Archives of Sexual Behavior, Vol. 33, No. 5, October 2004, pp. 487–496 (© 2004)

Depressive Symptoms Among Hong Kong Adolescents: Relation to Atypical Sexual Feelings and Behaviors, Gender Dissatisfaction, Pubertal Timing, and Family and Peer Relationships

T. H. Lam, M.D.,[1,4] Sunita M. Stewart, Ph.D., [2] Gabriel M. Leung, M.D.,[1] Peter W. H. Lee, Ph.D.,[3] Joy P. S. Wong, M.S.,[1] L. M. Ho, Ph.D.,[1] and the Youth Sexuality Task Force

Received February 13, 2003; revision received August 15, 2003; accepted October 13, 2003

A representative community sample of Hong Kong boys ($n = 1,024$) and girls ($n = 1,403$), age 14–18 years, provided information regarding same-sex attraction, gender dissatisfaction, pubertal timing, early experience with sexual intercourse, and depressive symptoms. They also rated the quality of their family and peer relationships and self-perceived attractiveness. Depressive symptoms were higher in youths reporting same-sex attraction, gender dissatisfaction, early pubertal maturation, and early sexual intercourse. Family relationships were less satisfactory for those who reported same-sex attraction, gender dissatisfaction, and early sexual intercourse, and peer relationships were also worse for those who reported gender dissatisfaction. In multivariate analyses, same-sex attraction, early sexual intercourse, and early pubertal maturation were unique and direct contributors to depressive symptoms; however, gender dissatisfaction's association with depressive symptoms was largely accounted for by shared correlations with negative family and peer relationships. The multivariate model explained 11% of the variance of depressive symptoms. These findings offer a preliminary documentation of the prevalence and correlates of atypical sexual self-assessments and behavior among adolescents in Hong Kong. Such information is important if theories of sexual identity and risk factors for depressive symptoms are to have cross-cultural utility.

KEY WORDS: adolescents; sexuality; depression; same-sex attraction; gender dissatisfaction.

INTRODUCTION

Deviance from norms on sexual variables in adolescence has been considered a risk factor for various emotional and behavioral problems in studies from the West (e.g., Orr, Beiter, & Ingersoll, 1991; Remafedi, French, Story, Resnick, & Blum, 1998; Zucker, Owen, Bradley, & Ameeriar, 2002). The present study examined the influence of self-reported same-sex attraction, gender dissatisfaction, sexual maturation timing, and history of early sexual intercourse on depressive symptoms in Hong Kong adolescents. Such data from non-Western cultures would be useful to broaden understanding of sexual experiences and their relationship to mood.

Sexual Minority Status and Depressive Symptoms

In the West (Smith, Lindsay, & Rosenthal, 1999), 6.8% of high school girls and 5.3% of boys reported current attraction to the same sex. Homosexual sexual

[1]Department of Community Medicine, University of Hong Kong, Hong Kong, People's Republic of China.
[2]Department of Psychiatry, UT Southwestern Medical Center at Dallas, Dallas, Texas.
[3]Department of Psychiatry, University of Hong Kong, Hong Kong, People's Republic of China.
[4]To whom correspondence should be addressed at Department of Community Medicine, University of Hong Kong, Pokfulam, Hong Kong S. A. R., People's Republic of China; e-mail: commed@hkucc.hku.hk.

behaviors, on the other hand, have been reported to be rare among adolescents (Schuster, Bell, & Kanouse, 1996). It has also been cautioned that those who by adolescence identify themselves as clearly homosexual are in the minority and may not be representative of the population of adults who accept an identity as homosexual or bisexual (Savin-Williams, 2001).

The adjustment of homosexual youth has been an issue of significant controversy. Several investigators have proposed that suicidal acts are more common among youth who report same-sex attraction (Remafedi, 1999; Remafedi et al., 1998; cf. Savin-Williams, 2001). Whether or not suicidality is more common among sexual minority youths, social stigmatization of same-sex attraction during a key developmental period for the consolidation of a secure identity and a positive sense of self is likely to make adolescence particularly difficult (Garofalo & Katz, 2001; Radkowsky & Siegel, 1997). Depression, hopelessness, despair (Radkowsky & Siegel, 1997), peer abuse, conflict with family (Uribe & Harbeck, 1991), fighting and victimization (Faulkner & Cranston, 1998), and substance use (Shifrin & Solis, 1992; Smith et al., 1999) have all been reported as disproportionately more common among sexual minority youth.

It has been noted that behaving like the opposite sex and expressing the desire to be the opposite sex are not uncommon in referred populations of children and adolescents (Bradley & Zucker, 1997). However, they are less common in the general population. This discrepancy raises the possibility that these behaviors and wishes are associated with other symptoms and, as such, may be harbingers of distress, though not necessarily markers of psychopathology. Green (1987) followed "feminine" boys for 15 years, yielding unusually rich and complex data. Both his study and the retrospective literature indicate that cross-gender behavior relates strongly to adult homosexuality in both sexes (Bailey & Zucker, 1995); however, even for those with severe and persistent dissatisfaction with gender associated with diagnosed gender identity disorder (GID), not all youth have adult homosexual outcomes (Bradley & Zucker, 1997). Gender dysphoria at levels high enough to result in referral in adolescence appears to persist into adulthood (Zucker & Bradley, 1995).

