The Association of Sexual Identity, Attraction, and Behavior with Suicidal Ideation and Attempts among Adolescents

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June, 2010

A manuscript-based thesis submitted to McGill University in partial fulfillment of the requirements of the degree of Master of Science.

ACKNOWLEDGEMENTS

I would first like to express my appreciation to Dr. Richard Montoro and Dr. Karine Igartua for allowing me to use their study data and for their intellectual input on the two papers which are included in this manuscript-based thesis.

My most sincere appreciation goes to my researcher supervisor and my mentor Dr. Brett Thombs for his invaluable guidance, advice, supervision, and his generous support throughout my Master's studies. His broad knowledge as a scholar, conscientiousness as a researcher, and supportiveness as a professor make him my role model; and his sense of humor makes research even more fun.

I would also like to thank the Transcultural Psychiatry Department directed by Dr. Laurence Kirmayer at the Jewish General Hospital at McGill, for providing this friendly, informative, and intellectually stimulating setting to work in. I very much enjoyed the learning experience that I obtained from the courses, seminars, presentations, and discussions in the department.

My Master's studies were financially supported by the Social Sciences and Humanities Research Council of Canada for the first year and the Fonds de Recherche sur la Société et la Culture for the second year, for which I am very grateful.

CONTRIBUTIONS OF AUTHORS

Yue Zhao worked with Dr. Thombs to develop the research questions and analysis plan of the articles included in the thesis, conducted all data analyses, and wrote and revised the include articles and other thesis text.

Dr. Brett Thombs is Yue Zhao's Master's thesis supervisor. Dr. Thombs consulted with Ms. Zhao on study conception and design, data analyses and interpretation, and revision of the articles.

Drs. Richard Montoro and Karine Igartua were responsible for the acquisition of the data used in the studies, and contributed suggestions for revisions to the text of the articles.

TABLE OF CONTENTS

ABSTRACT

Sexual orientation is a multi-dimensional construct, including sexual identity, attraction, and behavior. Adopting this multidimensional perspective, this thesis is structured in two manuscripts that investigate adolescent sexual orientation among a community sample of students from 14 high schools in Montréal, Québec. Study I examined sexual orientation and youth suicidality. Study II assessed factors related to concordance versus discordance of sexual identity, attraction and behavior. Students were surveyed anonymously. The survey included items assessing sexual orientation, health risk behaviors, suicidality, demographics, and social attitudes towards homosexuality. Multiple logistic regression models were used in both studies. Study I found that compared to youth with heterosexual identity, attraction and behavior, adolescents with GLB and "unsure" identities were at greater risk of suicidality. However, youth who reported same-sex attraction or behavior, but a heterosexual identity, were not at elevated risk. Study II found that compared with heterosexual-identified students, students with GLB identities were more likely to be older and to report that school homosexual attitudes were ridiculed, accepted, or appreciated versus tolerated or ignored. Overall, results highlighted the potential importance of social environment in sexual minority youth mental health outcomes and identity development.

RÉSUMÉ

L'orientation sexuelle est une construction mentale multidimensionnelle qui inclut l'identité sexuelle, l'attirance physique et le comportement sexuel. Cette thèse adopte la perspective multidimensionnelle et étudie l'orientation sexuelle chez un échantillon d'étudiants adolescents dans 14 écoles secondaires à Montréal, Québec. La thèse est divisée en deux manuscrits. La première étude examine l'orientation sexuelle et la suicidalité chez les jeunes. La deuxième étude examine les facteurs reliés à la concordance ou discordance de l'identité sexuelle, l'attirance physique et le comportement sexuel. Des étudiants étaient interrogés anonymement. Le questionnaire incluait des points qui évaluaient l'orientation sexuelle, les comportements de santé à risques, la suicidalité, les données démographiques et les attitudes sociales envers l'homosexualité. Les deux études ont utilisé des modèles de régression logistiques multiples. La première étude a trouvé que les jeunes avec une identité Gay-lesbienne-bisexuel(le)s (GLB) et « incertaines » étaient plus à risque pour la suicidalité comparer aux jeunes avec une identité, une attirance et un comportement hétérosexuel. Cependant, les jeunes qui ont mentionné avoir des attirances physiques ou des comportements sexuels avec le même sexe mais une identité hétérosexuelles n'étaient pas plus à risque. La deuxième étude a trouvé que, comparé aux étudiants avec une identité hétérosexuelle, les étudiants avec une identité GLB étaient plus vieux et plus porté à mentionné que l'attitude de leur école envers l'homosexualité était ridiculisé, accepté, ou apprécié au lieu de toléré ou ignoré. En tout, les résultats soulignent l'importance de l'environnement sociale pour la santé mentale et le développement de l'identité sexuelle chez les jeunes minorités sexuelles.

INTRODUCTION

Over the past few decades, clinicians, health researchers, and public health officials have become increasingly concerned about the extent to which youth of gay, lesbian, or bisexual (GLB) sexual orientation are at high risk of health problems.[1-3] Compared to heterosexual youth, non-heterosexual youth engage in more health-risk behaviors, including tobacco, alcohol, and illegal substance,[4, 5] eating disorders,[2, 6] and risky sexual behaviour.[1] They are also at substantially elevated risk of depression and suicide ideation or attempt.[2, 3, 7] While homosexuality was once viewed as a mental disorder, the American Psychiatric Association ultimately recognized that homosexuality was not a psychiatric illness.[8] Research examining mental health problems among GLB people has emphasized the role of social stigmatization in creating a chronic social stress in the lives of sexual minorities.[9, 10] Persons who identify as GLB commonly report history of victimization and discrimination,[11, 12] particularly in adolescence.[13] Despite early research acknowledged that there are "multiple homosexualities," [14] homosexual-identified youths as a group are often compared with heterosexual-identified youths on various aspects, including suicidality, sexual risk behaviours, and harassment, for example. GLB youth, however, are not a homogenous "at risk" group. To propose that GLB youth are at risk for health problems does not mean that all GLB youths are at risk – some are and some are not.[15] Thus, there is an ongoing need to examine which sexual minority youths are at risk and to investigate the mechanisms underlying the association between homosexuality or GLB identity and mental health outcomes.

In addition to identifying youth risk for health problems, it is important to examine the process of adolescent sexual orientation development to improve our understanding of sexual orientation and to facilitate the conduct of more relevant research paradigms and the development of more appropriate health care services.[16] While sexual orientation is widely believed to be determined during early childhood,[17] some youth may consolidate their GLB identity only at the end of adolescence or early adulthood, when their access to autonomy allows them more choice in their environment.[18] During adolescence, dealing with emerging sexuality becomes a critical developmental task.[19] The normal difficulties associated with this developmental process are heightened for sexual minority youth who must simultaneously negotiate the stigma of homosexuality.[20] An emerging homosexual identity may be reflected in youths' sexual attractions, fantasies, cultural affiliations, as well as their behaviors. Existing research, however, does not address factors that may influence sexual identity development.

This Master's Thesis includes two research studies that examine sexual orientation and sexual identity among a community sample of high school students in Montréal, Québec. Chapter 1 provides a literature review of research on sexual orientation and mental health among adolescents. Chapter 2 is a published study (Zhao, Montoro, Igartua, & Thombs 2010)[21] that examined sexual minority adolescent subgroup differences in suicide ideation and attempts. Chapter 3 presents a second project investigating characteristics related to GLB identity among youth with same-sex sexual attraction or behavior. Chapter 4 presents conclusions and suggestions for future research.

"This world is not to be divided into sheep and goats. It is a fundamental of taxonomy that nature rarely deals with discrete categories. Only the human mind invents categories and tries to force facts into separated pigeonholes. The living world is a continuum in each and every one of its aspects. The sooner we learn this regarding human sexual behavior, the sooner we shall reach a sound understanding of the realities of sex."

Kinsey et al.[22]

CHAPTER 1: REVIEW OF THE LITERATURE

The Concept of Sexual Orientation

Sexual orientation has been defined as a consistent pattern of sexual arousal toward persons of the same and/or opposite gender.[23] As discussed by Kinsey and other scholars, sexual orientation encompasses various aspects of sexuality, including fantasy, conscious attractions, emotional and romantic feelings, and sexual behavior.[24-26] Sexual orientation, thus, is a multidimensional construct that is generally understood to include three key dimensions: sexual attraction/fantasy, identity, and behavior.[27, 28]

Sexual identity, attractions, and behavior may occur with different frequency and for different reasons. Sexual orientation is used as a general term which intends to reflect an individual's essential predisposition to experience sexual attractions for persons of the same-sex, the other sex, or both sexes.[29] In contrast, sexual identity refers to the self-concept an individual organizes around this predisposition,[30] typically labeled

heterosexual, gay, lesbian, or bisexual. These labels are not necessarily disclosed to others.[31] Whereas sexual orientation is presumed to be early developing and stable,[29] sexual identity is presumed to develop in adolescence or adulthood and to vary as a result of social, historical, and cultural factors.[32, 33] Sexual behavior, on the other hand, may reflect preferences or environmental factors, such as restricted access to a same-sex partner. Individuals may identify with a specific sexual minority group without expressing concordant behaviors. Thus, the identity, attraction, and behavior dimensions are distinct constructs and need to be considered separately.

Concordance and Discordance of Sexual Identity, Attraction, and Behavior

The relative heterosexual or homosexual direction of sexual identity, attraction, or behavior may be consistent or inconsistent with other dimensions to varying degrees. Researchers have noted that far fewer individuals identify as a sexual minority than claim same-sex attractions, fantasies, and behaviors.[16, 18, 34] Young men and women who eventually identify as GLB vary among themselves in terms of when and the degree to which they become aware of their same-sex attractions, label these attractions as GLB, engage in sexual behavior with same-sex individuals, and disclose their sexual orientation to others.[31] As a result, one adolescent may have predominant same-sex attraction but not engage in same-sex sexual behavior or identify as GLB, while another engages in same-sex behavior, experiences same-sex fantasies and attractions, and yet identifies as heterosexual. Still others may adopt a nonheterosexual identity because of a lack of

sexual attraction to either gender, even though some of them may have had sexual contacts.[16]

This multi-dimensional perspective has important implications for the categorization of sexual orientation. Previous research on sexual minority youths has implicitly assumed a categorical conceptualization of sexuality – that is, it assumes that a person is heterosexual, bisexual, or homosexual, and that only one type of homosexuality exists.[15] GLB identified youths as a group are often contrasted with heterosexual-identified youths on some domains, such as harassment experience, mental health outcomes, and sexual risk behaviors.[15] The relative heterosexual or homosexual direction of each dimension may be inconsistent with the others, however, thus defying such a simplified dichotomous classification of individuals. There is great variability within heterosexual-identified or homosexual-identified groups in terms of sexual attraction and behavior. Characterizing sexual minority youths as a homogeneous group conceals this diversity.

Although most researchers in this field agree sexual orientation is a multi-dimensional aspect of a person's sexuality, few studies include more than one indicator of sexual minority status. In addition, researchers disagree on the importance they assign to each dimension of orientation.[35] For example, is same-sex sexual behavior more indicative of orientation than acknowledging same-sex sexual attraction? If one identifies as heterosexual, has no sexual experience, and acknowledges attractions to both genders, which is the salient dimension? Determining the relative importance of these various dimensions becomes even more difficult with respect to adolescents because

some youth may be aware of same-sex attractions, but may not yet be sexually active or have not yet adopted a nonheterosexual identity.[35]

These dilemmas have challenged the study of sexual minority populations for decades.[36]

Measurement of Sexual Orientation

One of the methodological challenges in this field of study is measuring adolescent sexual minority status.[37]

The definition of GLB has been operationalized in an inconsistent manner,[37] and measurements of sexual orientation have varied widely across studies. The most common method used to assess adolescent sexual orientation is self-reported sexual identity.[36] A considerable proportion of adolescents with homosexual sexual attraction or contact, however, may not consider themselves homosexual or even bisexual.[15, 16] Other studies have used same-sex sexual behavior to assess sexual orientation. Similarly, however, many youths who consider themselves GLB may not have engaged, for a variety of reason, in actual same-sex behavior.[15]

Developmental psychologists have created multi-item scales to measure sexual orientation in research,[36, 37] but general adolescent health surveys include only one or two items, most often measuring just one dimension.[3, 4, 38] Any single measure will miss some adolescents at risk, or misrepresent them, depending on the health concern. If the only measure is gender of sexual partners, then, self-identified GLB youth who are distressed, depressed, or suicidal but have not had same-sex sexual behavior will not be included.

In addition, the use of different measures limits the ability to compare results across studies. For example, several studies of adolescents have reported that the prevalence of nonheterosexual sexual orientation varies widely depending on whether the definition includes identity, attraction, or behavior.[39-41] Studies examining physical and mental health outcomes may also provide different profiles for youths who are at risk, depending on who and what is being measured in investigations of adolescent sexual orientation and health risks.[1, 2, 7]

Given the challenges posed by measuring adolescent sexuality, this Thesis aims to examine sexual orientation more in detail, by assessing three dimensions: same-sex sexual identity, sexual attraction, and sexual behavior.

