

Gender as a Moderator of the Effects of the Love Motive and Relational Context on Sexual Experience¹

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The moderator effect of gender on (i) the relation between adolescents' sexual experience on the one hand; and (ii) their orientations towards the type of relational and emotional commitment that they expect to be present before engaging in a sexual relationship, and (iii) having a steady partner on the other was examined. We hypothesized that the relations between these facets would be stronger for women. We utilized a random sample of 253 British adolescents interviewed twice with a 1-year interval. LISREL multigroup analysis with mean structures was used to test the hypotheses, thus offering the opportunity of detecting moderator as well as main effects of gender. Differential effects of emotional and relational commitment and having a steady partner relationship on sexual experience supported the hypotheses.

KEY WORDS: gender; adolescence; sexual behavior; love.

INTRODUCTION

The relationship between sexual experience and the emotional/relational conditions that have to be fulfilled before having intercourse among adolescents was studied. Numerous studies demonstrate a strong connection between sexual behavior and attitudes towards sexual issues, for adolescents (e.g., McCormick *et al.*, 1985; Miller and Olson, 1988; Taris and Semin, 1995) as well as for young adults (Delameter and MacCorquodale,

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1979; Reiss, 1967; Sneddon and Krenan, 1992). Previous research has shown that the partner is usually a close friend of the subject (Bowie and Ford, 1989; Delameter and MacCorquodale, 1979; Ehrmann, 1959; Kantner and Zelnik, 1972; Jessor *et al.*, 1983), and often the subject feels the partner is someone they would like to marry (Simon *et al.*, 1972). Adolescent motives for having intercourse are in line with what one would expect on the basis of the above results, and include emotional involvement, love, and commitment (Carrol *et al.*, 1985; Træen and Lewin, 1992).

There is small body of evidence suggesting that there are distinct differences between the sexes with regard to the type of relationship in which intercourse is typically experienced, and the importance of motives for having sex. Females report more often that they plan to marry their partner (Simon *et al.*, 1972; Zelnik and Shah, 1983), and their motives for having sex are much more often "commitment" and "love" than is the case for males (Carrol *et al.*, 1985). For females having sex typically occurs in the context of a steady relationship, the characteristics of which usually include reciprocal commitment and affection, as well as some degree of formalization (the relationship is supposed to last, perhaps "till death do us part").

Although males acknowledge the importance of emotional involvement in a sexual relationship, they are—unlike females—also willing partners when love and commitment are absent. Male motives for having sex include not only love and commitment but also pleasure and fun (Carrol *et al.*, 1985). Indeed, 61% of the men in the Carrol *et al.* study indicated that emotional involvement was never or only sometimes a prerequisite for having sex, whereas 85% of the females said it was a prerequisite always or most of the time. When asked for the primary reason for *refusing* to have sexual intercourse, nearly half of the men checked that they would "never miss an opportunity," whereas none of the women checked this response option. Thus, there appear to be major differences between the sexes when it comes to the importance of various motives in deciding whether to have sexual intercourse when the opportunity arises (Carrol *et al.*, 1985).

The current research reviews the relations between gender, the prerequisites that need to be fulfilled before engaging in a sexual relationship (especially the amount of relational and emotional commitment that should be present—which we refer to as the *love motive*—and having a steady relationship), and sexual experience in the context of a longitudinal study, among a sample of British adolescents. At the heart of this research lies the question whether gender moderates the relationship between the love motive and having a steady relationship on the one hand, and sexual experience on the other. Such a moderator effect follows logically from the

literature discussed above, yet we are not aware of other studies explicitly addressing this issue.⁴

Additionally, the evidence on the relation between sexual behavior and attitudes often stems from cross-sectional and/or retrospective studies (e.g., Bowie and Ford, 1989; Kantner and Zelnik, 1972; Zelnik and Shah, 1983). In cross-sectional studies the causal direction among the constructs cannot properly be unravelled, while retrospective reports may be distorted by memory effects (see Schwarz and Sudman, 1994). Though the evidence presented in such studies is suggestive, a true longitudinal design is better suited to unravel the causal relations between the love motive and having a steady relationship on the one hand, and sexual experience on the other. Indeed, as Breakwell and Fife-Shaw (1992) pointed out, given the advantages of longitudinal research it is remarkable that so few studies utilize a longitudinal design.

The current study offers a longitudinal investigation of (i) whether motives and background variables affect the sexual experience of a sample of adolescents; and (ii) whether these relations are moderated by gender (i.e., stronger for women than for men). As such this report contributes to the understanding of the interplay between gender, sexual attitudes, and sexual experience. We first present a more elaborate review on the effects of the context in which sexual experience typically takes place. We then propose a model that links sexual attitudes, via intended courtship behavior, to sexual experience. This model is successively tested using structural modeling procedures, and the implications of the results are discussed.

CONTEXT OF INTERCOURSE: EMOTIONAL AND RELATIONAL COMMITMENT, OR NOT?

There is abundant evidence that the meaning of intercourse differs substantially between the genders (among others, Carrol *et al.*, 1985; Jessor *et al.*, 1983; Træen and Lewin, 1992; Delameter and MacCorquodale, 1979; Simon *et al.*, 1982; Ehrmann, 1959). This is especially apparent in the case of first intercourse. Zelnik and Shah (1983) reported substantial differences between men and women in the type of relationship within which they first experienced intercourse. Over half of the women were "going steady" with their first partner, whereas only about a third of the men were. A further

⁴One might argue that it is not so much gender *itself* that moderates these relations, but rather the different norms held by men and women. In our culture it is uncommon for women to give in too easily to their sexual desires, while men are expected to never miss an opportunity. Thus, rather than to suggest that there is some biological or even evolutionary foundation for the differential sexual behavior of adolescent males and females (as, for example, Buss, 1994, argues), we merely use gender as a proxy of these cultural norms.

third of the men indicated that their first partner was a friend, with the corresponding figure for women being only 6.7%. Women were more likely to report the context of their first intercourse as "engaged," while more men reported that their first partner had been "someone they had recently met." Kantner and Zelnik (1972) found that over half of the sexually experienced young women in their sample reported that they had had intercourse only with the person they intended to marry. Ehrmann's (1959) study shows that in the 1950s females exclusively or primarily had had intercourse with lovers and not acquaintances, whereas the reverse was the case for males. A similar—though less strong—pattern was reported by Delameter and MacCorquodale (1979): 58% of their (nonstudent) females reported that their first intercourse was with someone they loved, whereas only 32% of the males reported the same. Indeed, 36% of the males reported that the context of their first intercourse was a casual relationship, whereas this was the case for only 11% of the females. Jessor *et al.* (1983) found that the context of first intercourse for about three quarters of the women in their sample was a committed relationship, while this only applied to about half of the men. Simon *et al.* (1979) reported that nearly half of the sexually experienced males said that they were not emotionally involved with their first coital partner, whereas this was the case for only 5% of the females, with nearly 6 in 10 reporting that they planned to marry their first coital partner.