Although young people who experience persistent gender dissatisfaction have been studied much less than youths who report same-sex attraction, they may face many similar barriers to attainment of the psychological tasks of adolescence (Vitale, 2001). A recent finding in the literature has been that girls with GID were rated as less attractive than girls without GID (Fridell, Zucker, Bradley, & Maing, 1996). Also, boys with GID were assessed as having fewer stereotypical masculine traits and girls with this disorder as having more masculine traits than did same-sex controls (McDermid, Zucker, Bradley, & Maing, 1998). Given that standards for good looks in adolescence frequently emphasize sex-typical attributes, youths who appear like the opposite sex are less likely to meet standards of attractiveness. If gender dissatisfaction and attractiveness are associated, youths who are not happy with their gender may be more depressed at least partly because they also feel less attractive.

Sexual activity is common among adolescents in the West (Thomas, DiCenso, & Griffith, 1998; Warren et al., 1997), with about 50% of high school students having had sexual intercourse at least once. Early initiation of sexual activity (defined as occurring in junior high school) correlated with maladjustment (Orr et al., 1991). Similarly, being deviant from peers in pubertal timing is a source of stress for adolescents. For example, early puberty placed girls in particular at risk for depressive symptoms, and pubertal status at Grade 7 predicted levels of depressive symptoms over time for both boys and girls (Ge, Conger, & Elder, 2001). Early puberty was also associated with increased tendency toward substance abuse and depressive disorders (Stice, Presnell, & Bearman, 2001). Thus, pubertal maturation and sexual intercourse, though normal events for most of the population, can be problematic if they occur earlier than normative for peers.

Adolescents, Minority Sexual Status, and Depression in Hong Kong

Stigma against homosexuals has been noted in Hong Kong (Ho, 1995). In Shanghai, another modernized Chinese city that shares cultural traditions with Hong Kong, attitudes toward homosexuality are less permissive than in the West, even among college students (Hong, Fan, Ng, & Lee, 1994), who are typically among the most tolerant of subgroups. Because Hong Kong culture is more gender-differentiated than the West (Cheung, 1996), it is likely that youths who experience same-sex attraction or the desire to be of the opposite sex face more stigmatization than their counterparts in the West. Yet, little is known about the correlates of same-sex attraction, the desire to be of the opposite sex, and experience of early sexual intercourse in Hong Kong. Sexuality in general is not as openly expressed or discussed as in the West. Sexual intercourse is far less common among adolescents in Hong Kong than in North America (Lam, Stewart, Ho, & the Youth Sexuality Study Task Force, 2001). Indeed, in Hong Kong, self-reported occurrence of a single event of sexual intercourse in high school age adolescents is

statistically unusual (reported by less than 4% of youths) and predicts poor emotional adjustment (Lam et al., 2001). Even among single-young adults up to age 27 years, only 28% report even a single experience of sexual intercourse (Lam et al., 2001). Boys and girls from Hong Kong who have engaged in each progressive step of the spectrum of sexual activity leading to sexual intercourse, have earlier pubertal maturation than those who do not (Lam, Shi, Ho, Stewart, & Fan, 2002). However, whether youth who mature early and those who are sexually active show more depressive symptoms has not yet been explored.

Prevalence rates among adolescents in Hong Kong for the most persistent manifestation of depressive symptoms, Major Depressive Disorder, are similar to those reported in a U.S. community sample (Stewart et al., 2002). Levels of self-reported symptoms of depression have, however, been found to be higher than those reported in the West among high school age (Stewart, Betson, et al., 1999) and university students (Stewart et al., 1995). Stresses associated with dysphoric mood were similar to those reported in Western studies in both Hong Kong (Stewart, Betson, et al., 1999; Stewart, Lam, Betson, & Chung, 1999) and mainland China (Greenberger, Chen, Tally, & Dong, 2000); however, consistent with hypotheses regarding cultural differences in the nature of stressors, family relationships and academic performance played a greater role in depressive symptoms in China compared to the United States (Greenberger et al., 2000).

Thus, family and peer relationships, found to be impaired among sexual minority youth (Uribe & Harbeck, 1991) are also known to be important contributors to depressive symptoms in Hong Kong youth (Stewart, Betson, et al., 1999). Youth who engage in early sexual intercourse have been found to violate other societal norms and to have less satisfactory relationships with their parents (Lam et al., 2001). Peer and family relationships may be mediators in the relationship between atypical sexual feelings and behaviors and depressive symptoms in Hong Kong.

Every 5 years, the Family Planning Association of Hong Kong conducts a community-based survey on sexual attitudes and behaviors. In 2001, the survey included several measures that provided an opportunity for a preliminary investigation of several aspects of sexuality that are unusual among Hong Kong youths. These aspects were same-sex attraction, desire to be of the opposite sex, pubertal timing, and early sexual intercourse. The survey also included measures of depressive symptoms, and some of the known correlates of these symptoms: family and peer relationships, and self-rated attractiveness. We hypothesized that atypical sexual experiences would relate to depressive symptoms. We also tested a model that sought to explain some of the mechanisms responsible for depression in atypical youths. The model proposed that atypical sexual experiences were associated with poorer family and peer relationships and a sense of being unattractive, which in turn would be associated with depressive symptoms.

METHOD

Participants

The sample consisted of 1,024 boys and 1,403 girls, age 14–18 years ($M = 15.6$ years, $SD = 1.3$ years). Schools were contacted (random selection stratified by type of school, i.e. government, aided, or private, and by grade) and participation was requested. Of the 51 schools contacted, 37 (72.5%) agreed to participate. Some schools served students of only one sex, and more girls' than boys' schools agreed to participation resulting in more data from girls. Consistent with the authority bestowed on schools, which act in loco parentis in Hong Kong, parents were not asked to give permission for participation. Students were informed about the goals of the survey and invited to participate. Voluntary participation, anonymity, and confidentiality were emphasized. Participation (consistent with the high compliance rate in face of authority in school settings) was virtually unanimous, though some students ($n = 20$) turned in largely incomplete questionnaires.

