past, and among the domains, parents' negative attitudes would be most correlated with *personal relationships*.

Findings (see Table 3.A.5) were consistent with these expectations. Self-esteem was the most correlated with the index (r=0.58), and among the domains, most correlated with *love life*, *achievements in life* and *future prospects*. Mental well-being measures (depressive symptoms, anxiety symptoms and self-rated mood) were more correlated with the index than self-rated health and log income were. Among the domains, self-rated health was most correlated with the *health* domain, and log income was most correlated with *living standard*, *work/school* and *achievements in life*. Parents' negative attitudes had the lowest association with the index, and the measures of attitudes at present were more correlated with the index that attitudes in the past. All four measures of parents' attitudes were more correlated with the domain *personal relationships* than with the other domains. These findings strongly suggest that the adapted personal well-being index has good external construct validity for the study population.

Reliability

Within the context of a cross-sectional study, index's test-retest reliability could not be evaluated; this needs to be examined by further research. Since this measure is conceptualized as an index, not a scale, the use of Cronbach's alpha (which captures internal consistency) as an indicator of reliability is not appropriate, because components of an index are not expected to have internal consistency. That said, it has been documented that the PWI-A tends to have high Cronbach's alpha, in the range of 0.70 to 0.85 based on data from different countries (The International Wellbeing Group, 2006). Our nine-item index version has a Cronbach's alpha of 0.85.

Conclusions

This adapted, nine-item, version of the PWI-A is a valid life-domain-based measure of life satisfaction in this population, with strong evidence of both internal and external construct validity. Evidence on reliability is preliminary, but promising. The analysis also provides evidence for the validity of an index with seven original domains (excluding *spirituality/religion*), which explains slightly less of the variation in global life satisfaction.

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Table 3.A.1. The adapted index instrument used in the survey, its English translation, and indication of items retained in the final index

Questions	Translation to English	Domains	Retained in final index
Bạn hài lòng (hoặc không hài lòng) ở mức độ nào với ____?	How satisfied (or dissatisfied) are you with ____?		
1. Điều kiện kinh tế và mức sống của bạn	1. Your economic condition and living standard	*standard of living*	Yes
2. Tình trạng sức khỏe của bạn	2. Your health	*personal health*	Yes
3. Những điều hiện nay bạn đang đạt được trong cuộc sống	3. What you are currently achieving in life	*achieving in life*	Yes
4. Mối quan hệ cá nhân của bạn với mọi người (như với gia đình, người thân, bạn bè)	4. Your personal relationships with others (e.g., family, those who are close to you, friends)	*personal relationships*	Yes
5. Đời sống tình cảm riêng tư (dù hiện tại bạn có hay không có người yêu)	5. Your love life (whether or not you currently have a girl/boyfriend)	*love life*	Yes
6. Sự an toàn của bản thân (trước những mối nguy về thân thể, tinh thần và các mối nguy khác)	6. Your safety (from physical, mental or other dangers)	*personal safety*	Yes
7. Công ăn việc làm hoặc chuyện học hành	7. Your work/job or study	*work or school*	Yes
8. Mức độ hòa nhập của bạn trong cộng đồng nơi bạn sinh sống hoặc làm việc, học tập	8. Your level of integration in the community where you live or work or study	*community integration*	Yes
9. Mức độ hòa nhập của bạn trong cộng đồng những người nữ yêu nữ	9. Your level of integration in the community of women who love women	*integration in sexual minority community*	NO
10. Viễn cảnh tương lai của bạn	10. Your future prospects	*future prospects*	Yes
11. Đời sống tâm linh hoặc tôn giáo của bạn	11. Your spiritual or religious life	*spirituality/religion*	NO

Table 3.A.2. Pair-wise correlations of PWI candidate items, correlations with single-item satisfaction with life as a whole, and degrees of missing data (N=3082)

	Pair-wise inter-item correlations										Corr. with	Missing data
	Living standards	Health	Achievements in life	Personal relations	Love life*	Safety	School /work*	Integration in community	Integration in SMW community*	Future prospects	Satisfaction with life as a whole	n (%)
Living standards											0.47	34 (1.1)
Health	0.33										0.36	23 (0.7)
Achievements in life	0.53	0.41									0.55	33 (1.1)
Personal relationships	0.35	0.37	0.48								0.48	29 (0.9)
Love life*	0.22	0.24	0.43	0.40							0.43	39 (1.3)
Safety	0.32	0.35	0.34	0.35	0.29						0.38	64 (2.1)
School/work*	0.48	0.34	0.63	0.42	0.32	0.45					0.48	39 (1.3)
Community integration	0.27	0.33	0.40	0.52	0.31	0.41	0.48				0.40	41 (1.3)
Integration in sexual minority community*	0.10	0.21	0.26	0.29	0.35	0.26	0.26	0.45			0.24	97 (3.1)
Future prospects	0.35	0.30	0.50	0.40	0.41	0.38	0.50	0.42	0.37		0.50	95 (3.1)
Spiritual life	0.24	0.27	0.30	0.33	0.26	0.35	0.30	0.32	0.25	0.38	0.32	188 (6.1)

Table 3.A.3. Regression of satisfaction-with-life-as-a-whole on domain-specific items (n=2847)

	Model with nine domains		**Model with seven original domains**	
	beta (SE)	95% CI	beta (SE)	95% CI
Living standards	0.140 (0.014)	(0.113,0.168) ***	0.139 (0.014)	(0.112,0.166) ***
Health	0.056 (0.014)	(0.029,0.083) ***	0.057 (0.014)	(0.030,0.085) ***
Achievements in life	0.132 (0.017)	(0.098,0.166) ***	0.177 (0.016)	(0.145,0.209) ***
Personal relations	0.097 (0.014)	(0.069,0.104) ***	0.116 (0.014)	(0.089,0.144) ***
Love life	0.084 (0.010)	(0.064,0.104) ***		
Safety	0.052 (0.013)	(0.027,0.077) ***	0.067 (0.013)	(0.042,0.092) ***
School/work	0.044 (0.016)	(0.014,0.075) **		
Community integration	0.035 (0.014)	(0.007,0.063) *	0.047 (0.014)	(0.019,0.075) ***
Future prospects	0.117 (0.012	(0.093,0.141) ***	0.141 (0.012)	(0.118,0.165) ***
	R-squared = 0.4615 Adjusted R-squared = 0.4598		R-squared = 0.447 Adjusted R-squared = 0.4457	

*, ** and *** denote p-value < 0.05, <0.01 and <0.0001

Table 3.A.4. Comparing the nine-item index to (i) the first principal component from the items and (ii) regression-based predicted satisfaction with life: inter-measure correlations and correlations with satisfaction-with-life-as-a-whole

	Inter-measure correlations		Correlation with
	The 9-item index	First principle component from the 9 items	Satisfaction-with-life-as-a-whole
The 9-item index			0.670
First principle component from the 9 items	0.998		0.670
Regression-based predicted satisfaction with life	0.986	0.986	0.679

Table 3.A.5. Correlations of the full index and its components with external constructs

	Self-esteem	Depressive symptoms	Anxiety symptoms	Self-rated mood	Self-rated health	Log income	Parents' negative attitude about loving women when first knew mother	Parents' negative attitude about loving women when first knew father	Parents' negative attitude about loving women at present mother	Parents' negative attitude about loving women at present father
The index	**0.58**	**-0.54**	**-0.48**	**0.49**	**0.37**	**0.20**	**-0.01**	**-0.09**	**-0.11**	**-0.12**
Index component items:										
Living standards	0.28	-0.24	-0.21	0.20	0.14	0.24	0.02	-0.06	-0.02	-0.03
Health	0.25	-0.35	-0.29	0.32	0.61	0.00	0.00	-0.03	-0.04	-0.09
Achievements in life	0.48	-0.39	-0.32	0.35	0.23	0.19	0.00	-0.09	-0.06	-0.07
Personal relations	0.36	-0.39	-0.35	0.33	0.22	0.12	-0.08	-0.16	-0.21	-0.19
Love life*	0.49	-0.41	-0.32	0.49	0.17	0.07	0.01	0.03	-0.06	-0.01
Safety	0.31	-0.34	-0.35	0.26	0.25	0.09	-0.01	-0.09	-0.08	-0.11
School/work*	0.44	-0.40	-0.36	0.32	0.23	0.21	-0.02	-0.09	-0.05	-0.10
Integration in community	0.43	-0.38	-0.34	0.30	0.24	0.14	0.02	-0.07	-0.09	-0.13
Future prospects	0.47	-0.38	-0.33	0.35	0.22	0.14	0.00	-0.04	-0.10	-0.03

Appendix to Chapter 4: Appendix to manuscript 1

Exploration of class enumeration with nine-item subsets of the original 19 items

Since sparse data undermines the validity of goodness-of-fit assessments to adjudicate the number of classes, to make sure the number of classes extracted is appropriate, class enumeration was explored with semi-random subsets of the class indicators.

Before selecting the subsets, it was noticed that both the 5-class and 6-class LCA with the full set of indicators resulted in a separation of about 37% of the sample from the rest, because they experienced almost none of the family behaviors in the list (the *peace* class). Three items, *against*, *hetero* and *feminine* resulted in this separation, because all the other classes had high levels of endorsement of these three items (ranging the low of 0.69 to 0.75 to the high of 0.99). Without these three items, individuals in this class would not be distinguishable from another 34% of the sample who experienced these endorsed these three items but almost none of the other items (the *pressure* class). These three items contributed little to separating the classes other than *peace*. This means if these three items were excluded, the separation of the *peace* class from the *pressure* class (or the class that is next more negative than *peace*, because in another solution, the classes could potentially change their composition and meaning) would be lost, but it was already clear this separation existed. A logical question to ask then, was how many classes would be "found" based on subsets of the remaining 16 items, and whether these classes would corroborate with the 5-class or 6-class solutions from the full indicator set.

From the 16 items excluding *against*, *hetero* and *feminine*, six 9-item subsets were randomly sampled. Class enumeration was conducted with each subset, in the manner

described in the Methods section. Table 4.A.1 summarizes the results of this exercise. Overall, there was good support for four as well as five classes using the subsets, corresponding to five and six classes using the full set of indicators. The 6-class model was preferred, and indicated by any subset that had at least three girlfriend-targeting items. This led to the decision to extract six classes from the full data. The 6-class solution separated the *aggressive R* and *aggressive R&G* classes, whereas the 5-class solution would collapse these two classes.

Risk ratios supplementing odds ratios in multinomial regression

Suppose we identified three classes: one class with no negative treatment (aka *class zero*) and two classes with different patterns of negative treatment (aka *class A* and *class B*). It is natural in this case to use class zero as the reference category in multinomial regression. Consider a simple case with only one hypothetical predictor, residential location in either a beach town (=1) or a mountain town (=0). Let us be concerned only about the odds, or risk, of being in class A, say because class A represents particularly bad treatment. Suppose that among the mountain town residents, 30% are in class zero, 30% in class A and 40% in class B; the odds of being in class A vs. class zero is 30%/30% = 1. Consider two very different scenarios for the beach town. In scenario 1, 40% of beach town residents are in class zero, 40% in class A and 20% in class B; the odds ratio (OR) of being in class A vs. class zero comparing beach town to mountain town residents is (40%/40%)/(30%/30%) = 1. In scenario 2, 20% of beach town residents are in class zero, 20% in class A, and 60% in class B; the OR is (20%/20%)/(30%/30%) = 1, the same as in scenario 1. The details that in scenario 1 class A prevalence is higher among beach town residents, and in scenario 2 class A prevalence

is lower in this group, would be lost had we only presented ORs. Risk ratios (RR) would provide the additional information: in scenario 1 the RR of being in class A comparing beach town to mountain town residence is 40%/30% = 1.33; in scenario 2, it is 20%/30% = 0.67. In a case like this, it is important to know both the ORs and the RRs. Therefore, when conducting multinomial regression analysis, in addition to the ORs that are the exponentiated regression coefficients, it is helpful to take the additional step of converting regression coefficients into predicted probabilities and using the probabilities to calculate RRs.