This pattern also generalizes to sexually experienced subjects. For example, Træen and Lewin (1992) found for a sample of Norwegian adolescents that 45% of the sexually experienced males indicated they ever had sexual intercourse with a casual partner (someone they met the same night the intercourse took place), with a corresponding figure of 25% for sexually experienced females. Hence, it appears that for women having intercourse usually implies having a close relationship and love, rather than a casual encounter, whereas this is much less so for men. This leads us to expect that having a steady relationship is linked to sexual experience, but that this relation is considerably stronger for women than for men; for the latter having a steady relationship is much less a prerequisite for having sexual experience. Similarly, we expect that a strong emotional and relational commitment (the love motive) will be related to being sexually experienced, but this relation is expected to be stronger for women than for men.

COURTSHIP BEHAVIORS AND FIRST INTERCOURSE

The further set of variables we expect to be relevant to acquiring sexual experience are the behaviors adolescents regard as permissible in a first

encounter. We refer to these as *courtship behaviors*. Over one third of the males (and 11% of the females, cf. Delameter and MacCorquodale, 1979; Træen and Lewin, 1992) experienced their first intercourse with someone they met only casually. Hence, the courtship behaviors one considers as permissible during such an encounter may well be relevant in predicting the timing of becoming sexually experienced, especially among males.

Several studies have provided strong evidence for a developmental sequence in sexual behavior. It appears that there is a sequence of "light" to "heavy" heterosexual courtship behaviors, progressing through holding hands, kissing, necking, light petting, heavy petting, and coitus, such that most individuals participate in less intimate behaviors before participating in the more intimate behaviors (cf. Breakwell and Fife-Shaw, 1992; Delameter and MacCorquodale, 1979; Miller and Simon, 1974; Smith and Udry, 1985). We expect that the more subjects regard these more intimate behaviors as permissible during a first encounter, the more likely they are to become sexually experienced at a young age.

On the other hand, it appears that the type of behavior one regards as permissible depends strongly on the love motive discussed in the previous section. It seems unlikely that subjects who feel that sexual intercourse should only take place between a man and a woman who really love each other, who are engaged to marry, or who are—at the very least—committed in a long-term relationship, feel that the more intimate behaviors are permissible at a first encounter.

HYPOTHESES

On the basis of the notions discussed above we advance the following hypotheses. Being sexually experienced is expected to be dependent on three factors (variables), namely, (i) the type of courtships behaviors one regards as permissible during a first encounter; (ii) whether one has a steady relationship; and (iii) the love motive. As outlined above, men often experience sexual intercourse frequently with a casual partner. We therefore expect gender moderator effects for the effect of the love motive and having a steady relationship on sexual experience.

We further expect that the love motive is also an important determinant of courtship behavior. When one feels that a high relational commitment is necessary before having sex with someone, then the likelihood that one intends to have intercourse with a person, without being emotionally involved with him or her and/or without knowing this person well, will decrease. These hypotheses are presented graphically in Fig. 1. The main features of this model are that sexual experience at Time 2 (T2) is affected

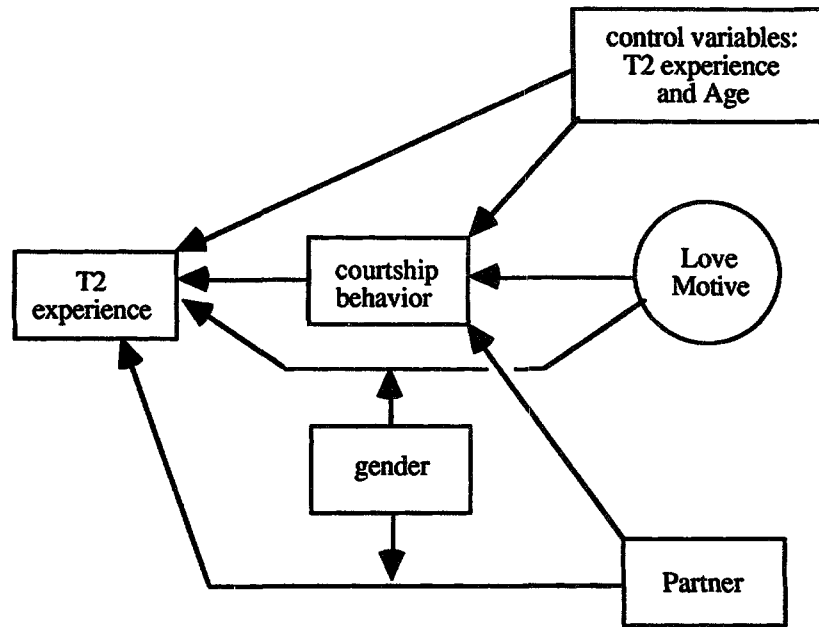


Fig. 1. Representation of the core of the model tested in this study. An arrow from Gender pointing to a path linking two variables means that the relationship between those variables depends on the subject's gender.

by the type of courtship behavior one intends to engage in on a first encounter, the presence of a steady partner, and the love motive. Courtship behavior is in turn affected by the love motive, and by having a steady relationship.

