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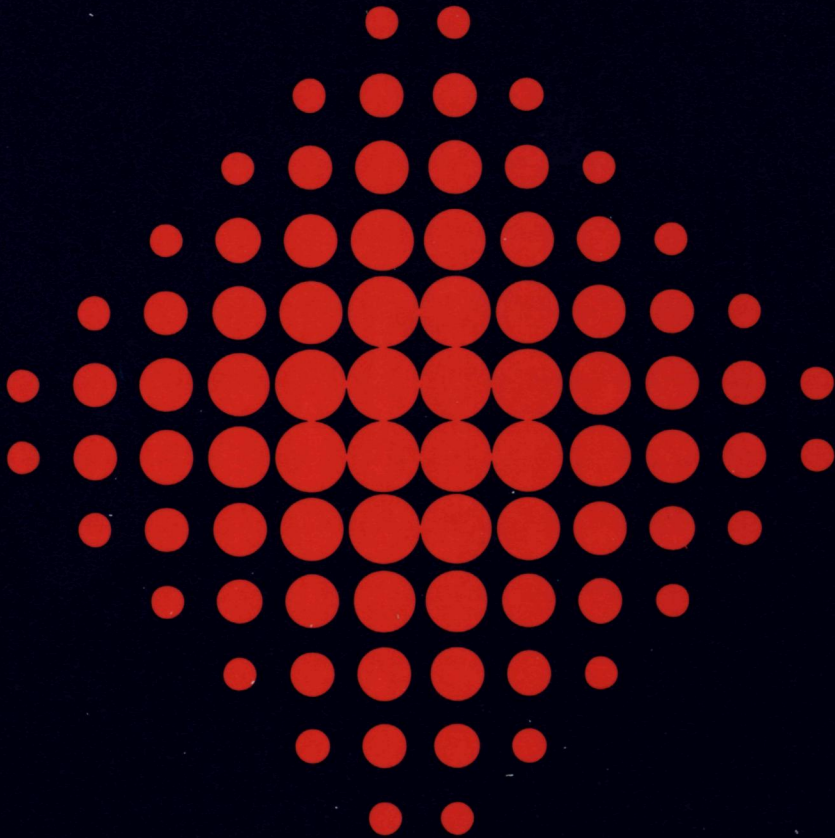
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Determinants of contraceptive use

National population-based studies in various
West European countries



Björn J. Oddens

Determinants of contraceptive use

**Determinants of contraceptive use
National population-based studies in various West
European countries**

**Determinanten van anticonceptiegebruik
Nationale bevolkingsonderzoeken in enkele West
Europese landen**

een wetenschappelijke proeve op het gebied van de Medische Wetenschappen

Proefschrift

ter verkrijging van de graad van doctor aan de Katholieke Universiteit Nijmegen,
volgens besluit van het College van Decanen in het openbaar te verdedigen
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door

Björn Johan Oddens

geboren op 22 maart 1965 te Doetinchem.



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Preface

After three months of preparatory work and familiarization with the International Health Foundation, I was appointed Research Fellow to the Foundation in June 1991. The late Dr Pieter A. van Keep, the former Director General, played a pivotal role in my appointment and induction. To my deep regret he unexpectedly contracted a serious illness and died on 17 June 1991 at the age of 58. Even during the last three months of his life he still devoted precious time to preparing me for my work in Brussels. A remarkable man and irreplaceable guide and mentor, he stimulated me to prepare a thesis based on part of the work I was to undertake at the International Health Foundation.

Most of the fieldwork for the research described in this thesis was done in 1991-92. Other, unrelated studies, also had to be carried out in parallel, so time pressures were considerable. Having received a classical medical training, I needed help with the psychological side of the research. Marianne Potting, at the time a student in the field of Health Education and Promotion at the University of Limburg, Maastricht (Netherlands), who prepared her Master's dissertation at the Foundation, guided me through many of the mysteries of the behavioural sciences. She also provided enormous help with the literature review and the pilot survey for the thesis.

In 1993, I was given responsibility for scientific affairs at the Foundation. As a result, the work involved in analysis, writing and publishing activities relating to the thesis had to be relegated to the evenings and week-ends only. At times I feared the thesis would never be finalized, while at others an optimism prevailed.

Over the past years Professor Hans M. Vemer has never ceased to encourage me. As promotor he kept the engine of the thesis running. As adviser to the Foundation and successor to Pieter van Keep, he has always been available to discuss, suggest and advise. Thanks to his unfailing support I was able to continue with the thesis and also to cope with the scientific responsibilities which had unexpectedly been placed on my somewhat inexperienced shoulders.

Professor Walter Th.A.M. Everaerd has been another tower of strength. He did not intervene frequently in the preparation of the thesis, but whenever he did, it was to very good purpose. In some cases analyses were redone and chapters completely rewritten, the resulting drafts being much better than I had ever dared to hope.

Professor David de Wied, in his dual capacities as Chairman of the Foundation's Board of Trustees and tutor, has always given me the feeling, and confirmed this by

his deeds, that he believed in my work. Ever since the time I worked as a student in his research institute, he has been a great support, both personally and professionally. His vision has been invaluable to the International Health Foundation, as is shown by its past successes and its solid basis for meeting future challenges.

At the International Health Foundation itself, Professor Philippe Lehert introduced me to the complex world of statistics. Fellow researcher Monique Boulet taught me how to manage colleagues and to place the Foundation above personal ambition. Paul Neijens, the Foundation's financial affairs expert, provided a stable basis of sound finances and reliable professional advice. The secretaries, Edna Keirens and Liliane Moeremans, successfully struggled with tables and retrieved texts that the computers had swallowed as a result of my pressing the wrong keys. Tineke de Hingh drove from library to library to find all the necessary reference articles. Alex Rutherford spent long hours editing my sometimes rambling English.

The International Health Foundation, with all its facilities and endless possibilities, provided me with a unique opportunity to carry out research, to establish contacts and to develop professionally. I will always be grateful to Pieter for selecting me to work there and to the Board of Trustees for allowing me to remain in my responsible and often challenging position.

A final word of appreciation is due to my parents, brother and close friends. They have continuously supported me and lent their ears to all the troubles with which I have sometimes burdened them. They have always simply taken me as I am, and for this I am very grateful. This thesis is accordingly dedicated to them.

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Chapter 1

General introduction

B.J. ODDENS

1.1. Research into contraceptive use

Effective contraception has a relatively short history. Only in the second half of this century have rapid developments in contraceptive technology provided the means for effective family planning. Intrauterine contraceptive devices (IUDs) as we know them today date back to 1909; they subsequently underwent major changes in the 1920s and were introduced into clinical practice in the 1960s. Voluntary sterilization also began gaining popularity in Europe and the USA in the 1960s, although it had been practised in Puerto Rico and Japan since the late 1940s. The first oral contraceptive pill was introduced in May 1960 in the USA. The principle of barrier contraception is far older and was known and used in Roman times (in the form of condoms made of animal bladders). Innovations in rubber technology over the past 50 years have led to the more effective, modern condoms we know today.

Until the late 1960s couples mainly practised the less reliable methods of coitus interruptus and periodic abstinence. In 1966, for example, 88% of married women aged 30-34 in the Flanders region of Belgium who used any form of contraception relied on these traditional methods [1]. Since the late 1960s these unreliable methods have been rapidly replaced by modern effective contraception. In Belgium, the use of these traditional methods had fallen to 4% in 1989, whereas the use of oral contraceptives (less than 10% in 1966 [1]) had increased to 41% [2].

Modern medical contraceptive methods were not received without controversy. Oral contraceptives (OCs) in particular were the subject of wide debate. In the early years, the issues concerned the exact mechanism of action of OCs, whether OC use might be unnatural, the potential side effects and health risks involved (including possible infertility after discontinuation), as well as moral and ethical dilemmas (religious acceptability, encouragement of sexual promiscuity) [3].

Social research relating to fertility and family planning had already started in the 1930s, when the Depression led to a decline in fertility in countries with low birth rates, giving rise to concern in these countries about their very survival [4]. Probably the first study which addressed the issues of knowledge, attitudes and practice with respect to fertility and family planning was conducted in the USA in 1931 [5]. As modern medical contraception became available, surveys were rapidly carried out in many countries to investigate the acceptability and use of the new methods. The World Fertility Survey of 1970, which covered virtually every country in the world, was probably the "largest exercise in social science ever undertaken" [6].

After studies had indicated that modern effective methods were readily accepted in Western countries, that fears about sexual immorality were largely unjustified and

that medical methods were in essence not harmful to health, research interest in the acceptability of medical methods to Western couples diminished considerably. A shift in interest towards the investigation of sexuality and sexual health also played a role in this connection. Developing countries, with their problems of excessive population growth, combined with poor availability of and accessibility to effective contraception became the central focus of family planning research. Recently, more attention has also been directed towards Central and Eastern Europe, where contraceptive use rates are generally low and abortion figures high.

The history of contraception continued to run its course in Western countries. 'Pill scares' (when women abandoned OCs in massive numbers after the publication of claims that OCs might increase cancer or cardiovascular disease risk) and concerns about infection and infertility risk associated with IUDs had a major impact on women's attitudes towards these methods [7]. Adolescents and young women remained the predominant risk group for unintended pregnancies and subsequent abortions [8]. The problem of sexually transmitted diseases (STDs) also attracted more and more attention. Although STDs and, currently, AIDS have nothing to do with contraception in the strict sense, the fact that condoms protect against their transmission nevertheless forced these issues into the field of family planning (which has subsequently been renamed 'reproductive health' [9]).