Sexual Orientation and Suicidality in Adolescence

Approximately one million adolescents attempt suicide per year.[42] Every 90 minutes one adolescent commits suicide, making it the third leading cause of death among adolescents.[42] GLB classification is a robust risk factor for suicidal ideation and attempt among youth. Nearly three decades of research have repeatedly documented the link between suicidality and sexual minority status among adolescents, showing significant higher rates of suicide attempts, in the range of 20% to 40%, among GLB adolescents.[2, 12, 43] Gibson reported a rate of GLB adolescent attempted suicide as high as 35%,[44] and Martin and Hetrick reported a rate of 21%.[45] In a study by D'Augelli and Hershberger, 42% of GLB adolescents reported a past suicide attempt.[46] These figures are considerably higher than estimates of high school suicide attempt rates, which range from 8%-13%.[47] Using a nationally representative data, Russell and Joyner found that

adolescents with a same-sex orientation were more than twice as likely to attempt suicide.[3]

GLB adolescents also report higher rates of risk factors for suicidal behavior, including depression, anxiety, alcohol and substance abuse,[4, 5] eating disorders,[2, 6] early sexual activity and more sexual partners,[1] being victims of violence,[48] family history of criminal offending, and family disruption.[4] Even after controlling for traditional risk factors, GLB sexual status is independently associated with suicidal ideation and attempt.[4, 7, 12, 43] The complexity of the associations between sexual orientation, suicide risk, and other health risk behaviors, however, have not been well understood.[1, 2]

In addition, studies of risk behaviors and mental health outcomes among nonheterosexual youth, typically assess either same-gender behavior or nonheterosexual identity based on a single question.[49] Because sexual orientation is a broader construct than same-gender sexual activity,[50] the use of sexual behavior alone to determine sexual orientation has led to some concern about classification bias in these studies.[51, 52] Indeed, Bailey suggested that this approach indexes not only sexual orientation but also, to some degree, impulsivity among those who are heterosexual but may engage in same-gender sexual behavior at times.[51] Similarly, if the only measure is gender of sexual partners, then, self-identified GLB youth who are distressed, depressed, or suicidal but have not had same-sex sexual behavior, or any other partnered sexual behavior, will not be included. Any single measure will miss some adolescents at risk, or misrepresent these adolescents.

Much more information is needed on the degree to which mental health and suicide risk vary across and within sexual minority statuses. As suggested by Eisengerg,[38]

as well as other researchers,[16] the next major step would include multiple measures in the same study. This would allow researchers to compare same-sex identities, behavior, and attractions as they are associated with suicide risk and other critical youth outcomes.[15, 38]

Characteristics Related to Concordance or Discordance of Sex Identity, Attraction, and Behavior among Sexual Minority Youth

Patterns of sexual orientation in human populations have long interested social scientists, epidemiologists, and sexologists. Sexual orientation, however, is a complex construct. There is great variability within heterosexual-identified or homosexual-identified groups in terms of sexual attraction and behavior.[15, 16] Research among adults[18, 53] and adolescents[16, 28] has found a high level of discordance between self-reported sexual identity and sexual attraction/fantasy and behavior. Many youth with same-sex attraction or behavior identify themselves as heterosexual.[15]

The discrepancy between adolescent's reported sexual orientation and their attractions, fantasies, and behaviors may reflect a reluctance to be labeled as homosexual.[18] The process of realizing that one is non-heterosexual and having to accept can actually narrow one's options further by taking away coping resources, such as friends and family.[43, 54, 55] Sexual identity development for GLB individuals has received considerable attention, resulting in numerous theoretical models.[56-58] These theoretical models, taken together, suggest a process of identity formation and integration as individuals strive for congruence. Identity formation consists of becoming aware of one's unfolding sexual orientation, beginning to question whether one may be GLB, and

exploring that emerging GLB identity by becoming involved in homosexual-related social and sexual activities.[56, 57] Perhaps external constraints, such as living in potentially discriminative communities as compared with more supportive communities retard or impede congruence.

Sexual identity adaptation can be influenced by other forces as well, such as culture, ethnic status, and religion.[59, 60] For example, some ethnic minorities who engage in same-sex relations may be less likely to identify as GLB,[61, 62] possibly because they identify homosexual culture with White society or because they fear an GLB identity would alienate them from family and community.[63] Racial-ethnic minority GLB people must negotiate the norms, values, and beliefs regarding homosexuality and bisexuality of both mainstream and minority cultures.[32, 64, 65] Cultural variation in these norms, values, and beliefs can be a major source of psychological stress. This problem may be an even greater challenge for racial-ethnic minority youth who are exploring their sexual identity and orientation. Multiple minorities status may complicate and exacerbate the difficulties these adolescents experience.[64]

Sensitivity to the complex dynamics associated with factors such as cultural values about gender roles, religious and procreative beliefs, and degree of individual and family acculturation is also important. All of these factors may have a significant impact on identity integration and psychological and social functioning.[65, 66]

This manuscript-based Master's Thesis describes two studies examining sexual orientation among a community sample of high school students. Study I will be presented in Chapter 2. It compared risk of suicide ideation and attempts separately in four groups of adolescents, controlling for traditional risk factors: (1) adolescents who reported

heterosexual identity without same-sex attraction/fantasy or behavior, (2) adolescents with GLB sexual identity, (3) adolescents with "unsure" sexual identity, and (4) adolescents with heterosexual identity and same-sex attraction/fantasy or behavior. Study II is presented in Chapter 3. It investigated the association between demographic characteristics and social attitudes and reporting of a non-heterosexual identity by comparing 2 groups of adolescents: (1) adolescents with same-sex attraction/fantasy or behavior who reported concordant GLB sexual identity and (2) adolescents with same-sex attraction/fantasy or behavior who reported discordant heterosexual identity.

CHAPTER 2 SUICIDAL IDEATION AND ATTEMPT AMONG ADOLESCENTS REPORTING “UNSURE” SEXUAL IDENTITY OR HETEROSEXUAL IDENTITY PLUS SAME-SEX ATTRACTION OR BEHAVIR: FORGOTTEN GROUPS?

This article was published in the February issue of the Journal of the American Acadamy of Child and Adolescent Psychiatry:

Zhao Y, Montoro R, Igartua K, Thombs BD. Suicidal ideation and attempt among adolescents reporting "unsure" sexual identity or heterosexual identity plus same-sex attraction or behavior: forgotten groups? *J Am Acad Child Adolesc Psychiatry.* 2010;49(2):104-113

TITLE PAGE

Suicidal Ideation and Attempt Among Adolescents Reporting "Unsure" Sexual Identity or Heterosexual Identity Plus Same-Sex Attraction or Behavior: Forgotten Groups?

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Affiliations and Acknowledgements: Ms. Zhao and Drs. Montoro, Igartua, and Thombs are with McGill University. Ms. Zhao and Dr. Thombs are also with the Jewish General Hospital. Drs. Montoro and Igartua are also with the McGill University Sexual Identity Centre of the McGill University Health Centre. This study was supported by funds from the McGill University Department of Psychiatry's One in Three Foundation awarded to Dr. Montoro. Ms. Zhao is supported by a Joseph-Armand Bombardier Canada Graduate Scholarship from the Social Science and Humanities Research Council of Canada. Dr. Thombs is supported by a New Investigator Award from the Canadian Institutes of Health Research and an Établissement de Jeunes Chercheurs award from the Fonds de la Recherche en Santé Québec.

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Word Count: 5,980

ABSTRACT

Objective: To compare risk of suicide ideation and attempts in adolescents with (1) GLB identity, (2) "unsure," identity, or (3) heterosexual identity with same-sex attraction/fantasy or behavior, to heterosexual identity without same-sex attraction/fantasy or behavior.

Method: 1,856 students aged 14 and older from 14 public and private high schools in Montréal, Québec, were surveyed anonymously. The survey included items assessing sexual orientation, health risk behaviors, and suicidal ideation and attempts. Multiple logistic regression models were used to assess risk factors for suicidal ideation and attempts.

Results: 58 (3.1%) adolescents identified as GLB, 59 (3.2%) as "unsure", and 115 (6.2%) as heterosexual with same-sex attraction/fantasy or behavior. Compared to heterosexually-identified youth without same-sex attraction/fantasy or behavior (N=1,624; 87.5%), in multivariable analyses, 12-month suicidal ideation was significantly higher for both GLB (odds ratio [OR]=2.31, 95% confidence interval [CI] 1.22 to 4.37) and "unsure" youth (OR=2.64, 95% CI 1.38 to 5.08). 12-month suicidal attempts were significantly elevated for GLB youth (OR=2.23, 95% CI 1.15 to 4.35), and high, although not statistically significant, for "unsure" youth (OR=1.61, 95% CI 0.77 to 3.36). Heterosexual identity with same-sex attraction/fantasy or behavior was not significantly associated with increased suicidal ideation (OR=1.26, 95% CI 0.76 to 2.08) or attempts (OR=1.03, 95% CI 0.55 to 1.91) in multivariable analyses.

Conclusion: Compared to heterosexual youth without same-sex attraction/fantasy or behavior, adolescents with GLB and "unsure" identities were at greater risk of suicidality. However, youth who reported same-sex attraction or behavior, but a heterosexual identity, were not at elevated risk.

Keywords: Sexual identity, suicidality, adolescence

INTRODUCTION

Gay, lesbian and bisexual (GLB) adolescents are at higher risk of mental health problems than their heterosexual peers. For GLB adolescents the lifetime rate of suicide attempt is between 20% and 40%,[2, 12, 43] approximately 2 to 6 times that of non-GLB adolescents.[1, 2, 67] GLB adolescents report higher rates of risk factors for suicidal behavior, including depression, anxiety, alcohol and substance abuse,[4, 5] eating disorders,[2, 6] early sexual activity and more sexual partners,[1] being victims of violence,[48] family history of criminal offending,[4] and family disruption.[4] Even after controlling for traditional risk factors, GLB sexual status is independently associated with suicidal ideation and attempt.[4, 7, 12, 43]

Sexual orientation includes 3 components: attraction/fantasy, behavior, and identity.[18] Some studies of suicidal ideation and attempt have compared youth with same-sex attraction or behavior to youth with opposite sex attraction and behavior,[3, 4, 38, 68] but most are based on self-report of sexual identity and compare adolescents with GLB identity to those with heterosexual identity.[36] Sexual orientation, however, is a complex construct, and there is great variability within heterosexual-identified or homosexual-identified groups in terms of sexual attraction and behavior. Many adolescents with same-sex attraction or behavior, for instance, identify themselves as heterosexual.[15, 69] It has been argued that adolescents with same-sex attraction/fantasy or behavior, but heterosexual identity, differ in important ways from both heterosexual-identified youth without same-sex attraction/fantasy or behavior and GLB-identified youth and that they may not be at risk for poor mental health outcomes.[15]

Existing studies, however, have not differentially assessed the risk of poor mental health outcomes among heterosexually-identified adolescents with same-sex attraction or behavior.[15]

Beyond this, existing studies of sexual identity and mental health outcomes have inconsistently addressed adolescents who reported being "unsure" about their sexual identity, even though as many or more adolescents report being "unsure" about their sexual identity as those reporting a GLB identity.[1, 2, 7, 18, 69] Many studies have not included an "unsure" response option.[4, 41, 43, 70, 71] When studies have included "unsure" identity as a response option, adolescents with "unsure" identity have been inconsistently categorized as GLB[7, 68] or heterosexual/non-GLB.[1, 2] One large study[1] reported results with adolescents unsure of their identity alternatively counted as non-GLB and excluded from analyses. These youth with "unsure" identity were classified as GLB in a subsequent study using the same data.[7] Adolescents who report "unsure" sexual identity may experience substantial turbulence in what is an important formative period in a young person's life. Youth who report "unsure" sexual identity may be exploring GLB identity. The formation of a GLB sexual identity is a different and possibly more complex process than heterosexual identity formation.[28] Sexual relationships and identity develop in a social context that establishes what the relationships mean and how they are socially supported or not supported. Adolescents exploring GLB sexual identity or who are otherwise unsure about their sexual identity are often without role models and accurate information. They may experience substantial confusion or fear of discrimination.[56] Little is known, however, about whether youth who are "unsure" of their sexual identity are at risk for poor mental health outcomes.

Assertions that GLB youth are at risk for suicidal behavior oversimplify sexual identity diversity, and no studies have specifically examined risk for suicide behavior among youth with heterosexual identity, but same-sex attraction/fantasy or behavior, or among youth with "unsure" sexual identity. The objective of this study was to compare risk of suicide ideation and attempts separately in four groups of adolescents, controlling for traditional risk factors: (1) adolescents who reported heterosexual identity without same-sex attraction/fantasy or behavior, (2) adolescents with GLB sexual identity, (3) adolescents with "unsure" sexual identity, and (4) adolescents with heterosexual identity and same-sex attraction/fantasy or behavior.

METHODS

Sample Design and Population

Participants in the study were students aged 14 and older, enrolled in grades 9-11 in either public or private schools in Montreal, Quebec, Canada. In 2004, principals from all public high schools in the French Montreal School Board (N=39), and English Montreal school board (N=20), as well as 2 private high schools were notified about the study by mail and then contacted by phone and invited to participate. The study purpose was stated as investigating suicide and its risk factors, including sexuality. The survey was approved and administered in 14 high schools (8 French school board, 4 English school board, 2 private). Within each school, principals selected 1-6 classrooms for survey administration based on logistical considerations and ensuring that no student would complete the survey more than once.

Prior to survey administration, parents were notified and given the opportunity to refuse their child's participation. Students were informed that the survey was anonymous, confidential, and voluntary. Classroom teachers were not permitted to circulate among students in order to ensure the confidentiality of responses. Questions about sexual orientation were scattered throughout the survey to make it less likely that classmates could identify which questions others were answering. In addition, students were provided with a cover sheet to conceal the answers they recorded on a scannable answer sheet. The study was approved by the Montreal General Hospital research ethics committee.

Demographic data and rates of sexual identity, attraction/fantasy, and behavior from this study have been published previously.[69]

Measures

The 2004 Quebec Youth Risk Behavior Survey (QYRBS) questionnaire was based on the 2001 Center for Disease Control Youth Risk Behavior Survey,[72] with additional items related to sexual orientation.