We also included two other, previously unmentioned, variables in our study. Clearly, Time 1 (T1) sexual experience must be controlled in order to obtain unbiased estimates of the relations between, for example, the love motive and T2 sexual experience; it is likely that T1 sexual experience is at least moderately correlated to both variables. The same applies to the respondents' age (presumably positively correlated to whether one has a steady partner relationship, and T2 sexual experience). Thus, age and T1 sexual experience are included in this study as control variables; we have no substantive interest in these variables, and therefore we do not advance explicit hypotheses for them (even though that would be possible).

We acknowledge in advance that we do not aim to present an exhaustive model of the process that leads to getting sexually experienced. Thus, other variables—not included in the current study—could potentially play an important role in explaining whether a respondent is a virgin (such as

the degree to which parents supervise the subject's dating behavior, see Hogan and Kitagawa, 1985; Jessor and Jessor, 1975; Taris and Semin, 1996). However, we believe that such variables are relatively independent from the variables included in this study, and therefore that the above hypotheses can appropriately be tested without including them (cf. Cliff, 1983).

METHOD

Sample

The data were collected as part of a two-wave panel study. The waves of the study were conducted, respectively, in 1989 and 1990 in the area around Brighton and Hove, Sussex, England. In the first wave, 333 adolescents ages 15–18 years old completed a structured questionnaire individually in the presence of an interviewer. The questionnaire addressed, among other things, sexual behavior, attitudes towards several sex-related issues, intimate relationships, courtship behavior, as well as background variables such as age, gender and socioeconomic status (SES). Nonresponse at the second wave decreased the sample to 255 subjects. Subsequent analysis of the nonresponse showed that attrition was not systematically affected by age, gender, religion, political preference, or SES, and that the sample was representative for the target population. Due to listwise deletion of missing values, the final sample was 253 adolescents (i.e., 128 male and 125 female). Table I presents the means and standard deviations of the sample for the variables used in the study as well as several demographic variables, for men and women separately.

Comparison of the T1 scores of the subjects in the final sample (the respondents) and the nonrespondents (the dropouts) revealed that the respondents were slightly more inclined to apply the light courtship behaviors (see Measures: $\bar{X}_{\text{respondents}} = 3.76$, $\bar{X}_{\text{dropouts}} = 3.53$), $F(1, 323) = 8.39$, $p = .004$. No differences were found concerning the other variables used in this study.

Measures

Time 1/Time 2 Sexual Experience

Whether the subject was sexually experienced or not was assessed by asking whether they had ever had sex with anyone (0 = no, 1 = yes). This question was asked at both time points. At the first occasion, 35% of the women and 38% of the men already had had sex. One year later, these percentages were 64 and 62, respectively, showing that men and women

Table I. Means and Standard Deviations of the Study Variables and Selected Demographic Variables

Variable	Men (<i>n</i> = 128)		Women (<i>n</i> = 125)		<i>F</i> (1, 253)
	\bar{X}	SD	\bar{X}	SD	
Age	15.70	1.09	15.83	1.06	ns
Religious commitment ^b	2.37	1.98	2.61	1.97	ns
Political commitment ^b	3.80	1.54	3.58	1.30	ns
SES ^b	2.32	1.18	2.41	1.28	ns
T2 Experience ^a	0.62	0.49	0.64	1.07	ns
T1 Experience ^a	0.38	0.42	0.35	0.50	ns
Steady partner relationship ^a	0.73	0.45	0.62	0.50	ns
Heavy courtship behavior	1.74	0.66	1.22	0.55	46.13, <i>p</i> < 0.001
Light courtship behavior	3.79	0.58	3.73	0.60	ns
Permissiveness	4.54	1.17	4.31	1.17	ns
Emotional commitment	0.63	0.41	0.76	0.35	6.42, <i>p</i> = 0.012
Relational commitment	0.10	0.26	0.12	0.30	ns

^aDichotomous variable; we applied the Pearson chi-square test here.

^bRange 1 (low) to 5 (high).

were about equally likely to have had sex at both time points. One advantages of this operationalization of sexual experience is that it can easily be remembered over time (cf. Schwarz and Sudman, 1994) Though in general a multiple-item operationalization of Sexual Experience would be more reliable than a single item (it would certainly provide more information, thus allowing for finer distinctions among the respondents), it seems reasonable to expect that given its matter-of-fact nature, the reliability of the current operationalization will be acceptable.

Courtship Behavior

In the current study the *perceived likelihood* to engage in particular sexual behaviors was measured, rather than actual behavior itself. The precise wording of the question was "Imagine that you are at a disco one evening and meet somebody. You are mutually attracted to each other. You have a wonderful evening and you don't want it to end. How likely would you be to do each of the following things" (after which a list of actions followed, such as "holding hands," "masturbate each other," and "go for a walk together"). Response categories ranged from 1 (*not at all likely*) to 7 (*very likely*).

On the basis of earlier research we expected that all types of behaviors would load on one dimension. Exploratory factor analysis however showed that not one but *two* (relatively orthogonal) factors accounted for the observed data. The first factor involved behaviors such as holding hands, kissing each other, going for a walk together, dancing together, sharing a drink

from the same glass, and talking to each other. The reliability (Cronbach's α) of this 13-item scale was .86. The second scale involved behavior such as having sexual intercourse either with or without a condom, masturbating each other, finding a place where you can be alone and possibly make love, and going home with them (α of this 7-item scale is .84). The correlation between these scales was only .28, showing that there is a clear separation between light and heavy courtship behavior, and that these two types of behavior cannot be located on a single continuum. Therefore, they are used as separate variables in the analysis.

Steady Boyfriend/Girlfriend. The subjects had to indicate whether they had a steady boy/girlfriend at T1 (score 1) or not (score 0). We included this variable rather than a measure asking whether the respondent had "ever" had a steady boy/girlfriend, because *all* subjects indicated that they had had a steady partner relationship in the past.

The Love Motive

Three scales served as indicators for this latent construct. The first scale appeared to tap the *relational commitment* that would have to be present before the subject feels it is acceptable to have intercourse. The three items of this scale were "I would have to be married to the person before having sex with them," "I would have to be engaged to marry the person before having sex with them," and "I would have to be in a committed, long-term relationship with the person before having sex with them" (1 = no, 2 = yes). The items of this scale complied with the requirements of the Mokken model, which is a stochastic generalization of the Guttman model (cf. Mokken and Lewis, 1982). The reliability (ρ) was .74.