Measures

The following measures were extracted from the survey and used in this study:

Depressive Symptoms

All participants were administered the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). This 20-item scale was designed to measure depressive symptoms in the previous week in community surveys, and has been used extensively with adolescents (Roberts, Andrews, Lewinsohn, & Hops, 1990) and adults. It has been previously used with adults in Hong Kong (Cheung & Bagley, 1998). Examples of items are "I felt that everything I did was an effort" and "I felt sad." Responses were provided on a Likert scale from 1 (*never*) to 5 (*always*). Western studies report a four-factor model. However, the data fit a four-factor solution poorly with two of the factors having eigenvalues <1.0. Further analysis indicated that two factors provided a

better fit. Four of the items worded in reverse direction from the others loaded on a separate factor. All the remaining items loaded at .57 or greater on the other factor. A single-item solution did not fit the data as well because the four reverse-worded items loaded very poorly on the same factor as the rest. For this reason, only 16 items were used in this set of analyses. These items had a Cronbach's alpha level of .93. They were summed and averaged for the analysis.

Same-Sex Attraction

Same-sex attraction was assessed by the single question: "Have you ever experienced homosexual tendencies?" The term is nonspecific and an affirmative response could indicate feelings of attraction and/or behavior.

Gender Dissatisfaction

Gender dissatisfaction was assessed by the question "If it were possible to change your sex, would you do so?"

Pubertal Timing

Pubertal timing was assessed by asking girls when they had their first menstrual period and boys when they had first experienced nocturnal ejaculation. This method has been used in Hong Kong samples previously (Lam et al., 2002). We were interested in the adolescents' pubertal development relative to peers (and not in identifying those who had precocious or delayed maturation in a clinical sense). We defined status of early, average, or late maturation by classifying the larger middle group of the sample as average maturers. This provided three subgroups with sample sizes sufficiently large for multivariate analysis. The groups were unequal in size, and also not equal between boys and girls, because age was provided by the respondents in full-year increment. Boys were classified as early maturers if they reported first ejaculation at 11 years or younger, and late maturers if they reported first ejaculation at 14 or older. Early maturing girls were those who reported menarche at 11 or younger, and late maturing girls were those who reported menarche at 13 or older.

Early Sexual Intercourse

Participants were asked to indicate whether or not they had ever experienced sexual intercourse. Because *any* experience with sexual intercourse is unusual for this group, all participants indicating that they had had sexual intercourse were included in the early intercourse group.

Family Relationships

Family relationships were examined by five items. Three questions assessed family relationships in general (e.g., "How do you feel about your family life?") with response options from 1 (*very poor*) to 5 (*very good*). One question assessed the relationship with mother (i.e., "Your relationship with your mother is" with response options from 1 (*very poor*) to 4 (*very good*), with an identical question to assess relationship with father. All items loaded on a single factor at .61 or greater and the Cronbach's alpha for the five items was .79. To adjust for different scale lengths, all items were converted to z scores and averaged for further analyses. Higher scores indicated better relationships.

Peer Relationships

Relationships with peers were assessed by four questions. Three assessed the quality of peer relationships by asking if the participant had a friend available to (a) support and help with decisions; (b) to cheer him or her up when the participant is distressed; and (c) spend time with. Response options were on a 4-point scale and ranged from *never* to *always*. The final question asked how many good friends the participant had, with whom s/he could enjoy spending time. Responses were on a 5-point scale from *none* to *5 or more*. Cronbach's alpha for these items was .74. Items were averaged for analyses. Higher scores indicated better relationships.

Attractiveness

Attractiveness was assessed by a single question, which asked the participant to rate the way that s/he looked compared to his/her friends and relatives. Responses were on a 4-point scale with higher scores indicating perception of greater attractiveness. Twenty-one percent of participants had missing data on this question.

RESULTS

Sex Differences

Table I presents information on sex differences in all variables of the study. Significant sex differences on

Table I. Sex Distributions for Atypical Sexuality, and Mean Ratings for Depressive Symptoms, Family and Peer Relationships, and Self-Perceived Attractiveness as a Function of Sex

		Boys [*N* (%)]	Girls [*N* (%)]
Same-sex attraction	Yes	44 (4.4)	163 (11.8)
	No	831 (83.3)	1,072 (77.8)
	Don't Know	122 (12.2)	142 (10.3)
Gender dissatisfaction	Yes	55 (5.6)	208 (15.1)
	No	794 (80.5)	883 (64.1)
	Don't Know	138 (14.0)	287 (20.8)
Pubertal timing	Early	174 (19.9)	412 (29.7)
	Average	428 (48.9)	522 (37.6)
	Late	274 (31.3)	455 (32.8)
Early experience of sexual intercourse	Yes	100 (10.3)	82 (6.0)
	No	872 (89.7)	1278 (94.0)
	Range	Boys [*M* (*SD*)]	Girls [*M* (*SD*)]
Depressive symptoms[a]	1–5	1.89 (0.74)	1.98 (0.66)
Family relationships[b]	−3.12 to 1.34	−0.06 (0.76)	0.02 (0.76)
Peer relationships[b]	1–4	2.87 (0.61)	3.12 (0.55)
Attractiveness[c]	1–4	2.87 (0.65)	2.85 (0.64)