In the late 1970s and early 1980s, large-scale population research into contraceptive decisions was carried out only incidentally. Following the appearance of AIDS, however, population surveys were conducted again, focusing more explicitly on sexual behaviour, knowledge of AIDS and AIDS preventing behaviour ('safe sex'), and less on contraceptive use and decisions.

1.2. International Health Foundation contraception surveys

In 1984, with a view to filling the obvious research vacuum, the International Health Foundation initiated its international comparative surveys of knowledge, attitudes and practice concerning contraception. Between 1984 and 1989, nine surveys were carried out: in Italy, France, West Germany, Great Britain, Spain, Austria, Sweden, Denmark and Belgium [2,10]. The publications covering these surveys are among the most frequently cited reports produced by the International Health Foundation, which confirms the need that existed for this type of research. These studies were notable in that they illustrated clearly that contraceptive behaviour was certainly not problem-free in Western Europe; many women were found to be

using unreliable contraceptive methods (in particular adolescents, women aged over 35 years and women in southern European countries). Moreover, attitudes towards medical methods were dominated by beliefs that were outdated in the light of modern medical research findings, while contraceptive and fertility knowledge also proved to be inadequate.

The surveys mentioned were predominantly descriptive in nature. In other words, they showed which methods were used by West European women and how these women viewed the various contraceptive methods, contraception in general, and fertility. They inevitably provided only limited information about the reasons why women had opted for particular methods, the factors underlying their contraceptive decisions, and consequently their contraceptive choices.

Furthermore, the first of these surveys was conducted shortly after the last major 'pill scares', viz. those of 1977 (cardiovascular disease risk) and 1983 (cervical cancer and breast cancer in young women). It is hence not unlikely that the attitude findings in the initial surveys (Italy, France, Great Britain, West Germany and Spain) would not have truly reflected what women are nowadays thinking about contraception.

1.3. New studies: determinants of contraceptive use

In 1990, the Board of Trustees of the International Health Foundation decided that the findings of the early surveys should be updated, starting with Great Britain and Germany (after reunification). A second aim was to obtain a better insight into factors and mechanisms that underlay women's contraceptive choices. The determinants of contraceptive use would be covered not only by the British and German surveys, but also by additional investigations focusing on specific factors for which these surveys were less suitable. It was considered of the utmost importance that the investigations should be nationally representative, to ensure that the findings would be valid for the general female population rather than subgroups that were of specific (or limited) interest. As large European countries, Great Britain and Germany were seen as fair representatives of the situation in the northern part of Western Europe, also reflecting, albeit with considerable variation, the situations in Scandinavia, the Netherlands, Belgium, France, Austria and Switzerland.

1.4. Aims of the investigations

The above-mentioned investigations, which are presented in this thesis, were designed with a view to providing answers to the following research questions:

- (a) which contraceptive methods are currently used by women of reproductive age in Great Britain and Germany who wish to avoid pregnancy?
- (b) to what extent do the contraceptive use patterns in these countries differ from those observed in 1984 and 1985 respectively?
- (c) can changes in contraceptive use observed over time be attributed to possible repercussions resulting from the 1991 pill scare in Germany (see Ref. [11]), the gradual disappearance of the effects of the 1983 pill scare in Great Britain, and AIDS campaigning in both countries?
- (d) what are the current attitudes towards the various existing methods in the two countries?
- (e) which factors (including attitudes) can be considered to be the principal determinants of contraceptive use? To what extent does knowledge in this connection contribute to our understanding of women's contraceptive choices?
- (f) which factors might influence the international variation in contraceptive use observed in Western Europe [2,10]?

1.5. Current approach

The series of related investigations started with an extensive literature review to explore the factors which, according to previous research, had had an impact on women's contraceptive use and their contraceptive decisions (*Chapter 2*). This review covered both demographic aspects and psychological and sex life characteristics.

It emerged from the literature review that contraceptive decisions were related to a great variety of factors. There was a resultant feeling that "everything might be related to everything". Contraceptive choices, moreover, constitute multi-stage decision processes in which one method is ultimately adopted from the range of those available. The questions of where to start and how to structure the research and analyses then had to be addressed.

A structuring rationale for investigating contraceptive use decisions was provided by the research models of Ajzen and Fishbein [12] and Ajzen and Madden [13] (a model being a simplified reflection of how complex interaction processes may

be structured). To summarize briefly, these authors postulated that a contraceptive decision was the result of a positive attitude towards the method concerned, perceptions that social referents (partner, friends, physician, family) stimulate use of the method and sufficient faith to be able to use the method correctly and consistently. Demographic background characteristics would exert their influence on a contraceptive decision indirectly by having an impact on these psychological factors.

It is important to note that these models were not developed only to predict whether or not a person performs a single behaviour (use or non-use of a single contraceptive method). Ajzen and Fishbein [12] explicitly promoted the use of their models to understand a person's choices among behavioural alternatives (p.54). In order to understand these choices, we must consider the factors influencing a person's decision to perform a given behaviour and not to perform the remaining alternatives. This can be achieved by simultaneous evaluation of the determinants of a given behaviour and its alternatives (e.g. a within-subjects analysis of the determinants of use and non-use of various alternative contraceptive methods). In this sense, application of the models contributes not only to our understanding of the determinants of contraceptive use *per se*, but also to our knowledge of how women make their choices from the range of contraceptive methods available, provided that the determinants for more than one contraceptive method are (simultaneously) addressed (for application, see [14,15]).

These models offered various advantages in the context of the current investigations. First, they included attitudes as a relevant factor (and attitudes had been covered in the previous International Health Foundation surveys with which the findings of the current surveys were to be compared). Secondly, they clearly structured the relevance of the many potential determinants and indicated a starting-point. Finally, the models had been applied in numerous previous studies on contraceptive use (in fact the large majority of model based studies into the determinants of contraceptive use relate to these models) and had been found to be effective in capturing the essence of these multi-stage decision processes. Nevertheless, the application of these models in large-scale West European population surveys would be a new departure. Previous applications had concerned small-scale studies, most of which had focused on adolescents and young women in the USA.

Use of the Fishbein-Ajzen-Madden model in the British and German surveys entailed adaptation of the phrasing of many questions from the old surveys and inclusion of new questions about social influences and the perceived ability to use specific contraceptive methods. In order to test the feasibility of the adapted

questionnaire and the validity of the approach in a population survey design, a pilot survey was carried out in West Germany (*Chapter 3*). The satisfactory results obtained with a modified version of the model confirmed that this approach should be continued.

Subsequently, large-scale population-based surveys were carried out in Great Britain and Germany. The descriptive results concerning contraceptive use and attitudes were commented upon in detail and where possible compared with those available from the 1984-85 studies (*Chapters 4 and 5*). The possible effects of pill scares and information campaigns on these issues were also addressed.

Since OC discontinuation emerged as an issue that was of considerable relevance to a better understanding of women's changes of contraceptive method (in both the literature review and the two population surveys), it was decided to investigate the dynamics of OC use (starting, discontinuing and switching to another OC type) and women's related motives. Data were analyzed from an ongoing series of surveys on contraceptive use in the Netherlands (*Chapter 6*).

Finally, the determinants of contraceptive choices were extensively explored.

As a first possible determinant, national reimbursement of contraception costs was considered (*Chapter 7*). Changes in reimbursement schemes have been under debate in various countries and it was considered possible that there would be consequent effects on the use of contraceptive methods. Furthermore, differences in reimbursement schemes among European countries might explain the international differences in contraceptive use that were observed. Since the new British and German surveys could not be expected to provide insights into the effects of reimbursement on contraceptive use (since only two reimbursement schemes could be compared), a separate study was carried out which considered eight West European countries and their respective reimbursement schemes.

Secondly, the effects of various key demographic characteristics on contraceptive use were explored, based on the newly obtained British and German data (*Chapter 8*). Since it was felt that national demographic characteristics might explain differences in international contraceptive use, an assessment was made of the extent to which cross-country differences persisted after the confounding effects of the remaining demographic characteristics had been taken into account.

Thirdly, the psychological determinants of contraceptive use were addressed (*Chapter 9*). These concerned attitudes, social influences, perceived ability to use a method, inter-partner communication and fertility awareness. The British and German data served as the basis for this investigation. As in the case of the demographic determinants, the impact of the country factor, after taking the effects of the

psychological determinants into account, was also specifically considered.

Finally, the results of these various investigations were reviewed in the context of the original research questions (*Chapter 10*). Principal conclusions were then formulated and the possible implications for practice and a better understanding of women's contraceptive behaviour were assessed.

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Chapter 2

Towards a better understanding of contraceptive practice in Western countries: characterization of contraception users

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2.1. Introduction

The most recent statistics on abortion in the United States indicate that 27.3 abortions are carried out annually per 1,000 women aged 15-44 [1]. Table 1 shows that, in the case of West European countries, somewhat lower (but still considerable) abortion rates have been reported, even though reliable methods of contraception are clearly effective in preventing unintended pregnancies and abortions. This fact is probably best illustrated by the inverse correlation that exists between the use of such methods and the unintended pregnancy and abortion rates (Figures 1-2). The question that arises from this inverse relationship is why substantial numbers of people in countries in which reliable contraceptive methods are widely available are not currently using them.