The second scale referred to the amount of *emotional commitment* (love) that should be present, before the subject feels it is acceptable to have a sexual relationship. The two items of this scale were "I would have to be in love with them," and "I would have to know that they really loved me" (1 = no, 2 = yes). The correlation between these items was .60.

Finally, the third scale was really a measure of *sexual permissiveness*. Typical items of this 6-item scale were "it is o.k. to have more than one regular sexual partner," "it does not really matter whether men and women have sex before marriage," and "adultery is sinful under all circumstances" (reversed), and α was .70 (1 = *disagree strongly*, 7 = *agree strongly*). In the analyses this scale is reversed to give it the same direction as the other two scales used as indicators of the love motive.

Thus, these three scales seemed to represent three different facets (relational commitment, emotional commitment, and—absence of—sexual permissiveness) of what we referred to as the love motive. Taken together

Table II. Correlations Among the Variables Used in This Study, for Men (Lower Half) and Women (Upper Half) Separately^a

	1	2	3	4	5	6	7	8	9
T2 experience	–	.43	.39	.49	–.02	.28	.24	.37	.29
T1 experience	.60	–	.32	.04	–.09	–.09	–.21	.07	–.12
Steady relationship	.30	.30	–	–.16	–.19	.03	.00	–.07	.17
Heavy courtship behavior	.55	.27	.11	–	.27	–.34	–.32	–.17	–.07
Light courtship behavior	.32	.09	.02	.30	–	–.20	–.15	–.12	–.12
Permissiveness (R) ^b	–.35	–.33	–.13	–.49	–.24	–	.36	.40	–.11
Emotional commitment	–.41	–.35	–.16	–.37	–.09	.43	–	.28	–.03
Relational commitment	–.27	–.24	–.09	–.30	–.32	.51	.40	–	–.12
Age	.28	.34	.17	–.02	.16	–.04	–.17	–.10	–

^aCorrelations of .17 and over are significant at $p \leq .05$, correlations of .22 and over are significant at $p \leq .01$.

^b(R) = variable reversed.

these scales cover the two domains encountered in the introduction: whether relational commitment is a necessary prerequisite before engaging in a sexual relationship, and whether emotional commitment is a necessary prerequisite. The correlations among the three scales range from .28 to .51 (median value .40). In the analysis they were taken as manifest indicators of the (latent) love motive. The correlations among the variables are presented in Table II for men and women separately.

Procedure

The data were analyzed by means of structural equation modeling (Jöreskog and Sörbom, 1993). The variables in such models can be latent (i.e., they are functions of two or more other variables) or manifest (there is only one indicator for a particular construct). Structural equation modeling marries factor analysis to regression analysis, in that the model allows for a simultaneous estimation of a measurement (factor) model (for the latent variables) as well as a structural (regression) model (for the relations among the variables). A less well-used feature of the model is that it can also be used in an ANOVA-like fashion, testing the equality of (latent) means across groups (cf. Jöreskog and Sörbom, 1993; Hayduk, 1989).

Usually structural equation models are estimated by means of maximum likelihood (ML) estimation. This procedure assumes that the variables are multivariately normally distributed. In the case of severely skewed variables (skewness > 1.00) ML estimation may result in severely biased parameter estimates (Boomsma, 1983). For the current data set, the skewness of the variables ranged from 0.24 to 1.07 (absolute values, median skewness was 0.57) for the male sample, and 0.03 to 1.11 (median 0.52) for the female sample. Thus, it appears that skewness does not present major prob-

lems here. Additionally, Boomsma (1983) showed that ML estimation can also be used when a particular variable is a dichotomy, provided that this dichotomy is not too skewed.

The model presented in Fig. 1 was first estimated for men and women separately, providing a first impression of the structure of the process for each group. Subsequently, we performed several analyses to examine the moderating effect of gender. Finally, we examined the equality of the means of the variables across groups, focusing on the direct effects of gender.

RESULTS

As a first approximation we estimated the model presented in Fig. 1 for the male and the female samples separately, thus obtaining a first impression of what the structure of the process looks like for these groups. Table III presents the ML estimates, standardized in a metric common to both groups (i.e., they range from -1 to $+1$, and they have the same magnitude in both groups). Thus, the parameter estimates can readily be compared.

The chi-square test indicated that for both groups the postulated model could be retained, $\chi^2(12)_{\text{males}} = 18.73, p = 0.095$; $\chi^2(12)_{\text{females}} = 19.85, p = 0.075$. Table III reveals several interesting differences between the groups.

Table III. LISREL Effect Estimates for the Model in Figure 1^a

	Men [$n = 128, \chi^2(12) = 18.73, p = 0.095, \text{NNFI} = .93$]			Women [$n = 125, \chi^2(12) = 19.58, p = 0.075, \text{NNFI} = .89$]		
	T2 experience	Heavy courtship behavior	Light courtship behavior	T2 experience	Heavy courtship behavior	Light courtship behavior
Heavy courtship behavior	.36 ^c			.52 ^c		
Light courtship behavior	.16 ^c			-.09		
Partner	.12	.00	-.04	.32 ^c	-.13	-.14
Love motive ^b	.01	-.60 ^c	-.34 ^d	-.23 ^c	-.48 ^c	-.34 ^d
Age	.10	-.11	.16	.19 ^d	-.11	-.13
T1 experience	.72 ^c	-.07	.20	.18 ^c	.00	.07
R^2	.57	.36	.13	.63	.26	.14

^aMetric completely standardized across groups (range -1 to $+1$) for men and women separately.

^bThis is a latent variable with as manifest indicators Permissiveness, Emotional commitment, and Relational commitment. The factor loadings of these variables are for men .78, .59^c, and .63^c, respectively; for women, .68, .52^c, and .58^c, respectively. The loading of Permissiveness was fixed for identification purposes (Long, 1983).

^c $p \leq .05$.