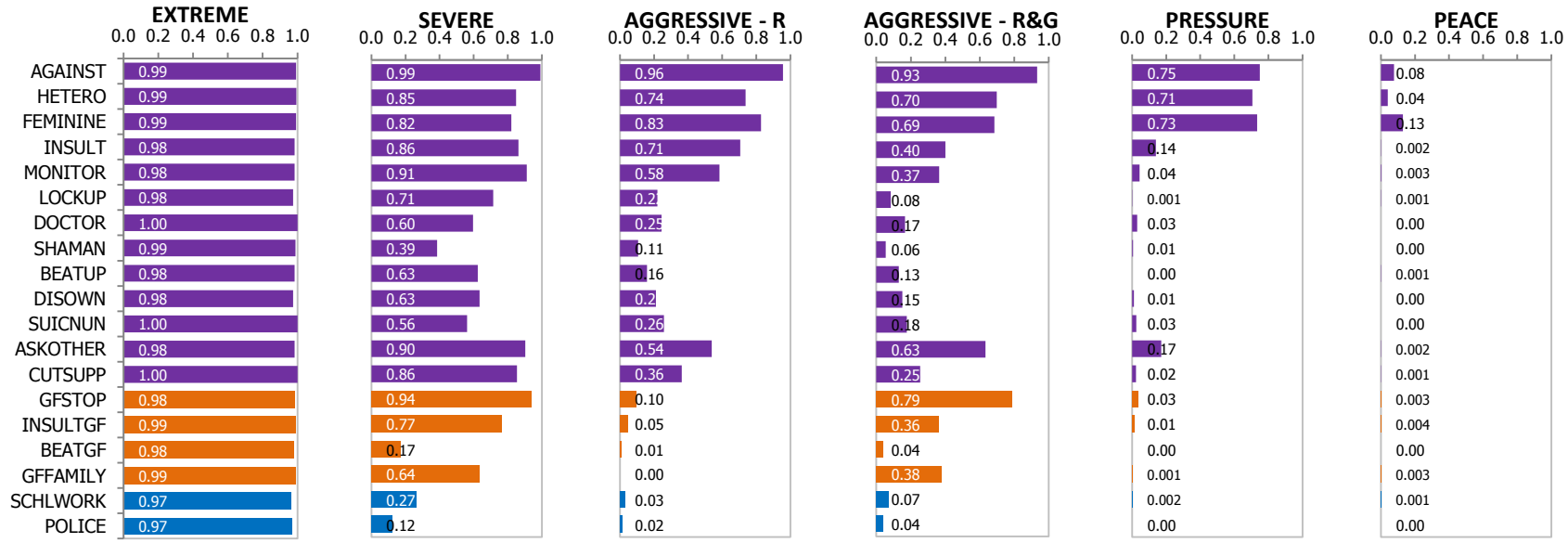
Table 4.A.1. Exploring number of classes using semi-random subsets of nine items

random subsets of items 4 to 19	**support for full-set 5-class solution**	**support for full-set 6-class solution**	**other information**
Subset A: monitor, doctor, beatup, disown, suicmon, askother, cutsupp, beatupgf, police	Yes. BIC, CAIC, BF and cmP favor a 4-class solution with the nine items. This 4-class solution is similar to the full-set 5-class solution, with the *peace* and *pressure* classes lumped into one class.	No.	AWE favors 3 classes with the nine items. saBIC, BLRT favor 5 classes. VLMR and LMR favor 6 classes. The 5- and 6-class solutions are not meaningful. AIC did not reach a minimum.
Subset B: insult, monitor, lockup, shaman, beatup, gfstop, insultgf, beatupgf, gffamily	Yes, but not preferred. Only AWE favors a 4-class solution with the nine items. This 4-class solution is similar to the full-set 5-class solution, with the *peace* and *pressure* classes lumpted into one class.	Yes and preferred. BIC, saBIC, CAIC, BF, cmP favor a 5-class solution with the nine items. This 5-class solution is similar to the full-set 6-class solution, with the *peace* and *pressure* classes lumped into one class.	VLMR and LMR favor 6 classes with the nine items. The 6-class solution is not meaningful. AIC did not reach a minimum. BLRT did not become non-significant.
Subset C: insult, monitor, lockup, shaman, disown, suicmon, cutsupp, insultgf, police	Yes. BIC, CAIC, BF and cmP favor a 4-class solution with the nine items. This solution is similar to the 5-class solution with the full set of items.	No.	AWE favors 3 classes. saBIC, VLMR and LMR favor 5 classes. BLRT favors 6 classes. The 5- and 6-class solutions are not meaningful. AIC did not reach a minimum.
Subset D: monitor, lockup, doctor, shaman, disown, suicmon, askother, insultgf, gffamily	No.	No.	A 4-class solution is favored by BIC, CAIC, BF, cmP, VLMR and LMR, but it is not meaningful. AWE favors 3 classes, saBIC favors 6 classes, but neither of these solutions are similar to any full-set solutions. AIC did not reach a minimum. BLRT did not become non-significant.
Subset E: insult, lockup, doctor, beatup, suicnun, askother, gfstop, insultgf, gffamily	No.	Yes. BIC, saBIC, BF and cmP favor a 5-class solution with the nine items that is similar to the full-set 6-class solution, with the *peace* and *pressure* classes lumped into one class.	AWE favors 3 classes; CAIC favors 4 classes, BLRT favors 6 classes; AIC, VLMR and LMR favor 7 classes. The 4-class solution is not similar to the full-set 5-class solution.
Subset F: insult, doctor, disown, cutsupp, gfstop, beatupgf, gffamily, schlwork, police	Yes, but not preferred. CAIC favors a 4-class solution with the nine items. This solution is similar to the full-set 5-class solution.	Yes and preferred. BIC, saBIC, BF, cmP, VLMR and LMR favor a 5-class solution with the nine items. This solution is similar to the full-set 6-class solution, with the *peace* and *pressure* classes lumped into one class.	AWE favors 3 classes. AIC did not reach a minimum. BLRT did not become non-significant.

Summary: Both 5- and 6-class solutions are supported. Items about action toward respondent's girlfriend(s) appear in red. Subsets that included three or more of these items provide support for the 6-class solution.

Appendix to Chapter 5: Supplemental material to manuscript 2

Figure 5.A.1. Six latent classes of family treatment, with respective item-endorsing probabilities



Items targeting respondent are in purple; items targeting respondent's girlfriend are in orange; and items targeting either respondent or girlfriend are in blue.

AGAINST: Opposed to loving women

HETERO: Pressured to have boyfriend or get married

FEMININE: Pressured to be more feminine

INSULT: Insulted

MONITOR: Followed or monitored time, or kept money/motorbike/papers (to prevent from seeing girlfriend)

LOCKUP: Locked up or taken to live somewhere else (to prevent from seeing girlfriend)

DOCTOR: Asked a hospital/doctor/healer to "treat" to stop loving women

SHAMAN: Asked a shaman to perform rituals to help stop loving women (or help get married)

BEATUP: Beat up

DISOWN: Disowned or threw out of the house

SUICNUN: Threatened to commit suicide or to join a monastery (if respondent doesn't change) or actually attempted suicide/joined a monastery

ASKOTHER: Asked others to persuade respondent to change

CUTSUPP: Stopped or reduced support for respondent (e.g., financial support, investment in education, inheritance)

GFSTOP: Asked girlfriend to stop relationship

INSULTGF: Insulted the girlfriend

BEATUPGF: Beat up the girlfriend

GFFAMILY: Told the girlfriend's family

SCLWORK: Informed the school/workplace of respondent or girlfriend

POLICE: Asked local authorities or police to intervene with the relationship

Table 5.A.1. Models examining associations between outcome variables and negative family treatment and other covariates – part 1

		MENTAL WELL-BEING				LIFE SATISFACTION	
		Anxiety symptoms	Depressive symptoms	Probable depression			
		model A	model B	model C	model C2	model D	model D2
Family treatment classes:		beta (95% CI)	beta (95% CI)	AOR (95% CI)	AOR (95% CI)	beta (95% CI)	beta (95% CI)
	PEACE	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	PRESSURE	**0.63** (0.08,1.19)	**1.10** (0.52,1.74)	**1.37** (1.01,1.86)	**1.53** (1.09,2.14)	**-2.5** (-4.6,-0.6)	**-3.2** (-5.1,-1.2)
	AGGRESSIVE - R&G	0.46 (-0.31,1.25)	0.40 (-0.49,1.20)	0.89 (0.54,1.47)	0.95 (0.56,1.64)	-1.1 (-3.8, 1.8)	-0.3 (-3.2, 2.8)
	AGGRESSIVE - R	**1.75** (0.77,2.91)	**1.72** (0.75,2.97)	**1.62** (1.01,2.61)	1.48 (0.82,2.67)	**-3.6** (-6.9,-0.4)	**-5.5** (-9.6,-2.1)
	SEVERE	**2.36** (1.44,3.44)	**3.06** (1.85,4.27)	**2.21** (1.40,3.47)	**1.94** (1.14,3.29)	**-7.3** (-10.4,-3.8)	**-6.0** (-9.5,-1.8)
	EXTREME	**2.70** (1.65,3.70)	**2.76** (1.46,3.96)	**2.12** (1.30,3.47)	**2.83** (1.66,4.83)	**-6.6** (-11.3,-1.7)	**-8.9** (-14.1,-3.6)
Interactions with transman identity:					OR ratio (95% CI)		
	pressure X transman				0.55 (0.26,1.20)		3.8 (-1.8,9.0)
	aggressive R&G X transman				0.67 (0.18,2.48)		-2.4 (-10.9,4.4)
	aggressive R X transman				1.08 (0.39,2.96)		7.2 (-0.8,13.9)
	severe X transman				1.36 (0.50,3.72)		-3.3 (-11.4,4.5)
	extreme X transman				**0.19** (0.05,0.81)		**10.4** (1.0,19.2)
Other covariates:		beta (95% CI)	beta (95% CI)	AOR (95% CI)	AOR (95% CI)	beta (95% CI)	beta (95% CI)
Age	26 or older	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	18-20 years old	**0.98** (0.38,1.58)	**1.43** (0.78,2.16)	**1.41** (1.01,1.96)	**1.41** (1.02,1.97)	**-2.4** (-4.3,-0.6)	**-2.4** (-4.4,-0.5)
	21-25 years old	**1.21** (0.69,1.78)	**1.75** (1.12,2.39)	**1.49** (1.08,2.06)	**1.50** (1.08,2.06)	**-4.5** (-6.6,-2.6)	**-4.5** (-6.6,-2.7)
Identity:	lesbian	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	bisexual	0.30 (-0.21,0.87)	**0.93** (0.28,1.54)	**1.38** (1.05,1.82)	**1.40** (1.06,1.84)	-1.0 (-2.8, 0.9)	-1.0 (-2.8,0.8)
	not sure	0.61 (-0.12,1.32)	0.88 (-0.004,1.69)	**1.44** (1.03,2.02)	**1.44** (1.03,2.02)	**-4.2** (-6.7,-2.0)	**-4.3** (-6.6,-2.1)
	transman	-0.05 (-0.54,0.52)	-0.14 (-0.80,0.47)	0.90 (0.67,1.21)	1.21 (0.71,2.08)	-0.3 (-2.3, 1.7)	-2.5 (-6.6,1.5)
Religion:	no religion	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Buddhism	0.45 (-0.03,0.90)	0.11 (-0.40,0.61)	1.07 (0.85,1.35)	1.06 (0.84,1.34)	-0.3 (-1.8,1.3)	-0.3 (-1.8,1.2)
	Christianity	0.48 (-0.20,1.22)	0.32 (-0.47,1.22)	1.26 (0.90,1.78)	1.25 (0.89,1.77)	-1.5 (-3.8,1.0)	-1.4 (-3.7,1.1)
Family economic:	sufficient	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	rich	-0.33 (-1.40,0.89)	-1.01 (-2.41,0.53)	0.95 (0.54,1.69)	0.95 (0.53,1.68)	**8.3** (4.2,11.5)	**8.3** (4.0,11.9)
	middle-class	**-0.59** (-1.06,-0.17)	**-0.81** (-1.29,-0.31)	0.81 (0.63,1.04)	0.83 (0.65,1.06)	**5.4** (4.0,7.0)	**5.4** (3.9,7.0)
	poor	**2.60** (1.68,3.57)	**3.31** (2.25,4.37)	**2.50** (1.77,3.54)	**2.58** (1.82,3.66)	**-13.8** (-16.8,-10.8)	**-13.8** (-16.8,-10.7)
Urbanicity:	big city	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	not big city	0.11 (-0.52,0.73)	0.00 (-0.74,0.71)	0.92 (0.69,1.23)	0.92 (0.69,1.23)	-0.3 (-2.1,1.7)	-0.2 (-0.21,1.7)
Geographical region:	Red river delta	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	north mountains	0.92 (-0.44,2.22)	0.71 (-0.89,2.10)	1.37 (0.61,3.07)	1.34 (0.60,3.02)	-4.3 (-9.1,0.3)	-4.2 (-9.0,0.2)
	central region	0.41 (-0.44,1.41)	**1.18** (0.22,2.25)	1.29 (0.79,2.11)	1.33 (0.81,2.16)	**-3.3** (-6.5,-0.3)	**-3.5** (-6.8,-0.6)
	southeast region	0.30 (-0.30,0.85)	0.63 (-0.01, 1.25)	1.19 (0.86,1.65)	1.20 (0.87,1.65)	-0.0 (-2.0,2.0)	-0.1 (-2.1,2.0)
	Mekong delta	0.57 (-0.20,1.37)	**1.35** (0.40, 2.35)	**1.83** (1.20,2.80)	**1.89** (1.24,2.89)	-2.2 (-5.5,0.6)	-2.5 (-5.7,0.3)