Table 1. Abortion rate per 1,000 women aged 15-44 and abortion ratio per 1,000 live births in selected West European countries and the United States^a

<i>Country and year</i>	<i>Rate</i>	<i>Ratio</i>
Denmark (1988)	18.6	360
England and Wales (1989)	15.5	249
Finland (1987)	11.7	217
France (1987) ^b	13.3	210
Federal Republic of Germany (1990) ^b	5.9	87
Iceland (1987)	12.0	167
Italy (1989) ^b	13.5	309
Netherlands (1988)	5.1	96
Norway (1990)	14.8	256
Sweden (1987)	19.8	331
United States (1988)	27.3	407

^aFrom Ref. [1]. ^bIncomplete statistics.

To address this question we assessed the factors that characterize non-users of reliable contraception, in particular in countries where reliable contraception is generally available, i.e. Western countries (North America, Western Europe, Australia, New Zealand). We adopted a somewhat broader perspective by assessing what characterizes users of the various available methods, including people relying on "luck" (no method). For this purpose we reviewed studies on contraceptive behaviour, including contraceptive use, contraceptive choice, sexual behaviour and AIDS preventive behaviours.

The studies were found by multiple MEDLINE and PsychLit database searches and by consulting the bibliographies of each of the articles identified. The database searches were restricted to articles published after 1970, because we felt that earlier

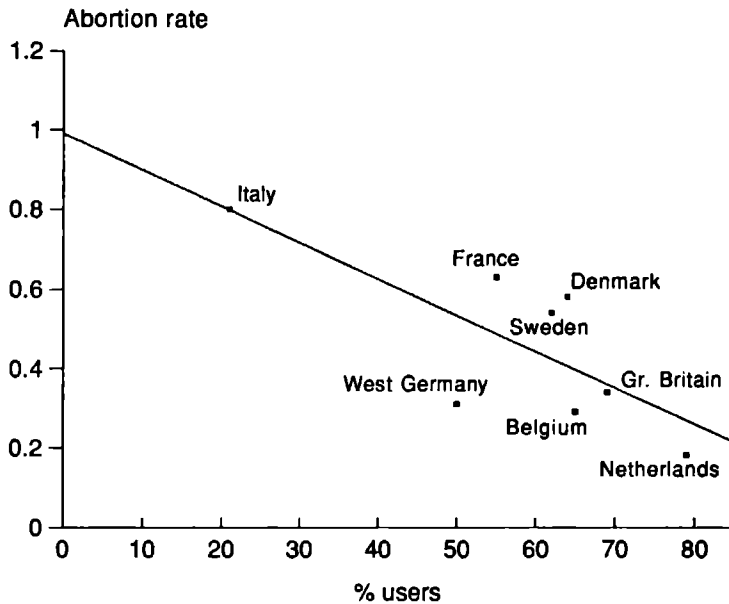


Figure 1. Abortion rate according to the aggregate percentage of users of oral contraceptives, intrauterine devices and sterilization. Data from Refs [2-5]. Correlation: Pearson $r = -0.75$, $P = 0.03$.

studies were of limited relevance to current situations. We focused mainly on articles in English, although some publications in French, German and Dutch were also included. Publications in the Dutch language were considered relevant because the Netherlands has the lowest abortion and unplanned pregnancy rates in the world [1]. In selecting the articles for review we opted for empirical, data-based studies rather than theoretical studies or illustrative case reports. In the case of review articles only paragraphs that summarized empirical research were taken into account; interpretations and extrapolations were deliberately left out of consideration.

In our searches we found mainly studies on women's contraceptive behaviour. The literature on men was sparse and seemed to be incomplete and we therefore decided to limit this review to women's contraceptive behaviour. The articles retrieved fell broadly into two groups. The first comprised studies on the demographic characteristics of users of the various contraceptive methods and included many national surveys on contraceptive use. Since the results of most recent surveys had not previously been brought together, we collated them in tables to show how demographic factors influenced contraceptive use. Where necessary, these surveys

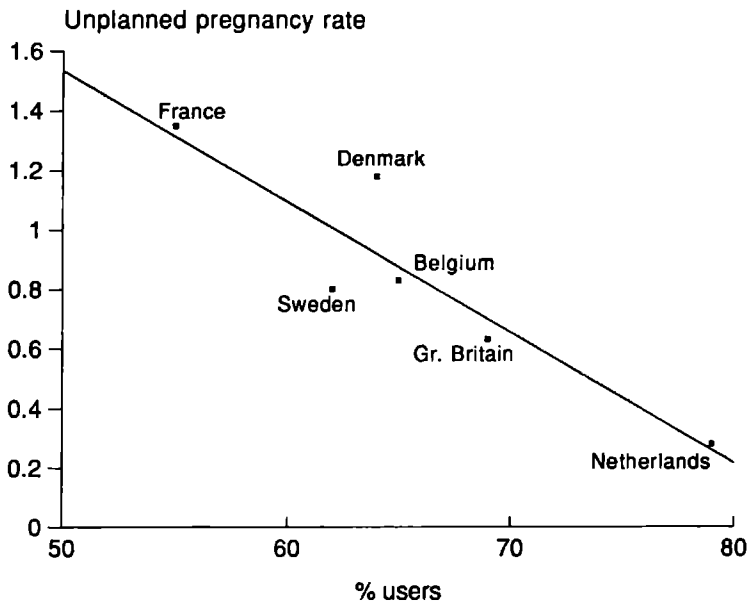


Figure 2. Unplanned pregnancy rate according to the aggregate percentage of users of oral contraceptives, intrauterine devices and sterilization. Data from Refs [2-5]. Correlation: Pearson $r = -0.92$, $P = 0.01$.

were reviewed in the context of earlier, non-representative surveys. The second group of articles was made up of studies on knowledge, attitudes, social influences, "self-efficacy", sexual anxieties, self-esteem and sex life characteristics. Some of the latter characteristics might be labelled as "psychological" in nature. In the present paper research of this type is discussed separately. Where individual studies dealt with both kinds of characteristics they were included in both sections of the paper.

2.2. Demographic characteristics

The demographic characteristics of the users of the various contraceptive methods are taken from the large-scale contraception surveys that have been regularly carried out in many countries. In Tables 2-5 the main results from the most recent national surveys on contraceptive use that we found are presented with respect to age, parity, marital status and educational level.

Table 2. Contraceptive use (%) by "exposed" women according to age@

Country	Year	Oral contraceptives						Intrauterine device							
		15-19	20-24	25-29	30-34	35-39	40-44	15-19	20-24	25-29	30-34	35-39	40-44	15-44	
Italy	1984	11	12	13	7	1	0	6	6	8	19	22	20	4	15
Spain	1985	23	28	23	18	19	8	19	1	5	25	17	8	14	13
Austria	1987	46	62	56	44	31	21	42	0	0	9	7	12	8	7
Sweden	1987	63	66	47	34	20	5	37	0	4	14	28	31	26	19
Denmark	1988	64	71	37	25	13	12	36	2	2	14	30	21	16	14
United States ^a	1988		56		30		4	28			2		3		2
France ^a	1988	86 ^c	83	60	43	31	17	45	0 ^c	5	21	32	33	30	25
United Kingdom ^a	1989	67 ^d	65	47	28	14	5	33	1 ^d	4	8	9	9	9	7
West Germany ^{a,b}	1989	33 ^c		71 ^e				44	0 ^c		7 ^c		14		9
Netherlands ^b	1989	--	60	48	27	18	--	--	--	2	5	10	10	--	--
Belgium	1989	61	61	51	55	38	26	49	0	1	12	13	27	20	13
Country	Year	Barrier methods						Rhythm and withdrawal							
		15-19	20-24	25-29	30-34	35-39	40-44	15-19	20-24	25-29	30-34	35-39	40-44	15-44	
Italy	1984	29	30	29	25	19	12	23	30	21	21	18	21	43	26
Spain	1985	30	23	21	20	29	23	23	17	15	7	14	22	21	16
Austria	1987	22	18	16	15	15	11	16	17	8	7	11	15	23	13
Sweden	1987	19	23	32	23	27	35	27	8	4	5	5	5	9	6
Denmark	1988	19	19	37	23	27	22	25	1	3	4	3	3	8	4
United States ^a	1988		21		20		17	19		4		5		3	4
France ^a	1988	4 ^c	3	6	5	4	5	5	7 ^c	7	10	12	15	20	13
United Kingdom ^a	1989	22 ^d	20	24	27	20	21	22	5 ^d	5	9	6	9	6	7
West Germany ^{a,b}	1989	33 ^c		29 ^e			16	25	7 ^c		11 ^c		11		11
Netherlands ^a	1989	--	8	12	12	8	--	--	--	--	--	--	--	--	--
Belgium	1989	12	1	5	3	4	11	5	4	4	3	4	7	9	5
Country	Year	Sterilization						No method							
		15-19	20-24	25-29	30-34	35-39	40-44	15-19	20-24	25-29	30-34	35-39	40-44	15-44	
Italy	1984	0	0	0	1	0	0	0	24	29	18	27	39	41	30
Spain	1985	0	1	3	5	4	3	3	29	28	21	26	28	31	26
Austria	1987	0	0	3	4	10	7	5	15	12	9	19	17	30	18
Sweden	1987	0	0	1	9	10	13	6	10	3	1	1	7	12	5
Denmark	1988	0	0	4	13	26	33	14	15	6	4	7	10	9	8
United States ^a	1988		4		32		64	35		15		9		7	10
France ^a	1988	0 ^c	0	0	5	11	21	8	0 ^c	0	1	2	2	6	2
United Kingdom ^a	1989	0 ^d	1	9	28	47	57	28	6 ^d	4	3	1	1	2	3
West Germany ^{a,b}	1989	0 ^c		3 ^c		12		6	--	--	--	--	--	--	--
Netherlands ^b	1989	--	1	5	20	38	--	--	--	21	18	20	18	--	--
Belgium	1989	0	0	1	4	6	5	3	23	33	27	21	19	29	25

@From Refs [4-13]. ^aRecalculations ^bAll women, instead of "exposed" women only ^c18-19 years of age only. ^d16-19 years of age only ^e15-17 and 18-34 years of age, respectively.