^d $p \leq .01$.

^e $p \leq .001$.

First, as expected there were considerable differences in effect size (absolute difference larger than .20) for the effect of having a steady partner relationship on being sexually experienced at Time 2, and the Love Motive on being sexually experienced at Time 2. Both differences were in the expected direction. However, for the effect of the light courtship type on being sexually experienced at Time 2, the effect of Age on the light courtship type, and the effect of Time 1 being sexually experienced and being sexually experienced at Time 2, similar—but *unexpected*—gender differences were found.

Moderator Analyses

Given our theoretical interest (i.e., are the effects of having a steady partner and the importance of love, on being sexually experienced, the same for men and women?) as well as the results reported above, we found it worthwhile to conduct a series of moderator analyses, focusing on the question to which degree the same model applied to both men and women: Were the seemingly differential effects of the light courtship type of being sexually experienced, and of age on the light courtship style, statistically significant?

To provide an answer to our question as to whether the same model applied to both men and women, we conducted a series of moderator analyses using the LISREL feature of being capable to simultaneously fit models for two (or more) samples at a time (Jöreskog and Sörbom, 1993). The program allows for imposing across-group constraints (e.g., to constrain a particular parameter to be equal in both groups). As the value of the chi-square test is also computed across groups, it is possible to test whether a model upon which such a constraint is imposed fits the data significantly worse than the model without this constraint (the first model is nested within the latter).

First, we tested whether the variance-covariance matrices of the male and the female sample were different. This yielded $\chi^2(45) = 165.33$, $p < 0.001$, thus rejecting the null hypothesis that both matrices were drawn from the same population. Hence, we may conduct further analyses to examine where the variance-covariance matrices actually differ. Table IV presents a summary of the results of the moderator analyses. Model 0 (the model of "absolute independence": Only the variances of the variables were estimated) served as a baseline model, to which the fit of the other models could be compared. Clearly, this model fitted the data extremely badly, showing that there was strong dependence among the variables—but where? Our a priori candidate for the mechanism that generated the dependence among the variables was, of course, the model presented in Fig. 1. Laying this model upon the data yielded $\chi^2(24) = 38.32$ (Model 1, $p =$

Table IV. Comparison of the Fit of Several Models

Model	Model description	χ^2	df	p	NNFI
0	Model of independence: Only variances of the variables are estimated, other elements fixed at zero	549.10	72	0.000	-
1	Same pattern in both groups (cf. Fig. 1, our null model). No further constraints	38.32	24	0.032	.91
2	As Model 1, with the loadings of the indicators of the Love Motive equal across groups	39.09	26	0.048	.92
3	As Model 2, with all structural effects equal across groups, except when the absolute difference exceeded .20	52.80	38	0.056	.94
4	As Model 3, + the effect of age on light courtship behavior equal across groups	57.98	39	0.026	.93
5	As Model 3, + the effect of T1 experience on T2 experience equal across groups	67.07	39	0.000	.89
6	As Model 3, + the effect of light courtship behavior on T2 experience equal across groups	60.15	39	0.016	.92
7	As Model 3, + the effect of having a partner on T2 experience equal across groups	57.80	39	0.027	.93
8	As Model 3, + the effect of the Love Motive on T2 experience equal across groups	61.95	39	0.011	.91
9	Final model: As Model 3, with all nonsignificant paths stepwisely omitted from that model	69.81	47	0.017	.93

0.03, NNFI = .91, a vast improvement upon the null model. The non-normed fit index (NNFI) proposed by Bentler and Bonett (1980) was used to evaluate model fit. Unlike many other fit indices, NNFI is independent from sample size (cf. Marsh *et al.*, 1988). Bentler and Bonett (1980) stated that values of .90 and over indicate a satisfactory fit.

We successively examined whether the factorial structure of the latent variable in the model—the Love Motive, with three manifest indicators—was equal across groups. If a differential factorial structure would be found (i.e., in Group A latent dimension X is mainly determined by item x_1 , while in Group B x_2 is much more important), it is doubtful whether it is really the same concept that is being compared across groups. Model 2 tested this assumption. The resulting chi-square increase of 0.77 with 2 degrees of freedom was not significant, therefore there was no reason not to assume that the factorial structure differed across groups. Hence, the hypothesis that the same concept was measured across groups could not be rejected.

Model 3 tested whether the hypothesis that the structural relationships in both groups were actually the same was tenable (excluding the 5 effects for which the male/female difference was equal to or larger than 0.20, cf. Table III). Again, the chi-square increase was not significant judged relative to the increase of degrees of freedom. Hence, the magnitude of many ef-

Table V. LISREL Estimates for the Fitted Model^a

	T2 experience	Heavy courtship behavior	Light courtship behavior
Heavy courtship behavior			
Men	.41 ^c		
Women			
Light courtship behavior			
Men	.13 ^c		
Women			
Partner			
Men			
Women	.33 ^c		
Love Motive ^b			
Men		-.58 ^c	-.27 ^d
Women	-.27 ^d		
Age			
Men	.16 ^c	-.12 ^c	
Women			
T1 experience			
Men	.71 ^c		
Women	.18 ^c		
R ²			
Men	.56	.33	.09
Women	.63	.32	.06

^aMetric completely standardized across groups (range -1 to +1), two-sample analysis, $N = 253$, $\chi^2(47) = 69.81$, $p = 0.017$, NNFI = .93.

^bThis is a latent variable with as manifest indicators Permissiveness, Emotional commitment, and Relational commitment. The factor loadings of these variables are .72, .53^c, and .52^c, respectively. The loading of Permissiveness was fixed for identification purposes.

^c $p \leq .05$.

^d $p \leq .01$.

^e $p \leq .001$.

facts was not significantly different across groups. Models 4 through 8 tested, for each of the five strongly different relationships separately, whether constraining that relationship to be equal across groups led to a significant decrease in fit, relative to Model 3. This was the case for all five relationships, indicating that gender indeed moderates these relationships. Successively the nonsignificant paths were omitted from the model. Model 9—our final model—yielded $\chi^2(47) = 69.81$, $p = 0.02$, NNFI = .93. Although the absolute fit of this model (chi-square in relation to the number of degrees of freedom) was not excessively good, NNFI indicated that the model explained the covariation among the variables sufficiently well. Table V presents the estimates for the final model, while Fig. 2 presents the results graphically.

