Culture and Sexual Risk

Anthropological Perspectives on AIDS

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Chapter
TEN

Risk in Context:
The Use of Sexual
Diary Data to
Analyse Homosexual
Risk Behaviour

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This is a study of gay men's sexual behaviour under the impact of AIDS which uses the method of diaries. It is an integral part of the work of Project SIGMA (Socio-Sexual Investigations of Gay Men and AIDS), which is a longitudinal study of the sexual and social lifestyle of gay and bisexual men in England and Wales (and also part of the English study under the auspices of WHO Global Programme on AIDS Homosexual Response Studies). SIGMA is one of the largest cohort studies in Europe and the only study in the UK to have emerged from the gay community. Initial work began in 1983, and funding followed in 1987. To date, the Project has interviewed over 1000 men, half of whom have been interviewed four times at (median) intervals of 10 months. The main aims of the study are to describe the sexual behaviour and lifestyles of gay and bisexual men; to monitor changes in sexual behaviour in relation to

HIV/AIDS; to examine attitudes to different sexual behaviours and relationships; to investigate reactions to safer sex practices; and to estimate prevalence of HIV and other viral infections in a non-clinic group of gay and bisexual men.

Project SIGMA uses several complementary methods of obtaining information, including: the *detailed structured interview* in which each respondent is asked for detailed information on sexual history and current practices (centred upon the Index of Sexual Behaviour, Coxon et al. 1992), numbers of sexual partners, health, and attitudes towards HIV and safer sex; the *sexual diaries*, a daily record of sexual activity kept by respondents for a month after each interview (see Coxon 1988b; so far we have collected information on about 30,000 sexual encounters which allows a unique analysis of their structure); *blood and/or saliva samples* collected at the interview by trained staff and tested for HIV-1 antibodies and other viral markers (results are available to respondents through trained counsellors); and the *postal survey of sexual behaviour*, a self-completion questionnaire which appears in the gay press periodically. In this chapter we concentrate primarily upon the method of sexual diaries.[1]

METHODS FOR COLLECTING SEXUAL DATA

There are various methods for collecting data for analysis of sexual behaviour, and their merits depend on what is needed from the data. Retrospective interviews and questionnaires are useful for obtaining general and 'memorable' aspects of behaviour (such as whether a given sexual behaviour has ever been experienced), but they are not efficient means of obtaining detailed data (such as accurate estimates of the frequency, or sequences of behaviour) that can more appropriately be obtained from the method of sexual diaries. The main reason for this is that accurate retrospective recall of detailed sexual behaviour is rarely reliable or accurate beyond a few days.[2]

On the other hand, selection bias is higher in the use of diaries than in survey techniques, simply because keeping a monthly diary on a daily basis involves a more prolonged commitment, and it is unlikely to be undertaken by those with a very inactive sex life, thus biasing estimates upward. A further possible drawback is that volunteers may record their behaviour in a way which they expect it *should* be (perhaps modifying the account to be more in accord with safer sex). On investigation, these drawbacks seem not to appear, and many results agree with one's intuition and with the data obtained by different methods. Preliminary research evidence suggests that

SIGMA sexual diary form   (Version: 11/92)

ID Number   :   *XY*   /   *00123*   /   *5*

Week beginning: *Sun 3*   /   *May*   /   *1992*
                 (day)   (month)   (year)

Remember, each session should include:
— The Time, The Place, The Partners (from partner list)
— Then, the session in your own words (or the code if you are confident).
— If you 'come' (ejaculate) in the session, remember to be explicit about
    where it goes and *always* to record the use of condoms.
— List any accompaniments you use (poppers, lubricants, drugs, sex toys, ...)

SUN DAY 3rd	9 am My flat, P1 We deep kissed, and moved into a '69.' Whilst doing it I began to finger him. Then he wanked me (both using poppers) and I came. Following that I wanked him till he came.
MON DAY 4th	7.30 am I woke up to find P1 wanking me. Then he sucked me off, and I came in his mouth. We began using poppers and I sucked him, carrying on to fuck him (with condom), whilst he wanked himself. He came, I didn't.