In interpreting the results of contraception surveys it is important to consider only findings relating to fertile, sexually active women who were not pregnant and did not wish to get pregnant at the time of the survey (so-called "exposed" women [6]). This approach ensures that the estimated percentages of women not using any method of contraception are more relevant, than they would be if the population also included women who did not need to use contraception. Accordingly, a special effort was made to present data relating specifically to "exposed" women only. In the International Health Foundation's surveys, the authors always presented results for such "exposed" women [3,5-9]. Some of the other surveys provided sufficient data on sexual activity, pregnancy and (self-defined) fertility to enable contraceptive use figures for "exposed" women to be calculated [10-12]. Where such calculations were not possible this is indicated in the tables.

The data presented in the tables are not all representative for the countries considered. The Italian survey carried out by Riphagen and Lehert [6] was conducted among women attending outpatient clinics or visiting patients in hospital. The French survey by these investigators was partly conducted in a similar way, but also included women attending preventive medicine clinics [6]. Their West German survey was conducted among women who consulted a general practitioner [6]. In the case of the German survey of Freundl *et al.* [13] insufficient details were given to determine whether this survey was representative. However, for these countries we did not find any more accurate national surveys which provided the details necessary for inclusion in the tables. All of the other surveys taken into account were true national population surveys, the lowest response rate being observed in Denmark (65% [8]) and the highest in Spain (88% [6]). Sample sizes ranged from 744 in Sweden [7] to 8,450 in the United States [11].

2.2.1. Age, parity and marital status

In Table 2 it can be seen that the highest oral contraceptive (OC) use rates were found in the younger age strata (15-29 years of age), whereas the highest intrauterine device (IUD) and sterilization rates were among women over 30. The prevalence of coitus interruptus and periodic abstinence was somewhat higher in the older age strata. Reliance on "luck" was greatest among adolescents and women over 35. This implies that OC users are, on average, younger than users of sterilization, IUDs or rhythm and withdrawal. "Exposed" women not using any method were found in all age groups, but the prevalence was somewhat higher in the younger and the oldest age strata.

What is the explanation for these changes in contraceptive use with age?

Clearly, sterilization is a permanent method and women who opt for this (whether of the female or the male partner) in most cases do not wish to have any more children, as is apparent from the higher sterilization rates among women with more than one child (Table 3). According to a United Nations report, the average age at the last birth is around 30 in developed countries [14] which explains why sterilization rates increase noticeably beyond 30 years of age.

Table 3. Current contraceptive use (%) by "exposed" women aged 15-44 according to parity[@]

<i>Country</i>	<i>Year</i>	<i>Oral contraceptives</i>				<i>Intrauterine device</i>			
		<i>0 child</i>	<i>1</i>	<i>2</i>	<i>3+</i>	<i>0 child</i>	<i>1</i>	<i>2</i>	<i>3+</i>
Italy	1984	7		2		14		19	
France	1984	34		19		19		18	
Spain	1985	21		15		12		15	
West Germany	1985	34		16		9		14	
Austria	1987	47		23		7		8	
Sweden	1987	42		11		16		35	
Denmark	1988	60	26	18	13	4	16	25	18
United Kingdom ^a	1989	55	36	24	19				
Netherlands ^b	1989	51	35	26	20	3	5	12	4
Belgium	1989	58	44	40	25	1	26	26	19
<i>Country</i>	<i>Year</i>	<i>Sterilization</i>				<i>Barrier methods</i>			
		<i>0 child</i>	<i>1</i>	<i>2</i>	<i>3+</i>	<i>0 child</i>	<i>1</i>	<i>2</i>	<i>3+</i>
Italy	1984					24		19	
France	1984					8		12	
Spain	1985					27		19	
West Germany	1985					6		9	
Austria	1987					15		16	
Sweden	1987					27		23	
Denmark	1988	1	10	22	41	24	27	27	21
United Kingdom ^a	1989	3	13	38	45	23	25	32	26
Netherlands ^b	1989	2	10	31	34	8	12	11	10
Belgium	1989	0	4	5	14	6	3	7	3

[@]From Refs. [3-5,8,10]. ^aRecalculations. ^bAll women, instead of "exposed" women only.

Nulliparous women were repeatedly advised not to use IUDs because of an assumed risk of genital infections and consequent infertility [15,16]. Three of the studies listed in Table 3 showed that IUD use rates were considerably higher among

multiparous women than among nulliparous women, suggesting that such advice did indeed influence IUD use, thus explaining why IUD use rates were found to be higher in the older age strata. Taking these considerations into account (viz. no desire for further children in the case of sterilization and multiparity in the case of IUDs) it can be understood why IUD and sterilization users are more frequently married, divorced or widowed than single (Table 4).

The decline in OC use rates observed with increasing age and higher parity may, therefore, be partly related to opting for sterilization or IUD use after the end of

Table 4. Current contraceptive use (%) by "exposed" women aged 15-44 according to marital status[@]

Country	Year	Oral contraceptives				Intrauterine device			
		cohab	married	widow/ divorced	single	cohab	married	widow/ divorced	single
Italy	1984		2		11		15		14
France	1984		25		48		22		11
Spain	1985		18		24		15		8
West Germany	1985		28		36		11		8
United States ^a	1988	46 ^c	19	23	^c	1 ^c	2	3	^c
United Kingdom ^a	1989		22	25	64		8	15	2
Netherlands ^b	1989	60	28	45		6	9		4
Belgium	1989	53	44	39	59	7	20	21	0
Country	Year	Sterilization				Barrier methods			
		cohab	married	widow/ divorced	single	cohab	married	widow/ divorced	single
Italy	1984		0		0		21		23
France	1984		5		1		9		8
Spain	1985		3		1		23		22
West Germany	1985		12		2		8		6
United States ^a	1988	6 ^c	46	48	^c	20 ^c	21	11	^c
United Kingdom ^a	1989		36	40	2		22	13	22
Netherlands ^b	1989	4	25	3		8	11		6
Belgium	1989	0	5	7	0	4	4	7	8

[@]From Refs. [4-6,10,11]. ^aRecalculations. ^bAll women, instead of "exposed" women only. ^cCohabiting and single women combined.

the childbearing period. Indeed, aggregate use rates for OCs, IUDs and sterilization show a considerably lower decline with increasing age, although some decline is still observed. The somewhat higher prevalence of the use of rhythm and withdrawal or no method at all in the older age strata suggests that some women also switch, possibly temporarily, to these less reliable contraceptive methods. One study that addressed women's contraceptive use after OC discontinuation focused on these phenomena [17]. It revealed that the majority of women who stopped using the pill eventually chose sterilization or an IUD, although many of them made temporary use of the abovementioned other, less reliable methods.

Some comments should be made concerning contraceptive use by adolescents. Table 2 suggests that OC use rates among adolescents are somewhat lower than among women in their early twenties. Since adolescents do not normally rely on sterilization, and since their IUD use rates are low, it is reasonable to conclude that reliable contraceptive methods are used less frequently by adolescents. Accordingly, the percentages of women using no contraception are higher in the youngest age strata. Many studies have specifically addressed contraceptive use by adolescents, the findings being that the use of no method at all was relatively frequent among adolescents [18-23] and that frequent use was also made of condoms and coitus interruptus.

These studies reveal the following general pattern. During their first sexual experiences, which often occur fairly unexpectedly for the adolescents concerned, condoms are used most frequently, but there is also reliance on "luck" or coitus interruptus. In subsequent sexual experiences condoms are used more often, but far from consistently, so that coitus interruptus and the use of no method at all remain prevalent. However, when sexual experiences become more established, "negotiations" with parents and physicians are initiated in order to have OCs prescribed. Eventually, most sexually active adolescents appear to adopt the pill. The consequences of the inconsistent use of contraception at the time of the first sexual experiences are strongly reflected in the high unplanned pregnancy and abortion rates observed in the adolescent population [1,24-26].

In conclusion, it emerged overall that the use of unreliable contraceptive methods (periodic abstinence and coitus interruptus) and no method at all occurs in all age strata, but probably to a greater extent among adolescents and older women. In the case of adolescents this is related to lack of experience and inconsistent condom use, the latter being the most frequently used method during the first sexual experiences. Among older women this phenomenon is related to discontinuation of OC use: after having had children women switch to IUDs, and after completing

childbearing they begin to opt for sterilization. However, not all women switch immediately to these other reliable contraceptive methods and they consequently make temporary use of the less reliable methods.