Sexual Identity, Attraction/Fantasy, and Behavior

Sexual identity was measured by the question, "Which of the following best describes you?" Responses were *heterosexual (straight)*, *gay or lesbian*, *bisexual*, and *not sure*. Sexual attraction/fantasy was measured by the question, "During your life, to whom have you been attracted to or had fantasies about, either romantically or sexually?" (*no romantic or sexual interest*, *female(s)*, *male(s)*, *female(s) and male(s)*). Sexual behavior was measured by the question, "During your life, who have you had sex with?" (*no*

sexual contact, *female(s)*, *male(s)*, *female(s) and male(s)*). The instructions indicated, "In this questionnaire, when we ask about sex, we are asking about any oral sex, vaginal sex, and/or anal sex that was consensual, which means that it was agreed upon by both people." Students were classified as (1) heterosexual without same-sex attraction/fantasy or behavior, (2) heterosexual with same-sex attraction/fantasy or behavior, (3) GLB, if they reported gay, lesbian, or bisexual identity, (4) and "unsure," if they reported "not sure" for sexual identity.

Depressed mood

Depressed mood was measured by asking, "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?" Responses were dichotomous.

Substance Use

Four substance use variables were examined, including current use (past 30 days) of cigarettes, alcohol, and marijuana and lifetime use of hard drugs (cocaine, heroin, illegal drug injection). Responses were measured with ordinal response options then dichotomized into positive and negative responses.

Fighting

Fighting behavior was assessed by the question, "During the past 12 months, how many times were you in a physical fight?" This variable was measured on an ordinal 5-point scale ranging from "0" to "8 times or more." Responses were recoded as dichotomous, no fighting vs. fighting 1 or more times.

Physical and Sexual Abuse

Physical abuse was measured by the item, "During the past 12 months, did any adult family member ever hit, slap, or physically hurt you on purpose?" Responses were dichotomous.

Sexual abuse was measured by the item, "During your life, has anyone ever had sexual contact with you against your will, including unwanted touching?" Response options were no or yes.

Sexual Risk Behaviors

Two sexual risk behavior variables were examined. Early initiation of sexual contact, which was the primary sexual risk behavior variable, was measured by the question, "How old were you when you had sex for the first time?" Responses were on a 5-point ordinal scale ranging from "never had sex" to "13 years old or younger". This variable was recoded into a 3-point ordinal scale: "never had sex," "14 years old and older," and "13 years old or younger," due to the relative small number of response in some categories. In addition, number of sexual partners was assessed by the question, "During the past 3 months, with how many people did you have sex?" Responses were on a 5-point ordinal scale, ranging from "never had sex" to "4 or more people." This variable was also recoded into a 4-point variable: "never had sex," "had, but not in the past 3 months," "1 person," and "more than 1 person," due to the very small number of students with "4 or more people."

Suicidal Ideation and Attempts

Suicidal ideation was assessed dichotomously with the item, "During the past 12 months, did you ever seriously consider attempting suicide?" Suicidal attempt was assessed with the item, "During the past 12 months, how many times did you actually

attempt suicide?" Original response options were ordinal, ranging from "0" to "6 or more times." Responses were dichotomized into "no suicide attempts" vs. "1 or more suicide attempts" due to the small number of respondents who reported multiple attempts.

Data Analyses

Heterosexual students without same-sex attraction/fantasy or behavior, GLB-identified students, "unsure" students, and heterosexual students with same-sex attraction/fantasy or behavior were compared on health risk factors and suicidal ideation and attempts using chi-square tests of significance for the overall comparison and Bonferroni-corrected comparisons between subgroup pairs. To maintain the family-wise error rate <.05, the Bonferroni-corrected α for each of the 6 subgroup comparisons for each variable was 0.0083.

The associations of demographic, risk factor, and sexual orientation variables with suicide ideation and attempts were assessed with multiple logistic regression models. Each model included the variables age, gender, race, depressed mood, drug use, fighting, physical and sexual abuse, sexual risk behaviors, and sexual orientation. Discrimination and calibration of the logistic regression models were assessed with the c-index and Hosmer-Lemeshow goodness-of-fit test statistic (HL), respectively.[73] The c-index for each model reflects the percentage of comparisons where adolescents with suicidal ideation or attempts had a higher predicted probability of ideation or attempts than adolescents without ideation or attempts for all possible pairs of adolescents in the sample, one of whom reported ideation/attempts and the other of whom did not report ideation/attempts. The HL is a measure of the accuracy of the predicted number of cases of suicide ideation or attempts compared to the number of students who actually reported ideation/attempts

across the spectrum of probabilities. A relatively large p value indicates that the model fits reasonably well. All of these analyses were conducted using SPSS version 16.0 (Chicago, IL), and all statistical tests were 2-sided with a $p < .05$ significance level.

In addition, post-hoc analyses for suicidal ideation and attempts that incorporated student clustering by schools were conducted using R version 2.7.0, and the mixed logistic models with random effects for school were compared to the originally specified logistic regression models.

RESULTS

Sample Characteristics

No parents refused permission, and all eligible students consented to participate. A total of 1,951 adolescents completed the QYRBS (mean of 5.4 classrooms and 139.4 students per school). Of these, 16 surveys were discarded due to mostly empty or defaced answer sheets. Of the 1,935 students whose data were recorded, 1,856 (95.9%) had complete data for all relevant items and were included in the present analyses. As shown in Table 1, 912 (49.1%) students were older than 16 years, 915 (49.3%) were females and 1197 (65.9%) were white. Based on data from the 2001 Canadian Census,[74] the sample closely replicated the percentage of females aged 15-19 living in Montreal (50.2%). A total of 1,624 students reported heterosexual identity without same-sex attraction/fantasy and behavior (87.5%); 58 students (3.1%) identified as GLB, 59 (3.2%) students identified as "unsure," and 115 (6.2%) students reported heterosexual identity but same-sex attraction/fantasy or behavior, including 33 (1.8%) who reported same-sex behavior.

Health Risk Behaviors

As shown in Table 1, of the 10 health risk factors (depressed mood, smoking, drinking, marijuana, hard drugs, fighting, physical abuse, sexual abuse, early sexual behavior, multiple sexual partners), compared to students with a heterosexual identity without same-sex attraction/fantasy or behavior, students with a GLB identity were significantly more likely to report depressed mood ($p<.001$), smoking ($p<.001$), drinking ($p<.001$), marijuana use ($p<.001$), use of hard drugs ($p<.001$), physical abuse, sexual abuse ($p<.001$), earlier sexual behavior ($p<.001$), and more sexual partners ($p<.001$). Students with an "unsure" identity were more likely than students with a heterosexual identity without same-sex attraction/fantasy or behavior to report smoking ($p<.001$), use of hard drugs ($p<.001$), sexual abuse ($p<.001$), and more sexual partners ($p=.006$). Students with a heterosexual identity and same-sex attraction/fantasy or behavior were more likely to report smoking ($p<.001$), use of hard drugs ($p=.004$), physical abuse ($p<.001$, sexual abuse ($p<.001$), earlier sexual behavior ($p<.001$), and more sexual partners ($p<.001$) compared to students with a heterosexual identity without same-sex attraction/fantasy or behavior.

Suicidal Ideation and Attempts

A total of 313 (16.9%) respondents reported having seriously considered attempting suicide and 177 (9.5%) respondents reported 1 or more suicide attempts within the past 12 months. As shown in Table 2, on an unadjusted basis, students with a GLB identity were almost 5 times more likely than students with heterosexual identity without same-sex attraction/fantasy or behavior to report suicidal ideation (OR=4.80, 95% CI=2.81 to 8.21, $p<.001$); students with an "unsure" identity were more than 3 times as likely to report suicide ideation (OR=3.51, 95% CI=2.04 to 6.06, $p<.001$); and students with a heterosexual identity with same-sex attraction/fantasy or behavior, were more than

twice as likely to report suicide ideation (OR=2.09, 95% CI=1.35 to 3.24, p=.001). In multivariable analysis, after adjusting for age, gender, depressed mood, drug use, fighting, physical and sexual abuse, and sexual risk behaviors, students with a GLB identity were more than twice as likely to report suicide ideation (OR=2.31, 95% CI=1.22 to 4.37, p=.010); youth with an "unsure" identity were almost 3 times more likely (OR=2.64, 95% CI=1.38 to 5.08, p=.004); and students with a heterosexual identity and same-sex attraction/fantasy or behavior, did not report a significantly higher rate of suicide ideation (OR=1.26, 95% CI=0.76 to 2.08, p=.373). Based on the number of students with a heterosexual identity and same-sex attraction/fantasy or behavior, there was 80% power to detect an OR of approximately 2.0 or greater. Female gender, depressed mood, physical and sexual abuse were also significantly associated with 12-month suicide ideation ($p<.05$). The final model had good discriminative power (c-index=.81) and calibration (p=.881 for the HL statistic). There were no significant differences in suicidal ideation between students with GLB and "unsure" identities in bivariable or multivariable analyses.

As shown in Table 3, compared to youth with heterosexual identity without same-sex attraction/fantasy or behavior, in unadjusted analyses, both students with a GLB (OR=4.65, 95% CI=2.57 to 8.41, $p<.001$) and an "unsure" identity (OR=2.86, 95% CI=1.48 to 5.53, $p<.05$) were significantly more likely to report at least one suicide attempt. Students with a heterosexual identity and same-sex attraction/fantasy or behavior did not report a significantly higher rate of suicide attempts (OR=1.68, 95% CI=0.95 to 2.98, p=.074). In multivariable analysis, both GLB (OR=2.23, 95% CI =1.15 to 4.35, p=.018) and "unsure" identities (OR=1.61, 95% CI=0.77 to 3.36, p=.203) were associated

with elevated risk of suicide attempt, although this was not significant for students with an "unsure" identity. Based on the number of students with "unsure" identity, there was 80% power to detect an OR of approximately 2.1 or greater. Students with a heterosexual identity and same-sex attraction/fantasy or behavior were not at greater risk of suicide attempts (OR=1.03, 95% CI=0.55 to 1.91, p=.926). Female gender, depressed mood, fighting, and physical abuse were also significant independent predictors of 12-month suicide attempts ($p<.05$). The model had good discriminative power (c-index=.77) and calibration (p=.121 for the HL statistic). Students with a GLB or an "unsure" identity were not significantly different from each other in suicidal attempts in unadjusted or adjusted analyses.

For both suicidal ideation and attempts, models with an interaction term between age and sexual identity category were tested post-hoc. The interaction term was not statistically significant nor did it improve model fit in either case. There were no substantive changes in model parameters for either the suicidal ideation or suicidal attempts models when student clustering by schools was incorporated. The fit of the models did not improve with nesting by schools and the estimated standard deviation for the random effect of school was essentially equal to zero in both models.

DISCUSSION

This was the first study to assess risk of suicide ideation and attempt between adolescents with an "unsure" sexual identity, those with a GLB identity, those with a heterosexual identity and same-sex attraction/fantasy or behavior, and those with a heterosexual identity without same-sex attraction/fantasy or behavior. In multivariable

analyses, youth with a GLB identity and youth with an "unsure" identity were at 2-3 times higher risk for suicidal ideation than youth with a heterosexual identity without same-sex attraction/fantasy or behavior, whereas youth with a heterosexual identity with same-sex attraction or behavior were not at significantly increased risk. Adolescents with a GLB identity also had significantly higher odds of suicide attempt (OR=2.2), and youth with an "unsure" identity had elevated, although not statistically significant risk (OR=1.6). The odds of suicide attempt were not elevated for youth with a heterosexual identity and same-sex attraction or behavior compared to youth with a heterosexual identity without same-sex attraction/fantasy or behavior. There were no statistically significant differences in risk estimates for GLB versus "unsure" adolescents for suicide ideation or attempts.

This is also the first study addressing the issue that same-sex attraction or behavior is not associated with increased suicidal ideation or attempts. Many studies have shown that youth with GLB status are at substantially greater risk of suicide ideation and attempt than non-GLB youth. Sexual minority youths, however, do not comprise a homogeneous population, but rather are a diverse collection of individuals with great variability on important characteristics, including the nature of their sexual orientation.[15] The results of this study demonstrate that simply dichotomizing sexual orientation into GLB versus heterosexual and concluding that GLB youth are at risk of mental health problems may not accurately capture the nature of risk related to GLB status. Indeed, whereas both students with GLB and "unsure" sexual identities had increased risk of suicidality, risk was not elevated among students with heterosexual identity and same-sex attraction or behavior in multivariable analyses. These findings suggest that same-sex attraction or

behavior per se is not likely the driving force behind the increased risk seen in youth with GLB and unsure identities.

As identity defines the individual in a social context, it is likely that anti-homosexual bias (homophobia) is an important mediating factor for increased suicidal risk among youth with non-heterosexual identity, especially in adolescent settings.[26,27] GLB adolescents who have come out are visible in a gay-negative environment and can be subject to discrimination and violence. Adolescents with a GLB or "unsure" identity who have not shared this with others, nonetheless view society's anti-gay behaviors and may conclude that this is what awaits them. Internalized homophobia, which refers to negative feeling towards oneself because of homosexuality, may be another factor making youth more vulnerable to suicidality.[11] Measuring distress among non-heterosexual adolescents may also be catching these youth at their most vulnerable, when their own internalized homophobia is high and their opportunities for socialization with peers is low, relative to adulthood.

Identity development among sexual minority youth is not a homogeneous process. Many youth consolidate their GLB identity only at the end of adolescence or early adulthood, when their access to autonomy allows them more choice in their environment. For example, Igartua and colleagues' study using the same data has found that older students were somewhat more likely to identify as GLB or unsure than younger students.[69] Given the average age of our sample (15.9 years), it is possible that these young GLB and unsure youth are different than those that develop non-heterosexual identities later in life. Identification of the characteristics that lead a youth to express a

non-heterosexual identity in a dangerous social climate, rather than delay it to a safer time, may help clarify the interplay between environmental and individual factors.