Note: Boldface denotes statistically significant estimates at alpha=0.05.

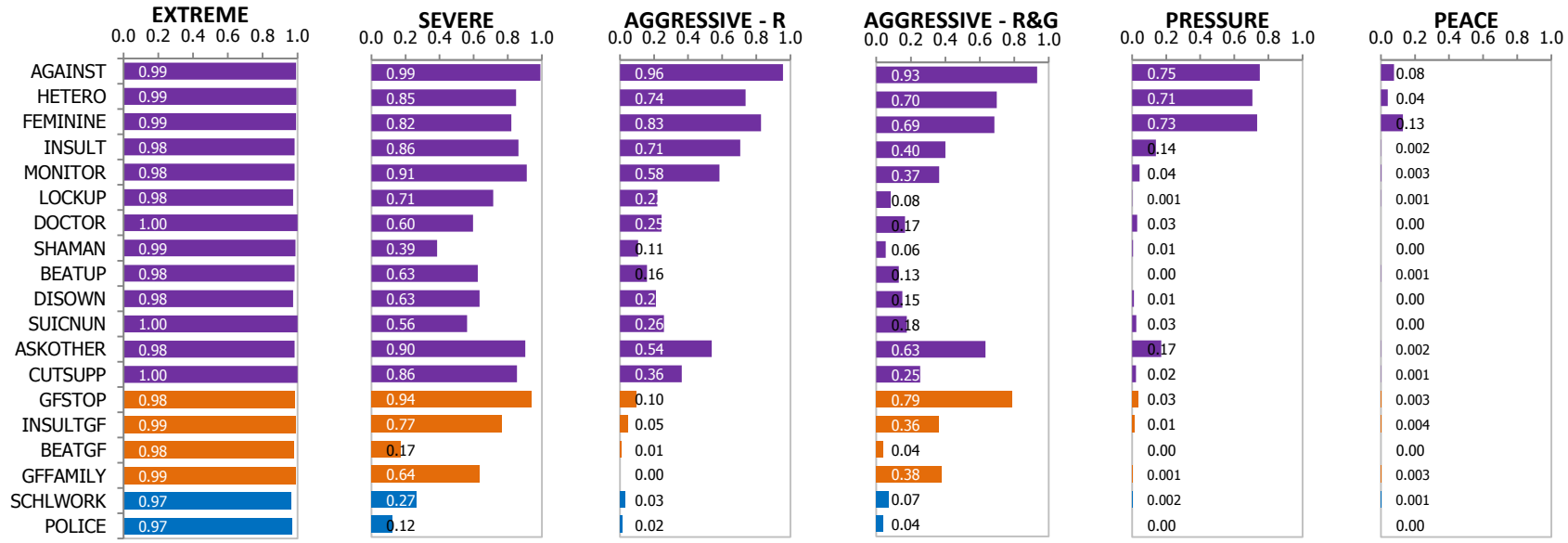
Table 5.A.1. Models examining associations between outcome variables and negative family treatment and other covariates – part 2

		SUICIDALITY		SUBSTANCE USE			
		Ever suicide attempt	**Repeat suicide attempt**	**Current smoking**		**Recent heavy drinking**	
		model E	**model F**	**model G**	**model G2**	**model H**	**model H2**
Family treatment classes:		AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
	PEACE	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	PRESSURE	0.99 (0.69,1.43)	0.80 (0.46,1.40)	0.86 (0.62,1.20)	0.89 (0.61,1.31)	1.11 (0.84,1.47)	1.14 (0.83,1.56)
	AGGRESSIVE - R&G	1.32 (0.80,2.17)	1.34 (0.68,2.66)	1.10 (0.69,1.75)	0.90 (0.41,1.94)	1.25 (0.85,1.85)	1.50 (0.97,2.31)
	AGGRESSIVE - R	**2.81** (1.72,4.57)	**2.87** (1.55,5.32)	0.96 (0.55,1.66)	1.19 (0.68,2.06)	1.51 (0.97,2.36)	1.15 (0.65,2.04)
	SEVERE	**3.70** (2.30,5.94)	**3.75** (2.07,6.77)	1.47 (0.92,2.33)	0.85 (0.43,1.73)	1.32 (0.85,2.04)	0.91 (0.52,1.60)
	EXTREME	**1.94** (1.13,3.34)	**2.24** (1.11,4.54)	**2.01** (1.17,3.43)	**1.88** (1.02,3.49)	**2.26** (1.37,3.72)	**2.37** (1.37,4.08)
Interactions with transman identity:					OR ratio (95% CI)		OR ratio (95% CI)
	pressure X transman				0.94 (0.45,1.95)		0.95 (0.48,1.89)
	aggressive R&G X transman				0.84 (0.30,2.29)		0.51 (0.19,1.38)
	aggressive R X transman				1.21 (0.39,3.77)		2.09 (0.78,5.61)
	severe X transman				**3.77** (1.30,10.88)		**3.06** (1.14,8.21)
	extreme X transman				1.37 (0.39,4.78)		0.80 (0.22,2.89)
Other covariates:		AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Age	26 or older	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	18-20 years old	0.81 (0.57,1.17)	1.39 (0.81,2.37)	**0.62** (0.44,0.86)	**0.61** (0.43,0.85)	**0.66** (0.49,0.88)	**0.65** (0.49,0.87)
	21-25 years old	1.16 (0.82,1.64)	1.41 (0.83,2.40)	1.12 (0.82,1.53)	1.12 (0.82,1.53)	0.90 (0.68,1.19)	0.90 (0.68,1.19)
Identity:	lesbian	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	bisexual	**0.65** (0.46,0.90)	**0.43** (0.26,0.70)	**0.64** (0.47,0.88)	**0.64** (0.47,0.88)	1.08 (0.84,1.40)	1.09 (0.84,1.41)
	not sure	0.75 (0.50,1.12)	**0.54** (0.30,0.98)	**0.32** (0.19,0.52)	**0.31** (0.19,0.51)	0.98 (0.71,1.35)	0.98 (0.71,1.35)
	transman	0.90 (0.66,1.24)	0.74 (0.49,1.13)	**1.81** (1.38,2.38)	1.62 (0.98,2.69)	**1.43** (1.11,1.85)	1.33 (0.82,2.17)
Religion:	no religion	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Buddhism	1.10 (0.84,1.43)	1.10 (0.77,1.57)	**1.30** (1.01,1.68)	**1.30** (1.01,1.68)	**1.51** (1.22,1.87)	**1.50** (1.21,1.86)
	Christianity	1.31 (0.90,1.90)	1.03 (0.61,1.73)	1.25 (0.87,1.80)	1.29 (0.89,1.86)	1.10 (0.80,1.51)	1.12 (0.82,1.55)
Family economic status:	sufficient	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	rich	1.50 (0.84,2.69)	1.29 (0.58,2.87)	1.37 (0.76,2.48)	1.35 (0.75,2.44)	0.97 (0.58,1.63)	0.95 (0.57,1.61)
	middle-class	**0.75** (0.57,0.99)	0.82 (0.56,1.21)	1.01 (0.78,1.30)	1.01 (0.78,1.31)	0.94 (0.76,1.17)	0.95 (0.76,1.18)
	poor	1.15 (0.74,1.80)	1.42 (0.81,2.50)	**1.62** (1.05,2.50)	**1.66** (1.07,2.56)	1.23 (0.84,1.81)	1.26 (0.86,1.86)
Urbanicity:	big city	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	not big city	1.17 (0.83,1.64)	1.00 (0.62,1.62)	0.72 (0.52,1.01)	0.73 (0.52,1.02)	1.14 (0.87,1.49)	1.16 (0.88,1.52)
Geographical region:	Red river delta	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	north mountains	1.58 (0.71,3.52)	1.87 (0.66,5.29)	1.12 (0.49,2.59)	1.13 (0.48,2.61)	1.64 (0.78,3.45)	1.66 (0.79,3.50)
	central region	1.08 (0.63,1.84)	0.93 (0.44,1.95)	0.98 (0.59,1.61)	0.92 (0.55,1.54)	**2.08** (1.32,3.28)	**2.03** (1.28,3.22)
	southeast region	0.83 (0.59,1.17)	0.72 (0.45,1.15)	0.80 (0.58,1.11)	0.79 (0.57,1.09)	**1.75** (1.29,2.39)	**1.74** (1.28,2.38)
	Mekong delta	0.73 (0.44,1.20)	0.66 (0.34,1.28)	0.65 (0.40,1.06)	0.64 (0.39,1.05)	**2.77** (1.85,4.16)	**2.80** (1.87,4.20)

Note: Boldface denotes statistically significant estimates at alpha=0.05.

Appendix to Chapter 6: Supplemental material for manuscript 3

Figure 6.A.1. Six latent classes of family treatment, with respective item-endorsing probabilities



Items targeting respondent are in purple; items targeting respondent's girlfriend are in orange; and items targeting either respondent or girlfriend are in blue.