Table 5. Current contraceptive use (%) by "exposed" women aged 15-44 according to educational level[@]

<i>Country</i>	<i>Year</i>	<i>Oral contraceptives</i>						<i>Intrauterine device</i>					
		<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>
Italy	1984	3			9		9	10		16			25
France	1984	14			42		49	13		23			24
Spain	1985	14			27		22	11		18			15
West Germany	1985	31			36		29	10		8			11
Sweden	1987	29			50		39	21		17			16
Denmark	1988	26			35		44	11		17			14
United Kingdom	1989	28	38			46	36	--	--		--		--
Netherlands ^a	1989	34	35	30	38	36	34	8	4	9	9	8	10
Belgium	1989	52			48		43	10		18			15
<i>Country</i>	<i>Year</i>	<i>Sterilization</i>						<i>Barrier methods</i>					
		<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>
Italy	1984	0			0		1	17		33			32
France	1984	8			3		2	11		8			10
Spain	1985	4			3		2	20		25			29
West Germany	1985	8			7		7	8		6			10
Sweden	1987	14			5		4	20		20			32
Denmark	1988	26			14		4	20		24			28
United Kingdom	1989	34	23			17	16	22	26		25		32
Netherlands ^a	1989	25	26	22	15	14	13	2	8	11	11	13	12
Belgium	1989	8			4		3	3		3			7
<i>Country</i>	<i>Year</i>	<i>No method</i>											
		<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>						
Italy	1984	40			19		1						
France	1984	36			16		2						
Spain	1985	28			20		2						
West Germany	1985	22			17		7						
Sweden	1987	8			0		4						
Denmark	1988	14			6		4						
United Kingdom	1989	--	--			--	--						
Netherlands ^a	1989	25	19	17	21	18	17						
Belgium	1989	24			22		28						

[@]From Refs. [4-8,10]. ^aAll women, instead of "exposed" women only. I-VI indicate levels of education.

2.2.2. Education and/or socio-economic status

Contraceptive use according to educational level is shown in Table 5. No attempts were made to adjust the educational levels internationally, so the various educational categories are only broadly comparable. This is also why the educational levels in the United Kingdom and the Netherlands show more subdivisions.

It can be seen from Table 5 that OC use is less frequent among women of low educational level than those of intermediate or high educational level, who are more or less comparable in this respect. La Vecchia *et al.* [27], Pratt and Bachrach [17], Jacobsen and Lund [28] and Jacobsen *et al.* [29] found that women of high educational level were more likely to have used OCs at some time, which is consistent with these findings. With respect to IUDs the picture is rather more variable, but in six out of the eight countries listed it appears that use rates are somewhat higher among women of intermediate and/or high educational level. Sterilization is most prevalent among women of low educational level, a trend also reported by Hunt and Annandale [30]. The use of barrier methods is associated with a high educational level, and the use of no method at all appears to be most prevalent in women of low educational level. The few studies that focus on socio-economic status suggest that the influence of this variable is broadly comparable with that of educational level [27,30], which is not surprising, since educational level and socio-economic status are generally interrelated.

2.2.3. Religion

In Western Europe some studies have addressed the religious convictions of users of the various contraceptive methods. Vennix [4] found in the Netherlands that orthodox Protestant women were less likely to use any method of contraception than other women, whereas those who were most likely to use reliable contraceptive methods were Catholic women or those with no religious convictions. Riphagen and Leher [6] investigated the frequency of church attendance rather than religious persuasion and showed that the use of more reliable methods of contraception was generally associated with less frequent church attendance.

The effects of religious persuasion and church attendance observed in Western Europe appeared to be marginal in comparison with those in the United States. Practising Catholic and Jewish women were less frequently sterilized than Protestant women and women of no specific faith [31]. Moreover, OC use was rather infrequent among Jewish women, whereas barrier methods, especially diaphragms, were relatively popular in this group. Where stronger indicators of religious practice than nominal religious faith were considered, such as frequency of church attendance and

religious education, committed Catholic women were less likely to rely upon female-dependent methods (sterilization and OCs) and more likely to rely on barrier methods than Protestant women and less religiously committed women. Furthermore, Mosher and McNally [21] discovered that fundamentalist Protestants differed considerably in their contraceptive practices from other Protestants: they used the pill and condoms less frequently, and were consequently more often likely to use no method at all. It is reasonable to conclude, therefore, that women with orthodox religious convictions use reliable contraceptive methods less often than other women.

2.2.4. Ethnic origin

In the Netherlands it has been shown that the number of unplanned pregnancies and abortions is much higher among women belonging to the ethnic minorities than among autochthonous women [32]. Less consistent use of the pill, and consequently more "pill failures", and lower rates of contraception use in general were held responsible for this phenomenon. In the United Kingdom, it was noted that family planning clinic attenders from Asian backgrounds preferred using condoms and IUDs, but hardly used OCs, in contrast to non-Asian attenders [33]. In the United States, it appeared that black women were less likely to use contraception than white women (mainly due to lower prevalences of coitus-dependent methods), relied relatively seldom on male sterilization, and more rapidly discontinued use of reliable methods once started [11,17,21,34]. Moreover, black women experienced more failures of contraceptive methods, suggesting a higher frequency of problems linked to consistency of use [35]. Hispanic women scored somewhere in between blacks and whites in these respects. In 1987, the abortion rates among women from minority groups were 56% higher than among whites [26], which highlights the relevance of these findings. According to Radecki [34], some of these racial differences may be related more to social status and other respondent characteristics than to ethnic origin as such, a contention which has nevertheless to be confirmed by future research.

2.2.5. Country

From the data in Tables 2-5 a final important demographic characteristic related to the use of contraception emerged, viz. the country concerned. The studies listed showed that the variation in contraceptive practices between the countries was huge, but despite this observation, hardly any research had specifically addressed the cause and nature of this phenomenon. Theoretically, the variation might be due either to differences in other determinants between these countries - the population of one country being on average older, better educated or having different attitudes, for

example, than that of another country - or to an independent "country-effect". This has been termed a "characteristics" hypothesis as opposed to a "group status" hypothesis [34]. As far as we know, only one study has empirically addressed the phenomenon of variation among countries. This study, which evaluated 20 West European and North American countries, found that countries in which there was a high use rate of reliable contraception were also characterized by:

- liberal abortion legislation;
- extensive sex education in schools;
- special contraceptive care facilities for groups at risk of poor contraceptive practice;
- government schemes to inform the public about the need to use reliable contraception;
- general practitioners as the primary source of contraceptive care [2].

Given the fact that the use of reliable contraception was prevalent in all age groups in these countries, while the relevant legislation, facilities and schemes had been introduced relatively recently, it can only be concluded that general public awareness of the need to use reliable contraception acted as a key determinant both in having these issues addressed and in achieving the widespread use of reliable contraceptive methods. The finding that general practitioners' involvement in contraceptive care was related to the use of reliable contraceptive methods suggested that general practitioners brought contraception - often literally - within closer reach of the people.

2.2.6. The relevance of demographic characteristics

Table 6 presents broad generalizations of the demographic characteristics of the users of the various contraceptive methods, based on the observations previously discussed. A question that arises from this table is whether the demographic characteristics that are included can be considered as determinants of contraceptive use. In other words, do these characteristics have an independent impact on contraceptive use?

The answer to this question must be affirmative, although it must be acknowledged that the effects of many of these demographic characteristics are in fact interrelated. Several studies have shown that effective contraceptive use, i.e. the consistent use of reliable contraceptives, can be explained by the differences observed in age, religious influences and educational level between users and non-users [21,35-41]. In general, the users of effective contraception were somewhat older, were not members of a conservative religious faith and were of higher educational level. In a

Table 6. Broadly generalized demographic characteristics of users of various contraceptive methods

<i>Method</i>	<i>Oral contraceptives</i>	<i>IUDs</i>	<i>Sterilization</i>
Age	young	older	older
Marital status	single	(ever-)married	(ever-)married
Parity	low	higher	higher
Future child wish	yes	sometimes	no
Educational level	intermediate/high	intermediate/high	low
Religion	[uncommitted, infrequent church attendance]	[uncommitted, infrequent church attendance]	[uncommitted, infrequent church attendance]
Ethnic origin	[white/black]	--	[white]
<i>Method</i>	<i>Barrier methods</i>	<i>Rhythm/withdrawal</i>	<i>No method</i>
Age	all [adolescents]	all [older]	all [adolescents, older]
Marital status	all	--	--
Parity	all	--	--
Future child wish	all	--	--
Educational level	high	--	low
Religion	[conservative, frequent church attendance]	[conservative, frequent church attendance]	[committed, frequent church attendance]
Ethnic origin	[white]	--	[non-white]

all = of all ages, marital status, etc [.] = subpopulation in which higher prevalences were observed.

-- = no data

study among women aged 15-44, Visser *et al.* [5] found that lower age (under 34) determined OC use and that multiparity determined IUD use. The absence of any wish for a future child and a low educational level were also found to be sufficiently characteristic to predict whether people would opt for sterilization [30,42]. This implies that most of the demographic characteristics described in this paper seemed to distinguish the users of a specific contraceptive method from non-users of the method, and may be considered to be relevant characteristics of the users of the method concerned.

2.3. Psychological and sex life characteristics

We identified many studies that dealt with what we termed the "psychological" characteristics of users of the various contraceptive methods, viz. knowledge levels, attitudes, social influences, "self-efficacy", sexual anxieties and self-esteem. In addition, some studies focused on sex life characteristics. These issues will be discussed in the following paragraphs.

2.3.1. Knowledge

Knowledge regarding four different family planning issues was considered to be potentially relevant to contraceptive practice: (a) knowledge of the existence of birth control methods, (b) knowledge of the mode of action of these methods, (c) knowledge of fertility and the need to use contraception and, more recently, (d) knowledge of the risk of AIDS infection.