[a]Higher scores indicate more symptoms.
[b]Higher scores indicate better family and peer relationships.
[c]Higher scores indicate greater self-perceived attractiveness.

measures of atypical sexuality were as follows: More girls than boys reported same-sex attraction ($\chi^2 = 40.66$, $df = 2$, $p < .001$) and gender dissatisfaction ($\chi^2 = 83.61$, $df = 2$, $p < .001$). More boys than girls indicated that they had experienced sexual intercourse ($\chi^2 = 14.29$, $df = 1$, $p < .001$). Analyses were not conducted for pubertal maturation because the categories of "early," "average," and "late" were defined on the basis of modal characteristics for each sex separately. Boys and girls' depressive symptoms, family and peer relationships, and self-perceived attractiveness were compared using 4 one-way analyses of variance (ANOVA). Girls reported more depressive symptoms, $F(1, 2291) = 20.53$, $p < .001$, and better family, $F(1, 2416) = 6.92$, $p < .01$, and peer, $F(1, 2418) = 118.38$, $p < .001$, relationships than boys. No sex differences were found for self-perceived attractiveness.

Same-Sex Attraction

Table II presents the mean ratings for depressive symptoms, family relationships, peer relationships, and attractiveness as a function of same-sex attraction status. For each of these four variables, a one-way analysis of variance (ANOVA) with three levels of same-sex attraction (yes, no, don't know) was conducted. Significant main effects for same-sex attraction were found for depressive symptoms, $F(2, 2276) = 22.13$, $p < .001$, family relationships, $F(2, 2362) = 15.27$, $p < .001$, and peer relationships, $F(2, 2364) = 5.08$, $p < .01$, but not for attractiveness. For depressive symptoms, post hoc tests showed that all three groups were significantly different from each other, with those reporting same-sex attraction showing most depression and those indicating no attraction to the same sex showing least depression. Family relationships were better in the group that reported that they were not attracted to the same sex compared to the other two groups. Peer relationships were poorer in the group that indicated that they "did not know" whether they were attracted to the same sex compared to the other two groups.

Gender Dissatisfaction

Mean scores for groups indicating gender dissatisfaction are presented in Table III. Main effects of gender dissatisfaction were found for depressive symptoms, $F(2, 2250) = 11.20$, $p < .001$, family relationships, $F(2, 2355) = 18.22$, $p < .001$, peer relationships, $F(2, 2356) = 4.42$, $p < .05$, and attractiveness, $F(2, 1878) = 8.88$, $p < .001$. Post hoc tests indicated the following differences between groups. Those who

Table II. Mean Ratings for Depressive Symptoms, Family Relationships, Peer Relationships, and Attractiveness as a Function of Same-Sex Attraction

		Same-sex attraction		
Variable	Range	No [*M* (*SD*)]	Yes [*M* (*SD*)]	Don't know [*M* (*SD*)]
Depressive symptoms[a]	1–5	2.30 (0.65)	2.61 (0.62)	2.42 (0.81)
Family relationships[b]	−3.12 to 1.34	0.03 (0.74)	−0.23 (0.88)	−0.15 (0.76)
Peer relationships[b]	1–4	3.02 (0.58)	3.10 (0.59)	2.93 (0.61)
Attractiveness[c]	1–4	2.88 (0.61)	2.79 (0.79)	2.81 (0.71)

[a]Higher scores indicate more symptoms.
[b]Higher scores indicate better family and peer relationships.
[c]Higher scores indicate greater self-perceived attractiveness.

Table III. Mean Ratings for Depressive Symptoms, Family and Peer Relationships, and Attractiveness as a Function of Gender Dissatisfaction

Variable	Range	Gender dissatisfaction		
		No [*M* (*SD*)]	Yes [*M* (*SD*)]	Don't know [*M* (*SD*)]
Depressive symptoms[a]	1–5	2.30 (0.65)	2.46 (0.68)	2.43 (0.73)
Family relationships[b]	−3.12 to 1 .34	0.04 (0.73)	−0.20 (0.81)	−0.14 (0.80)
Peer relationships[b]	1–4	3.04 (0.58)	3.01 (0.63)	2.94 (0.58)
Attractiveness[c]	1–4	2.94 (0.58)	2.82 (0.69)	2.72 (0.66)

[a]Higher scores indicate more symptoms.
[b]Higher scores indicate better family and peer relationships.
[c]Higher scores indicate greater self-perceived attractiveness.

reported gender dissatisfaction and those who indicated "don't know" had higher levels of depressive symptoms and poorer family relationships than those who did not report gender dissatisfaction. The respondents indicating "don't know" had poorer peer relationships and perceived themselves as less attractive than those who did not indicate gender dissatisfaction.

Pubertal Maturation

Table IV presents the data for early, average, and late maturers. ANOVAs indicated a significant effect of pubertal timing on depressive symptoms, $F(2, 2140) = 3.26$, $p < .05$, and peer relationships, $F(2, 2255) = 4.87$, $p < .01$. Post hoc analyses indicated that early maturers reported higher levels of depressive symptoms than late maturers. Early maturers also described their peer relationships as significantly better than those who were average or late maturers.

Early Experience of Intercourse

The relationship between early sexual intercourse and the variables of this study are presented in Table V. Adolescents with early experience of sexual intercourse reported more depression, $F(1, 2276) = 12.36$, $p < .001$, and worse family relationships, $F(2, 2321) = 16.37$, $p < .001$. However, they perceived themselves as being more attractive than did their counterparts, $F(1, 1852) = 9.66$, $p < .01$, who had not yet experienced sexual intercourse.