The implications of this study are multiple. The first is the need to recognize that research that divides sexuality into binary groups (e.g., GLB versus heterosexual identity; same-sex attraction or behavior versus opposite-sex attraction or behavior) may not accurately represent key risk factors. There are important differences between youth with "unsure," GLB, heterosexual identity without same-sex attraction/fantasy or behavior, and heterosexual identity with same-sex attraction/fantasy or behavior. The second is for the clinician. In an adverse environment, an adolescent's hesitation to express a non-heterosexual identity may be protective; evaluation of both the adolescent and the environment may more accurately guide discussions and the understanding of how an adolescent's sexual identity development may impact mental health outcomes. The final implication relates to the need to understand the ways our schools, institutions and families support anti-gay sentiment, as this is likely a powerful source of increased suicidal ideation and attempt in vulnerable youth.[12] The mediating effects of social support need further investigation to better understand the mechanisms underlying the link between homosexual orientation and suicidality.

There are limitations that should be considered in interpreting the results of this study. Sampling was not done randomly, and it is possible that bias could have been introduced and that schools with more open attitudes towards non-heterosexual students were oversampled. On the other hand, the sample was representative of the Montreal population in terms of language, race/ethnicity and gender. Another strength was the high rate of participation response. This was likely due to the study passive consent method, in

which parents were asked to notify the school if their children did not have their permission to complete the anonymous survey.

The sample sizes of both self-identified GLB and "unsure" youth were small in the study. Some associations of GLB and "unsure" identities with health risk factors might not have been statistically significant due to limited statistical power. Furthermore, because of relatively small numbers, it was not possible to analyze gender differences, to separately analyze data from students who identified as bisexual versus gay and lesbian or to conduct mediator/moderator analyses. Students who identified as GLB were more likely to be at least 16 years old, but the relatively small number of students in subgroups did not permit exploration of interactions between sexual orientation categories and age. In addition, transgendered identity, gender non-conforming behavior, bullying, and parental rejection were not addressed in this study. Moreover, the study was cross-sectional and not prospective, and thus could not address questions related to the stability of sexual patterns over time or the eventual identity outcome of students who were "unsure" at the time of survey. Indeed, other studies have reported that, among adolescents, there is substantial variability across time in sexual identity, attraction/fantasy, and behavior.[15] Finally, although we distinguished between GLB and "unsure" youth, outcomes for these groups were similar, and 21.1% of the GLB group reported exclusively opposite-sex attraction/fantasy. This raises questions about the degree of differentiation between these groups during adolescence, but alternatively may reflect limitations in single-item assessments of dimensions of sexual orientation.

CONCLUSION

This is the first study to examine risk of suicide ideation and attempt among adolescents who reported heterosexual identity and same-sex attraction/fantasy or behavior and among adolescents with "unsure" sexual identity. Sexual minority youth are not a homogeneous group, but vary among themselves in important ways. Adolescents with a GLB sexual identity or an "unsure" sexual identity were at elevated risk of suicidal ideation and attempt. However, youth who identified themselves as heterosexual, whether or not they had same-sex attraction/fantasy or behavior were not at risk. These findings suggest that same-sex attraction/fantasy or behavior per se do not increase suicidality. Studies examining the link between anti-gay sentiment and suicidality, as well as individual factors that lead to non-heterosexual identity expression in an adverse environment are needed.

REFERENCES

1. Hershberger SL, D'Augelli AR. The impact of victimization on the mental health and suicidality of lesbian, gay, and bisexual youths. *Dev Psychol.* 1995;31:65-74.

2. Remafedi G, French S, Story M, Resnick MD, Blum R. The relationship between suicide risk and sexual orientation: results of a population-based study. *Am J Public Health.* 1998;88:57-60.

3. Safren SA, Heimberg RG. Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. *J Consult Clin Psych.* 1999;67:859-866.

4. Blake S, Ledsky R, Lehman T, Goodenow C, Sawyer R, Hack T. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: the benefits of gay-sensitive HIV instruction in schools. *Am J Public Health.* June 1, 2001;91:940-946.

5. Garofalo R, Wolf RC, Kessel S, Palfrey J, DuRant RH. The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. *Pediatrics.* 1998;101:895-902.

6. Fergusson DM, Horwood LJ, Beautrais AL. Is sexual orientation related to mental health problems and suicidality in young people? *Arch Gen Psychiatry.* 1999;56:876-880.

7. Sandfort TGM, de Graaf R, Bijl RV, Schnabel P. Same-sex sexual behavior and psychiatric disorders: findings from the netherlands mental health survey and incidence study (NEMESIS). *Arch Gen Psychiatry.* 2001;58:85-91.

8. Strong SM, Williamson DA, Netemeyer RG, Geer JH. Eating disorder symptoms and concerns about body differ as a function of gender and sexual orientation. *J Soc Clin Psychol.* 2000;19:240-255.

9. DuRant RH, Krowchuk DP, Sinal SH. Victimization, use of violence, and drug use at school among male adolescents who engage in same-sex sexual behavior. *J Pediatr.* 1998;133:113-118.

10. Garofalo R, Wolf RC, Wissow LS, Woods ER, Goodman E. Sexual orientation and risk of suicide attempts among a representative sample of youth. *Arch Pediatr Adolesc Med.* 1999;153:487-493.

11. Remafedi G, Resnick M, Blum R, Harris L. Demography of sexual orientation in adolescents. *Pediatrics.* 1992;89:714-721.

12. Eisenberg ME, Resnick MD. Suicidality among gay, lesbian and bisexual youth: the role of protective factors. *J Adolescent Health.* 2006;39:662-668.

13. Noell JW, Ochs LM. Relationship of sexual orientation to substance use, suicidal ideation, suicide attempts, and other factors in a population of homeless adolescents. *J Adolescent Health.* 2001;29:31-36.

14. Russell ST, Joyner K. Adolescent sexual orientation and suicide risk: evidence from a national study. *Am J Public Health.* 2001;91:1276-1281.

15. Chung YB, Katayama M. Assessment of sexual orientation in lesbian/gay/bisexual studies. *J Homosex.* 1996;30:49-62.

16. Igartua K, Thombs DB, Burgos G, Montoro R. Concordance and discrepancy in sexual identity, attraction, and behaviour among adolescents. *J Adolesc Health.* In press.

17. Savin-Williams RC. A critique of research on sexual-minority youths. *Journal of Adolescence.* 2001;24:5-13.

18. Cochran SD, Sullivan JG, Mays VM. Prevalence of mental disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. *J Consult Clin Psych.* 2003;71:53-61.

19. McCabe SE, Boyd C, Hughes TL, d'Arcy H. Sexual identity and substance use among undergraduate students. *Substance Abuse.* 2003;24:77-91.

20. Wichstrom L, Hegna K. Sexual orientation and suicide attempt: A longitudinal study of the general norwegian adolescent population. *J Abnorm Psychol.* 2003;112:144-151.

21. Rosario M, Schrimshaw EW, Hunter J, Braun L. Sexual identity development among lesbian, gay, and bisexual youths: consistency and change over time. *J Sex Res.* 2006;43:46-58.

22. Cass VC. Homosexuality identity formation. *J Homosex.* 1979;4:219-235.

23. Brener ND, Collins JL, Kann L, Warren CW, Williams BI. Reliability of the Youth Risk Behavior Survey Questionnaire. *Am J Epidemiol.* 1995;141:575-580.

24. Hosmer DW, Lemeshow S. Applied logistic regression. 2nd ed: New York: John Wiley & Sons; 2000.

25. Statistics Canada. 2001 Community Profiles. Statistics Canada Catalogue [*93F0053XIE*]. 2002.

26. Kitts R. Gay adolescents and suicide: Understanding the association. *Adolesence.* 2005;40:621-628.

27. Mays VM, Cochran SD. Mental health correlates of perceived discrimination among lesbian, gay, and bisexual adults in the United States. *Am J Public Health.* 2001;91:1869-1876.

28. Herek GM, Cogan JC, Gillis JR, Glunt EK. Correlates of internalized homophobia in a community sample of lesbians and gay men. *J Gay Lesbian Med Assoc.* 1998;2:17-26.

TABLES

Table 2.1. Demographics, Health Risk Factors, and Suicide Ideation and Attempt

Variable	Total N=1856 n (%)	Heterosexual Identity Without Same-Sex Attraction or Behavior N=1624 n (%)	Gay, Lesbian, or Bisexual (GLB) Identity N=58 n (%)	Unsure Identity N=59 n (%)	Heterosexual Identity With Same-Sex Attraction or Behavior N=115 n (%)	p value
Age ≥16 years	912 (49.1)	786 (48.4)[a]	39 (67.2)[a]	26 (44.1)	61 (53.0)	.026
Female	915 (49.3)	757 (46.6)[a,c]	38 (65.5)[a]	35 (59.3)[c]	85 (73.9)	<.001
White[h]	1197 (65.9)	1041 (65.4)	41 (73.2)	29 (51.8)[f]	86 (76.1)[f]	.009
Depressed Mood	641 (34.5)	528 (32.5)[a]	36 (62.1)[a]	26 (44.1)	51 (44.3)	<.001
Smoking	441 (23.8)	338 (20.8)[a,b,c]	27 (46.6)[a]	24 (40.7)[b]	52 (45.2)[c]	<.001
Drinking	1020 (55.0)	873 (53.8)[a]	45 (77.6)[a,d]	30 (50.8)[d]	72 (62.6)	.001
Marijuana	523 (28.2)	431 (26.5)[a]	29 (50.0)[a]	22 (37.3)	41 (35.7)	<.001
Hard Drugs	139 (7.5)	100 (6.2)[a,b,c]	10 (17.2)[a]	14 (23.7)[b]	15 (13.0)[c]	<.001
Fighting	604 (32.5)	520 (32.0)	24 (41.4)	26 (44.1)	34 (29.6)	.098
Physical Abuse	359 (19.3)	287 (17.7)[a,c]	21 (36.2)[a]	16 (27.1)	35 (30.4)[c]	<.001
Sexual Abuse	299 (16.1)	221 (13.6)[a,b,c]	21 (36.2)[a]	19 (31.7)[b]	38 (33.0)[c]	<.001
First Sexual Behavior[g]		[a,c]	[a,d]	[d]	[c]	
Never	1063 (57.3)	972 (59.9)	12 (20.7)	31 (52.5)	48 (41.7)	<.001
≥14 years	538 (29.0)	457 (28.1)	29 (50.0)	13 (22.0)	39 (33.9)	
≤13 years	255 (13.7)	195 (12.0)	17 (29.3)	15 (25.4)	28 (24.3)	
Sexual Partners[g,h]		[a,b,c]	[a,d,e]	[b,d]	[c,e]	
Never had	1060 (57.2)	967 (59.6)	12 (20.7)	32 (54.2)	49 (42.6)	<.001

0 last 3 months	233 (12.6)	197 (12.1)	7 (12.1)	8 (13.6)	21 (18.3)	
1 in last 3 months	428 (23.1)	361 (22.3)	28 (48.3)	10 (15.3)	30 (26.1)	
>1 in last 3 months	133 (7.2)	97 (6.0)	11 (19.0)	10 (16.9)	15 (13.0)	
Sexual Attraction[g,h]		[a,b,c]	[a,e]	[b,f]	[c,e,f]	
No interest	124 (6.7)	109 (6.7)	3 (5.3)	11 (18.6)	1 (0.9)	<.001
Opposite sex only	1560 (84.4)	1509 (93.3)	12 (21.1)	20 (33.9)	19 (16.5)	
Same sex only	46 (2.5)	0 (0.0)	5 (8.8)	3 (5.1)	38 (33.0)	
Bisexual	119 (6.4)	0 (0.0)	37 (64.9)	25 (42.4)	57 (49.6)	
Sexual Behavior[g,h]		[a,b,c]	[a,d]	[b,d]	[c]	
No contact	1022 (55.3)	936 (57.8)	12 (21.1)	28 (47.5)	46 (40.0)	<.001
Same sex only	19 (1.0)	0 (0.0)	5 (8.8)	4 (6.8)	10 (8.7)	
Opposite sex only	756 (40.9)	682 (42.2)	19 (33.3)	19 (32.2)	36 (31.3)	
Bisexual	52 (2.8)	0 (0.0)	21 (36.8)	8 (13.6)	23 (20.0)	
Suicide Ideation	313 (16.9)	235 (14.5)[a,b,c]	26 (44.8)[a]	22 (37.3)[b]	30 (26.1)[c]	<.001
Suicide Attempt	177 (9.5)	133 (8.2)[a,b]	17 (29.3)[a]	12 (20.3)[b]	15 (13.0)	<.001

[a] Heterosexual without same-sex attraction/fantasy or behavior significantly different from GLB, p<.0083 based on Bonferroni correction.

[b] Heterosexual without same-sex attraction/fantasy or behavior significantly different from unsure, p<.0083 based on Bonferroni correction.

[c] Heterosexual without same-sex attraction/fantasy or behavior different from heterosexual with same- sex attraction/fantasy or behavior, p<.0083 based on Bonferroni correction.

[d] GLB different from unsure, p<.0083 based on Bonferroni correction.

[e] GLB different from heterosexual with same- sex attraction/fantasy or behavior, p<.0083 based on Bonferroni correction.

[f] Unsure different from heterosexual with same- sex attraction/fantasy or behavior , p<.0083 based on Bonferroni correction.

[g] For variables with >2 levels, footnote references a-f are presented on the first line of the variable only.

[h] For race/ethnicity, N=1,816; for number of sexual partners, N=1,854; for sexual attraction, N=1,849; for sexual behavior, N=1,849.