(a) Knowledge of the existence of birth control methods

To know that contraception exists, and can be used in order to prevent unwanted pregnancies, is a prerequisite for contraceptive practice. This kind of contraceptive knowledge was studied frequently in the classic knowledge, attitudes and practice (KAP) surveys [43]. At the time, however, modern contraceptive methods, such as the pill and IUDs, had only recently been introduced, so the results of these studies provide no indication of the level of knowledge regarding contraceptive methods today. However, numerous studies have reported on this kind of knowledge in more recent years.

Most of these studies have been conducted among adolescents and young women ("starters") in the United States (see for example [44]). The reason for focusing on starters may seem self-evident, given the fact that adolescents and young women constitute a widely recognized risk group for unplanned pregnancies. That these studies were conducted in the United States is noteworthy: the US has the largest number of unplanned teenage pregnancies in the Western world [2]. The studies concerned revealed that, generally speaking, most of the available contraceptive methods were well known to young women [18,45,46]. Starters least frequently mentioned or recognized spermicides, vaginal douching and rhythm as contraceptive methods, but these methods were still known to 55-80% of the respondents in the various studies. This type of contraceptive knowledge appeared to be related to sexual experience, to gender (women being better informed than men), to ethnic origin (whites being better informed than non-whites) and to higher socio-economic status [44]. The fact that most starters were found to be well aware of the existence of reliable contraception suggested that, in practice, lack of such knowledge was hardly a factor that affected contraceptive use.

(b) Knowledge of the mode of action of contraceptive methods

In surveys conducted by the International Health Foundation in Western Europe, respondents were asked in a multiple-choice questionnaire about the mode of action of OCs [5-9]. The right answer (that the pill inhibits ovulation) was selected by

from 26% of respondents in France to 97% of those in Belgium. The percentages of women with appropriate knowledge were not related to OC use rates in the countries concerned, which suggested that possession of such knowledge did not influence contraceptive use. Knowledge of how periodic abstinence works may be necessary in order to use this method successfully [47]. However, in the case of the very reliable methods (OCs, IUDs and sterilization) it may be assumed that precise knowledge of their modes of action is not very important as regards acceptance.

(c) Knowledge of fertility and the need to use contraception

On reviewing eight American studies on knowledge of fertility in adolescents, Morrison [44] concluded that less than half were aware that the time when the risk of conceiving was highest occurred just in between two consecutive menstrual periods. In the population surveys conducted by the International Health Foundation the findings were similar among the 15-19 year old women surveyed. In a study among teenagers, Eisen and Zellman [48] found that 22% of the sample thought that a girl could not get pregnant when she had sexual intercourse for the first time. Many teenagers also thought that a girl could not get pregnant if she had intercourse only occasionally (24%), if she had not had menstrual periods (53%), if she did not have an orgasm during intercourse (45%), or if her partner did not ejaculate during intercourse (74%). Apparently, "many younger adolescents build their contraceptive decisions on a base of considerable misinformation about reproductive physiology" (p. 546) [44]. It appeared that this phenomenon was not limited to adolescents only, but was also seen in other age strata, as the International Health Foundation surveys showed: 20-40% of the surveyed women between 20 and 44 years of age had erroneous ideas about the time when the risk of conceiving was greatest.

Some studies showed that correct knowledge of reproductive physiology, and in particular of the risk of conceiving when not using contraception, was a characteristic of women who consistently used reliable contraceptives [49,50]. In addition to the fact that women in general took this risk fairly seriously [44,51], these studies revealed that women who used reliable contraception took this risk more seriously than the others. Another phenomenon observed in this context was termed the "illusion of unique invulnerability" - in general women tended to think their own personal risk of conceiving was much lower than that of an "average woman" [52]. However, the discrepancy between the two risk estimations was significantly smaller in women who consistently used reliable contraception than in women who did not use reliable contraception or used it inconsistently [53]. These studies all suggested that there is a relation between a realistic perception of the risk of conceiving

unintentionally and the use of reliable contraceptive methods.

(d) Knowledge of the risk of HIV infection

In 1981 the first cases of AIDS were reported. With approximately 20 million people having been infected since then, AIDS has become a threat of major concern. In Western countries AIDS is now spreading faster among heterosexuals than among homosexual men and intravenous drug users [54]. It is not therefore surprising that large-scale information campaigns have been started in almost every country. In the Netherlands such campaigns have been evaluated biannually by means of representative population surveys, which have shown that awareness of AIDS and knowledge of the ways of preventing HIV transmission had reached 98% of the people in the samples after 2½ years of campaigning [55]. Similar results have been obtained in Switzerland [56], the United Kingdom [57] and Canada [58]. However, in the United States, 10% of unmarried women still did not know that HIV could be transmitted by sharing hypodermic needles, and 6% did not know that it could be transmitted through sexual intercourse [59].

Although many people stated that they had changed their contraceptive behaviour because of concern about AIDS, "safe sex" is certainly not practised by the majority of the heterosexuals who are at risk, i.e. women who have casual sexual partners and women who have sexual contacts with homo/bisexual men or intravenous drug users [60,61]. One of the probable reasons for this is that people do not generally recognize that they themselves are at risk of becoming infected. In the Dutch surveys more than 65% of the respondents (who were representative of the Dutch population) considered they ran at least some risk of contracting HIV, but only 15% thought this risk was serious enough to be taken into account [55]. Among people who engaged in sexual relationships with intravenous drug users and bisexual men, and among adolescents who had casual sexual partners, it was found that underestimation of this risk was an important reason why many did not use barrier methods [62]. An "illusion of unique invulnerability", i.e. realistically estimating the risk of "average people" getting infected, but erroneously underestimating personal risk, played a considerable role in this respect [52]. This implies that a greater educational effort is necessary to raise awareness of the possible threat of AIDS in the general population.

Does this also mean that barrier method users are no more aware of the AIDS risk than people who use other contraceptive methods? Barrier method users have in fact been shown to feel themselves more susceptible to AIDS [63,64], but the differences between users and non-users of these methods were not sufficiently large

in all studies to explain the variations in barrier method use [39,41,65]. This finding also suggested that people did not take the AIDS risk seriously enough to feel they needed to adapt their contraceptive behaviour accordingly.

2.3.2. Attitudes

Attitudes towards contraception reflect people's opinions. Studies on attitudes towards contraceptive methods provide three types of information: (a) information on what people, in particular women, generally think about the various contraceptive methods, (b) information on the opinions and motives of women who have started or stopped using a method, and (c) information on whether users of a particular method have different opinions to those of non-users of the method.

(a) What do women think in general about the various contraceptive methods?

Table 7 gives an overview of perceptions of the advantages and disadvantages of OCs and IUDs as observed in a number of studies [4-9,66,67]. It is important to note that many of the disadvantages feared in these studies were not completely realistic. OC users do not run an increased risk of heart disease unless they smoke and are aged over 35 [68]. OC use may in fact prevent certain types of cancer and, in general, previous OC use does not affect fertility. With respect to IUDs, genital infections and infertility are linked to having multiple (consecutive) sexual partners rather than to IUD use [16]. The general attitude towards sterilization also emerged as fairly negative: many women were simply afraid to be sterilized [69]. As regards condoms, the studies showed that their potential effectiveness in preventing AIDS and other sexually transmitted diseases was well recognized [41,55,58]. Furthermore, Sonnex *et al.* [60], Nickerson [70], Kline *et al.* [62] and Ross [71] reported that condoms were seen as safe, readily available and easy to carry around. However, these authors also noted they were perceived as unreliable, unnatural, inhibitors of spontaneity, uncomfortable, an interfering factor in sex and a cause of embarrassment. Diaphragms were generally rated as less reliable than OCs and IUDs, but more reliable than rhythm and withdrawal [4]. They were also seen as somewhat less easy to use than condoms, but easier to use than rhythm and withdrawal, and as causing somewhat more disturbance to sex life than condoms [4]. Sterilization was considered the most reliable available contraceptive method, with a safety rating between that of condoms and the pill [3,4]. The main characteristics of these contraceptives, as perceived by women and assessed by a process of derivation, are outlined in Figure 3. This figure suggests that women do not consider any contraceptive method to be ideal: most methods are rated favourably on one characteristic but unfavourably on

Table 7. Perceived advantages and disadvantages of oral contraceptives and intrauterine devices

<i>Oral contraceptives</i>	<i>Yes/ possibly^a</i>	<i>Important (dis)advantage^b</i>	<i>Yes^c</i>	<i>Yes^d</i>
Regular cycles	62-95%	85%		
Less painful periods	46-87%	74%		
Ease of use	75-100%	73%		
No disturbance of sex life		85%		
Reliability		93%		
Cancer prevention		33%		18%
Anaemia prevention		30%		
Weight gain	69-86%	43%	58%	54%
Headache	27-68%	33%		
Painful tense breasts	23-67%	18%		
Nervousness	28-61%	19%		
Infertility/subfertility	25-71%		37%	59%
Cancer risk	30-70%		25%	34%
Depression	32-58%	23%		
Cardiovascular risk	39-81%		10%	16%
High blood pressure		36%	38%	30%
Mood changes		35%	53%	
No protection against AIDS		44%		
Daily intake		28%		
Intermenstrual bleeding		26%		
Decreased libido		21%	25%	
Vertigo		17%		
<hr/>				
<i>Intrauterine device</i>	<i>Yes/ possibly^e</i>			
No hormones / safe for health	55-92%			
Frequent medical checks	40-84%			
Frequent expulsion	47-77%			
Heavier bleeding	69-89%			
Infection risk	73-96%			
Infertility	73-85%			
Unsuitable if multiple partners	29-77%			

^aLowest/highest observed percentages in nine West European countries [5-9]. ^bFrom Ref. [4]. ^cOral contraceptive users only [66] ^dPercentage of women who believed they would personally suffer from the disadvantage or benefit from the advantage if they used OCs [67]. ^eLowest/highest observed percentages in three West European countries [5,7,8].

others.