Path Analysis

Table VI presents the analyses that examined the contribution of the atypical sexual variables and the potential mediators to depressive symptoms. Causal modeling using path analyses and multiple regression (Munro & Page, 1993) was utilized to test the proposal that atypical sexual experiences were associated with worse family and peer relationships and a sense of being unattractive, which in turn were associated with depressive symptoms. Each "outcome" (i.e., potential mediator and depressive symptoms) was regressed on all predictors that fell before it in the path. Thus, family and peer relationships and self-perceived attractiveness were each first regressed on atypical sexuality variables and age and sex. Following these three analyses, atypical sexual variables and the potential mediators were tested as

Table IV. Mean Ratings for Depressive Symptoms, Family and Peer Relationships, and Attractiveness as a Function of Pubertal Maturation Timing

Variable	Range	Pubertal maturation		
		Early [*M* (*SD*)]	Average [*M* (*SD*)]	Late [*M* (*SD*)]
Depressive symptoms[a]	1–5	2.40 (0.66)	2.36 (0.66)	2.30 (0.68)
Family relationships[b]	–3.12 to 1.34	0.00 (0.77)	−0.02 (0.75)	0.00 (0.77)
Peer relationships[b]	1–4	3.09 (0.58)	3.00 (0.57)	3.02 (0.58)
Attractiveness[c]	1–4	2.86 (0.65)	2.86 (0.64)	2.87 (0.64)

[a]Higher scores indicate more symptoms.
[b]Higher scores indicate better family and peer relationships.
[c]Higher scores indicate greater self-perceived attractiveness.

Table V. Mean Depressive Symptoms, Family and Peer Relationships, and Attractiveness as a Function of Early Experience of Sexual Intercourse

Variable	Experience of early sexual intercourse		
	Range	No [*M* (*SD*)]	Yes [*M* (*SD*)]
Depressive symptoms[a]	1–5	2.52 (0.76)	2.33 (0.66)
Family relationships[b]	–3.12 to 1.34	−0.23 (0.81)	0.01 (0.75)
Peer relationships[b]	1–4	3.04 (0.64)	3.02 (0.58)
Attractiveness[c]	1–4	3.01 (0.71)	2.84 (0.64)

[a] Higher scores indicate more symptoms.
[b] Higher scores indicate better family and peer relationships.
[c] Higher scores indicate greater self-perceived attractiveness.

predictors to depressive symptoms in a single equation. In this equation, those atypical sexual variables whose prediction to depressive symptoms persisted when potential mediators were included as independent variables were termed "direct" predictors. Those that did not offer significant prediction could still exercise "indirect" effects by predicting to variables on the path to family or peer relationships or self-assessment of attractiveness.

Following each set of equations presented in Table VI, sex by predictor interactions were individually tested. Same-sex attraction's prediction to family relationships and to depressive symptoms was significantly moderated by sex (βs for interactions = .46 and .33, $p < .05$), with girls showing stronger relationships between predictor and dependent variable than boys. Peer relationships contributed to depressive symptoms for girls but not boys (β for interaction = −.35, $p < .05$). Significant direct and indirect paths are shown in Fig. 1.

The multivariate model presented in Fig. 1 indicates that same-sex attraction predicted depressive symptoms uniquely in both boys and girls (though the prediction was stronger for girls). In addition, because individuals who reported same-sex attraction also reported worse family relationships, and these relationships were also predictors of depressive symptoms, same-sex attraction had both direct and indirect effects on depressive symptoms. Individuals with gender dissatisfaction reported worse family and peer relationships. Because family (for both boys and girls) and peer relationships (for girls) also had an association with depressive symptoms, gender dissatisfaction indirectly influenced depressive symptomatology. Early pubertal maturation predicted depressive symptoms but did not associate with potential mediators in the multivariate model. The experience of early sexual intercourse was positively related to depressive symptoms, and also indirectly influenced these symptoms by associating (negatively) with family relationships and (positively) with self-perceived attractiveness. An unexpected finding was the positive association between early sexual intercourse

Table VI. Path Analysis Assessing Model in Fig. 1

Path	*B*	*SE*	β
1. On family relationships[a]			
From age	−.01	.01	−.02
From sex	.12	.04	.08**
From same-sex attraction	−.23	.06	−.09***
From gender dissatisfaction	−.25	.05	−.11***
From pubertal timing rate	−.01	.02	−.01
From experience of early sexual intercourse	.18	.07	.06**
2. On peer relationships[b]			
From age	.02	.01	.03
From sex	.27	.03	.23***
From same-sex attraction	.03	.05	.01
From gender dissatisfaction	−.10	.04	−.06*
From pubertal timing rate	−.03	.02	−.04
From experience of early sexual intercourse	.06	.05	.03
3. On self-assessment for attractiveness[c]			
From age	−.01	.01	−.02
From sex	.00	.03	.00
From same-sex attraction	−.10	.06	−.04
From gender dissatisfaction	−.07	.05	−.04
From pubertal timing rate	.01	.02	.01
From experience of early sexual intercourse	.19	.06	.08**
4. On depressive symptoms[d]			
From age	.06	.01	.11***
From sex	.15	.03	.11***
From family relationships	−.17	.02	−.19***
From peer relationships	−.09	.03	−.08**
From self-assessment for attractiveness	−.12	.03	−.12***
From same-sex attraction	.22	.06	−.12***
From gender dissatisfaction	.05	.05	.03
From pubertal timing rate	−.05	.02	−.05*
From experience of early sexual intercourse	.14	.06	.06*

[a] $R^2 = 0.03$.
[b] $R^2 = 0.05$.
[c] $R^2 = .01$.
[d] $R^2 = .11$.
* $p < .05$; ** $p < .01$; *** $p < .001$.