Table 2.2. Risk Factors for Suicide Ideation

Variable	Unadjusted Odds Ratio (95% CI)	*p*	Adjusted Odds Ratio[a] (95% CI)	*p*
Age ≥16 years	1.10 (0.86-1.40)	.442	0.91 (0.68-1.21)	.506
Male	0.44 (0.34-0.57)	<.001	0.60 (0.44-0.82)	.001
Depressed Mood	8.79 (6.63-11.66)	<.001	6.32 (4.67-8.51)	<.001
Smoking	2.67 (2.07-3.46)	<.001	1.41 (0.98-2.02)	.062
Drinking	1.61 (1.25-2.08)	<.001	0.95 (0.69-1.30)	.729
Marijuana	1.95 (1.51-2.51)	<.001	1.12 (0.79-1.60)	.522
Hard Drugs	2.31 (1.57-3.39)	<.001	0.99 (0.61-1.62)	.982
Fighting	1.71 (1.33-2.19)	<.001	1.24 (0.91-1.69)	.174
Physical Abuse	3.09 (2.37-4.04)	<.001	1.85 (1.36-2.50)	<.001
Sexual Abuse	3.60 (2.73-4.76)	<.001	1.68 (1.21-2.34)	.002
Early Sexual Behavior				
Never	Reference			
≥14 years	1.80 (1.37-2.37)	<.001	1.26 (0.90-1.77)	.173
≤13 years	2.11 (1.50-2.96)	<.001	1.18 (0.77-1.81)	.448
Sexual Identity				
Heterosexual Without Same-Sex Attraction or Behavior	Reference			
Gay, Lesbian, Bisexual (GLB)	4.80 (2.81-8.21)	<.001	2.31 (1.22-4.37)	.010
Unsure	3.51 (2.04-6.06)	<.001	2.64 (1.38-5.08)	.004
Heterosexual With Same-Sex Attraction or Behavior	2.09 (1.35-3.24)	.001	1.26 (0.76-2.08)	.373

[a] Adjusted for age, gender, depressed mood, drug use, fighting, physical and sexual abuse, and sexual risk behavior.

Table 2.3. Risk Factors for Suicide Attempt

Variable	Unadjusted Odds Ratio (95% CI)	*p*	Adjusted Odds Ratio[a] (95% CI)	*p*
Age ≥16 years	1.00 (0.73-1.36)	.997	0.84 (0.59-1.18)	.314
Male	0.56 (0.41-0.77)	<.001	0.62 (0.42-0.90)	.012
Depressed Mood	4.68 (3.36-6.52)	<.001	3.02 (2.11-4.33)	<.001
Smoking	2.64 (1.92-3.63)	<.001	1.20 (0.78-1.85)	.398
Drinking	1.50 (1.09-2.07)	.013	0.81 (0.55-1.18)	.274
Marijuana	2.30 (1.68-3.15)	<.001	1.29 (0.85-1.97)	.235
Hard Drugs	3.40 (2.22-5.21)	<.001	1.66 (0.99-2.78)	.053
Fighting	2.47 (1.81-3.37)	<.001	1.85 (1.29-2.67)	.001
Physical Abuse	2.98 (2.14-4.13)	<.001	1.76 (1.23-2.53)	.002
Sexual Abuse	3.01 (2.14-4.24)	<.001	1.41 (0.96-2.09)	.084
Early Sexual Behavior				
Never	Reference			
≥14 years	1.85 (1.30-2.65)	.001	1.27 (0.84-1.92)	.250
≤13 years	2.83 (1.89-4.26)	<.001	1.51 (0.93-2.46)	.094
Sexual Identity				
Heterosexual Without Same-Sex Attraction or Behavior	Reference			
Gay, Lesbian, Bisexual (GLB)	4.65 (2.57-8.41)	<.001	2.23 (1.15-4.35)	.018
Unsure	2.86 (1.48-5.53)	.002	1.61 (0.77-3.36)	.203
Heterosexual With Same-Sex Attraction or Behavior	1.68 (0.95-2.98)	.074	1.03 (0.55-1.91)	.926

[a] Adjusted for age, gender, depressed mood, drug use, fighting, physical and sexual abuse, and sexual risk behavior.

As suggested by the study in Chapter 2, as well as other studies in the literature, adolescents with same-sex attraction/fantasy or behavior, but heterosexual identity, differ in important ways from both heterosexual-identified youth without same-sex attraction/fantasy or behavior and GLB-identified youth and that they may not be at risk for poor mental health outcomes.[15] However, factors that are associated with whether youth with same-sex attraction/fantasy or behavior identify as GLB versus heterosexual are not well understood. The next study, which is presented in Chapter 3, will follow-up on the identity issues raised in the previous study in Chapter 2 to investigate characteristics potentially related to concordant non-homosexual identity, attraction, or behavior, including age, gender, ethnicity, immigrant status, family and school homosexual attitudes.

CHAPTER 3 WHO IDENTIFIES AS GAY, LESBIAN OR BISEXAUL AMONG ADOLESCENTS WITH SAME-SEX ATTRACTION/FANTASY OR BEHAVIOR?

TITLE PAGE

Who Identifies as Gay, Lesbian or Bisexual Among Adolescents with Same-Sex Attraction/Fantasy or Behavior?

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Word Count: 4623

ABSTRACT

Objective: To assess the association between demographic characteristics and social attitudes, and reporting of a non-heterosexual identity among students with same-sex attraction/fantasy or behavior.

Method: 1,935 students aged 14 and older from 14 public and private high schools in Montréal, Québec, were surveyed anonymously. The survey included items assessing sexual orientation, demographic characteristics, and family and school attitudes. Multiple logistic regression models were used to identify characteristics related to non-heterosexual identity among youth with same-sex attraction or behavior.

Results: Of the 159 students with same-sex attraction/fantasy or behavior, 112 (70%) reported heterosexual identity, and 47 (30%) identified as GLB. In multivariable analysis, students who were at least 16 years of age had more than twice the odds or reporting GLB identity than younger students (odds ratio [OR]=2.19, 95% confidence interval [CI] 1.02 to 4.71). Students who reported that homosexuality was ridiculed or accepted/appreciated in their school had 2-3 times the odds of identifying as GLB (OR=2.56, 95% CI 1.06 to 6.18; OR=2.97, 95% CI 1.05 to 8.37). Students who were immigrants to Canada had less than half the odds and non-white students had approximately twice the odds of reporting GLB identity (OR=0.39, 95% CI 0.14 to 1.08; OR=2.16, 95% CI 0.83 to 5.60, respectively), although these was not statistically significant ($p = .070$, $p = .114$, respectively). Family homosexual attitudes were not significantly associated with GLB identity.

Conclusion: Compared with heterosexual-identified students, students with GLB identities were more likely to be older and to report that school homosexual attitudes were ridiculed, accepted, or appreciated versus tolerated or ignored. These findings highlight the potential importance of school environment in youth non-heterosexual identity development.

Clinical Implications:

- Discuss sexuality in all its dimensions.
- Ask questions by using adolescent vocabulary and without a prior assumption of heterosexuality.
- Create a space where the adolescent feels safer to disclose the potentially multiple facets of their sexuality.

Limitations:

- Small sample size of self-identified GLB youth may statistically limit some associations of GLB identity and demographic factors.
- The study was cross-sectional and could not address questions related to the stability of sexual patterns over time.
- Culture and ethnicity variables were crudely measured with single items.

Keywords: Sexual identity, demographic characteristics, family and school homosexual attitudes, adolescence

INTRODUCTION

Research in the last 20 years has consistently found that gay, lesbian and bisexual (GLB) adolescents are at higher risk of mental health problems than their heterosexual peers.[1] GLB adolescents report higher rates of suicidality,[1, 2, 67] depression, anxiety, alcohol and substance abuse,[4, 5] eating disorders,[2, 6] early sexual activity and more sexual partners,[1] being victims of violence,[48] family history of criminal offending, and family disruption.[4]

Sexual orientation, however, is a complex construct. There is great variability within heterosexual-identified or homosexual-identified groups in terms of sexual attraction and behavior.[15, 16] Research among adults[18, 53] and adolescents[16, 28] has found a high level of discordance between self-reported sexual identity and sexual attraction/fantasy and behavior. Many youth with same-sex attraction or behavior identify themselves as heterosexual.[15] For example, Remafedi et al.[18] found that only 5% students who reported same-sex attraction and 27% of students with same-sex experiences self-identified as predominantly homosexual. Igartua and colleagues recently found that only 25% of adolescents who reported same-sex attraction and 38% with same-sex behavior self-identified as GLB.[16]

It has been suggested that adolescents with same-sex attraction/fantasy or behavior, but heterosexual identity, may differ in important ways from both heterosexual-identified youth without same-sex attraction/fantasy or behavior and GLB-identified youth and that they may not be at risk for poor mental health outcomes.[15] Consistent with this, Zhao et al.[21] found that compared to heterosexual youth without

same-sex attraction/fantasy or behavior, adolescents with GLB and "unsure" identities were at greater risk of self-reported suicidal ideation and attempts. However, youth who reported same-sex attraction or behavior, but a heterosexual identity, were not at elevated risk.

Factors that are associated with whether youth with same-sex attraction/fantasy or behavior identify as GLB versus heterosexual are not well understood. Some studies have reported that young women may be generally consistent with sexual identity and attraction, but more fluid in terms of identity and behavior.[75, 76] Male adolescents, on the other hand, may be overall more consistent about sexual identity, behavior, and attractions, compared to young women.[77] In terms of age, older adolescents are more likely than younger adolescents to identify as GLB or "unsure" and to report same or both gender sexual attraction and behavior.[16, 18]

Discrepancies between sexual behavior, attraction/fantasy, and identity may also vary across cultural groups. Ross et al.[62] for instance, studied a sample of men and women recruited in public places in Houston, Texas and found that concordance between self-reported sexual identity and behavior varied substantially across racial ethnic groups with the highest rates of concordance among Asian men and women and the lowest among Black women and White men. Pathela et al.[61] studied population-based data from men in New York City and found that men who had sex exclusively with men, but self-identified as heterosexual, were more likely than their gay-identified counterparts to belong to ethnic minority groups and more likely to be immigrants. No research has

examined the association of race/ethnicity or immigration status on concordance of adolescent sexual identity with behavior and attraction/fantasy.

Social attitudes toward non-heterosexuality may also be important factors in adolescent sexual identity development and adapting a non-heterosexual identity. Sexual relationships and identity develop in a social context that establishes what the relationships mean and how they are socially supported or not supported. Adolescents exploring GLB sexual identity are often without role models and accurate information. They may experience substantial confusion or fear of discrimination. Positive family and school support are associated with better psychological characteristics among GLB youth.[78, 79] Little is known, however, about how social attitudes in the home and school may influence whether students adapt a non-heterosexual identity.

The objective of this study was to assess the association between demographic characteristics and social attitudes and reporting of GLB identity by comparing 2 groups of adolescents: (1) adolescents with same-sex attraction/fantasy or behavior who reported concordant GLB sexual identity and (2) adolescents with same-sex attraction/fantasy or behavior who reported discordant heterosexual identity.

METHODS

Sample Design and Population

Participants in the study were students aged 14 and older, enrolled in grades 9-11 in public and private schools in Montreal, Quebec, Canada. In 2004, principals from all public high schools in the French Montreal School Board (N=39) and English Montreal

school board (N=20), as well as 2 private high schools, were notified about the study by mail and then contacted by phone and invited to participate. The study purpose was stated as investigating suicide and its risk factors, including sexuality. The survey was approved and administered in 14 high schools (8 French school board, 4 English school board, 2 private). Within each school, principals selected 1-6 classrooms for survey administration based on logistical considerations and ensuring that no student would complete the survey more than once. Only students who reported same-sex behavior or same-sex attraction/fantasy were included in the present study.

Prior to survey administration, parents were notified and given the opportunity to refuse their child's participation. Students were informed that the survey was anonymous, confidential, and voluntary. Classroom teachers were not permitted to circulate among students in order to ensure the confidentiality of responses. Questions about sexual orientation were scattered throughout the survey to make it less likely that classmates could identify which questions others were answering. In addition, students were provided with a cover sheet to conceal the answers they recorded on a scannable answer sheet. The study was approved by the Montreal General Hospital research ethics committee.

Demographic data, rates of sexual identity, attraction/fantasy, and behavior, and outcomes related to sexual identity from this study have been published previously.[16, 21]

Measures

The 2004 Quebec Youth Risk Behavior Survey (QYRBS) questionnaire was based on the 2001 Center for Disease Control Youth Risk Behavior Survey,[72] with additional items related to sexual orientation.

Sexual Identity, Attraction/Fantasy, and Behavior

Sexual identity was measured by the question, "Which of the following best describes you?" Responses were *heterosexual (straight)*, *gay or lesbian*, *bisexual*, and *not sure*. Sexual attraction/fantasy was measured by the question, "During your life, to whom have you been attracted to or had fantasies about, either romantically or sexually?" (*no romantic or sexual interest*, *female(s)*, *male(s)*, *female(s) and male(s)*). Sexual behavior was measured by the question, "During your life, who have you had sex with?" (*no sexual contact*, *female(s)*, *male(s)*, *female(s) and male(s)*). The instructions indicated, "In this questionnaire, when we ask about sex, we are asking about any oral sex, vaginal sex, and/or anal sex that was consensual, which means that it was agreed upon by both people."

Demographics

Demographic variables included in the present analyses included age, sex, race/ethnicity, and immigration status. Age was initially assessed on an ordinal 5-point scale ranging from "14 years old" to "18 years old or older" and was recoded as dichotomous, *14-15 years old* vs. *16 years old or older*. Race was measured by asking, "Which term best describes you?" Responses were *Native*, *Asian*, *Black, Latino,* and *White or Caucasian.* Responses were dichotomized into *non-White* vs. *White* because of

relatively small numbers in each non-White group. Immigration status was measured by asking, "How long have you lived in Canada?" Responses were on a 5-point ordinal scale ranging from "less than 1 year" to "I have always lived in Canada". Students were classified as non-immigrants if they reported "I have always lived in Canada" and immigrants if they reported other than "I have always lived in Canada."