Figure 1. Part of a SIGMA diary.

counts of sexual behaviours based upon self-reports in the interview are systematic distortions of the more reliable counts derived from the diaries.[3]

COLLECTING DIARY DATA IN PROJECT SIGMA

At each wave of the investigation, the subject produces a (retrospective) diary of the last week's sexual behaviour in the presence of the interviewer in the context of the ordinary interview. This ensures that the diarist understands what needs to go into the diary, and also provides indirect evidence of the ability to recall detailed information. At the end, he is given a month diary kit (SIGMA 1993), and he returns the completed diary after the month period. The diary form is completed each day, and explicit instructions are given for its completion. The diary is filled out in ordinary language, within the framework specified, and respondents are encouraged to use 'street language' if they wish to. An example of part of a completed week form is given in Figure 1.

When the completed diary is received back, it is encoded according to a scheme described in Coxon et al. 1992, summarised, and then entered into a database for subsequent analysis.

The chief *methodological advantages* of the diary method are its ease and flexibility: (a) it is naturalistic (some respondents are accustomed to keeping some sort of sexual diary anyway); (b) it is easily adapted to record sexual data from those of any sexual orientation (or, indeed, to domains other than sex); (c) it can be augmented to obtain other concurrent information (such as alcohol and other substance consumption in a sexual context; see Weatherburn et al. 1993); and (d) it can be expanded to take into account such aspects as coital position.

There are a number of more *substantive advantages* of the diary method: (a) it allows the detail of sexual behaviour to be recorded and analysed, and to be encoded intact, since the researcher knows the context of any sexual act — location (time, place), the actors (sexual partners), the adjuncts to sex (such as condoms, lubricants, toys, 'poppers'[4]), and is able to place their use in the correct context; (b) uniquely, it permits the analysis not only of individual behaviour (such as, 'What is the average number of times a gay man engages in oral intercourse in a month?') but of the 'volume' (or 'outlet' to use Kinsey's phrase) of behaviour, where the denominator is all the sexual *acts* involved (as in, 'What proportion of young gay men's sexual activity in a month consists of oral intercourse?'); (c) it allows *sequences* of sexual activity to be analysed. Sometimes this can be crucial, for we need to know whether unsafe behaviour tends to occur at the start, middle, or end of a sexual session, and the meaning of acts such as anal intercourse can be substantially different when it occurs as an end-marker rather than as an incidental activity; and (d) it allows issues of power or dominance in sexual behaviour to be investigated by systematically encoding the modality of the act (which partner does what to whom) and thus allowing gendered distinctions to be made between reciprocated and dominance sessions — the former where the other partner tends to do the same thing in return to his partner, the latter where one partner is repeatedly the submissive, the other the dominant partner (Davies 1990).

In this chapter, these claims are illustrated with respect to the analysis of two aspects of sexual behaviour, and especially anal intercourse: the *effect of relationship type on sexual behaviour* and *behavioural progression in a sexual act* (answering the questions: where is anal intercourse located in a sexual session, and what difference does it make?)

BACKGROUND

Before proceeding further, it is important that the reader understand the basics of the system of encoding the structure of sexual behaviour that we have developed, since the results in the tables make use of it (Coxon 1988a; Coxon et al. 1992). Essentially, every diary is encoded into a database from which application programs may analyse the results. The encoding process simply translates the respondent's description of sexual behaviour into a structured formal language that readily lends itself to computer representation.

Every diary pack has a preliminary face-sheet eliciting information on HIV status, relationship type, geographic location, etc., in the form of a few preliminary questions, together with a table for the respondent to list sexual partners (with their characteristics) who are involved in their sexual transactions. The characteristics include demographic and descriptive information about each partner,[5] and the list is built up as the diary progresses.[6]

The remainder of the diary looks similar to a normal diary, giving space for every day in which the diarists may write what they have done. They are instructed to enter the time and date, then to describe in normal ('street') language precisely what they did, according to a provided set of criteria.[7] Each such spatially and time-limited sexual encounter is referred to as a *session* and may involve one or more persons. Each session forms a separate record in the database. The sexual session is subdivided into sexual *acts*, each of which is finally described by the *behaviour* and its *modality* and by its *outcome* — basically whether and how and where ejaculation occurs.[8]

To aid understanding, take the following simple example of a sexual session:

Session: = { PW AS AF }

This *session* consists of three *acts* (a session may contain many acts, but must contain at least one). The first character of each act is the *modality*, and any remaining characters are the *behaviour*. (The encoding process is far more complex than this, but it is not necessary to go into depth for the results at this stage.)