AGAINST: Opposed to loving women

HETERO: Pressured to have boyfriend or get married

FEMININE: Pressured to be more feminine

INSULT: Insulted

MONITOR: Followed or monitored time, or kept money/motorbike/papers (to prevent from seeing girlfriend)

LOCKUP: Locked up or taken to live somewhere else (to prevent from seeing girlfriend)

DOCTOR: Asked a hospital/doctor/healer to "treat" to stop loving women

SHAMAN: Asked a shaman to perform rituals to help stop loving women (or help get married)

BEATUP: Beat up

DISOWN: Disowned or threw out of the house

SUICNUN: Threatened to commit suicide or to join a monastery (if respondent doesn't change) or actually attempted suicide/joined a monastery

ASKOTHER: Asked others to persuade respondent to change

CUTSUPP: Stopped or reduced support for respondent (e.g., financial support, investment in education, inheritance)

GFSTOP: Asked girlfriend to stop relationship

INSULTGF: Insulted the girlfriend

BEATUPGF: Beat up the girlfriend

GFFAMILY: Told the girlfriend's family

SCLWORK: Informed the school/workplace of respondent or girlfriend

POLICE: Asked local authorities or police to intervene with the relationship

Table 6.A.1. Moderation analysis: Regression coefficients (95% confidence intervals)

	life satisfaction	depressive symptoms	current smoking	recent heavy drinking
Models with SR as moderator				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.4** (-5.3,-1.4)	**1.11** (0.39,1.83)	-0.09 (-0.45,0.27)	0.11 (-0.19,0.41)
aggressive R&G	-1.4 (-4.6,1.7)	0.52 (-0.49,1.53)	0.04 (-0.56,0.64)	0.17 (-0.31,0.64)
aggressive R	**-6.5** (-10.0,-3.0)	**2.18** (0.84,3.52)	-0.02 (-0.74,0.71)	0.11 (-0.48,0.71)
severe	**-6.3** (-9.7,-2.9)	**2.69** (1.33,4.04)	-0.28 (-1.07,0.51)	-0.16 (-0.74,0.42)
extreme	**-9.7** (-15.1,-4.4)	**2.98** (1.34,4.62)	**0.67** (0.07,1.28)	**0.79** (0.22,1.35)
SR	**4.1** (2.5,5.7)	-0.45 (-1.04,0.14)	0.14 (-0.12,0.40)	0.07 (-0.15,0.30)
SR x family treatment:				
SR x pressure	-1.0 (-3.7,1.7)	0.24 (-0.80,1.28)	0.12 (-0.35,0.58)	-0.05 (-0.42,0.32)
SR x aggressive R&G	1.5 (-3.1,6.0)	0.61 (-0.78,2.00)	0.35 (-0.38,1.08)	**0.64** (0.03,1.25)
SR x aggressive R	-2.2 (-6.0,1.6)	-0.98 (-2.47,0.52)	**-0.77** (-1.47,-0.08)	-0.44 (-1.14,0.27)
SR x severe	1.4 (-2.7,5.5)	0.59 (-1.20,2.38)	0.32 (-0.68,1.31)	0.27 (-0.43,0.97)
SR x extreme	2.2 (-6.2,10.6)	-0.62 (-2.38,1.14)	-0.30 (-0.90,0.31)	0.30 (-0.31,0.92)
Models with SA as moderator				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.0** (-5.0,-1.1)	**1.07** (0.35,1.79)	-0.14 (-0.52,0.24)	0.14 (-0.17,0.44)
aggressive R&G	-0.6 (-3.7,2.5)	0.57 (-0.46,1.60)	0.13 (-0.43,0.68)	0.33 (-0.11,0.77)
aggressive R	**-6.5** (-9.9,-3.0)	**2.11** (0.77,3.45)	-0.04 (-0.74,0.66)	-0.03 (-0.70,0.63)
severe	**-5.7** (-9.3,-2.2)	**2.68** (1.35,4.02)	-0.16 (-0.83,0.51)	-0.09 (-0.64,0.46)
extreme	**-8.8** (-14.0,-3.6)	**2.89** (1.28,4.51)	**0.60** (-0.03,1.23)	**0.87** (0.32,1.41)
SA	**2.9** (1.5,4.4)	**-0.64** (-1.13,-0.15)	0.03 (-0.22,0.28)	0.17 (-0.04,0.37)
SA x family treatment:				
SA x pressure	0.0 (-2.1,2.2)	0.31 (-0.46,1.09)	**0.53** (0.13,0.93)	0.05 (-0.27,0.37)
SA x aggressive R&G	-1.9 (-5.7,1.9)	0.20 (-0.99,1.38)	0.25 (-0.40,0.91)	0.18 (-0.35,0.70)
SA x aggressive R	-1.2 (-5.1,2.8)	0.64 (-1.01,2.29)	-0.42 (-1.21,0.37)	**-1.32** (-2.12,-0.51)
SA x severe	-1.3 (-5.2,2.5)	0.36 (-1.26,1.98)	0.04 (-0.71,0.79)	0.02 (-0.58,0.61)
SA x extreme	1.6 (-6.7,10.0)	1.94 (-0.34,4.22)	0.36 (-0.36,1.09)	-0.02 (-0.64,0.60)
Models with WN as moderator				
Family treatment:				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.5** (-5.5,-1.5)	**1.17** (0.44,1.89)	-0.31 (-0.73,0.11)	0.08 (-0.23,0.39)
aggressive R&G	-0.9 (-4.0,2.3)	0.60 (-0.42,1.63)	-0.13 (-0.80,0.54)	0.17 (-0.31,0.64)
aggressive R	**-7.1** (-10.6,-3.5)	**2.27** (0.90,3.63)	-0.07 (-0.87,0.73)	-0.15 (-0.84,0.54)
severe	**-6.2** (-10.0,-2.4)	**2.65** (1.27,4.02)	-0.30 (-1.06,0.47)	-0.37 (-1.02,0.28)
extreme	**-9.4** (-4.5,-4.3)	**2.86** (1.22,4.51)	**0.64** (0.00,1.27)	**0.85** (0.30,1.40)
WN	**1.9** (0.6,3.1)	**-0.64** (-1.13,-0.15)	**0.36** (0.11,0.61)	**0.30** (0.09,0.50)
WN x family treatment:				
WN x pressure	0.9 (-1.4,3.2)	0.39 (-0.52,1.30)	**0.59** (0.10,1.08)	0.13 (-0.21,0.48)
WN x aggressive R&G	0.1 (-3.7,3.9)	0.58 (-0.56,1.72)	0.56 (-0.20,1.31)	**0.61** (0.03,1.18)
WN x aggressive R	0.3 (-3.6,4.2)	0.04 (-1.55,1.64)	-0.17 (-1.11,0.77)	0.42 (-0.37,1.22)
WN x severe	-1.2 (-4.9,2.5)	1.07 (-0.49,2.63)	0.12 (-0.72,0.95)	0.55 (-0.14,1.23)
WN x extreme	0.2 (-7.7,8.1)	0.92 (-1.00,2.84)	-0.20 (-0.85,0.45)	-0.10 (-0.67,0.47)

Notes: SR, SA and WN stand for perceived non-family support received, perceived availability of sexuality/stigma-related support, and connection to sexual minority women network. Regression coefficients for SR, SA and WN are per standard deviation difference in the latent factor. Boldface denotes effects statistically significant effects (at α=0.05). All models adjusted for age, sexual identity, religion, family economic status, urbanicity and geographical region.

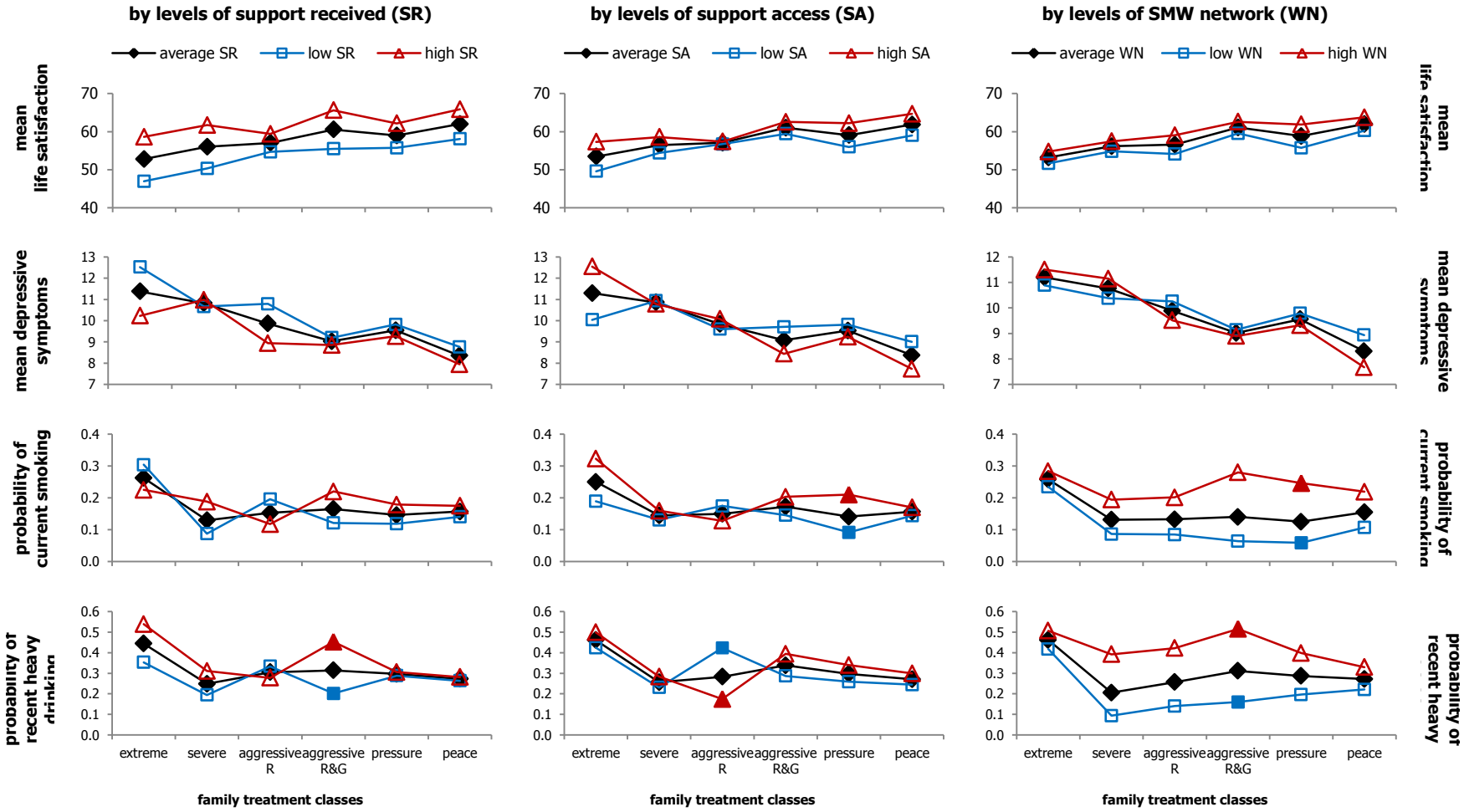
Table 6.A.2. Mediation analysis: Path coefficients (95% confidence intervals)