First we focus on the effects of the Love Motive. A high degree of emotional and relational involvement reduced the intention to apply both

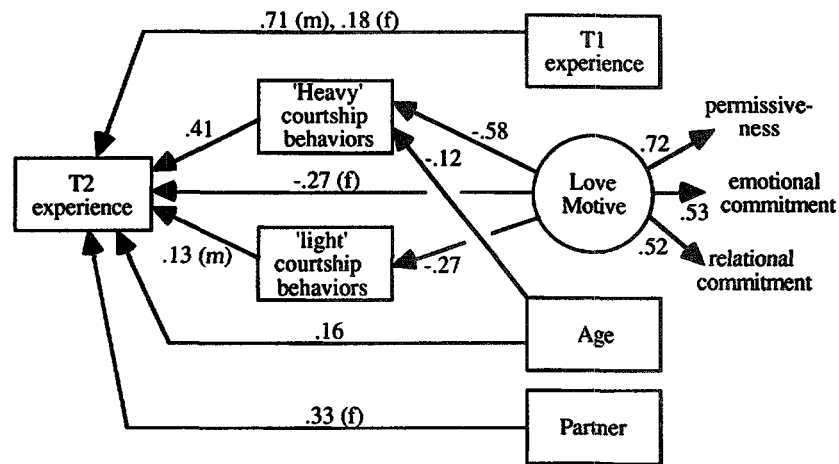


Fig. 2. The fitted model. All effects significant at $p \leq .05$ or better and metric completely standardized across groups (range -1 to +1), (m) denotes effect size for males, (f) denotes effect size for females.

heavy and light courtship strategies, though its effect on the heavy behaviors was stronger than the effect on the light courtship behaviors (-.58 vs. -.27). For males, both courtship behaviors were positively related to being sexually experienced at T2 (though the effect of the heavy courtship type was, perhaps not surprisingly, much stronger than the effect of the light courtship type). For females the latter effect was not replicated, but for them, however, we found a negative *direct* effect of the Love Motive on T2 sexual experience. All in all, the total effect of the Love Motive on T2 sexual experience is larger for women than for men (-.52 vs. -.30, both effects significant at $p < 0.001$), which supports our hypothesis.

Having a steady partner relationship at T1 was for women positively related to being sexually experienced at T2, whereas this effect was not found for men.

Older subjects tended to be more experienced (0.16) and intended to apply less often the heavy courtship strategies (-0.12) than younger subjects. Finally, for men the relation between T1 and T2 sexual experience was much stronger than for women (0.71 vs. 0.18), indicating that women tended to change their status from virgin to nonvirgin more often during the observed interval than do men. One assumption of maximum likelihood estimation is that the variables are measured on the interval level. Our main dependent variable (T2 experience) is, however, a dichotomy, thus clearly violating this assumption. To check the implications of this violation we reestimated the effects of the explanatory variables on T2 experience

using logistic regression analysis. The results of this analysis paralleled the findings reported here, in that we found significant effects of the heavy courtship type, T1 experience, and Gender \times Love Motive and Gender \times Steady Relationship interaction effects.)

Comparison of Means

The above analyses showed to which degree the same model could explain individual differences in sexual experience, for males and females separately. This provided some evidence that the structure of the model was not the same for these groups. What these analyses do not show, however, are the *main* effects of gender on the variables included in the model. These main effects take the form of differences in the means of the variables. To investigate these mean differences, LISREL offers the possibility to estimate the means of observed and latent variables (cf. Jöreskog and Sörbom, 1993). The estimates for the means can be constrained to be equal across groups, like the other parameters of a model.

A model in which the means are *unconstrained* yields $\chi^2(49) = 72.81$, $p = 0.02$ (this model parallels Model 9 in Table II, extended with means for the latent and the observed variables). The question now is whether the fit of the model becomes significantly worse, if the means of the variables were constrained to be equal across groups. Doing so yielded a substantial increase of 72.91 chi-square points with only 7 degrees extra, and NNFI deteriorates to a very poor 0.76, indicating that one or more means were different across groups. Inspection of the modification indices showed that especially the constraints on the means for T2 sexual experience, heavy courtship strategies, and the Love Motive (the latent variable) contributed to this bad fit. Estimating these means for each group separately yielded $\chi^2(53) = 76.72$, $p = 0.018$, NNFI = 0.93, which was deemed acceptable. Table VI presents the means for the observed and latent variables, for both groups separately.

For the sake of simplicity we focus first on the dependent (endogenous) variables, as here there are no latent variables (there is only one observed variable for each latent variable).⁵ It turned out that men on average had a higher score on heavy courtship behaviors than women (1.73 vs. 1.34), which is in line with the literature. Women were more likely to

⁵Thus, here we do *not* control for measurement error. In principle, we might have conducted simple *t* tests here, which would have resulted in the same results. This also applied to the tests on the means of the endogenous variables. Only in the case of the love motive (a true latent variable with three indicators) do we actually control measurement error, and is the approach taken here superior to simple *t* tests.

Table VI. Maximum Likelihood Estimates for the Intercepts of the Observed and Latent Means for Men and Women Separately^a

Intercepts of measurement model of endogenous variables (τ_y)						
		T2 experience ^b	Heavy courtship behavior ^b	Light courtship behavior ^b		
Estimate intercept for men		0.59 (0.04)	1.73 (0.06)	3.79 (0.04)		
Estimate intercept for women		0.71 (0.05)	1.34 (0.06)	3.79 (0.04)		
Intercepts of measurement model of exogenous variables (τ_x)						
	Partner ^c	Permissiveness ^c	Emotional commitment ^c	Relational commitment ^c	Age ^c	T1 experience ^c
Men	0.78 (0.03)	-4.57 (0.10)	0.65 (0.03)	0.09 (0.02)	33.18 (0.82)	0.38 (0.04)
Women	0.78 (0.03)	-4.57 (0.10)	0.65 (0.03)	0.09 (0.02)	33.18 (0.82)	0.38 (0.04)
Intercepts of latent exogenous variables (κ)						
	Partner ^c	Love Motive ^b	Age ^c	T1 experience ^c		
Men	0.00	0.00	0.00	0.00		
Women	0.00	+0.29 (0.12)	0.00	0.00		

^aNumbers in parentheses are standard errors.