The behaviour describes *what (sexual act)* is done, and the modality describes *who does it*. There are five modalities, which define *who does what* and *to whom* from the diarist's (also referred to as *Ego's*) point of view. Ego's partner is referred to as *Alter* (see Table 1).

A comment is in order about the 'H' modality. Although Ego is not involved directly in this modality, what his partner does by himself

Table 1. Modalities of Sexual Acts

[S]	Self:	Behaviour performed by Ego on himself
[A]	Active:	Behaviour performed by Ego on his partner
[P]	Passive:	Behaviour performed by his partner on himself

The other modalities are:

[M]	Mutual:	Behaviour performed simultaneously by both partners to each other
[H]	Him:	(Opposite of 'S'). Ego's partner does it to himself

may have possible consequences for HIV transmission (the original stimulus for our development of the method), such as when Alter masturbates himself and ejaculates over Ego.

In the example above, 'PW' means that the behaviour here is 'W' (masturbation), and the modality is Passive, i.e., Ego is masturbated by Alter. The whole sexual session quoted would be read as:

Ego is passively masturbated (PW)
then Ego actively performs fellatio on Alter (AS)
then Ego actively engages in anal intercourse with Alter (AF)

In the actual diary this may well have been written as:

He wanked me, then I sucked him off, then I fucked him.

The diary thus preserves the *sequence* or *progression* of behaviour, which is an important aspect of many types of analysis. Table 2 lists the current set of recognized behaviours (sexual acts).[9]

A GENERAL VIEW OF BEHAVIOUR

At the simplest level, information can be obtained from respondents' diaries to match commonly used interview-based variables such as information referring to the prevalence and incidence of various sexual activities. In interviews, this is obtained by asking the respondent him/herself to estimate how often (or whether) a given sexual act has been engaged in during a specified period.[10] In the sexual diaries such information is derived *post factum* by the researcher by counting how often a given activity occurs in the diary script.

Table 2. List of Sexual Behaviours

Code letter(s)	Sexual behaviour	'Street' term
W	Masturbation	'Wanking'
F	Anal intercourse	'Fucking'
S	Fellatio	'Sucking'
DK	Deep kiss	
V	Vaginal intercourse	
CN	Cunnilingus	
RI	Anilingus	'Rimming'
TF	Inter-femoral frottage	'Thigh fuck'
FG	Ano-digital insertion	'Fingering'
FI	Ano-brachial insertion	'Fisting'
BR	Body rubbing/frottage	
MA	Massage	
CP	Corporal punishment	
TT	Nipple play	'Tit torture'
WS	Lindinism	'Water sports'

The first area of interest is to see how figures derived from sexual diaries compare at the aggregate level to interview responses.[11] Table 3 deals with incidence of sexual behaviour by modality, i.e., the percentage of those (in a month) who had *ever* in the course of their diaries done each of several given sexual behaviours (rows) in the given modality (columns). Thus, 24 per cent of the 610 diarists had engaged in active anal intercourse ('fucked a guy') and 25 per cent had engaged in passive anal intercourse ('been fucked by a guy') in the last month.

The percentages for Self and Him modalities are generally small or not relevant for our present purposes, due to their physical difficulty or impossibility or irrelevance. There are some exceptions: *Solo Masturbation* is important because it is the most prevalent sexual behaviour, and *His Masturbation* indicates that a quarter of the diarists experienced their partner's solo masturbation in a sexual session.

The more interesting point concerns active and passive variants of sexual behaviours. In a stable and closed population, the figures for active and passive variants of a sexual behaviour should be identical. In fact, the figures are surprisingly close to equality, and there is no

Table 3. Percentage Incidence of Persons Ever Engaging in Specified Sexual Acts by Modality: Data from One-Month Diaries

Behaviour	Modality				
	Self	Active	Passive	Mutual	His
Anal intercourse	NP	#24	#25	NP	NP
Fellatio	NP	#45	#43	#23	NP
Masturbation	#87	#46	#47	#39	25
Anilingus	NP	#11	#10	#4	NP
Ano-brachial insertion	*	2	2	*	*
Vaginal intercourse	NP	3	NP	NP	NP
Inter-femoral frottage	*	#8	#7	2	*
Ano-digital insertion	3	13	11	4	*
Body rub	1	#16	#13	#19	*
Massage	*	13	11	6	*

Percentage of diarists in data set who have exhibited tabulated behaviour in the last month. Total diarists = 610. '#' indicates comparison with ISB data. '*' indicates less than 1%. NP indicates not possible or extremely rare due to physical limitations.

tendency for there to be more active diarists than passive diarists, as one might expect.[12] For sexual diary data the differences are smaller than the data from any other method, indicating their greater validity.