	model with SR as mediator	model with SA as mediator	model with WN as mediator	model combining SR, SA & WN
Path A effects				
Family treatment -> SR				
peace	Ref.			Ref.
pressure	0.03 (-0.11,0.18)			0.04 (-0.07,0.150
aggressive R&G	**0.24** (0.04,0.44)			**0.20** (0.05,0.35)
aggressive R	0.06 (-0.21,0.33)			0.07 (-0.14,0.28)
severe	0.11 (-0.13,0.35)			0.10 (-0.09,0.29)
extreme	0.24 (-0.14,0.61)			0.15 (-0.13,0.42)
Family treatment -> SA				
peace		Ref.		Ref.
pressure		-0.09 (-0.25,0.08)		-0.09 (-0.20,0.03)
aggressive R&G		0.11 (-0.10,0.32)		0.09 (-0.07,0.25)
aggressive R		0.00 (-0.26,0.27)		0.00 (-0.22,0.21)
severe		-0.06 (-0.30,0.17)		-0.05 (-0.25,0.15)
extreme		-0.02 (-0.33,0.28)		-0.02 (-0.26,0.23)
Family treatment -> WN				
peace			Ref.	Ref.
pressure			**0.13** (0.01,0.25)	**0.12** (0.01,0.23)
aggressive R&G			**0.18** (0.01,0.37)	**0.18** (0.01,0.34)
aggressive R			**0.33** (0.11,0.54)	**0.30** (0.10,0.50)
severe			**0.36** (0.16,0.56)	**0.34** (0.15,0.52)
extreme			0.23 (-0.02,0.48)	0.19 (-0.04,0.43)
Path B effects				
From SR to:				
life satisfaction	**4.0** (2.8,5.2)			**2.6** (1.6,3.6)
depressive symptoms	**-0.42** (-0.81,-0.03)			-0.22 (-0.57,0.14)
current smoking	0.14 (-0.04,0.31)			-0.04 (-0.21,0.14)
recent heavy drinking	0.12 (-0.02,0.26)			-0.02 (-0.16,0.12)
From SA to:				
life satisfaction		**2.7** (1.8,3.6)		**1.8** (0.8,2.7)
depressive symptoms		**-0.39** (-0.71,-0.07)		-0.27 (-0.60,0.07)
current smoking		**0.22** (0.07,0.38)		0.10 (-0.06,0.27)
recent heavy drinking		**0.13** (0.002,0.25)		0.02 (-0.11,0.16)
From WN to:				
life satisfaction			**0.21** (0.12,0.30)	0.09 (-0.00,0.19)
depressive symptoms			**-0.38** (-0.71,-0.04)	-0.26 (-0.61,0.10)
current smoking			**0.57** (0.39,0.74)	**0.52** (0.34,0.71)
recent heavy drinking			**0.44** (0.30,0.58)	**0.43** (0.27,0.57)
Direct/unmediated effects				
Family treatment -> life satisfaction				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**-3.4** (-5.3,-1.4)	**-3.0** (-5.0,-1.1)	**-3.5** (-5.5,-1.6)	**-3.3** (-5.2,-1.4)
aggressive R&G	-1.5 (-4.6,1.6)	-0.8 (-4.0,2.3)	-0.9 (-4.1,2.2)	-1.4 (-4.5,1.7)
aggressive R	**-6.7** (-10.3,-3.2)	**-6.5** (-10.0,-3.0)	**-7.1** (-10.6,-3.6)	**-6.9** (-10.4,-3.4)
severe	**-6.3** (-9.8,-2.9)	**-5.7** (-9.3,-2.1)	**-6.6** (-10.2,-3.0)	**-6.4** (-9.9,-2.8)
extreme	**-10.0** (-15.1,-4.8)	**-8.9** (-14.1,-3.8)	**-9.5** (-14.6,-4.3)	**-9.5** (-14.6,-4.4)
Family treatment -> depressive symptoms				
peace	Ref.	Ref.	Ref.	Ref.
pressure	**1.11** (0.38,1.84)	**1.06** (0.33,1.79)	**1.15** (0.42,1.87)	**1.11** (0.39,1.84)
aggressive R&G	0.64 (-0.39,1.67)	0.58 (-0.45,1.60)	0.61 (-0.42,1.63)	0.65 (-0.38,1.67)
aggressive R	**2.12** (0.80,3.45)	**2.10** (0.75,3.44)	**2.22** (0.88,3.56)	**2.19** (0.85,3.52)
severe	**2.74** (1.39,4.08)	**2.66** (1.13,4.00)	**2.83** (1.48,4.17)	**2.78** (1.44,4.13)
extreme	**2.95** (1.33,4.57)	**2.83** (1.19,4.48)	**2.93** (1.30,4.56)	**2.92** (1.29,4.55)

Family treatment -> current smoking				
peace	Ref.	Ref.	Ref.	Ref.
pressure	-0.09 (-0.45,0.28)	-0.06 (-0.43,0.31)	-0.11 (-0.48,0.26)	-0.09 (-0.47,028)
aggressive R&G	0.14 (-0.39,0.67)	0.15 (-0.38,0.69)	-0.09 (-0.45,0.62)	0.10 (-0.43,0.63)
aggressive R	-0.06 (-0.77,0.66)	-0.05 (-0.77,0.68)	-0.19 (-0.91,0.53)	-0.17 (-0.89,0.56)
severe	-0.20 (-0.87,0.47)	-0.16 (-0.83,0.52)	-0.29 (-0.98,0.39)	-0.26 (-0.94,0.42)
extreme	0.60 (-0.01,1.22)	**0.65** (0.04,1.25)	0.51 (-0.12,1.14)	0.54 (-0.09,1.17)
Family treatment -> recent heavy drinking				
peace	Ref.	Ref.	Ref.	Ref.
pressure	0.11 (-0.19,0.41)	0.13 (-0.18,0.43)	0.08 (-0.23,0.39)	0.09 (-0.22,0.40)
aggressive R&G	0.30 (-0.13,0.73)	0.33 (-0.11,0.76)	0.28 (-0.15,0.71)	0.29 (-0.15,0.72)
aggressive R	0.09 (-0.50,0.68)	0.10 (-0.50,0.69)	-0.04 (-0.63,0.55)	-0.03 (-0.62,0.56)
severe	-0.13 (-0.67,0.42)	-0.10 (-0.64,0.45)	-0.21 (-0.75,0.32)	-0.20 (-0.74,0.34)
extreme	**0.83** (0.29,1.36)	**0.87** (0.33,1.41)	**0.80** (0.23,1.36)	**0.81** (0.25,1.38)
Indirect/mediated effects				
Family treatment -> life satisfaction				
peace	Ref.	Ref.	Ref.	Ref.
pressure	0.1 (-0.4,0.7)	-0.2 (-0.7,0.2)	0.3 (0.0,0.6)	0.1 (-0.4,0.5)
aggressive R&G	**1.0** (0.1,1.8)	0.3 (-0.3,0.9)	0.4 (0.0,0.8)	**0.9** (0.2,1.5)
aggressive R	0.3 (-0.8,1.3)	0.0 (-0.7,0.7)	**0.7** (0.2,1.2)	0.5 (-0.4,1.3)
severe	0.4 (-0.5,1.4)	-0.2 (-0.8,0.5)	**0.8** (0.2,1.3)	0.5 (-0.3,1.3)
extreme	1.0 (-0.6,2.5)	-0.1 (-0.9,0.8)	0.5 (0.0,1.0)	0.5 (-0.4,1.5)
Family treatment -> depressive symptoms				
peace	Ref.	Ref.	Ref.	Ref.
pressure	-0.01 (-0.07,0.05)	0.03 (-0.04,0.10)	-0.05 (-0.11,0.01)	-0.02 (-0.10,0.07)
aggressive R&G	-0.10 (-0.23,0.03)	-0.04 (-0.13,0.05)	-0.07 (-0.16,0.02)	-0.11 (-0.23,0.00)
aggressive R	-0.03 (-0.14,0.09)	0.00 (-0.10,0.10)	-0.12 (-0.26,0.01)	-0.09 (-0.24,0.06)
severe	-0.05 (-0.16,0.06)	0.02 (-0.07,0.12)	-0.14 9-0.28,0.01)	-0.09 (-0.25,0.06)
extreme	-0.10 (-0.28,0.08)	0.01 (-0.11,0.13)	-0.09 (-0.21,0.03)	-0.08 (-0.22,0.07)
Family treatment -> current smoking				
peace	Ref.	Ref.	Ref.	Ref.
pressure	0.01 (-0.02,0.03)	-0.02 (-0.06,0.02)	**0.08** (0.00,0.15)	0.05 (-0.01,0.12)
aggressive R&G	0.03 (-0.02,0.08)	0.03 (-0.02,0.07)	**0.11** (0.00,0.21)	0.10 (-0.00,0.19)
aggressive R	0.01 (-0.03,0.05)	0.00 (-0.06,0.06)	**0.19** (0.05,0.32)	**0.16** (0.04,0.27)
severe	0.02 (-0.02,0.05)	-0.01 (-0.07,0.04)	**0.20** (0.08,0.33)	**0.17** (0.05,0.28)
extreme	0.03 (-0.04,0.10)	-0.01 (-0.07,0.06)	0.13 (-0.02,0.28)	0.09 (-0.03,0.22)
Family treatment -> recent heavy drinking				
peace	Ref.	Ref.	Ref.	Ref.
pressure	0.00 (-0.01,0.02)	-0.01 (-0.03,0.01)	**0.06** (0.00,0.11)	0.05 (-0.00,0.10)
aggressive R&G	0.03 (-0.01,0.07)	0.01,-0.02,0.05)	0.08 (0.00,0.16)	0.07 (-0.00,0.15)
aggressive R	0.01 (-0.03,0.04)	0.00 (-0.03,0.03)	**0.14** (0.04,0.25)	**0.13** (0.03,0.22)
severe	0.01 (-0.02,0.05)	-0.01 9-0.04,0.02)	**0.16** (0.06,0.26)	**0.14** (0.05,0.23)
extreme	0.03 (-0.03,0.09)	0.00 (-0.04,0.04)	0.10 (-0.01,0.21)	0.08 (-0.02,0.18)