^bMean scores of the groups are significantly different at $p < .01$.

^cMeans are constrained to be equal across groups. Unconstrained effects are significantly different at $p \leq .01$ or better.

be sexually experienced than men at T2 (0.59 vs. 0.71). There were no gender differences with regard to the light courtship behaviors.

Turning to the exogenous (independent) variables, the means of the observed variables were not significantly different across groups. With regard to the latent variables, however, it turned out that women obtained a score on the Love Motive that was on average 0.29 higher than men, i.e., they felt more strongly that love and a committed relationship were important prerequisites for engaging in a sexual relationship than men.

CONCLUDING REMARKS

The moderator effects of gender on the relation between being sexually experienced on the one hand, and (i) the love motive; and (ii) having a steady partner relationship on the other were studied. We hypothesized that these effects would be stronger for women. The results of a series of LISREL analyses showed that this was indeed the case.

Gender, the Love Motive, Having a Partner Relationship, and Sexual Experience

LISREL analyses with mean structures revealed that men tend to attach less importance to a high emotional and relational commitment as a prerequisite for having sex than women. This result supports earlier findings on sex differences concerning the importance of various motives in deciding when sex is all right. However, the current findings not only confirm but also extend these earlier results. While gender differences in means are interesting in itself, this does not necessarily mean that there is a different process at work in both groups. In this sense our results provide a missing link, in that we have shown that the role of the love motive is very different for the sexes. Although its influence is small and very subtle for men (via the type of courtship strategies one finds permissible), for women we also find a straightforward *direct* effect on sexual experience.

Paradoxically, while women tend to stress the importance of love and having a committed relationship before engaging in a sexual relationship, and while this concept is moderate strongly linked to being sexually experienced, it is actually *not* the case that a correspondingly smaller proportion of the females than of the men is sexually experienced. At both occasions the number of sexually experienced is about *equal* for both sexes. This result does not replicate earlier findings, most of which consistently found that women tend to experience their first sexual intercourse at a later age than men. Several studies, however (e.g., Robinson and Jedlicka, 1982), have revealed a trend towards subjects becoming sexually experienced at an increasingly earlier age. This trend is especially visible for females. For example, while the percentages of sexually experienced male and female college students were 65 and 29 in 1965, respectively, Robinson and Jedlicka reported for 1980 corresponding percentages of 77 for male and 64 for female students. If we were to speculate, our results suggest that this trend of leveling out has reached the point where the sexes are in balance with each other, at least with respect to the age at which they experience their first intercourse—a finding that was reported earlier by Jessor and Jessor (1975), but failed to replicate in other studies.

Our results also show that having a steady partner relation is a much better predictor of sexual experience for females. This supports our notion that for females having sex occurs in the context of a steady, committed relationship that is supposed to last; while for males having such a relationship is not an important prerequisite. To be sure, our data did not reveal gender differences with regard to the proportion of subjects that indicated a steady partner relationship. It is just that we did not find any evidence that sexual experience is for males in any sense systematically linked to

this relationship. Combined with the significantly higher score of males on the heavy courtship type, this result fits in nicely with Carrol *et al.*'s (1985) study on male/female motives for engaging in sex. Together, these findings sketch a consistent, though rather one-dimensional, picture of adolescent males as indefatigable sex hunters who "never miss an opportunity," and who do not care whether this opportunity occurs within or outside the realm of a steady relationship—much like the cartoon-like creatures in the so-called "screwball" comedies that were popular in the 1980s.

Limitations of the Study

One could, of course, contend that this macho picture is simply too much like the stereotypical impression young males may want to communicate to be true—just like young females may not want to convey themselves as cheap. Hence, could it be that *social desirability* accounts for these findings, especially given the rather coarse nature of the dependent variable? After all, the impact of social desirability may be much larger on a single-item dichotomous measurement of sexual experience than on a more refined multi-item operationalization (e.g., in terms of the behaviors one has actually done, much like the operationalization of courtship behaviors used in the current study). As far as the absolute levels of the variables in this study are involved, it is conceivable that social desirability could have biased our results. However, the proportion of sexually experienced males does not differ much from earlier findings, whereas the fact that the proportion of sexually experienced females is somewhat higher than usually found in earlier studies among this age group argues against the social desirability hypothesis.

Additionally, it is difficult to imagine how the theoretically plausible and systematic across-time relations among the variables could be due to the operation of this cognitive process. Would our respondents really be able to remember what their answers were, given the 1-year gap between the waves of our study? If not, the across-time effects we found can hardly be due to social desirability, which means that at least the *longitudinal effects* in our study—which present the most interesting findings—are unbiased.

Sexual Behavior and HIV Infection

With the onset of the possibility of HIV infection, no study dealing with sexual behavior can circumvent discussing the implications of its results with regard to this issue. Our study suggests that the level of sexual activity among adolescents is rather high, given that more than half of our sample (mean age slightly less than 16 years) already had experienced sexual intercourse. As age

is negatively related to, for example, condom use (cf. Taris and Semin, 1995), many young people may run a relatively high risk of HIV infection.