(b) Reasons for starting and stopping the use of a contraceptive method

The International Health Foundation surveys revealed that in the various countries studied 70-84% of contraception users had switched contraceptive method at some time [5-9]. The most important reasons for this were health considerations

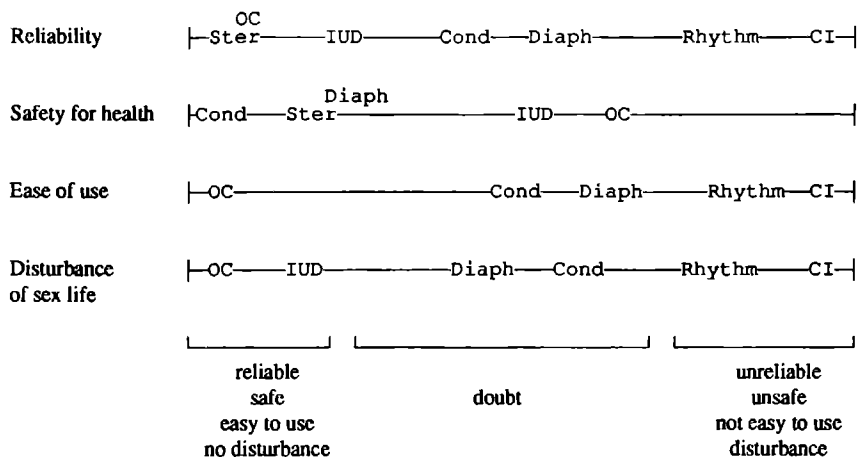


Figure 3. Derived pattern of perceptions of the reliability, safety for health, ease of use and disturbance of sex life of various contraceptive methods (from Refs. [3,4]). OC = oral contraceptives, Ster = sterilization, Cond = condoms, Diaph = diaphragm, Rhythm = periodic abstinence, CI = coitus interruptus.

(32-86% of the switchers), a desire for enhanced reliability (9-32%), greater ease of use (3-20%) and less disturbance of sex life (3-10%). These reasons were not cited by reference to the methods previously used by the respondents. Coulter [72] found that many women had started using OCs because they saw the method as easy to use, reliable and conducive to freedom and spontaneity. However, 81% of the sample had switched to another method, half of them because of side effects and the rest because of feared health risks. In a study among ex-pill users in the US Pratt and Bachrach [17] showed that virtually 100% of the women had stopped pill use because of physical problems (headache, menstrual difficulties, weight gain, nausea, cardiovascular conditions and high blood pressure), while 29.1% had also mentioned feared health risks. Two-thirds of these women had not consulted a doctor about the problems they had experienced or feared. Nevertheless, these few studies indicate that the perceived disadvantages of contraceptives, as referred to in the previous paragraph, were felt to be so important that they made the women concerned decide to switch to another method of contraception.

(c) Association between attitude and use of a particular contraceptive method

Not surprisingly, the users of a contraceptive method were found to have a more

positive attitude towards their method of choice than non-users [41,73,74]. Similar differences in attitude have been observed with respect to women who intended to use a given method, as compared with those who did not intend to do so [75-77], and also between consistent and inconsistent users of a method [37,51,78]. The latter findings, in particular, suggest that differences in attitude cannot be explained simply by the possibility that attitudes become more positive after a method is adopted: indeed, a more positive attitude was shown to precede the choice of a particular contraceptive (even where the actual decision was made two years after measurement of the attitude) and also to affect the consistency with which this method was used.

The fact that a positive attitude is strongly associated with the use of a particular contraceptive method does not imply that users do not have negative opinions about the method concerned. The results of the study by Rutter *et al.* [66] as listed in Table 7 (3rd column) demonstrated this convincingly. However, it appeared that for users the advantages outweighed the disadvantages, whereas this was not the case for non-users of the method concerned [46]. In general, users were found to value their method considerably more positively, or at least less negatively, for its reliability, ease of use and non-disturbance of sex life, and they associated more health advantages and fewer health disadvantages with their method than non-users [46,50,73,74,77].

2.3.3. Social influences

It has been shown that users of a contraceptive method receive more support, approval and advice from partners, parents and friends in favour of using the method than non-users [38,39,73]. The fact that a lack of support may also play a role in determining which method is used was reported by Thompson *et al.* [79]: 49% of women requesting sterilization stated that their partners were unwilling to have a vasectomy, so they had no real choice between the two types of sterilization, and, *mutatis mutandis*, 23% of vasectomy seekers indicated that their partners were not willing to consider female sterilization.

As regards social expectations ("subjective norms"), it appeared that users of a contraceptive method indicated more often than non-users that they thought their partner, doctor, friends or parents wished them to use the method concerned [73,74]. This phenomenon was also expressed in the reasons women indicated for not using condoms in a study by Sonnex *et al.* [60]: 60% of these women thought their partner would not like using them and 86% believed that men in general disliked condoms. The same differences in social expectations were observed between those who intended and those who did not intend to use a method, and between consistent and

inconsistent users [75,78,80,81]. Again, this suggests that social expectations contribute to the actual contraceptive choice and are not affected only *ex post facto*.

Communication and communication skills may modulate the extent to which other people's opinions are "transmitted" to an individual. Some studies have indicated that consistent users of effective contraception had communicated about sexuality and contraception significantly more frequently than others [82,83], although it should be pointed out that these studies were conducted among adolescents and college students. On the other hand, we have no reason to believe that similar differences between users of reliable methods and others with respect to communication would not be found among older women.

2.3.4. Self-efficacy, sexual anxieties and self-esteem

Levinson [84] showed that users of a contraceptive method had higher self-efficacy with respect to the method concerned than non-users of the method. The term "self-efficacy" refers to an individual's expectations regarding his/her ability to adopt a specific behaviour [85] and, in the context of contraceptive use, to his/her expected ability to communicate about contraception, to obtain the contraceptive method concerned and to use it correctly and consistently [84]. In the case of condom use, in particular, a lack of self-efficacy may be expected to hinder consistent use, as was shown by Basen-Engquist and Parcel [86], and also by Kasen *et al.* [87]. Nevertheless, all the studies cited were conducted among adolescents and college students, and further research is necessary to determine whether there is also a relation between self-efficacy and contraceptive use among older women.

The studies on sexual anxieties and self-esteem were also conducted exclusively among adolescents and college students. Young women who knew how to cope with sexual anxieties and feelings of guilt when engaging in sexual intercourse appeared to be more likely to use reliable contraception [36,49,78]. However, this was not observed in other studies [82,83]. Garris *et al.* [88] and Miller [89] found that young women who used reliable contraceptive methods had higher self-esteem than others. On the other hand, Herold *et al.* [90] and Burger and Inderbitzen [83] did not observe such an effect. The lack of uniformity of these study results might indicate that sexual anxieties and self-esteem play only a minor role in contraceptive behaviour, but here again further research is necessary to assess the importance of these influences.

2.3.5. Sex life characteristics: number of sexual partners and coital frequency

DeLamater and MacCorquodale [82] and Herold and McNamee [49] found that women who had had a higher number of sexual partners were more likely to use

reliable contraceptive methods and to use these consistently. It may be assumed that the total number of sexual partners ever had is related to experience in the areas of sexuality and contraception, indicating that contraceptive experience is the factor that is conducive to consistent use of a reliable method, rather than the number of partners in itself.

These and other studies also revealed that coital frequency was higher in women using OCs than in women using condoms [36,38,80,91]. In a small longitudinal study Westoff *et al.* [92] suggested, however, that such effects were consequential: coital frequency increased in women who adopted the pill instead of condoms, whereas it decreased in the case of condom users. The seriousness of the relationship with the partner may also be a related factor: a high coital frequency is more likely in women involved in serious relationships [93], and such women are also more likely to use reliable contraception [78].

Table 8. Broadly generalized psychological characteristics of users of various contraceptive methods

<i>Oral contraceptives / IUDs / sterilization</i>	<i>Barrier methods</i>	<i>Rhythm / withdrawal / no method</i>
Realistic awareness of fertility Higher coital frequency Frequent communication about contraception ^a Higher self-efficacy as regards use of oral contraceptives / IUDs / sterilization ^a Positive attitude towards the method concerned, and a more negative attitude regarding other methods Advice / support received in regard to use of the method concerned or no advice / support received in regard to use of other methods Perceptions that other people support and approve of use of the method concerned	Lower coital frequency Frequent communication about contraception ^a Higher self-efficacy as regards barrier method use ^a	Underestimation of own fertility Lower coital frequency Lack of communication about contraception ^a Lower self-efficacy as regards use of more reliable contraceptive methods ^a

^aStudies concerned adolescents and college students.