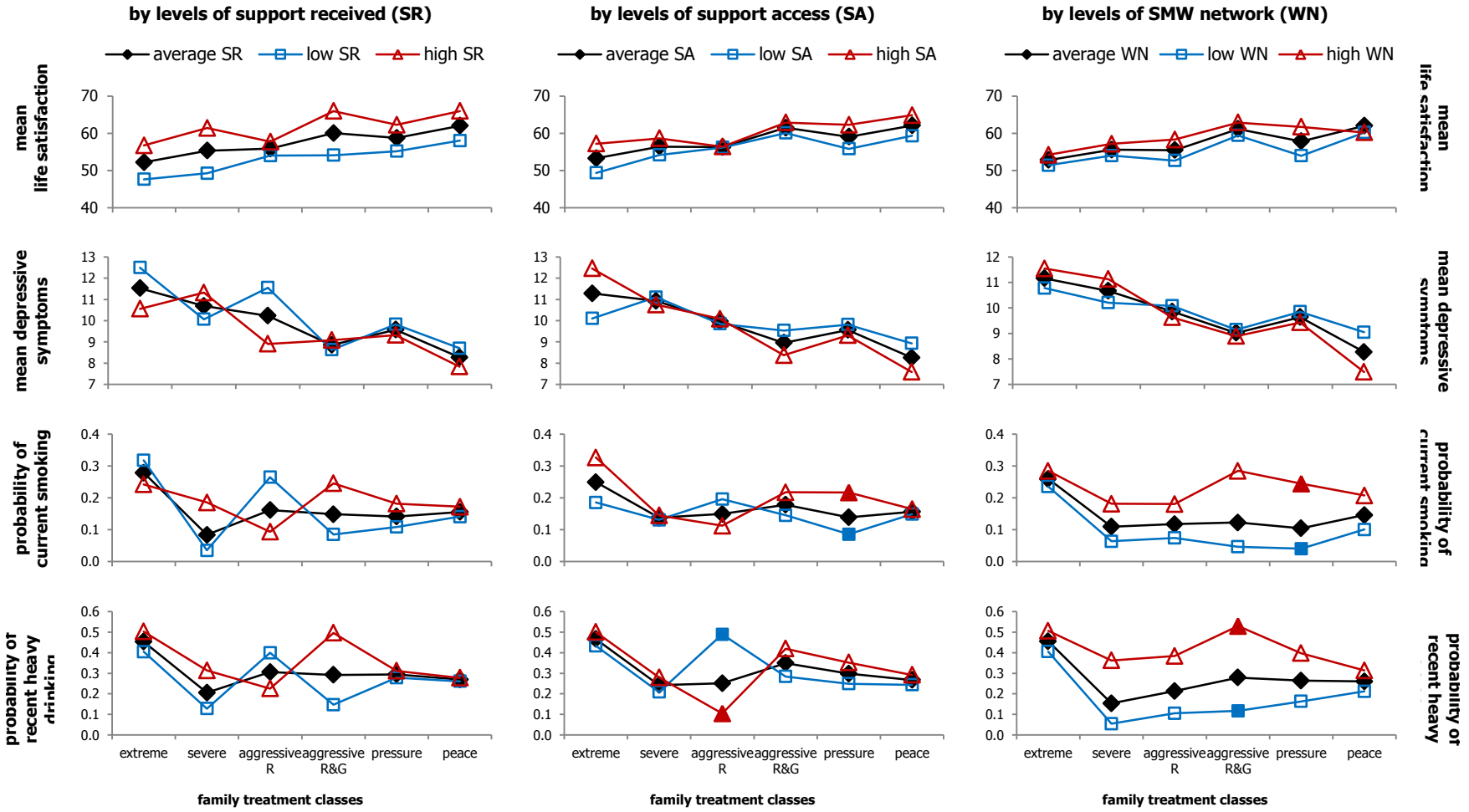
Notes: SR, SA and WN stand for perceived non-family support received, perceived availability of sexuality/stigma-related support, and connection to sexual minority women network. The single-mediator models used latent SR/SA/WN factor. The model combining SR, SA and WN used factor scores for SR, SA and WN. In all results, SR, SA and WN are on standard deviation units. Indirect effect is defined as the sum of all products of path A and path B coefficients between a family treatment class and an outcome. Bold face denotes statistically significant effects (at alpha=0.05). All models adjusted for age, sexual identity, religion, family economic status, urbanicity and geographical region in predicting the mediator(s) and the outcomes.

Figure 6.A.2. Results from moderation analysis using modal class



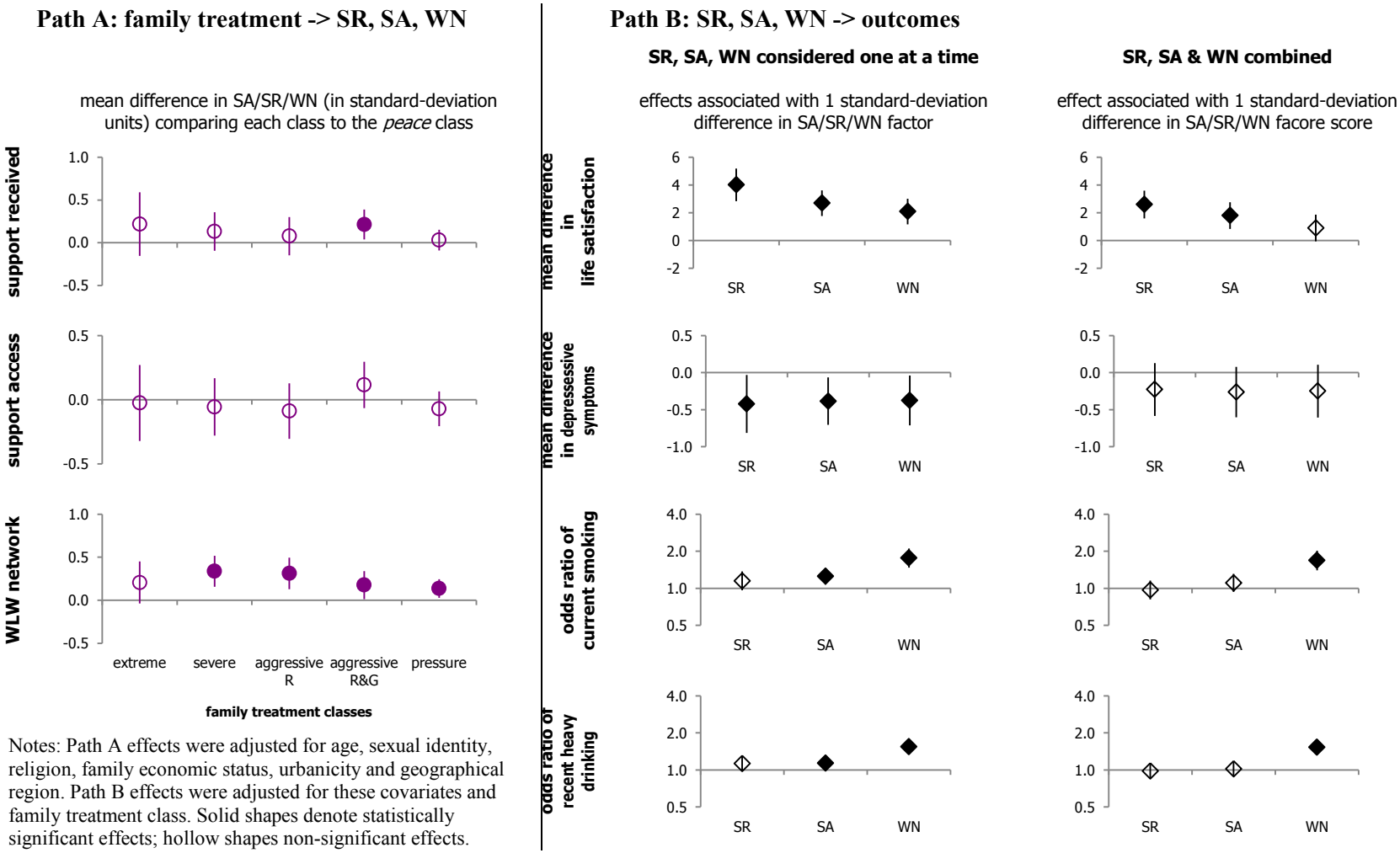
Notes: Age, sexual identity, religion, family economic status, urbanicity and geographical region were adjusted for and fixed at their means in estimating these means/probabilities. *Average, low* and *high* SR/SA/WN denote the mean and mean ± 1 SD of the factor. Lines connect estimates for the same SR/SA/WN level. A pair of solid (red) triangle and (blue) square for a family treatment class means that the class's interaction with the support/connection measure was statistically significant.

Figure 6.A.3. Results from moderation analysis using Vermunt correction method



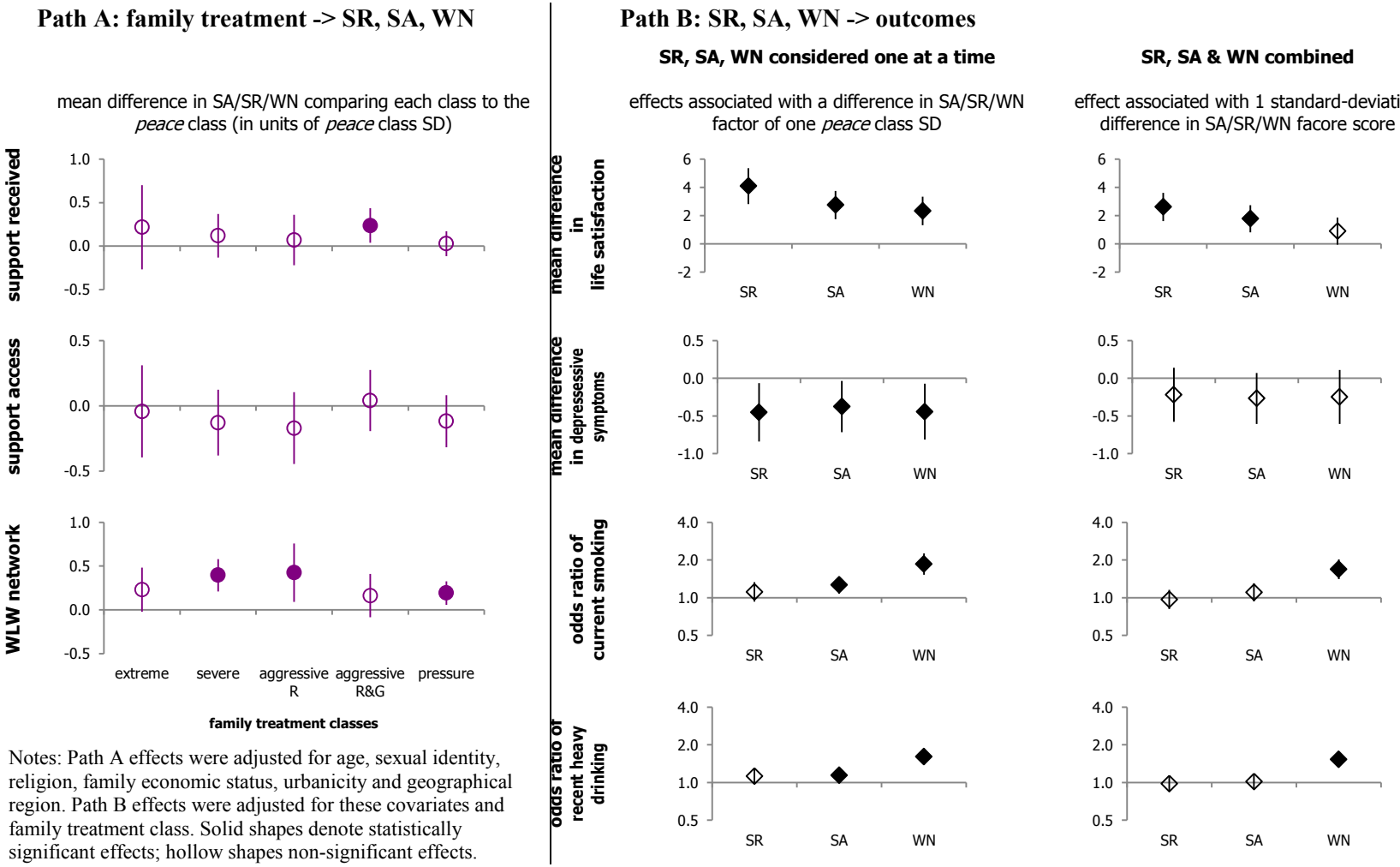
Notes: Age, sexual identity, religion, family economic status, urbanicity and geographical region were adjusted for and fixed at their means in estimating these means/probabilities. *Average, low* and *high* SR/SA/WN denote the levels of mean and mean ± 1 SD of the factor in the *peace* class. Lines connect estimates for the same SR/SA/WN level. A pair of solid (red) triangle and (blue) square for a family treatment class means that the class's interaction with the support/connection measure was statistically significant.

Figure 6.A.4. Results from mediation analysis using modal class



Notes: Path A effects were adjusted for age, sexual identity, religion, family economic status, urbanicity and geographical region. Path B effects were adjusted for these covariates and family treatment class. Solid shapes denote statistically significant effects; hollow shapes non-significant effects.

Figure 6.A.5. Results from mediation analysis using Vermunt correction method



Notes: Path A effects were adjusted for age, sexual identity, religion, family economic status, urbanicity and geographical region. Path B effects were adjusted for these covariates and family treatment class. Solid shapes denote statistically significant effects; hollow shapes non-significant effects.