How similar are these diary data to aggregated self-report data obtained by the interview method?[13] At first sight and looking at the actual percentages, they are rather different, with some major discrepancies: the rank-order correlation is modest ($\tau = 0.77$). More interestingly, the Pearsonian (linear) correlation is much higher ($r = 0.95$), and the regression equation

Y (estimated interview percentage) = 15.82 + 0.94X (diary percentage)

reveals that the relationship is close to absolute, but with an added constant of about 16. That is, if the diary data are more reliable, then the interview method systematically overestimates the incidence figures but keeps a virtually identical profile. One possibility is that in the interview respondents actually use an interval greater than one month and correctly remember having done X, but have done it in a longer period. There is one notable exception: the figures for anal

intercourse (active: 29 vs. 24 and passive: 28 vs. 25) are markedly similar, which may indicate that gay men are able to recall with unusual accuracy whether or not they have engaged in this most implicated behaviour.

ANALYSIS OF 'VOLUME': BEHAVIOURAL TRENDS

In a report on an earlier diary sample (Coxon and Carballo 1989) it has been said that 'the vast majority of gay men's sexual activity is taken up by the three main behaviours of masturbation, fellatio and anal intercourse.' The justification for this statement is clearly seen in diary analysis, where the act (as opposed to the person) can be used as the unit of counting. This is termed 'analysis of volume' in our account and is a mode of analysis only feasible using the diary method. It makes it possible to ask not only how many men did X, or how often they did it, but also: 'What proportion (as a fraction of all sexual acts performed) of a person's (or a group's) total outlet consisted of X?' Table 4 illustrates the proportions (of the total number of sexual acts in this data set) which various sexual behaviours occupy.

In fact, over 80 per cent of all behaviour in the sample consists of these three main activities: masturbation, fellatio, and anal intercourse. Masturbation is by far the most common activity and accounts for three-fifths of the total outlet, with Solo Masturbation accounting for over one-third of all sexual acts. The low figure for DK (deep kissing) is simply a reflection of the fact that most diarists don't consider it to be a sexual act, and therefore don't record it consistently.[14] The next 16 per cent of sexual outlet is distributed between BR (frottage), DK (deep kissing), FG (digital-anal insertion), MA (massage) and RI (anilingus).

Expressed in terms of the total sexual outlet for the group, heterosexual activity (vaginal intercourse (VF) and cunnilingus (CN)) is very low indeed. Table 3 shows that 3 per cent of the individuals in the last month had a heterosexual encounter, but this represents merely 0.4 per cent of the total sexual outlet. It would seem that Britain is peculiar in this respect compared to other WHO Homosexual Response Studies sites (see Coxon 1992: §3.2), showing the lowest figures out of all the seven nations.

BEHAVIOUR AND RELATIONSHIPS

Within the diaries, sexual relationship types are defined, following the SIGMA conventions, as: (a) one exclusive regular partner

Table 4. Sexual Behaviours as Proportion of Total Sexual Acts

Behaviour	Frequency of acts	Percentage of total
Masturbation (W)	20,976	58.3
Fellatio (S)	5,990	16.7
Anal int. (F)	2,017	5.6
Frottage (BR)	1,683	4.4
Deep kissing	1,346	3.7
Ano-digital insertion (FG)	1,057	2.9
Massage	921	2.6
Anilingus (RI)	813	2.3
Inter-femoral frottage (TF)	460	1.3
Corporal punishment	269	0.8
Nipple play (TT)	148	0.4
Ano-brachial insertion (FI)	133	0.4
Vaginal intercourse (VF)	126	0.4
Lindinism (WS)	39	0.1
Cunnilingus	7	0.02
Total acts	35,981	100%

Table 5. SIGMA Typology: Relationship by Age Types

	Age		
Relationship	Under 21	21 to 39	Above 39
One regular partner	I	II	III
Regular partner(s) and others	IV	V	VI
No regular partner	VII	VIII	IX

('closed'); (b) one or more regular partners and others ('open'); and (c) no regular partner. Each of these relationship types is subdivided into three age ranges. Each cell of the resulting nine-fold design is given a label, in the form of a roman numeral, as shown in Table 5.