Family and School Attitudes towards Homosexuality

Family and school attitudes were measured by the questions, "Generally in your family, homosexuality is?" and "Generally in your school, homosexuality is?" Responses were on 5-point ordinal scales, "Ridiculed, stigmatized, discriminated," "Tolerated," "Accepted, respected," "Appreciated, celebrated," and "Ignored." For each question, responses were recoded into 3-point ordinal scales: "Ridiculed, stigmatized, discriminated," "Tolerated, or Ignored," and "Accepted, respected, or Appreciated, celebrated," due to the relative small number of responses in some categories.

Data Analyses

GLB-identified students with same-sex attraction/fantasy or behavior were compared with students who reported heterosexual identity and same-sex attraction/fantasy or behavior on demographic factors, and family and school attitudes towards homosexuality, using chi-square tests of significance.

The associations of demographics, and family and school attitudes variables with concordant GLB identity were assessed with multiple logistic regression models. The model included the variables age, gender, race, immigrant status, family attitudes towards

homosexuality, and school attitudes towards homosexuality. Discrimination and calibration of the logistic regression models were assessed with the c-index and Hosmer-Lemeshow goodness-of-fit test statistic (HL), respectively.73 The c-index reflects the percentage of comparisons where adolescents with GLB identity had a higher predicted probability of concordant GLB identity than adolescents without GLB identity for all adolescents in the sample. The HL is a measure of the accuracy of the predicted number of cases of concordant GLB identity compared to the number of students who actually reported concordant GLB identity across the spectrum of probabilities. A relatively large p value indicates that the model fits reasonably well. All of these analyses were conducted using SPSS version 16.0 (Chicago, IL), and all statistical tests were 2-sided with a $p < .05$ significance level.

RESULTS

Sample Characteristics

No parents refused permission, and all eligible students consented to participate. A total of 1,951 adolescents completed the QYRBS (mean of 5.4 classrooms and 139.4 students per school). Of these, 16 surveys were discarded due to mostly empty or defaced answer sheets. Of the 1,935 students whose data were recorded, 159 (8.2%) reported same-sex sexual attraction/fantasy or behavior, had complete data for all relevant items, and were included in the present analyses. Of the 159 students with same-sex attraction/fantasy or behavior, 112 (70%) reported heterosexual identity, and 47 (30%) identified as GLB. Of the 159 students with same-sex attraction/fantasy or behavior, 107 reported same-sex behavior, and 68 (64%) identified as heterosexual. As shown in Table 1,

57% of students were 16 years of age or older, 28% were male, 26% were non-white, and 27% were immigrants.

Variables Associated with Identity

Compared to students with heterosexual identity, students with a GLB identity were not significantly different in age, sex, race/ethnicity, or immigration status in bivariate analysis. Similarly, overall attitudes toward homosexuality (tolerated or ignored versus ridiculed versus accepted or appreciated) encountered by students in families and schools did not differ significantly between students with GLB and heterosexual identities. However, students with GLB identities were significantly less likely to indicate that homosexuality was tolerated or ignored versus the combined category of ridiculed, accepted, or appreciated (p=.042).

In multivariable analysis, students who were at least 16 years of age had more than twice the odds or reporting GLB identity than younger students (OR=2.19, 95% CI=1.02 to 4.71, p<.046). In addition, students who reported that homosexuality was ridiculed or accepted/appreciated in their school had 2-3 times the odds of identifying as GLB (OR=2.56, 95% CI=1.06 to 6.18, p<.037; OR=2.97, 95% CI=1.05 to 8.37, p<.040, respectively). Students who were immigrants to Canada had less than half the odds of reporting GLB identity, although this was not statistically significant (p = .070). Non-white students had approximately twice the odds of reporting GLB identity, but, similarly, this was not statistically significant (p = .114). Family attitudes towards homosexuality were not significantly associated with GLB identity and same-sex attraction and behavior. When the variable same sex behavior (versus only fantasy/attraction) was included in the model, students with same-sex behavior were more than 4 times as likely to identify as GLB

compared to students without same-sex sexual experiences (OR = 4.33, 95% CI = 1.59 to 11.76). The final model had good discriminative power (c-index=.678) and calibration (p=.483 for the HL statistic).

DISCUSSION

This study examined the association between demographic characteristics, social attitudes and sexual identity among adolescents with same-sex attraction/fantasy or behavior. Of 159 students who reported same-sex attraction/fantasy or behavior, approximately 7 of 10 identified as heterosexual and not GLB. In multivariable analysis, students who were 16 years old or older were more than twice likely to report GLB identity than younger students. In addition, in comparison to students who reported that homosexuality was tolerated or ignored in their schools, students who reported that homosexuality was ridiculed and students who reported that it was accepted or appreciated were 2-3 times more likely to identify as GLB. Gender, ethnicity, immigration status, and family attitudes towards homosexuality were not significantly related to GLB sexual identity.

The finding that older students were more likely to identify as GLB than younger students supports the idea that same-sex sexual attraction/fantasy and behavior may precede sexual identity formation for many non-heterosexual adolescents. The formation of a GLB sexual identity is a different and possibly more complex process than heterosexual identity formation.28 Adolescents exploring GLB sexual identity are often without role models and accurate information. They may experience substantial confusion about their non-heterosexual sexual orientation,56 particularly given that adaptation of a

GLB identity requires a move away from the normative heterosexual identity. Some youth may consolidate their GLB identity only at the end of adolescence or early adulthood, when their access to autonomy allows them more choice in their environment.18 Sexual relationships and identity develop in a social context that establishes what the relationships mean and how they will be accepted or not accepted. Identification of the characteristics that lead a youth to express a non-heterosexual identity in a dangerous social climate, rather than delay it to a safer time, may help clarify the interplay between environmental and individual factors.

The finding that school attitudes towards homosexuality were significantly associated with GLB identity, but not family attitudes, may reflect the importance of peers and their influence to adolescent identity. Students who reported that homosexuality was "Ridiculed" and those who reported that it was "Accepted or Appreciated" were more likely to have GLB identities than students who reported that it was "Tolerated or ignored." One interpretation of this might be that settings where views towards homosexuality are clearly delineated, whether positive or negative, may influence identity development. On the other hand, this was a cross-sectional survey, and it is possible that students who have adapted a GLB identity are more aware of attitudes in their school environment than students who have not adapted a GLB identity. Compared with heterosexually identified youths with same-sex attraction or behavior, adolescents who self-identified as GLB may be more likely to come out or to be visible about their sexual orientation, which might elicit reactions, either positive or negative. On the other hand, adolescents with same-sex attraction/fantasy or behavior, but a heterosexual identity, may be less likely to share their

sexual orientation with others and, as such, may be less likely to experience others attitudes towards homosexuality.

In this study, non-White and non-immigrant youths with same-sex attraction/fantasy or behavior were also more likely to report GLB identity, compared to Whites and immigrants, although the associations between ethnicity and immigrant status and GLB identity were not statistically significant. This pattern is consistent with previous studies that have reported lower concordance of sexual identity, attraction/fantasy, and behavior among immigrants61 and White respondents.62

This study has multiple implications. The high rate of adolescents with same-sex attraction/fantasy and/or behavior in this study emphasizes the need for clinicians to understand and discuss sexuality in all its dimensions. By asking questions using adolescent vocabulary and without a prior assumption of heterosexuality (e.g., Do you have a boyfriend or a girlfriend? Are you interested in/attracted to guys, girls or both? Are you sexually active with guys, girls or both? How do you identify: gay/lesbian, straight, bi, queer, queer questioning?), clinicians can create a space where the adolescent feels safer to disclose the potentially multiple facets of their sexuality. A recent study found that most sexual minority adolescents have not disclosed their sexual orientation to their health care provider.80 Of those who had spoken to their physicians about their sexual minority status, only 21% discussed it because their physician broached the issue. The majority of sexual minority adolescents in the study said that the best way to facilitate talking about their sexual orientation was simply to ask.

Future research should further examine the potential influence of cultural factors on sexual identity among adolescents. Sexual behavior and sexual identity development might

be affected by ethnocultural variables, such as values, religion, gender roles, and social class.81 The single-item dichotomized ethnic/cultural variable in this study, however, would not be expected to reflect the diversity of cultures and to illustrate the importance of culture in sexual identity development. Second, this study demonstrates a need for future investigations of the impact of school environment and attitudes on adolescent mental health and identity formation. Munoz-Plaza and colleagues,82 for instance, interviewed GLB adolescents and reported that they perceived that peers to be more supportive than family members and that their parents and family members offered limited emotional, appraisal and informational support. Given potential bidirectional influences, our study was not conclusive in demonstrating the role of school environment in sexual identity development, and it remains to be determined how school attitudes may affect stages of sexual self-identification and psychological well-being in sexual minority youth.

There are additional limitations that should be considered in interpreting the results of this study. Sampling was not done randomly, and it is possible that bias could have been introduced and that schools with more open attitudes towards non-heterosexual students were oversampled. On the other hand, the sample was representative of the Montreal population in terms of language, race/ethnicity and gender. The sample size of self-identified GLB youth was small in the study. Some associations of GLB identity and demographic factors might not have been statistically significant due to limited statistical power. Alternatively, it is possible that the statistically significant findings in this study would not replicate in a larger sample. Furthermore, the study was cross-sectional and not prospective, and thus could not address questions related to the stability of sexual patterns over time or the eventual identity outcome of students who reported same-sex attraction or

behavior at the time of survey. Indeed, other studies have reported that, among adolescents, there is substantial variability across time in sexual identity, attraction/fantasy, and behavior.75, 83 Finally, it is important to note that variables related to culture and ethnicity were measured with single items and may not have fully captured possible cultural differences in sexual behavior and identity.

CONCLUSION

In sum, approximately 7 of 10 students with same-sex attraction/fantasy or behavior in this study identified as heterosexual. In multivariable analysis, compared with heterosexual-identified students, students with GLB identities were more likely to be older and to report that school homosexual attitudes were ridiculed, accepted, or appreciated versus tolerated or ignored. These findings highlight the potential importance of school environment in youth non-heterosexual identity development, either because it influences their identity adaptation or because minority youth are more sensitive about, and, thus, might be more affected by school attitudes towards homosexuality. Studies examining the associations between school bullying, victimization, and sexual identity formation, in relation to adolescent mental health, are needed.

Funding and Support and Acknowledgements:

This study was supported by funds from the McGill University Department of Psychiatry's One in Three Foundation awarded to Dr. Montoro. Ms. Zhao is supported by a Fonds de Recherché sur la Société et la Culture. Dr. Thombs is supported by a New Investigator Award from the Canadian Institutes of Health Research and an Établissement de Jeunes Chercheurs award from the Fonds de la Recherche en Santé Québec.

REFRENCES

1. Garofalo R, Wolf RC, Kessel S, Palfrey J, DuRant RH. The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. Pediatrics. 1998;101(5):895-902.

2. Blake S, Ledsky R, Lehman T, Goodenow C, Sawyer R, Hack T. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: the benefits of gay-sensitive HIV instruction in schools. Am J Public Health. 2001;91(6):940-946.

3. Remafedi G, French S, Story M, Resnick MD, Blum R. The relationship between suicide risk and sexual orientation: results of a population-based study. Am J Public Health. 1998;88(1):57-60.

4. Fergusson DM, Horwood LJ, Beautrais AL. Is sexual orientation related to mental health problems and suicidality in young people? Arch Gen Psychiatry. 1999;56(10):876-880.

5. Sandfort TGM, de Graaf R, Bijl RV, Schnabel P. Same-sex sexual behavior and psychiatric disorders: findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Arch Gen Psychiatry. 2001;58(1):85-91.

6. Strong SM, Williamson DA, Netemeyer RG, Geer JH. Eating disorder symptoms and concerns about body differ as a function of gender and sexual orientation. J Soc Clin Psychol. 2000;19:240-255.

7. DuRant RH, Krowchuk DP, Sinal SH. Victimization, use of violence, and drug use at school among male adolescents who engage in same-sex sexual behavior. J Pediatr. 1998;133(1):113-118.

8. Igartua K, Thombs BD, Burgos G, Montoro R. Concordance and discrepancy in sexual identity, attraction, and behavior among adolescents. J Adolesc Health. 2009;45(6):602-608.

9. Savin-Williams RC. A critique of research on sexual-minority youths. Journal of Adolescence. 2001;24(1):5-13.

10. Remafedi G, Resnick M, Blum R, Harris L. Demography of sexual orientation in adolescents. Pediatrics. 1992;89(4):714-721.

11. Smith AMA, Rissel CE, Richters J, Grulich AE, de Visser RO. Sex in Australia: sexual identity, sexual attraction and sexual experience among a representative sample of adults. Aust N Z J Public Health. 2003;27(2):138-145.

12. Rosario M, Schrimshaw EW, Hunter J, Braun L. Sexual identity development among lesbian, gay, and bisexual youths: consistency and change over time. J Sex Res. 2006;43(1):46-58.

13. Zhao Y, Montoro R, Igartua K, Thombs BD. Suicidal ideation and attempt among adolescents reporting "unsure" sexual identity or heterosexual identity plus same-sex attraction or behavior: forgotten groups? J Am Acad Child Adolesc Psychiatry. 2010;49(2):104-113.

14. Diamond LM. Sexual identity, attractions, and behavior among young sexual-minority women over a 2-year period. Dev Psychol. 2000;36(2):241-250.

15. Savin-Williams RC, Diamond LM. Sexual identity trajectories among sexual-minority youths: gender comparisons. Arch Sex Behav. 2000;29(6):607-627.

16. Dempsey D, Hillier L, Harrison L. Gendered (s)explorations among same-sex attracted young people in Australia. J Adolesc. 2001;24(1):67-81.