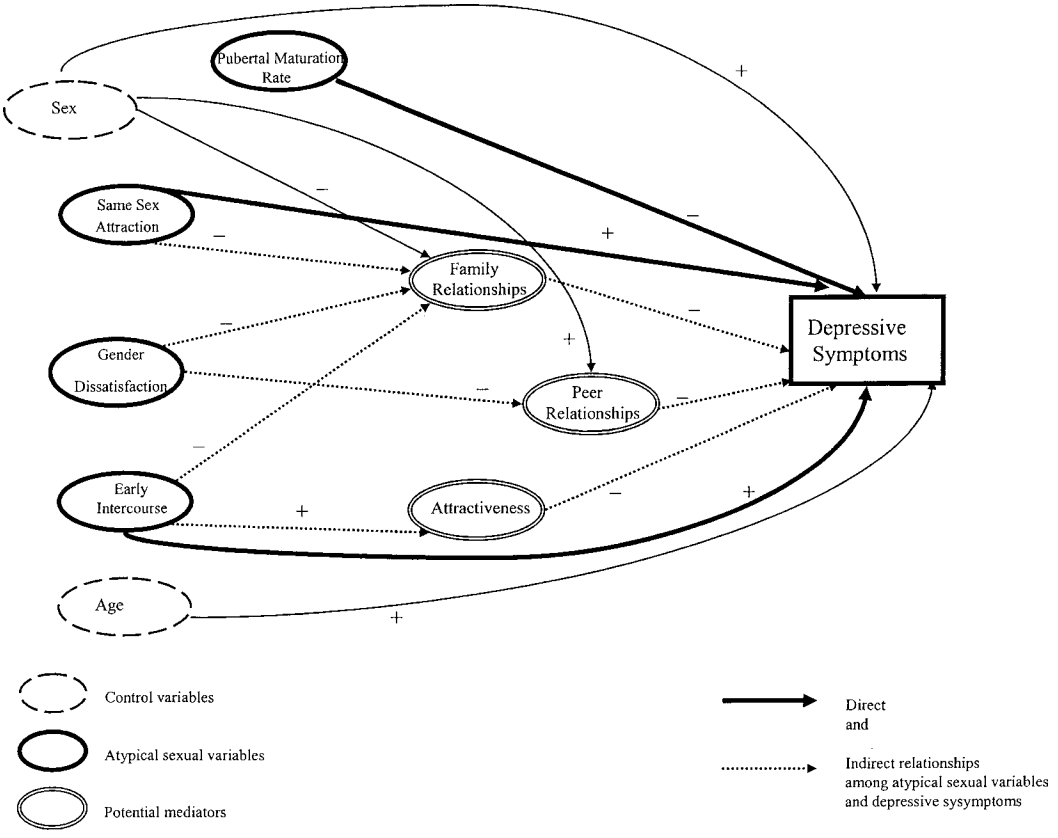

Fig. 1. Model describing relationships among atypical sexual variables, mediators (peer and family relationships and self-perceived attractiveness), and depressive symptoms. All paths in model are significant at $p < .05$ for both boys and girls, except for path from peer relationships to depressive symptoms that is significant for girls only.

and attractiveness. This model explained 11% of the variance in depressive symptoms.

DISCUSSION

This study provided information on the frequency of self-reported same-sex attraction and gender dissatisfaction in a community sample of boys and girls ages 14–18 in Hong Kong. Young people who reported tendencies to be attracted to the same sex or wishing to change their gender reported more depressive symptoms. In addition, those who reached pubertal maturation earlier than their peers and those who reported having experienced sexual intercourse also showed more depressive symptoms. Youths reporting same-sex attraction and gender dissatisfaction reported poorer relationships with family and/or peers. Young people who indicated experience of sexual intercourse described poorer family relationships, but they perceived themselves as more attractive. In multivariate models, same-sex attraction, early pubertal maturation, and the early experience of intercourse contributed unique variance to depressive symptoms over and above shared effects as well as those of the possible mediators. Gender dissatisfaction, however, was no longer a significant contributor to depressive symptoms when the other predictors were included. Our findings indicated that sexual feelings and behaviors that are different from (or appear at a different rate than) peers are also associated with depressive symptoms in non-Western cultures. This information regarding vulnerability of youths with atypical sexual experiences may be helpful in designing intervention programs to improve mood in individuals at risk for depressive disorders.

Although boys and girls had different frequencies of atypical sexual behaviors, there were few actual differences in the prediction afforded by atypical sexuality to mediators and to depressive symptoms. For girls, same-sex attraction predicted more variance in depressive symptoms and in family relationships in the multivariate model than for boys; however, both predictors were significant for both sexes. Peer relationships accounted

for significant variance in depressive symptoms in girls but not boys. The finding that relationships may be more easily disrupted and more salient in eliciting depressive symptoms for girls compared to boys is not unexpected, given the consistent literature on the higher emphasis girls place on relationships (Cross & Madson, 1997).