Patterns of sexual behaviour can then be studied by looking at how the sexual outlet of each of these nine types differs. This is done

by treating that type's total sexual outlet as 100 per cent, and then looking at how it is divided between the three most common sexual behaviours and their associated modalities. (This is termed unconditional or volume analysis, as opposed to conditional analysis, where the individual is the unit of analysis.)

An exhaustive analysis of the whole data set by type was performed and gave the results presented in Table 6. They are worthy of considerable attention, since once again, these are data which are unobtainable by any other method. Each section of the table represents a separate modality, which is then in turn divided by sexual activity.[15] For example, Table 6.1 indicates that 22.2 per cent of the total 694 (Table 6.5) sexual acts done by type I individuals (those aged 21 and under and in a closed relationship) consist of solitary masturbation, compared to 54.1 per cent of type VII (those aged 21 and under with no regular relationship). This suggests that having no regular partner has the effect of doubling the reliance on masturbation for these young men (see Davies et al. 1992).

The behavioural characteristics for each type are well defined:

Masturbation. Those with no regular partner (VII, VIII, IX) show a very high incidence of solo-masturbation, whereas those in closed relationships (I, II, III) have a very low incidence.

Anal intercourse. Those with no regular partner (VII, VIII, IX) show the lowest incidence of any form of anal intercourse, with most of their values being significantly less than the 'average' figure indicated in the ALL column. Those in closed relationships show a consistently higher level of both active and passive anal intercourse. Active anal intercourse is significantly higher for type III (the older partners in a regular relationship), and this is shown in Table 7.[16] But there is no significant variation in the passive form (see Coxon et al. 1993 for further treatment of this question).

Fellatio. Fellatio seems to transcend the relationship limits, and does not show any consistent relationship pattern. Types IV, V, and VI have the highest figures for fellatio, but we should bear in mind that type IV is by far the smallest set, and so we cannot treat the result as reliable.

No other form of behaviour exhibits a significant relationship type or age dependency.

BEHAVIOURAL PROGRESSION WITHIN THE SESSION

Anal intercourse is recognized as the form of sexual behaviour that is implicated most significantly in the transmission of HIV. From a

Table 6. 'Volume' Analysis of Sexual Behaviour by Modality and Type of Relationship (the following percentages are expressed as a proportion of the total sexual outlet of the indicated type of sexual behaviour: W = masturbation; F = anal intercourse; S = fellatio)

6.1: Modality = self: solo activity by act (masturbation) and type

	ALL	I	II	III	VI	V	VI	VII	VIII	IX
W	34%	22.5	22.8	19.7	15.3	31.0	21.4	54.1	53.7	44.6

6.2 Modality = active: active (Ego to Alter) by acts and type

	ALL	I	II	III	IV	V	VI	VII	VIII	IX
W	6.9	10.0	7.5	7.7	2.4	7.2	9.9	4.2	4.8	6.3
F	2.6	4.0	2.8	10.5	2.4	2.4	3.5	1.4	1.2	2.6
S	7.5	7.2	7.0	7.5	12.9	8.0	10.3	6.4	5.8	6.6

6.3 Modality = passive: (Alter to Ego) by acts and type

	ALL	I	II	III	IV	V	VI	VII	VIII	IX
W	6.7	8.5	7.5	5.2	7.0	7.1	8.4	5.0	4.1	5.0
F	2.4	3.0	4.0	3.8	4.7	2.2	2.2	1.5	1.5	2.2
S	6.2	7.5	7.0	3.6	9.4	7.3	5.2	4.8	5.0	4.2

6.4 Modality = mutual: (Alter and Ego simultaneously) by act and type

	ALL	I	II	III	IV	V	VI	VII	VIII	IX
W	7.4	7.2	6.0	3.6	11.8	6.8	10.4	6.8	5.6	11.0
F	–	–	–	–	–	–	–	–	–	–
S	2.8	2.6	3.2	4.8	4.7	2.4	4.5	2.0	1.9	1.9

6.5 Total sexual outlet by type (frequency of acts)

	ALL	I	II	III	IV	V	VI	VII	VIII	IX
	194155	694	2748	478	85	1136	2792	1368	2545	5800

Table 7. Sexual Outlet for Active Anal Intercourse (AI)
(number of acts of active AI per month)

Relationship	Under 21	21 to 39	Over 39
One partner	4.0	2.8	10.6
Regular partners and others	2.4	2.4	3.6
No regular partner	1.4	1.2	2.7

behavioural point of view, it would be interesting to see what types of behaviour are most likely to precede and lead on to anal intercourse of some form. We already know that anal intercourse is most typically the end-marker of a session, and the sequence in a sexual session may be so constrained that anal intercourse becomes virtually inevitable. Moreover, different behaviours may precede the active as opposed to the passive variant. Is this true?