17. Ross MW, Essien EJ, Williams ML, Fernandez-Esquer ME. Concordance between sexual behavior and sexual identity in street outreach samples of four racial/ethnic groups. Sex Transm Dis. 2003;30(2):110-113.

18. Pathela P, Hajat A, Schillinger J, Blank S, Sell R, Mostashari F. Discordance between sexual behavior and self-reported sexual identity: a population-based survey of New York City men. Ann Intern Med. 2006;145(6):416-425.

19. Kurdek LA. Relationship quality of gay and lesbian cohabiting couples. J Homosex. 1988;15(3-4):93-118.

20. Vincke J, Bolton R. The social support of Flemish gay men: an exploratory study. J Homosex. 1996;31(4):107-121.

21. Brener ND, Collins JL, Kann L, Warren CW, Williams BI. Reliability of the Youth Risk Behavior Survey Questionnaire. Am J Epidemiol. 1995;141(6):575-580.

22. Hosmer DW, Lemeshow S. Applied logistic regression. 2nd ed: New York: John Wiley & Sons; 2000.

23. Cass VC. Homosexuality identity formation. J Homosex. 1979;4(3):219-235.

24. Meckler GD, Elliott MN, Kanouse DE, Beals KP, Schuster MA. Nondisclosure of sexual orientation to a physician among a sample of gay, lesbian, and bisexual youth. Arch Pediatr Adolesc Med. 2006;160(12):1248-1254.

25. Doll LS, Beeker C. Male bisexual behavior and HIV risk in the United States: synthesis of research with implications for behavioral interventions. AIDS Educ Prev. 1996;8(3):205-225.

26. Munoz-Plaza C, Quinn SC, Rounds KA. Lesbian, gay, bisexual and transgender students: perceived social support in the high school environment. The High School Journal. 2002;85(4):52-63.

27. Diamond LM. Development of sexual orientation among adolescent and young adult women. Dev Psychol. 1998;34(5):1085-1095.

TABLES

Table 3.1. Demographics and Homosexual Attitudes

Variable	Total Sample N=159 n (%)	Heterosexual Identity With Same-Sex Attraction or Behavior N=112 n (%)	Gay, Lesbian, or Bisexual (GLB) Identity N=47 n (%)	p value
Age ≥16 years	90 (56.6)	59 (52.7)	31 (66.0)	.123
Male	44 (27.7)	28 (25.0)	16 (34.0)	.245
Non-White	41 (25.8)	26 (23.2)	15 (31.9)	.252
Immigrant	43 (27.0)	33 (29.5)	10 (21.3)	.289
Homosexual Attitudes – Family				.846
Tolerated or Ignored	54 (34.0)	38 (33.9)	16 (34.0)	
Ridiculed	33 (20.8)	22 (19.6)	11 (23.4)	
Accepted or Appreciated	72 (45.3)	52 (46.4)	20 (42.6)	
Homosexual Attitudes – School				.082
Tolerated or Ignored	58 (36.5)	47 (42.0)	11 (23.4)	
Ridiculed	69 (43.4)	45 (40.2)	24 (51.1)	
Accepted or Appreciated	32 (20.1)	20 (17.9)	12 (25.5)	
Had Same-Sex Sexual Behavior	107 (67.7)	68 (60.7)	39 (84.8)	.003

[a] Adjusted for age, gender, race, immigrant status, family attitudes towards homosexuality, and school attitudes towards homosexuality

Table 3.2. Predictors of GLB Sexual Identity and Same-Sex Attraction and Behavior

Variable	Unadjusted Odds Ratio (95% CI)	*p*	Adjusted Odds Ratio[a] (95% CI)	*p*
Age ≥16 years	1.74 (0.86-3.53)	.125	2.19 (1.02-4.71)	.046
Male	1.55 (0.74-3.24)	.247	1.11 (0.50-2.47)	.804
Non-White	1.55 (0.73-3.30)	.254	2.16 (0.83-5.60)	.114
Immigrant	0.65 (0.29-1.45)	.291	0.39 (0.14-1.08)	.070
Homosexual Attitudes – Family				
Tolerated or Ignored	Reference			
Ridiculed	1.19 (0.47-3.01)	.717	1.28 (0.47-3.44)	.629
Accepted or Appreciated	0.91 (0.42-1.99)	.820	0.82 (0.33-2.03)	.670
Homosexual Attitudes – School				
Tolerated or Ignored	Reference			
Ridiculed	2.28 (1.00-5.19)	.005	2.56 (1.06-6.18)	.037
Accepted or Appreciated	2.56 (0.97-6.77)	.057	2.97 (1.05-8.37)	.040

[a] Adjusted for age, gender, race, immigrant status, family attitudes towards homosexuality, and school attitudes towards homosexuality.

CHAPTER 4 CONCLUSION

This final chapter provides a summary of the primary findings of the two studies, along with interpretations and implications of these results, a discussion of some important study limitations, and suggestions for future research.

Study I: Suicidal Ideation and Attempt among Sexual Minority Youth

Sexual orientation is a multi-dimensional construct, and there is great variability within heterosexual-identified or homosexual-identified groups in terms of sexual attraction and behavior.[15, 16] Adopting this multi-dimensional approach, Study I assessed the relation between the risk of suicide ideation and attempt and sexual minority status by examining adolescents with an "unsure" sexual identity, those with a GLB identity, those with a heterosexual identity and same-sex attraction/fantasy or behavior, and those with a heterosexual identity without same-sex attraction/fantasy or behavior. This study used multiple regression analyses to control for traditional risk factors, including depression, substance use, and sexual risk behaviors.

The study found that youth with a GLB identity and youth with an "unsure" identity were at 2-3 times higher risk for suicidal ideation than youth with a heterosexual identity without same-sex attraction/fantasy or behavior, whereas youth with a heterosexual identity with same-sex attraction or behavior were not at significantly increased risk. Adolescents with a GLB identity were also twice as likely to report suicide attempt, and youth with an "unsure" identity had elevated, although not statistically significant risk. The risk of suicide attempt was not elevated for youth

with a heterosexual identity and same-sex attraction or behavior compared to youth with a heterosexual identity without same-sex attraction/fantasy or behavior.

The study results demonstrated that same-sex attraction or behavior alone is not associated with increased suicidal ideation or attempts. Previous research has consistently concluded that youth with GLB status are at substantially greater risk of suicide ideation and attempt than non-GLB youth. However, diversity exists among sexual minority youths and GLB adolescents are not all at risk for suicidality. It is thus important to understand who are and who are not at risk, and which sexual component may be related to increased suicidality. Results from Study I suggest that same-sex attraction or behavior per se is not likely the driving force behind the increased risk seen in youth with GLB and unsure identities. As identity defines the individual in a social context, it is likely that anti-homosexual bias may be an important mediating factor for poor mental health outcomes among sexual minority youth. Further research need to clarify to what extent these factors impact sexual minority youth psychological well-being.

Study II: Characteristics Related to GLB Sexual Identity, Attraction and Behavior

Research among adults[15, 16] and adolescents[18, 53] has consistently found a high level of discordance between self-reported sexual identity and sexual attraction/fantasy and behavior. Many youth with same-sex attraction or behavior identify themselves as heterosexual.[15] Factors that are associated with whether youth with same-sex attraction/fantasy or behavior identify as GLB versus heterosexual are not well understood. Study II examined the association between demographic characteristics and

social attitudes and sexual identity among adolescents with same-sex attraction/fantasy or behavior. Multiple logistic regression models were used to identity factors related to concordance of GLB sexual identity, attraction, and behavior.

This study found that of students who reported same-sex attraction/fantasy or behavior, approximately 7 of 10 identified as heterosexual and not GLB. Of students who reported same-sex attraction/fantasy or behavior, students who were 16 years old or older were more than twice likely to report GLB identity than younger students. In addition, in comparison to students who reported that homosexuality was tolerated or ignored in their schools, students who reported that homosexuality was ridiculed and students who reported that it was accepted or appreciated were 2-3 times more likely to identify as GLB.

The results suggest that same-sex sexual attraction and behavior may precede sexual identity formation for many non-heterosexual adolescents. The significant relation between school homosexual attitudes and GLB identity adaptation emphasizes the importance of peers and school influence to adolescent identity development, although the causal direction between two variables cannot be explained by this cross-sectional study.

Implications

Findings of the two studies have multiple implications. Research in this field needs to recognize that dividing sexuality into binary groups (e.g., GLB versus heterosexual identity) based on any single dimension may not accurately represent the

diversity of sexual minority youths. Study definitions and measures of non-heterosexual or sexual minority youth should be multi-dimensional. Any single measure will miss some important information. For example, many youths who consider themselves GLB may not have engaged, for a variety of reason, in actual same-sex behavior.[15] If the only measure is gender of sexual partners, then, self-identified GLB youth who are distressed, depressed, or suicidal but have not have same-sex sexual behavior will not be included.

In addition, studies of sexual orientation and health outcomes should recognize within-group differences among sexual minority youths. There are important differences among youth with same-sex sexual attraction and/or behavior, and some sexual minority youth are not at risk for health problems. Ignoring the subgroup differences and generalizing results of findings from one group of sexual minority youth to a different group, GLB-identified youth to heterosexual-identified youth with same-sex attraction or behavior, for instance, may misrepresent some adolescents and lead to erroneous conclusions. Research should sample different sexual minority youth and explore subgroup variations.

Furthermore, discordance of same-sex attraction/fantasy, behavior, and self-labeled sexual identity should be anticipated in research and clinical settings. As demonstrated by Study II, as well as other research in the literature,[15, 16] far more youths have same-sex attraction, fantasy, behavior than report that they are GLB. Many sexual minority youths do not identity to self or to others during adolescence and thus are not categorized as such in research investigations and clinical visits. Sexuality research, sexual education, and clinical services for adolescents should expect that some

adolescents might choose to describe not their sexual identity but their sexual attraction, for instance.

Limitations and Future Research Directions

The two studies have some limitations which should be considered in the interpretation of the results. The sample sizes of both self-identified GLB and "unsure" youth were small in each study. Some associations of GLB and "unsure" identities with health risk factors, and some associations of GLB identity and demographic factors, such as ethnicity and immigrant status, might not have been statistically significant due to limited statistical power. Furthermore, because of relatively small numbers, it was not possible to separately analyze data from students who identified as bisexual versus gay and lesbian or to conduct mediator/moderator analyses. Moreover, the studies were cross-sectional and not prospective, and thus could not address questions related to the stability of sexual patterns over time or the eventual identity outcome of students who were "unsure" at the time of survey. Indeed, other studies have reported that, among adolescents, there is substantial variability across time in sexual identity, attraction/fantasy, and behavior.[75, 83] In addition, school attitudes towards homosexuality were significantly associated with GLB identity, but not family attitudes. This may reflect the importance of peers and their influence to adolescent identity, but alternatively may reflect limitations in single-item assessments of family attitudes and school attitudes towards homosexuality. Similarly, it is important to note that variables related to culture and ethnicity were measured with single items and may not have fully captured possible

cultural differences in sexual behavior and identity. Finally, transgendered identity, gender non-conforming behavior, gender atypicality, bullying, victimization, and parental rejection were not addressed in this study.

Future research should include qualitative methods to investigate more deeply the role of social environment, cultural influence, family support, and other factors that shape the lives of sexual minority youth and the ways that they support or hinder development, especially the degree to which school climates and policies make a difference in the lives of sexual minority youth. Longitudinal research is also needed to determine the causal association between these factors and psychological well-being. A comprehensive, multidisciplinary approach is required to address medical, mental health, and psychosocial issues within the context of the adolescents' community and culture.

Summary

The overall study findings indicate that sexual minority youth are not a homogeneous group, but vary among themselves in important ways. Study definitions and measures of non-heterosexual or sexual minority youth should be multi-dimensional. In addition, adolescents with a GLB sexual identity or an “unsure” sexual identity were at elevated risk of suicidal ideation and attempt. However, youth who identified themselves as heterosexual, whether or not they had same-sex attraction/fantasy or behavior were not at risk. These findings suggest that homosexual attraction or behavior per se does not lead to pathology or mental health problems, such as suicidality. Studies examining the link between anti-homosexual sentiment and suicidality, as well as individual factors that lead

to non-heterosexual identity expression in an adverse environment are needed. Further, there is a low concordance between same-sex sexual identity, attraction/fantasy, and behavior. Compared with heterosexual-identified students, students with GLB identities were more likely to be older and to report that school homosexual attitudes were ridiculed, accepted, or appreciated versus tolerated or ignored. These findings highlight the potential importance of school environment in youth non-heterosexual identity development. Studies examining the associations between school bullying, victimization, and sexual identity formation, in relation to adolescent mental health, are needed.

REFERENCES

1. Garofalo R, Wolf RC, Kessel S, Palfrey J, DuRant RH. The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. *Pediatrics.* 1998;101(5):895-902.

2. Remafedi G, French S, Story M, Resnick MD, Blum R. The relationship between suicide risk and sexual orientation: results of a population-based study. *Am J Public Health.* 1998;88(1):57-60.

3. Russell ST, Joyner K. Adolescent sexual orientation and suicide risk: evidence from a national study. *Am J Public Health.* 2001;91(8):1276-1281.

4. Fergusson DM, Horwood LJ, Beautrais AL. Is sexual orientation related to mental health problems and suicidality in young people? *Arch Gen Psychiatry.* 1999;56(10):876-880.

5. Sandfort TGM, de Graaf R, Bijl RV, Schnabel P. Same-sex sexual behavior and psychiatric disorders: findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Arch Gen Psychiatry.* 2001;58(1):85-91.

6. Strong SM, Williamson DA, Netemeyer RG, Geer JH. Eating disorder symptoms and concerns about body differ as a function of gender and sexual orientation. *J Soc Clin Psychol.* 2000;19:240-255.