CURRICULUM VITAE

TRANG QUYNH NGUYEN

PERSONAL INFORMATION

Birth date	7 November 1974
Birth location	Ha Noi, Viet Nam
Email	nqtrang.hanoi@gmail.com

EDUCATION

2014	**PhD, Health, Behavior and Society** Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
2014	**MHS, Biostatistics** Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
2001	**SM, Population and International Health** Harvard School of Public Health, Boston, MA
1995	**BA, Economics** Foreign Trade University, Ha Noi, Viet Nam

PROFESSIONAL POSITIONS

2009 – present	**Senior Researcher** Institute for Studies of Society, Economy and Environment (iSEE), Ha Noi, Viet Nam Focus: sexual minority health and rights
2010 – 2014	**Graduate Research Assistant** Department of Health, Behavior and Society Johns Hopkins Bloomberg School of Public Health, Baltimore, MD Topics: drug use, HIV care, violence
2012 – 2013	**Graduate Teaching Assistant** Department of Biostatistics and Department of Health, Behavior and Society Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
2008 – 2009	**Public Health Technical Consultant** Pact Vietnam, Ha Noi, Viet Nam Constella/Futures, Ha Noi, Viet Nam Family Health International, Ha Noi, Viet Nam STI and HIV/AIDS Prevention Center (SHAPC), Ha Noi, Viet Nam Topics: HIV prevention, care, and policy advocacy
2007 – 2008	**Senior Technical Advisor/Program Coordinator** Pact Vietnam, Ha Noi, Viet Nam Focus: HIV treatment and care

2006 – 2007 **Technical Advisor/Program Coordinator**
Pact Vietnam, Ha Noi, Viet Nam
Focus: HIV treatment and care

2005 – 2006 **Program Coordinator**
Pact Vietnam, Ha Noi, Viet Nam
Focus: HIV prevention, care and treatment

2004 – 2005 **Program Officer**
The Policy Project, The Futures Group, Ha Noi, Viet Nam
Focus: HIV law and policy, treatment access and treatment literacy, and community building with people living with HIV

2001 – 2003 **Research Consultant**
The Population Council, Ha Noi, Viet Nam
Oxfam Great Britain, Ha Noi, Viet Nam
Great Britain's Department for International Development (DfID), Ha Noi, Viet Nam
Viet Nam's Ministry of Agriculture and Rural Development, Ha Noi, Viet Nam
The World Bank, Ha Noi, Viet Nam
World Vision International, Ha Noi, Viet Nam
Topics: HIV prevention, youth reproductive health, disaster management, community infrastructure, primary education system strengthening

2001 – 2003 **Public Health Technical Consultant**
Pathfinder International, Ha Noi, Viet Nam
World Population Foundation, Ha Noi, Viet Nam
Topics: youth sexual and reproductive health, reproductive health services

1998 – 1999 **Project Development Officer**
Oxfam Great Britain, Ha Noi, Viet Nam

1998 **Program Assistant**
Oxfam Great Britain, Ha Noi, Viet Nam

1998 **Research Consultant**
Oxfam Hong Kong, Ha Noi, Viet Nam

1996 – 1998 **Project Officer and Principal Author**
Gender Education Group, Ha Noi, Viet Nam
Focus: research, writing and publishing sexual health books and booklets for youth

1996 – 1997 **Micro-credit Consultant**
Oxfam Belgium, Ha Noi, Viet Nam

HONORS AND AWARDS

2009 – 2014 **Sommer Scholarship**
Johns Hopkins Bloomberg School of Public Health

2013 **Doctoral Distinguished Research Award**
Department of Health, Behavior & Society
Johns Hopkins Bloomberg School of Public Health

2012	**Doctoral Distinguished Research Award** Department of Health, Behavior & Society Johns Hopkins Bloomberg School of Public Health
1999 – 2001	**Buffett Foundation Fellowship** The Population Council

PROFESSIONAL ACTIVITIES

2014 –	Member, Society for Prevention Research
2013 –	Member, American Public Health Association
2003 – 2006	Member, Viet Nam Public Health Association

PEER REVIEW SERVICES

2014	Prevention Science

JOURNAL ARTICLES

Published or In Press

Nguyen, T. Q., Weir, B. W., Pinkerton, S. R., Des Jarlais, D. C., & Holtgrave, D. R. Syringe exchange in the United States: A national level economic evaluation of hypothetical increases in investment. *AIDS and Behavior.* doi:10.1007/s10461-014-0789-9

Nguyen, T. Q., & Blum, R. W. Homosexuality tolerance among male and female Vietnamese youth: An examination of traditional sexual values, self-esteem and demographic/life experience. *Journal of Adolescent Health*. In press.

Under Review

Nguyen, T. Q., Bandeen-Roche, K., Masyn, K. E., German, D., Nguyen, Y. H., Vu L. K. C., & Knowlton, A. R. Negative family treatment of sexual minority women and transmen in Viet Nam: Latent classes and their predictors.

Nguyen, T. Q., Bandeen-Roche, K., Nguyen, Y. H., Vu L. K. C. & Knowlton, A. R. Negative family treatment and mental well-being, suicidality and substance use among sexual minority women and transmen in Viet Nam: An application of latent class with distal outcome model.

German, D., Nguyen, T. Q., & Colin F. Unprotected anal intercourse among heterosexual males and females at high risk for HIV.

Knowlton, A. R., Weir, B. W., Nguyen, T. Q., Wissow, L., Ripullon, K., McWilliams, J., Fields, J., Cochran, G., Gaasch, W. Pediatric use of emergency medical services: The role of chronic illnesses and behavioral health problems.

Mitchell, M. M., Robinson, A. C., Nguyen, T. Q., & Knowlton, A. R. Latent growth curve analyses of emotional support for informal caregivers of vulnerable persons with HIV/AIDS.

Mitchell, M. M., Robinson, A. C., Nguyen, T. Q., & Knowlton, A. R. Preferences for professional versus informal care at end of life amongst African American drug users with HIV/AIDS.

Mitchell, M. M., Robinson, A. C., Nguyen, T. Q., & Knowlton, A. R. Informal caregiver characteristics associated with viral load suppression among disadvantaged former or current drug users living with HIV/AIDS.

In Preparation

Nguyen, T. Q. Predictors of online survey dropout in Vietnamese sexual minority women and transmen: Examination of dropout proportion and time to dropping out.

Nguyen, T. Q., Bandeen-Roche, K., Bass, J. K., German, D., Nguyen, N. T. T., Nguyen, Y. H., Vu, L. K. C., & Knowlton, A. R. Validity and reliability of Vietnamese versions of the Patient Health Questionnaire (PHQ-9) and the Generalized Anxiety Disorder Scale (GAD-7); and prevalence and co-occurrence of depressive and generalized anxiety symptoms in a sample of non-heterosexual women and female-to-male transgender persons in Viet Nam.

Nguyen, T. Q., Bandeen-Roche, K., & Knowlton, AR. Social support and sexual minority network connection: Moderators or mediators of negative family treatment's effects on sexual minority women's mental well-being and substance use?

Nguyen, T. Q., Nguyen, Y. H., Vu, L. K. C., German, D., Bandeen-Roche, K., Nguyen, N. T. T., & Knowlton A. R. Development of the Vietnamese Internalized Homophobia Scale (IH-VN) for non-heterosexual women.

Nguyen, T. Q., & Stuart, E. A. Using propensity score matching to study sexual-orientation-related health disparities: Injury due to violence, substance use, and suicidality in Vietnamese youth.

Nguyen, T. Q., Conron, K., & Masyn, K. E. How much does violence exposure contribute to sexual-orientation-related disparities in youth mental health in Massachusetts? A mediation analysis.

Nguyen, T. Q. Smoking behavior in sexual minority women and transmen in Viet Nam: Effects of emotional distress, peer influence, self expression and the practice of gender.

Knowlton, A. R., Mitchell M. M., Robinson A. C., & Nguyen, T. Q. Informal caregiver proxy reports of care recipients' HIV treatment adherence: Relationship factors associated with concordance to recipients' viral suppression.

Knowlton, A. R., Nguyen, T. Q., Harrell, P. T., Mitchell, M. M., & Robinson, A. C. Pain predicting use of heroin and prescription opiates among vulnerable persons with HIV/AIDS.

Mitchell, M. M., Robinson, A. C., Nguyen, T. Q., & Knowlton, A. R. Caregiver and care recipient predictors of health-related quality of life among disadvantaged persons with HIV/AIDS.

Mitchell, M. M., Robinson, A. C., Nguyen, T. Q., & Knowlton, A. R. Caregiver and care recipient predictors of caregivers' quality of life among disadvantaged persons with HIV/AIDS.

RESEARCH REPORTS

Published

Institute for Studies of Society, Economy and Environment, & ICS Center. (2013). *Kết quả ban đầu từ khảo sát nữ yêu nữ [Preliminary Findings from the Survey of Women who Love Women]*. Ha Noi, Viet Nam: Institute for Studies of Society, Economy and Environment. (PI and reporter: Nguyen, T. Q.).

Nguyen, T. Q., Nguyen, N. T. T., Le, T. N. T., & Le, B. Q. (2010). *Sống trong một xã hội dị tính: Chuyện của 40 người nữ yêu nữ: Quan hệ với cha mẹ [Living in a Heterosexual Society: Stories from 40 Women who Love Women: Relationships with Parents]*. Ha Noi, Viet Nam: Institute for Studies of Society, Economy and Environment.

Nguyen, T. Q. (2004). *Community-based Infrastructure Project Management: The Lessons Learnt*. Ha Noi, Viet Nam: Oxfam Great Britain.

Nguyen, T. Q. (2002). *Seafarers and HIV Vulnerability: A Study of Fishermen and Passenger Boat Crewmembers in Hai Phong*. Hai Phong, Viet Nam: World Vision International.

Nguyen, T. P. Q., Nachuk, S., Houghton, G., Nguyen, T. Q., Than H. T. T. (1999). *Tra Vinh: A Participatory Poverty Assessment*. Ha Noi, Viet Nam: Oxfam Great Britain.

Unpublished

Nguyen, T. Q., & Duong, H. B. (2003). *Needs Assessment for Flood Preparedness and Mitigation in Dong Thap Province*. Report submitted to Oxfam Great Britain.

Pairaudeau, N., Nguyen, T. Q. and Nguyen, P. D. (2003). *Social assessment for Disaster Mitigation Project*. Report submitted to Vietnamese Ministry of Agriculture and Rural Development.

Nguyen, T. Q., Nachuk, S., & Vo, G. T. C. (2003). *Primary Teachers Project: Action Research in Tuy Hoa District, Phu Yen Province*. Report submitted to the World Bank.

Hoang, T. X., Bui H. D., Nguyen, T. Q., Pham, T. V., Hoang, T. X. (2003). *Lao Cai Participatory Poverty Assessment*. Report submitted to Department for International Development, Great Britain.

Nguyen, T. Q. (2001). *Hợp tác liên ngành và sự tham gia của cộng đồng trong chương trình phát triển sức khỏe do cộng đồng quản lý tại một huyện tỉnh Quảng Trị* [Intersectoral Collaboration and Community Participation in the Community-Managed Health Development Program in a District in Quang Tri province]. Report submitted to Quang Tri Department of Health.

Nguyen, T. Q. (2001). *Community Participation in Health in Rural Viet Nam: Barriers and Proposed Strategies*. Master Thesis, Department of Population and International Health, Harvard School of Public Health.

CONFERENCE PRESENTATIONS

Nguyen, T. Q., Conron, K., & Masyn, K. E. *How much of the sexual-orientation-related disparities in youth mental health can be explained by experience of victimization? A mediation analysis with causally defined effects*. Oral presentation at the Society for Prevention Research Annual Meeting, Washington DC, May 2014.