In a preliminary analysis of the *co-occurrence* of sexual acts it was found that the two acts most likely to occur *in the same sexual session* as anal intercourse are masturbation and fellatio. Starting with this, precedence analysis was then applied to the sessions to see what behaviour is most likely to lead on to anal intercourse.

'Precedence analysis' is essentially a frequency count of how many times a given act precedes another in a sexual session. The analysis uses a 'sensitivity' parameter called 'width' which defines how many acts are taken into consideration by the analysis as preceding the reference act. For example, consider the following session:

Session 1:= { AW PW <u>PF</u> AS }

Let us use PF as the reference base; the AS is ignored in a precedence analysis, since it follows the reference. If the width is one, then only PW is counted as the precedent, but if the width is 2, then both PW and AW count as precedents. Thus the width value defines how many acts are visible to the analysis previous to the reference base. But the same act can occur more than once in a session, and this has to be allowed for. Consider the following example:

Session 2:= { AFI AS PW AS <u>AF</u> }

If AF is the reference base, then the three (distinct) precedent acts are: AFI, AS, and PW. But AS occurs twice, and is therefore given a higher

Table 8. Precedence Analysis for Anal Intercourse

[1] Precedent reference base: active anal intercourse (AF)

Act	Width		
	1	2	3
AS	49	89	126
PS	85	118	146
AW	31	61	73
PW	31	51	64

[2] Precedent base: passive anal intercourse (PF)

Act	Width		
	1	2	3
AS	50	89	123
PS	42	80	101
AW	26	38	52
PW	33	51	61

precedence value. In the above example, the precedence value of AS (with AF as the reference) has a value of 2 *if the width is* 3, but a value of 1 *if the width is* 2, the reason being that the second AS is out of the range of width visibility when the width is 2. (Width does not include the reference act itself.)

Let us turn now to the diary data (see Table 8). Looking at both the Active and Passive tables, the rank order of likely precedence is the same, independent of the width of the precedence. Active/insertive anal intercourse is most likely to be preceded (in order) by:

(Passive Sucking/Receptive Fellatio)
(Active Sucking/Insertive Fellatio)
(Active Wanking/Masturbation), and
(Passive Wanking/Masturbation)

In brief, this can be expressed as a rule: *'If I fuck a guy, sucking is most likely to precede it (rather than wanking), and I'm most likely to be sucked*

by him first.'

Passive/receptive anal intercourse, by contrast, is most likely to be preceded (in order) by:

(Active Sucking/Insertive Fellatio)
(Passive Sucking/Receptive Fellatio)
(Passive Wanking/Masturbation), and
(Active Wanking/Masturbation)

In brief: *'If I am fucked by a guy, sucking is, again, most likely to precede it, and I'm most likely to suck him first.'* (This accords with gay received wisdom and underwrites once again the symbolic dominance/subservience role of anal intercourse.)

In many ways these are the two sides of the same coin — seen from Ego's and Alter's perspective. A 'successor analysis' of active and passive fellatio would reveal the similar point: 'If you suck your partner, you're likely to go on to be fucked by him,' and 'If you are sucked by your partner, you are likely to be expected to go on to fuck him.'

If anal intercourse occurs in a sexual session, then it is most commonly the end-marker, and is very likely indeed to result in ejaculation, so this is where attention needs to be focused for a more accurate knowledge of how risk occurs (or is prevented). But this is another story (see Coxon and Coxon 1993).

USEFULNESS OF DIARY ANALYSIS

The results given by the diary analysis are very reliable and conclusive when studying the behaviour of individuals at the session level. Because of the short duration of the diaries (usually about a month or so), it is not so effective for time-generalized analysis (such as genuine 'ever' figures). It does, however, give a good idea of relative proportions of sexual behaviour, since total sexual outlet sets may be analysed by various independent variables (such as type, status, geographic location).