About 4–6% of boys and 12–15% of girls reported feelings of same-sex attraction and gender dissatisfaction. We note that the measures were such that they likely captured a heterogeneous range of individuals, the majority of whom likely have neither stable bi- or homosexual orientations nor stable opposite gender identities. A larger number reported that they "did not know" if they have been attracted to same-sex individuals and if they would want to change their sex. This uncertain group did not consistently segregate with either those who acknowledged or denied these assessments on the concomitants we assessed; however, given the stigmatization of these feelings, it is possible that some proportion of youth may not be willing to acknowledge them directly. Uncertainty may also result if the experience is transient and therefore not reliable over time. Finally, single yes/no questions may not carry the range of responses that some adolescents believe accurately represents their experience.

A finding that was not hypothesized was that both boys and girls reported higher levels of self-rated attractiveness when they have had early sexual intercourse. Whether more attractive youth are likely to engage earlier in sexual intercourse or whether adolescents perceive themselves as being more attractive after they have had sexual intercourse cannot be determined. Although self-perceived attractiveness was associated with positive mood, overall, youths reporting early sexual intercourse reported worse rather than better mood. The finding of poor adjustment in sexually experienced teenage youth in Hong Kong is consistent with our earlier report (Lam et al., 2001).

In both Western and Hong Kong culture, sexual minority youths are vulnerable to the development of depressive symptoms. The small (but statistically significant) variance contributed by the variables of this study to depression is expected, given that depressive mood is frequent and multidetermined among adolescents, and atypical sexuality is relatively rare. In the case of same-sex attraction and the early experience of sexual intercourse, direct relationships persisted even after shared variance with relationships and self-perceived attractiveness was accommodated. Thus, atypical sexual attitudes and experiences may be a small but consistent contributor to the mood status of Hong Kong youth.

The full range of agents accounting for the effects of atypical sexual experiences on mood was not elucidated. Impaired relationships do, as predicted, account for some, but not all, of the effects of sexual variables on mood. Cognitions related to stigmatization of same-sex attraction and/or concerns about future roles and relationships may be other agents that impact mood. Early puberty and early sexual intercourse may correlate with impulsivity or self-damaging behaviors, which may also directly or indirectly influence mood. Determining the intervening variables between the sexual attitude and/or experience and depressed mood is important if effective strategies to prevent and alleviate depressed mood among sexual minority youth are to be developed.

There are several limitations of this study, a number of which are related to the fact that items were extracted from a large and broad-based examination of sexuality among adolescents. The measures of same-sex attraction and gender dissatisfaction were single items with primarily face validity and unknown reliability. Time periods and strength thresholds for the sexual feelings and behaviors were not specified, and the groups captured in these "atypical" categories may be quite heterogeneous. The methodology did allow the inclusion of a larger sample than more comprehensive face-to-face interviews would yield. Indeed, in addressing sensitive topics such as same-sex attraction in Hong Kong culture where sexuality is little discussed, surveys may provide some important information regarding prevalence that may be difficult to elicit in face-to-face interviews; however, large-scale paper–pencil surveys miss the richness of qualitative data, and, as in the case of the present study, missing data can be a problem. Careful piloting of questions and more specific instruments in a shorter overall survey may reduce the "don't know" and missing response problem. Our findings need to be extended by using more specific items, in-depth questionnaires, and open-ended interviews.

ACKNOWLEDGMENTS

The data for this study came from the Family Planning Association. Members of the Task Force on Youth Sexuality Study, 2001, were T. H. Lam, Suzanne Ho, Joseph Lee, Peter W. H. Lee, Priscilla Ng Suk-han Lee, Judith Mackay, M. L. Ng, Paul S. F. Yip, and Sunita M. Stewart (advisor).

REFERENCES

Bailey, J. M., & Zucker, K. J. (1995). Childhood sex-typed behavior and sexual orientation: A conceptual analysis and quantitative review. *Developmental Psychology*, *31,* 43–55.

Bradley, S. J., & Zucker, K. J. (1997). Gender identity disorder: A review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36,* 872–880.

Cheung, F. M. (1996). Gender role development. In S. Lau (Ed.), *Growing up the Chinese way* (pp. 45–68). Hong Kong: Chinese University Press.

Cheung, C. K., & Bagley, C. (1988). Validating an American scale in Hong Kong: The Center for Epidemiological Studies Depression Scale (CES-D). *The Journal of Psychology*, *132,* 169–186.

Cross, S. E., & Madson, L. (1997). Models of the self: Self-construals and gender. *Psychological Bulletin*, *122,* 5–37.

Faulkner, A. H., & Cranston, K. (1998). Correlates of same-sex behavior in a random sample of Massachusetts high school students. *American Journal of Public Health*, *88,* 262–266.

Fridell, S. R., Zucker, K. J., Bradley, S. J., & Maing, D. M. (1996). Physical attractiveness of girls with gender identity disorder. *Archives of Sexual Behavior*, *25,* 17–31.

Garofalo, R., & Katz, E. (2001). Health care issues of gay and lesbian youth. *Current Opinion in Pediatrics*, *13,* 298–302.

Ge, X., Conger, R. D., & Elder, G. H. (2001). Pubertal transitions, stressful life events, and the emergence of gender differences in adolescent depressive symptoms. *Developmental Psychology*, *37,* 404–417.

Green, R. (1987). *The "sissy boy syndrome" and the development of homosexuality*. New Haven: Yale University Press.

Greenberger, E., Chen, C., Tally, S. R., & Dong, Q. (2000). Family, peer, and individual correlates of depressive symptomatology among U.S. and Chinese adolescents. *Journal of Consulting and Clinical Psychology*, *68,* 209–219.