Nguyen, T. Q., & Stuart, E. A. *Health outcomes of non-heterosexual compared to heterosexual adolescents and young adults from a national survey in Viet Nam: Analysis using propensity score matching*. Poster presentation at the 141st APHA Annual Meeting, Boston MA, November 2013.

Mitchell, M., Knowlton, A., Robinson, A., & Nguyen T. Concordance of mental health ratings between people living with HIV/AIDS and their primary informal caregivers. Poster presentation at the 141st APHA Annual Meeting, Boston MA, November 2013.

Knowlton, A., Robinson, A., Mitchell, M., Nguyen, T., & Ropelewski, L. *Informal caregiver reports of care recipients' ART adherence: Implications for dyadic intervention*. Poster presentation at the 8th International Conference on HIV Treatment and Prevention Adherence, Miami FL, June 2013.

Knowlton, A., Robinson, A., Mitchell, M., Nguyen, T., & Ropelewski, L. *Medication assistance from family or friends is protective of effects of current substance use on virologic control: Implications for intervention*. Poster presentation at the 8th International Conference on HIV Treatment and Prevention Adherence, Miami FL, June 2013.

Nguyen, T. Q., Weir, B.W., Pinkerton, S. R., Des Jarlais, D. C., & Holtgrave, D. R. *It would be cost-saving to increase investment in syringe exchange in the United States*. Oral presentation at the International AIDS Conference, Washington DC, July 2012.

Knowlton, A., Nguyen, T., Chander, G., Keruly, J., Amsten, J., & Wissow, L. *Adherence to psychiatric medications is associated with viral suppression among IDUs on HAART*. Poster presentation at the 6th International Conference on HIV Treatment and Prevention Adherence, Miami FL, May 2011.

ANALYTIC SKILLS

Methods

Generalized linear models, multilevel models, longitudinal data analysis, survival analysis, complex survey analysis, propensity score matching, structural equation modeling, latent factor analysis, latent class models, mediation analysis, causal inference, Bayesian analysis, cost-effectiveness analysis

Software

R, MPlus, Stata (proficient); SAS, ArcGIS, UCINet, LaTeX, NVivo (working knowledge)

PUBLICATIONS AND PRODUCTS IN PUBLIC HEALTH PRACTICE

Book

Nguyen, T. Q., Efroymson, D., & Nguyen, L. K. (1998). *Trò chuyện về giới tính, tình yêu, sức khỏe [Let's Talk About Sexuality, Love and Health].* Ha Noi, Viet Nam: Women's Publishing House.

Nguyen, T. Q., Efroymson, D., & Nguyen, L. K. (2001; 2003; 2005 – later edition). *Trò chuyện về giới tính, tình yêu, sức khỏe [Let's Talk About Sexuality, Love and Health].* Ha Noi, Viet Nam: Youth Publishing House.

Booklets

Nguyen, T. Q., Efroymson, D., & Nguyen, L. K. (1998). *Tuổi mới lớn? Tuổi dậy thì? Tuổi hoa? [Puberty? Growing up? Blossoming?].* Ha Noi, Viet Nam: Women's Publishing House.

Nguyen, T. Q., & Efroymson, D. (1996; 1997). *Tuổi trẻ yêu đời biết về HIV/AIDS [Youth Who Love Life Know about HIV/AIDS]*. Ha Noi, Viet Nam: Women's Publishing House.

Training manual

Luu, T. T., Bui, P. N., & Nguyen, T. Q. (2003). *Giáo dục giới tính-tình dục và sức khỏe sinh sản [Sexuality and Reproductive Health Education]*. Ha Noi, Viet Nam: World Population Foundation; Center for Moral and Civic Education, Viet Nam Institute for Educational Sciences; V26, Ministry of Public Security; & KOTO Training Center.

Capacity building guide

Nguyen, T. Q. & Pact Vietnam Care and Treatment Team. (2011). *Hãy cùng chia sẻ và thảo luận [Let's Share and Discuss!]*. Ha Noi, Viet Nam: Pact Vietnam. (A set of discussion guides used by HIV community/home-based care teams as a form of continuing learning).

Counseling flipcharts

Nguyen, T.Q., Nguyen, N. T. M., Nguyen, H. M., Duong, T. T., & Dong, T.D. (2005). *Những điều cơ bản cần biết về HIV/AIDS [Basics to Know about HIV/AIDS]*. Ha Noi, Viet Nam: The Policy Project/Futures Group.

Nguyen, T.Q., Nguyen, N. T. M., Nguyen, H. M., Duong, T. T., & Dong, T.D. (2005). *Triệu chứng thường gặp ở người có HIV [Common Symptoms of People Living with HIV]*. Ha Noi, Viet Nam: The Policy Project/Futures Group.

Nguyen, T.Q., Nguyen, N. T. M., Nguyen, H. M., Duong, T. T., & Dong, T.D. *Bệnh thường gặp ở người có HIV [Common Illnesses Experienced by People Living with HIV]*. Ha Noi, Viet Nam: The Policy Project/Futures Group.

Nguyen, T.Q., Nguyen, N. T. M., Nguyen, H. M., Duong, T. T., & Dong, T.D. *Điều trị ARV [Antiretroviral Therapy].* Ha Noi, Viet Nam: The Policy Project/Futures Group.

TEACHING AND TRAINING EXPERIENCE

Teaching Assistanceships

2013 **Social and Behavioral Aspects of Public Health**
Instructor: Dr. Michelle Kaufman
Social Determinants of Health Summer Institute
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

2013 **Longitudinal Data Analysis**
Instructor: Dr. Michael Griswold
Epidemiology and Biostatistics Summer Institute
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

2012 **Structural Equation Modeling**
Instructors: Dr. Qian-Li Xue & Dr. Jeanie-Marie Leoutsakos, second term
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

2012 **Data Analysis Workshops I & II**
Instructor: Dr. John McGready, Epidemiology and Biostatistics Summer Institute
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Guest Lectures

2014 *An Introduction to Latent Class and Finite Mixture Modeling*
Couse: Data Analysis and Presentation in Social and Behavioral Science Research; instructor: Dr. Hee-Soon Juon
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

2013 *Using the Law to Protect the Public's Health: A Case Study*
Couse: Social and Behavioral Aspects of Public Health; instructor: Dr. Michelle Kaufman
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

2011 *Growing up Gay in Viet Nam*
Course: Adolescent Health; instructor: Dr. Robert Blum
Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Training Courses Delivered

2009 **Sexual Diversity and the Press with Sexual Minority Persons**
Trainers: Trang Q. Nguyen, Le Quang Binh, & Nguyen Thi Tam
Institute for Studies of Society, Economy and Environment (iSEE) and journalists from major Vietnamese print and online newspapers, Ha Long City, Viet Nam

2009 **Sexual and Gender Diversity**
Trainers: Trang Q. Nguyen, Le Quang Binh, Nguyen Thi Tam, & Tran Khac Tung
iSEE and moderators of websites for lesbian, gay, bisexual and transgender persons, Ho Chi Minh City, Viet Nam

2009 **Sexual Orientation and Sexual Identity**
Trainers: Trang Q. Nguyen & Le Quang Binh
World Population Foundation staff, Ha Noi, Viet Nam

2007 **Care and Support for HIV Orphans and Vulnerable Children**
Trainers: Trang Q. Nguyen, Nguyen Thanh Hang, & Vu Thi Thu Nga
Pact Vietnam and partner organizations, Ha Noi, Viet Nam

2007 **Home-based and Community-based Care for People Living with HIV**
Trainers: Trang Q. Nguyen & Vu Thi Thu Nga
Pact Vietnam and partner organizations, Ha Noi, Viet Nam

2006 **Results Framework and Monitoring and Evaluation**
Trainer: Trang Q. Nguyen
Pact's REACH program's global grantee organizations, Washington, DC

2005 **Monitoring and Evaluation**
Trainers: Lynn McCoy & Trang Q. Nguyen
Pact Vietnam and partner organizations, Ha Noi, Viet Nam

2004 **HIV/AIDS Basics**
Trainer: Trang Q. Nguyen
Oxfam Great Britain staff, Ha Noi, Viet Nam

2003 **Project Development for Youth-friendly Reproductive Health Services**
Trainers: Hoang Tu Anh & Trang Q. Nguyen
Pathfinder and partner organizations, Ha Noi, Viet Nam

2001 – 2002 **Teachers Training on Sexual and Reproductive Health I & II**
Trainers: Luu Thu Thuy, Trang Q. Nguyen, & Bui Phuong Nga
World Population Foundation and teachers from youth reform schools, Ha Noi, Viet Nam

GRANT WRITING/FUND RAISING AND GRANT REVIEW EXPERIENCE

Grant Writing/Fund Raising

2012 – 2013 at **Johns Hopkins Bloomberg School of Public Health**
Wrote and submitted grant proposal to the IASSCS-Ford Foundation Research Grant Program for the Global South, requesting support for research on sexual stigma and mental well-being among Vietnamese sexual minority women. Proposal not funded.

Wrote and submitted proposal on dissertation research to Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health. Funding granted: 2,000 USD.

Wrote and submitted proposal for dissemination of dissertation research findings Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health. Funding granted: 2,000 USD.

2009 at **Institute for Studies of Society, Economy and Environment**
Wrote parts of the grant proposal that led to the Ford Foundation's support of an intervention with journalists in Viet Nam to improve their knowledge about sexual and gender diversity, sensitize them to issues faced by sexual and gender minority people, and reduce stigma in the portrayal of lesbian, gay and transgender people. Funding amount: 150,000 USD.

2006 – 2008 at **Pact Vietnam**
Wrote parts of a bid that led to a USAID cooperative agreement for Pact Vietnam to take the role of grant management and technical assistance to a range of non-profit organizations involved in HIV prevention, care and treatment within the President's Emergency Program for HIV/AIDS Response (PEPFAR) in Viet Nam.

Annually, reviewed interventions, set priorities, negotiated with grantees and USAID technical officers in Viet Nam, and wrote sections of PEPFAR's annual country operating plans concerning Pact Vietnam's HIV care and treatment program component, which secured annual funding. Pact Vietnam's overall annual funding ranged from about 1,000,000 USD in FY2005/06 to 1,600,000 USD in FY2007/08, with over one third allocated to HIV care and treatment.

One component in the funding for FY2007/2008 was for a qualitative study of barriers to HIV medication adherence, conducted in collaboration with Dr. Hanh La at Tufts University. I led the process of proposing this research and negotiating with USAID's Viet Nam PEFAR team, and secured funding of 80,000 USD for the study.

2004 – 2005 at **The Policy Project, The Futures Group**
On behalf of a collaborating community based organization of people living with HIV (the Bright Futures Network), wrote and submit a funding proposal to the Ha Noi International Women's Coalition, which led to support for an income-generation project. Funding amount: 1,400 USD.

Wrote concept notes as part of an annual budget request for an ongoing USAID contract that led to the funding for two qualitative research projects on sexual and reproductive health needs of women living with HIV and subcultures of men who have sex with men. Funding amounts: 10,000 USD for each study.

Grant Review

2013 for **amfAR HIV Scholars Program** at Center for LGBT Health Research, Graduate School of Public Health, Pittsburgh University
Reviewed proposals for research on the health of men who have sex with men and transgender populations and made funding recommendations.

2007 at **Pact Vietnam**
Issued a request for proposals for interventions providing support to children infected with or affected by HIV/AIDS, assembled a team of reviewers, developed evaluation rubrics, participated in the review and decision making on the proposals, provided feedback to applicants and continuing support to the winners.