The greatest strengths of diary analysis, and areas in which it is worth particular further study, are in the analysis of the volume of sexual behaviour, of sexual role segregation, and co-occurrence, precedence, and successor analyses. These are all methods used to study behaviour at the session or individual level. The use of condoms during sessions is also an important part of the study, and one area in which diary analysis can, in principle, perform well.

Perhaps the most striking difference is that data are *derived* in the case of diaries, whereas data represent subjects' accounts (or estimates) in the case of interviews. There is no warrant for believing that the two will necessarily give rise to the same conclusions (indeed, the comparison of the two is an important component of our validation studies). But it is clearly seen from this analysis that sexual diaries are capable of providing unique data which is also uniquely adapted to answering problems of considerable epidemiological and policy relevance.

USE OF DIARIES IN ANTHROPOLOGICAL SETTINGS

In the research reported here, sexual diaries have been used as an auxiliary method of data collection and validation within a Western European context. The reliability and utility of diaries in other contexts depends on a number of factors:

Whether diary-keeping is an accepted procedure in the culture. For gay men, and for sexual and romantic activity in general, diary-keeping is a popular, though often a private, pastime, and is often written in code to ensure confidentiality (McCormick 1980). The social science use (see also Pomeroy, Flax, and Wheeler 1982) consists primarily in persuading respondents to do so for scientific purposes.

Anonymity must be guaranteeable. Whilst some diarists care not who knows their secrets, for others the diary records what no one else knows, and somehow the social scientist has to safeguard this secrecy, especially if the matters being recorded are illegal, deviant, or even simply private. At least one SIGMA diarist was expelled from his lodgings because his landlady 'found' his sexual diary.

The diary does not depend on a written format. Although diaries are most conveniently kept in writing in literate cultures, there is no reason why they must be. We have used both tape recorders and electronic pocket memos to record (and have diarists record) their diaries.

The diary does not depend on a long period. Although we have found that a month is the minimum period for reliable data, some diarists can be persuaded to keep it for much longer. (However, we believe that persons who keep the diary longer may differ in important ways from our other respondents.) Also, card versions of day entries can be devised which allow an encrypted version of events to be sent through the mail on a daily basis, thus avoiding problems of partial-completion and loss; it also helps avoid contamination due to recognition of trends by the diarist, if this is felt to be a problem.

The diary can be completed at leisure. Communicating about sexual behaviour (and especially uncommon behaviour) is often not feasible or is subject to systematic bias if elicited in the presence of others. Diaries can be completed at any time convenient to the respondent.

Diary information can as well be based on observation as on the subject's report. Although not always feasible, the structure of sexual behaviour underlying the diary code makes it possible to use it as a rapid shorthand for situations such as immediate re-interview, and our current studies of competent encoders' encodings of a common video stimulus (gay male pornographic sequences) show that high agreement on 'chunking' and description of sexual activity can be achieved.

* * *

The sexual diary is a robust, easy-to-use method for collecting reports (and/or observations) on detailed and sequential aspects of sexual behaviour. So long as common meanings are established before its use, respondents find them straightforward and even interesting to complete, and the data can be used to answer questions which interviews based on retrospective recall are ill-adapted to answer. Probably the most telling shortcoming is that volunteer (selection) bias is likely to be strong — including the earlier point about the difference in diary-keepers. This can be minimized by careful strategies to improve participation (Rosenthal and Rosnow 1975).

Because of the inherent detail of the diary account, it lends itself to serendipitous discovery and since it provides a general trace of behaviour it can provide well-adapted information if new foci of research become imperative. With the rapid increase in our understanding of HIV transmission, this cannot but be for the best.

NOTES

1. This research is supported by grants from the Department of Health (UK), the Medical Research Council, and the World Health Organization to Project SIGMA (Essex). These bodies are in no way responsible for the views expressed in this chapter.

2. This, and other issues of reliability and validity of SIGMA sexual diary data are currently under investigation by the senior author, with funding from the Department of Health. For discussion of relevant experimental and theoretical findings see Linton (1986) and Brewer (1988).

3. Interview estimates tend to be 'chunked' aggregates of week estimates (e.g., a respondent will mentally estimate the last week's frequency and then multiply up by four for a month estimate), be reported in rounded quantities (e.g., multiples of 5 or 10), and be subject to an individual distortion factor. Current research centres on the comparison of estimates provided by the subject *after* the return of the diary with those calculated from the diary of the same period (Coxon 1988b).