Ho, P. S. (1995). Male homosexual identity in Hong Kong: A social construction. *Journal of Homosexuality*, *29,* 71–88.

Hong, J. H., Fan, M. S., Ng, M. L., & Lee, L. K. C. (1994). Sexual attitudes and behavior of Chinese university students in Shanghai. *Journal of Sex Education and Therapy*, *20,* 277–286.

Lam, T. H., Shi, H. J., Ho, L. M., Stewart, S. M., & Fan, S. (2002). Timing of pubertal maturation and sexual behavior among Hong Kong Chinese adolescents. *Archives of Sexual Behavior*, *31,* 359–366.

Lam, T. H., Stewart, S. M., Ho, L. M., & Youth Sexuality Study Task Force. (2001). Prevalence and correlates of smoking and sexual activity among Hong Kong adolescents. *Journal of Adolescent Health*, *29,* 352–358.

McDermid, S. A., Zucker, K. J., Bradley, S. J., & Maing, D. M. (1998). Effects of physical appearance on masculine trait ratings of boys and girls with gender identity disorder. *Archives of Sexual Behavior*, *27,* 253–267.

Munro, B. H., & Page, E. B. (1993). *Statistical methods for health care research*. Philadelphia: J. B. Lippincott.

Orr, D. P., Beiter, M., & Ingersoll, G. (1991). Premature sexual activity as an indicator of psychosocial risk. *Pediatrics*, *87,* 141–147.

Radkowsky, M., & Siegel, L. J. (1997). The gay adolescent: Stressors, adaptations, and psychosocial interventions. *Clinical Psychology Review*, *17,* 191–216.

Radloff, L. S. (1977). A CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1,* 385–401.

Remafedi, G. (1999). Suicide and sexual orientation: Nearing the end of controversy? *Archives of General Psychiatry*, *56,* 885–886.

Remafedi, G., French, S., Story, M., Resnick, M. D., & Blum, R. (1998). The relationship between suicide risk and sexual orientation: Results of a population-based study. *American Journal of Public Health*, *88,* 57–60.

Roberts, R. E., Andrews, J. A., Lewinsohn, P. M., & Hops, H. (1990). Assessment of depression in adolescents using the Center for Epidemiologic Studies Depression Scale. *Psychological Assessment*, *2,* 122–128.

Savin-Williams, R. C. (2001). Suicide attempts among sexual-minority youths: Population and measurement issues. *Journal of Consulting and Clinical Psychology*, *69,* 983–991.

Schuster, M. A., Bell, R. A., & Kanouse, D. E. (1996). The sexual practices of adolescent virgins: Genital sexual activities of high school students who have never had vaginal intercourse. *American Journal of Public Health*, *86,* 1570–1576.

Shifrin, S., & Solis, M. (1992). Chemical dependency in gay and lesbian youth. *Journal of Chemical Dependency Treatment*, *5,* 67–76.

Smith, A., Lindsay, J., & Rosenthal, D. (1999). Same-sex attraction, drug injection and binge drinking among Australian adolescents. *Australian and New Zealand Journal of Public Health*, *23,* 643–646.

Stewart, S. M., Betson, C., Lam, T. H., Chung, S. F., Ho, H. H., & Chung, T. F. C. (1999). The correlates of depressed mood in adolescents in Hong Kong. *Journal of Adolescent Health*, *25,* 27–34.

Stewart, S. M., Betson, C., Marshall, I., Wong, C., Lee, P., & Lam, T. H. (1995). Stress and vulnerability in Hong Kong medical students. *Medical Education*, *29,* 119–127.

Stewart, S. M., Lam, T. H., Betson, C., & Chung, S. F. (1999). Suicide ideation and its relationship to depressed mood in a community sample of adolescents in Hong Kong. *Suicide and Life-Threatening Behavior*, *29,* 226–240.

Stewart, S. M., Lewinsohn, P., Lee, P. W. H., Ho, L. M., Kennard, B. D., Hughes, C. W., et al. (2002). Symptom patterns in depression and "subthreshold" depression among adolescents in Hong Kong and the United States. *Journal of Cross- Cultural Psychology*, *33,* 559–576.

Stice, E., Presnell, K., & Bearman, S. K. (2001). Relation of early menarche to depression, eating disorders, substance abuse and comorbid psychopathology among adolescent girls. *Developmental Psychology*, *37,* 608–619.

Thomas, B. H., DiCenso, A., & Griffith, L. (1998). Adolescent sexual behavior: Results from an Ontario sample. Part I: Adolescent sexual activity. *Canadian Journal of Public Health*, *89,* 90–93.

Uribe, V., & Harbeck, K. M. (1991). Coming out of the classroom closet. *Journal of Homosexuality*, *22,* 9–27.

Vitale, A. (2001). Implications of being gender dysphoric: A developmental review. *Gender and Psychoanalysis*, *6,* 121–141.

Warren, C. W., Kann, L., Small, M. L., Santelli, J. S., Collins, J. L., & Kolbe, L. J. (1997). Age of initiating selected health-risk behaviors among high school students in the United States. *Journal of Adolescent Health*, *21,* 225–231.

Zucker, K. J., & Bradley, S. J. (1995). *Gender identity disorder and psychosexual problems in children and adolescents*. New York: Guilford.

Zucker, K. J., Owen, A., Bradley, S. J., & Ameeriar, L. (2002). Gender-dysphoric children and adolescents: A comparative analysis of demographic characteristics and behavioral problems. *Clinical Child Psychology and Psychiatry*, *7,* 398–411.