On the basis of the findings reported here, one may think that the risk of infection is even higher for males. It is often assumed that the risk of getting infected with HIV is lower in the context of a steady relationship. As for adolescent males, casual encounters are a major source of acquiring sexual experience, whereas this is much less so for the females. This would lead to the expectation that the males run a higher risk of infection than the females. Additionally, the principal assumption that underlies this expectation is that the partners are faithful to each other. One must question this supposition, at least for the males, given that they on average have a higher score on the heavy type of courtship strategies than females, the differential effect of having a steady relationship on being sexually experienced, and the evidence on motives for having sex provided by earlier studies. It may be that adolescent males having a steady relationship do *not* have a lower risk of getting infected than males who do not have such a relationship. Hence, an interesting follow-up to the current study might address the sexual behavior of adolescents within a committed relationship: Is this relation exclusive, as far as it concerns having sex? Are there gender differences with regard to the exclusivity of a particular relationship? To what degree is the love motive, as identified in the current and other studies, of importance here? Indeed, does the risk of HIV infection bear any relevance to adolescents' sexual behavior within a committed relationship? This study was not designed to provide answers to these questions: It can only suggest that their answers could possibly lead to a better understanding of the risk of HIV infection among adolescents having a steady relationship.

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REFERENCES

- Bentler, P. M., and Bonett, G. (1980). Significance tests and goodness of fit indices in the analysis of covariance structures. *Psychol. Bull.* 88: 588-606.
- Boomsma, A. (1983). *On the Robustness of LISREL (Maximum Likelihood Estimation) Against Non-Normality and Small Sample Size*, Sociometric Research Foundation, Amsterdam.
- Bowie, C., and Ford, N. (1989). Sexual behavior of young people and the risk of HIV-infection. *J. Epidemiol. Commun. Health* 43: 61-65.

- Breakwell, G. M., and Fife-Shaw, C. (1992). Sexual activities and preferences in a United Kingdom sample of 16- to 20-year-olds. *Arch. Sex. Behav.* 21: 271-293.
- Buss, D. M. (1994). *The Evolution of Desire: Strategies of Human Mating*, Basic Books, New York.
- Carrol, Z. L., Volk, K. D., and Hyde, J. S. (1985). Differences between males and females in motives for engaging in sexual intercourse. *Arch. Sex. Behav.* 14: 131-139.
- Cliff, N. (1983). Some cautions concerning the application of causal modeling methods. *Multivar. Behav. Res.* 18: 115-126.
- Delameter, J., and MacCorquodale, F. (1979). *Premarital Sexuality: Attitudes, Relationships, Behavior*, University of Wisconsin Press.
- Ehrmann, W. (1959). *Premarital Dating Behavior*, Henry Holt, New York.
- Hayduk, L. A. (1989). *Structural Modelling with LISREL: Essentials and Advances*, Johns Hopkins University Press, Baltimore.
- Hogan, D. P., and Kitagawa, E. M. (1985). The impact of social status, family structure, and neighborhood on the fertility of Black adolescents. *Am. J. Sociol.* 90: 825-855.
- Jessor, R., Costa, F., Jessor, S. L., and Donovan, J. E. (1983). Time of first intercourse: A prospective study. *J. Pers. Soc. Psychol.* 44: 608-626.
- Jessor, S. L., and Jessor, R. (1974). Maternal ideology and adolescent problem behavior. *Dev. Psychol.* 10: 246-254.
- Jessor, S. L., and Jessor, R. (1975). Transition from virginity to non-virginity among youth: A social-psychological study over time. *Dev. Psychol.* 11: 473-484.
- Jöreskog, K. G., and Sörbom, D. (1993). *LISREL-8 (computer manual)*, Scientific Software International, Chicago.
- Kantner, J. F., and Zelnik, M. (1972). Sexual experience of young unmarried women in the United States. *Fam. Plann. Perspect.* 4: 9-18.
- Long, J. S. (1983). *Confirmatory Factor Analysis*, Sage, Beverly Hills.
- Marsh, H. W., Balla, J. R., and McDonald, R. P. (1988). Goodness-of-fit indices in confirmatory factor analysis: The effect of sample size. *Psychol. Bull.* 103: 391-410.
- McCormick, N., Izzo, A., and Folcik, J. (1985). Adolescents' values, sexuality and contraception in a rural New York county. *Adolescence* 20: 385-395.
- Miller, B. C., & Olson, T. D. (1988). Sexual attitudes and behavior of high school students in relation to background and contextual factors. *J. Sex Res.* 24: 194-200.
- Miller, P. Y., and Simon, W. (1974). Adolescent sexual behavior: Context and change. *Soc. Probl.* 22: 58-76.
- Mokken, R. J., and Lewis, C. (1982). A nonparametric approach to the analysis of dichotomous item responses. *Appl. Psychol. Meas.* 6: 417-430.
- Reiss, I. (1967). *The Social Context of Premarital Permissiveness*, Holt, Rinehart and Winston, New York.
- Robinson, I. E., and Jedlicka, D. (1982). Change in sexual attitudes and behavior for college students from 1965 to 1980: A research note. *J. Marr. Fam.* 44: 237-240.
- Simon, W., Berger, A. S., and Gagnon, J. H. (1972). Beyond anxiety and fantasy: The coital experiences of college youth. *J. Youth Adolescence* 1: 203-222.
- Smith, E., and Udry, J. (1985). Coital and non-coital sexual behaviors of white and black adolescents. *Am. J. Public Health* 75: 1200-1203.
- Schwarz, N., and Sudman, S. (eds.). (1994). *Autobiographical Memory and the Validity of Retrospective Reports*, Springer, New York.
- Sneddon, I., and Krenan, J. (1992). Sexual behavior and attitudes of university students in Northern Ireland. *Arch. Sex. Behav.* 21: 295-312.
- Taris, T. W., and Semin, G. R. (1995). Does adolescents' sexual behavior affect their sexual attitudes? *Int. J. Adolescence Youth* 5: 139-156.
- Taris, T. W., and Semin, G. R. (1996). *Parent-Child Interaction During Adolescence, and the Adolescent's Sexual Experience: Control, Closeness, and Conflict*. Submitted.
- Taris, T. W., and Semin, G. R. (1995). Weten en doen is twee: AIDS en seksueel gedrag van adolescenten (What they know ain't why they do: AIDS and adolescents' sexual behavior). *Gedrag Gezond.* 23: 272-285.

- Træen, B., and Lewin, B. (1992). Casual sex among Norwegian adolescents. *Arch. Sex. Behav.* 21: 253-269.
- Zelnik, M., and Shah, F. K. (1983). First intercourse among young Americans. *Fam. Plann. Perspect.* 15: 64-70.