4. 'Poppers' refer to amyl or butyl nitrite sniffed to give a quick 'high' by cardiovascular dilation.

5. The respondent is asked to provide the following information about each sexual partner: [1] Whether he is *regular/occasional/'one-off'*; [2] His *age* (if you know it, or your guess); [3] How long you have been having sex with him; [4] Where you met him; [5] His HIV status (one of: Negative, Positive, or Don't Know), together with the partner's sex, if it is not male.

6. For reasons of confidentiality we did not ask the respondent to give the actual name of his contacts and in the case contacts, this was never known. Systematic network tracing is thus precluded by our adoption of this self-denying ordinance.

7. Instructions are contained in 'Instructions for Completing a Sexual Diary,' SIGMA 1990.

8. Since the SIGMA system was developed explicitly with HIV transmission in mind, it is necessary to distinguish *which* partner ejaculates, and where the ejaculate goes — in/on the partner, in a condom, etc. This is encoded in the SIGMA coding system but is not discussed further here (see Coxon et al. 1992).

9. Such a list is of its very nature open; sexual adventurousness and inventiveness, together with shifting labels for acts, make it so. Taking the respondents' terminology as definitive does introduce methodological problems of overlapping categories, such as occur for essentially the same activities as 'NN' ('nipple nibbling') and 'TT' ('tit torture'), and of apparently equivalent categories which reverse the modality — compare 'sucking' and 'mouth-fucking').

10. The diaries of this study are all completed by men (hence the use of male gender throughout), but there is no reason why this should be so.

11. The sexual diaries are held in DbaseIV and CARDBOX-PLUS format. The programs for subsequent analysis are contained in the software package SDA [Sexual Diary Analysis] written in TOPSPEED C by Huw Coxon with funding from the Department of Health, whose help is gratefully acknowledged. Copies of the programs, selected data, and documentation are available at cost from Project SIGMA (attn: N.H. Coxon), University of Essex.

12. Because in general receptive anal intercourse has lower prestige or is deemed more submissive than the insertive variant.

13. Reported in SIGMA 1990 (Table 5.5, pp. 129–130). Because these data are obtained using the ISB, which has the same structure as the Diary codes, direct comparison is possible. The 17 cells entering the comparison are marked with '#' in Table 3. The values, in order, are: 24 (AF), 28, 61, 58, 39, 90 (SW), 65, 63, 61, 23, 23, 10, 26, 23, 42, 38, 40 (MBR).

14. And also because it was only recently re-introduced into the list of behaviours. It was initially excluded on the grounds that it could not be implicated in HIV transmission, and was re-introduced as a marker for tracking CMV (cytomegalovirus) sero-conversion.

15. Each row of the table is better represented as an Age × Relationship table, whose entries are the relevant percentages. In previous analyses (Coxon 1987), each table is then analysed using an ANOVA or resistant analysis such as Median Polish (see note 16).

16. To illustrate the additive analysis mentioned in note 15, when the data of Table 6.2 (F) (i.e., active anal intercourse; also shown in Table 7) are analysed using Tukey's Median Polish, the results table is as follows:

REL	AGE			Effect of REL
	<21	21–39	>39	
Closed	0	–1.0	5.3	1.6
Open	0	0.2	–0.1	0
No reg.	0	0	0	–1.0
Effect of age:	0	–0.2	1.3	Total: 2.4

The overall (total) value is 2.4 per cent, and compared to this the effects of age and relationship are small — being in a closed relationship raises the percentage by 1.6 per cent; being over 39 raises it by a further 1.3 per cent, whilst having no regular relationship decreases it by 1 per cent. The entries in the body of the table are the 'interaction' or residual/joint effects, so the *combined* effect of being in a closed relationship and between 21 and 39 decreases it by 1 per cent. By far the greatest effect of all is being in a closed relationship and over 39: this adds an effect more than twice the size of the overall effect. (Adding the total, row, column, and interaction effect (necessarily) yields the original data. Thus the 'closed relationship/age less than 21' cell comprises:

Total + Closed + Age < 21 + Closed-and-age < 21

i.e.,

| 2.4 | 1.6 | 0 | 0 | = | 4.0%, |

as in Table 6, 6.2 (F) cell I).

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