7. Garofalo R, Wolf RC, Wissow LS, Woods ER, Goodman E. Sexual orientation and risk of suicide attempts among a representative sample of youth. *Arch Pediatr Adolesc Med.* 1999;153(5):487-493.

8. American Psychiatric Assoication. Diagnostic and statistical manual of mental disorders.Third Edition, Revised. (DSM-III-R). ed. Washington, DC: American Psychiatric Association; 1987.

9. Dohrenwend BP. The role of adversity and stress in psychopathology: some evidence and its implications for theory and research. *J Health Soc Behav.* 2000;41(1):1-19.

10. Kendler KS, Kessler RC, Walters EE, et al. Stressful life events, genetic liability, and onset of an episode of major depression in women. *Am J Psychiatry.* 1995 1995;152(6):833-842.

11. Herek GM, Cogan JC, Gillis JR, Glunt EK. Correlates of internalized homophobia in a community sample of lesbians and gay men. *Journal-gay and Lesbian Medical Association.* 1998;2(1):17-26.

12. Hershberger SL, D'Augelli AR. The impact of victimization on the mental health and suicidality of lesbian, gay, and bisexual youths. *Dev Psychol.* 1995;31(1):65-74.

13. D'Augelli AR, Hershberger SL, Pilkington NW. Lesbian, gay, and bisexual youth and their families: disclosure of sexual orientation and its consequences. *Am J Orthopsychiatry.* 1998;68(3):361-371.

14. Bell AP, Weinberg MS. Homosexualities: a study of diversity among men and women New York, NY: Simon and Schuster; 1978.

15. Savin-Williams RC. A critique of research on sexual-minority youths. *Journal of Adolescence.* 2001;24(1):5-13.

16. Igartua K, Thombs BD, Burgos G, Montoro R. Concordance and discrepancy in sexual identity, attraction, and behavior among adolescents. *Journal of Adolescent Health.* 2009;45(6):602-608.

17. Remafedi G. Fundamental issues in the care of homosexual youth. *Med Clin North Am.* 1990;74(5):1169-1179.

18. Remafedi G, Resnick M, Blum R, Harris L. Demography of sexual orientation in adolescents. *Pediatrics.* 1992;89(4):714-721.

19. Petersen AC, Leffert N, Graham BL. Adolescent development and the emergence of sexuality. *Suicide Life Threat Behav.* 1995;25 Suppl:4-17.

20. Rotheram-Borus MJ, Fernandez MI. Sexual orientation and developmental challenges experienced by gay and lesbian youths. *Suicide Life Threat Behav.* 1995;25 Suppl:26-34.

21. Zhao Y, Montoro R, Igartua K, Thombs BD. Suicidal ideation and attempt among adolescents reporting "unsure" sexual identity or heterosexual identity plus same-sex attraction or behavior: forgotten groups? *J Am Acad Child Adolesc Psychiatry.* 2010;49(2):104-113.

22. Kinsey AC, Pomeroy WB, Martin CE. *Sexual behavior in the human female.* Philadelphia, PA: WB Saunders; 1953.

23. Spitzer RL. The diagnostic status of homosexuality in DSM-III: a reformulation of the issues. *Am J Psychiatry.* 1981;138(2):210-215.

24. Kinsey AC, Pomeroy WB, Martin CE. *Sexual behavior in the human male.* Philadelphia, PA: WB Saunders; 1949.

25. Klein F, Sepekoff B, Wolf TJ. Sexual orientation: a multi-variable dynamic process. *J Homosex.* 1985;11(1-2):35-49.

26. Shively MG, De Cecco JP. Components of sexual identity. *J Homosex.* 1977;3(1):41-48.

27. Frankowski BL. and Committee on Adolescence, Sexual orientation and adolescents. *Pediatrics.* 2004;113(6):1827-1832.

28. Rosario M, Schrimshaw EW, Hunter J, Braun L. Sexual identity development among lesbian, gay, and bisexual youths: consistency and change over time. *J Sex Res.* 2006;43(1):46-58.

29. Bell AP, Weinberg MS, Hammersmith SK. Sexual preference: Its development in men and women.Bloomington: Indiana University Press; 1981.

30. Cass VC. Homosexual identity: a concept in need of definition. *J Homosex.* 1983;9(2-3):105-126.

31. Cohen K, Savin-Williams R. *Developmental perspectives on coming out to self and others. In R. C. Savin-Williams, & K. M. Cohen (Eds.), The lives of lesbians, gays, and bisexuals: Children to adults (pp. 113-151).* Fort Worth: Harcourt Brace & Company; 1996.

32. Rust P. Coming out in the age of social constructionism: Sexual identity formation among lesbians and bisexual women. *Gender and Society.* 1993;7(50-77).

33. Kitzinger C, Wilkinson S. Transitions from heterosexuality to lesbianism: The discursive production of lesbian idenities. *Developmental Psychology.* 1995;31:95-104.

34. Laumann EO, Gagnon JH, Michael RT, Michaels S. *The Social Organization of Sexuality: Sexual Practices in the United States.* Chicago: University of Chicago Press; 1994.

35. Friedman MS, Silvestre AJ, Gold MA, et al. Adolescents define sexual orientation and suggest ways to measure it. *J Adolesc.* 2004;27(3):303-317.

36. Chung YB, Katayama M. Assessment of sexual orientation in lesbian/gay/bisexual studies. *J Homosex.* 1996;30(4):49-62.

37. Gonsiorek JC, Sell RL, Weinrich JD. Definition and measurement of sexual orientation. *Suicide Life Threat Behav.* 1995;25 Suppl:40-51.

38. Eisenberg ME, Resnick MD. Suicidality among gay, lesbian and bisexual youth: the role of protective factors. *J Adolescent Health.* 2006;39(5):662-668.

39. Eskin M, Kaynak-Demir H, Demir S. Same-sex sexual orientation, childhood sexual abuse, and suicidal behavior in university students in Turkey. *Arch Sex Behav.* 2005;34(2):185-195.

40. Savin-Williams RC, Ream GL. Prevalence and stability of sexual orientation components during adolescence and young adulthood. *Arch Sex Behav.* 2007 Jun (Epub 2006 Dec 2007;36(3):385-394.

41. Wichstrom L, Hegna K. Sexual orientation and suicide attempt: a longitudinal study of the general Norwegian adolescent population. *J Abnorm Psychol.* 2003;112(1):144-151.

42. Gould MS, Greenberg T, Velting DM, Shaffer D. Youth suicide risk and preventive interventions: a review of the past 10 years. *J Am Acad Child Psy.* 2003;42(4):386-405.

43. Safren SA, Heimberg RG. Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. *J Consult Clin Psych.* 1999;67(6):859-866.

44. R. G. *Report of the secretary's task force on youth suicide: prevention and intervention in youth suicide*. Rockville, Md: US Dept of Health and Human Services; 1989.

45. Martin AD, Hetrick ES. The stigmatization of the gay and lesbian adolescent. *J Homosex.* 1988;15(1-2):163-183.

46. D'Augelli AR, Hershberger SL. Lesbian, gay, and bisexual youth in community settings: personal challenges and mental health problems. *Am J Community Psychol.* 1993;21(4):421-448.

47. Friedman JM, Asnis GM, Boeck M, DiFiore J. Prevalence of specific suicidal behaviors in a high school sample. *Am J Psychiat.* 1987;144:1203-1206.

48. DuRant RH, Krowchuk DP, Sinal SH. Victimization, use of violence, and drug use at school among male adolescents who engage in same-sex sexual behavior. *J Pediatr.* 1998;133(1):113-118.

49. Saewyc EM, Bauer GR, Skay CL, et al. Measuring sexual orientation in adolescent health surveys: evaluation of eight school-based surveys. *J Adolesc Health.* 2004;35(4):345.e341-315.

50. Sell RL. Defining and measuring sexual orientation: a review. *Arch Sex Behav.* 1997;26(6):643-658.

51. Bailey JM. Homosexuality and mental illness. *Arch Gen Psychiatry.* 1999;56(10):883-884.

52. Cochran SD, Keenan C, Schober C, Mays VM. Estimates of alcohol use and clinical treatment needs among homosexually active men and women in the U.S. population. *J Consult Clin Psychol.* 2000;68(6):1062-1071.

53. Smith AMA, Rissel CE, Richters J, Grulich AE, de Visser RO. Sex in Australia: sexual identity, sexual attraction and sexual experience among a representative sample of adults. *Aust N Z J Public Health.* 2003;27(2):138-145.

54. Goldfried MR. Integrating gay, lesbian, and bisexual issues into mainstream psychology. *Am Psychol.* 2001;56(11):977-988.

55. Paul JP, Catania J, Pollack L, et al. Suicide attempts among gay and bisexual men: lifetime prevalence and antecedents. *Am J Public Health.* 2002;92(8):1338-1345.

56. Cass VC. Homosexuality identity formation. *J Homosex.* 1979;4(3):219-235.

57. Chapman BE, Brannock JC. Proposed model of lesbian identity development: an empirical examination. *J Homosex.* 1987;14(3-4):69-80.

58. Fassinger RE, Miller BA. Validation of an inclusive model of sexual minority identity formation on a sample of gay men. *J Homosex.* 1996;32(2):53-78.

59. Rietmeijer CA, Wolitski RJ, Fishbein M, Corby NH, Cohn DL. Sex hustling, injection drug use, and non-gay identification by men who have sex with men. Associations with high-risk sexual behaviors and condom use. *Sex Transm Dis.* 1998;25(7):353-360.

60. Stokes JP, Peterson JL. Homophobia, self-esteem, and risk for HIV among African American men who have sex with men. *AIDS Educ Prev.* 1998;10(3):278-292.

61. Pathela P, Hajat A, Schillinger J, Blank S, Sell R, Mostashari F. Discordance between sexual behavior and self-reported sexual identity: a population-based survey of New York City men. *Ann Intern Med.* 2006;145(6):416-425.

62. Ross MW, Essien EJ, Williams ML, Fernandez-Esquer ME. Concordance between sexual behavior and sexual identity in street outreach samples of four racial/ethnic groups. *Sex Transm Dis.* 2003;30(2):110-113.

63. US Department of Health and Human Services. Reaching men of color who have sex with men HRSACAREAction; 2003. Available at: ftp://ftp.hrsa.gov/hab/june_2003_final.pdf. Accessed January 23, 2008.

64. Manalansan M. *Double minorities: Latino, Black, and Asian men who have sex with men*. Fort Worth, TX: Harcourt Brace; 1996.

65. Rust P. *Managing multiple identities: Diversity among bisexual women and men*. Thousand Oaks, CA: Sage; 1996.

66. Chan C. *Issues of sexual identity in an ethnic minority: The case of Chinese American lesbians, gay men, and bisexual people*. New York: Oxford University Press; 1995.

67. Blake S, Ledsky R, Lehman T, Goodenow C, Sawyer R, Hack T. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: the benefits of gay-sensitive HIV instruction in schools. *Am J Public Health.* 2001;91(6):940-946.

68. Noell JW, Ochs LM. Relationship of sexual orientation to substance use, suicidal ideation, suicide attempts, and other factors in a population of homeless adolescents. *J Adolescent Health.* 2001;29(1):31-36.

69. Igartua K, Thombs DB, Burgos G, Montoro R. Concordance and Discrepancy in Sexual Identity, Attraction, and Behaviour Among Adolescents. *J Adolesc Health.* In press.

70. Cochran SD, Sullivan JG, Mays VM. Prevalence of Mental Disorders, Psychological Distress, and Mental Health Services Use Among Lesbian, Gay, and Bisexual Adults in the United States. *J Consult Clin Psych.* 2003;71(1):53-61.

71. McCabe SE, Boyd C, Hughes TL, d'Arcy H. Sexual Identity and Substance Use Among Undergraduate Students. *Substance Abuse.* 2003;24(2):77-91.

72. Brener ND, Collins JL, Kann L, Warren CW, Williams BI. Reliability of the Youth Risk Behavior Survey Questionnaire. *Am J Epidemiol.* 1995;141(6):575-580.

73. Hosmer DW, Lemeshow S. Applied logistic regression. 2nd ed: New York: John Wiley & Sons; 2000.

74. Statistics Canada. 2001 Community Profiles. Statistics Canada Catalogue [*93F0053XIE*]. 2002.

75. Diamond LM. Sexual identity, attractions, and behavior among young sexual-minority women over a 2-year period. *Dev Psychol.* 2000;36(2):241-250.

76. Savin-Williams RC, Diamond LM. Sexual identity trajectories among sexual-minority youths: gender comparisons. *Arch Sex Behav.* 2000;29(6):607-627.

77. Dempsey D, Hillier L, Harrison L. Gendered (s)explorations among same-sex attracted young people in Australia. *J Adolesc.* 2001;24(1):67-81.

78. Kurdek LA. Relationship quality of gay and lesbian cohabiting couples. *J Homosex.* 1988;15(3-4):93-118.

79. Vincke J, Bolton R. The social support of Flemish gay men: an exploratory study. *J Homosex.* 1996;31(4):107-121.

80. Meckler GD, Elliott MN, Kanouse DE, Beals KP, Schuster MA. Nondisclosure of sexual orientation to a physician among a sample of gay, lesbian, and bisexual youth. *Arch Pediatr Adolesc Med.* 2006;160(12):1248-1254.

81. Doll LS, Beeker C. Male bisexual behavior and HIV risk in the United States: synthesis of research with implications for behavioral interventions. *AIDS Educ Prev.* 1996;8(3):205-225.

82. Munoz-Plaza C, Quinn SC, Rounds KA. Lesbian, gay, bisexual and transgender students: perceived social support in the high school environment. *The High School Journal.* 2002;85(4):52-63.

83. Diamond LM. Development of sexual orientation among adolescent and young adult women. *Dev Psychol.* 1998;34(5):1085-1095.

APPENDIX

2004 QUEBEC YOUTH RISK BEHAVIOR SURVEY (QYRBS)