2.3.6. The relevance of psychological and sex life characteristics

It may be concluded that women who use unreliable contraceptive methods demonstrate certain generalized psychological and sex life characteristics, which are broadly outlined in Table 8. As in the case of the demographic characteristics, the question that arises from this summary table is whether the variation in the use of reliable contraception can be explained by differences in the characteristics included. Do these characteristics act as determinants of the use of reliable or unreliable contraception? The conclusions of many of the studies quoted previously were

Table 9. Predictors of contraceptive use by women as identified in empirical studies

<i>Study</i>	<i>Dependent variable</i>	<i>Predictors</i>
DeLamater & MacCorquodale [82]	effectiveness of contraceptive use	1. discuss contraception 2. one versus two/+ partners 3. coital frequency 4. number of coital experiences 5. acceptance of intercourse
Davidson & Jaccard [73]	use of oral contraceptives	1. attitude 2. subjective norm
Werner & Middlestadt [74]	use of oral contraceptives	1. attitude 2. subjective norm
Fisher <i>et al</i> [78]	consistent contraceptive use	1. emotional orientation towards sexuality 2. attitude 3. normative beliefs 4. seriousness of relationship
Jorgensen <i>et al</i> [94]	regularity of contraceptive use	1. communication: sexual relationship 2. contraceptive use by peers 3. communication: contraception 4. female power: sexual relationship 5. relationship with father
	regularity of effective contraceptive use	1. communication. sexual relationship 2. female power: contraception 3. communication: contraception 4. relationship with father
Jorgensen & Sonstegard [81]	regularity of effective contraceptive use	1. attitude 2. subjective norms parents
Burger & Inderbitzen [83]	percentage of time contraception used	1. sexual communication 2. general communication
	effectiveness of contraceptive use	sexual communication
Adler <i>et al.</i> [95]	intention to use pill	1. attitude 2. subjective norm
	intention to use condom	idem
	intention to use diaphragm	idem
	intention to use withdrawal	idem
	use of pill	intention to use pill
	use of condom	intention to use condom
	use of diaphragm	intention to use diaphragm
	use of withdrawal	intention to use withdrawal
Weisman <i>et al</i> [38]	consistent oral contraceptive use	1. partner support 2. visit to physician for contraception vs. abortion 3. race
Basen-Engquist & Parcel [86]	intention to use condom	1. self-efficacy 2. attitude
	frequency of condom use	1. self-efficacy 2. intention to use condom

positive on this point. When the effects of knowledge levels, attitudes, social expectations, support, communication, self-efficacy, coital frequency and the seriousness of the relationship were considered in association (as was done for various combinations of these factors in the studies concerned) they were found to be significantly predictive of whether reliable contraception was actually being used, was intended to be used or was used consistently (Table 9). The results therefore indicate that these psychological and sex life characteristics are of particular relevance to contraceptive use.

2.4. Discussion

In conducting this review our objective was to determine why many women still use unreliable contraceptive methods, despite the availability of reliable methods. Users of unreliable methods were found in all demographic groups, although to a greater extent among adolescents, women over 35, non-white women, women of low educational level and women with orthodox religious convictions. The relevance of these findings is seen in the fact that, with the exception of the last group, abortion rates are considerably higher in these demographic groups than among other women [25,26,96].

Psychologically-oriented research indicated that users of unreliable methods tended to underestimate their own fertility, had a more negative attitude towards reliable contraceptive methods, received less support in the social environment for their use, were less convinced that other people favoured their using them and had a lower coital frequency. Furthermore, research among young women showed that users of unreliable contraceptive methods communicated less frequently about contraception and felt less confident about being able to use reliable methods. These findings suggest that a greater proportion of the women belonging to the demographic "risk-groups" for the use of unreliable contraceptive methods lack the necessary psychological characteristics that incline women towards the use of reliable contraception. Indeed, some research findings confirm this conclusion. In this final section the risk groups will be discussed in greater detail to identify the mechanisms that may underlie their contraceptive behaviour.

As regards the attitudes of adolescents, Visser *et al.* [5] showed that they had more doubts about the safety of OCs and IUDs than older women. In another study their attitude towards condoms was found to be rather negative [70]. With respect to their self-efficacy, adolescents perceived many problems regarding the necessary

consistent use of condoms [87]. In addition, they were found to underestimate their risk of becoming infected with HIV [65] and also their own fertility [37]. The communication problems experienced by adolescents that were discussed earlier can be explained by lack of experience, fear of disapproval of their sexual behaviour by parents and physicians [97] and the perception that communication about contraceptive use with a new partner is difficult and may "shut things down" [18]. A lack of support in their social environment for the use of contraception plays an important role in this respect. Furthermore, in the view of adolescents, the appearance of having thoroughly planned the use of contraception during initial sexual experiences might suggest "availability" or "being out for something" [18].

According to Dryfoos and Santelli [98], the key to improvement of adolescent contraceptive use, therefore lies in the provision of more social support for adolescent contraceptive use by parents and physicians, for instance by involving parents in sex education programmes. According to a working party of the British Royal College of Obstetricians and Gynaecologists, sex education in schools could be improved [25]. The paper concerned expresses the view that sex education should aim to improve adolescents' awareness of fertility and the risk of AIDS, and foster a more positive attitude towards reliable contraceptive methods, higher self-efficacy and more understanding and support for contraceptive use by their friends.

Women over 35 were found to be at increased risk for the use of unreliable contraceptive methods, because they discontinued OC use without immediately changing to another reliable method [17]. Most women over 35 had used OCs when they were younger [10]. With respect to their attitudes, Visser *et al.* [5] found that, apart from the doubts harboured in all age strata as to the safety of OCs and IUDs for health, women over 35 expressed considerably more uncertainty about these issues. James [99] observed that coital frequency was on average lower among women over 35. In addition, according to Hollingworth and Guillebaud [96], older women frequently believed, erroneously, that they were no longer likely to conceive and that OCs were no longer suitable for them. The important need for all women to be kept informed of the latest knowledge regarding the real risks and benefits of OCs, IUDs and sterilization might be particularly acute in the case of women over 35. Furthermore, it is essential for them to be made aware that they still run a considerable risk of unintended pregnancy.

Women of low educational level were found to have less realistic ideas about fertility and also a more negative attitude regarding the safety of OCs and IUDs [5]. These women might perceive more problems with respect to their ability to use OCs consistently, receive less encouragement to use a reliable contraceptive method and

communicate less frequently about contraception, but we were not able to retrieve any research findings confirming these assumptions.

The same remarks apply to women in minority groups. It might be assumed that such women have a less adequate knowledge of fertility, a rather negative attitude towards OCs, IUDs and sterilization, receive less social encouragement to use them and perceive more problems as to their self-efficacy, but we could not find any research data to confirm such differences between minority-group and other women.

In the case of women with orthodox religious convictions, it is understandable that their beliefs may cause them to have a fairly negative attitude towards reliable contraceptive methods or indeed towards contraceptive use in general.

Obviously, the possession of adequate knowledge about fertility and contraception, the ability to communicate openly about sexuality and contraception, the feeling that others approve and expect sexually active people to make appropriate use of contraception, as well as confidence in being able to use a particular method with the necessary consistency, are prerequisites for the use of reliable contraceptive methods. However, the current unplanned pregnancy and abortion rates indicate that such knowledge, attitudes and perceptions are not yet as widespread in Western societies as might be hoped.

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Chapter 3

Attitude, social influences and self-efficacy as determinants of contraceptive use among West-German women aged 15-45: a pilot survey

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3.1. Introduction

In many Western European countries, women's contraceptive use and its subsequent changes over time have been carefully documented, generally in population surveys among women aged 15-45 [1]. Some of the more recent studies surveyed not only contraceptive use but also assessed women's perceptions of the advantages and disadvantages of various contraceptive methods [1-3]. One of the motives for studying these perceptions was the idea that they played an important role in the decisions on contraceptive use of the women surveyed. In other words, these perceptions were assumed to be important determinants of contraceptive use.

The question remained, however, whether this was indeed the case [4]. More psychologically oriented studies have indicated that perceptions of a method's advantages and disadvantages are important in contraceptive choices [5-10], but further scrutiny reveals that the studies concerned were conducted in samples and settings that differ substantially from those of the above mentioned Western European population surveys.

3.1.1. Psychological studies on the determinants of contraceptive use

Probably the most frequently applied theoretical model in psychological studies of contraceptive use [4] is that of Fishbein and Ajzen [11]. In the context of the above-mentioned perceptions, studies that use this model are particularly relevant since the 'attitude' construct in the model is based on the perceptions of the advantages and disadvantages of a contraceptive method ('beliefs' according to Fishbein and Ajzen). Studies in which this model was applied have shown that such attitude constructs were closely associated with current contraceptive use and that they predicted future contraceptive behaviour [5-7,9,10,12]. Perceptions that were found to be relevant in these studies were related to e.g. a method's reliability, side effects and health risks, ease of use and moral acceptability, as well as to sexual pleasure in general.

Attitude is obviously not the sole determinant of contraceptive use. According to Fishbein and Ajzen's model, perceived social norms (e.g. perceptions that friends or close relatives would approve of the method) play an important role as well [11], and various studies have confirmed this hypothesis [5,6,9,10,12]. Other studies have shown that explicit advice from others (the partner, physician and close friends) may explain contraceptive use [13,14]. Also, self-efficacy (which generally refers to perceived volitional control over the behaviour concerned and, in case of contraceptive use, to beliefs about one's ability to use the contraceptive method

correctly and consistently [15]) was found to be relevant either as a direct determinant [15,16], or in connection with other predictors (such as attitude and perceived social norms) [17].

3.1.2. Extrapolation to Western European women aged 15-45?

Many studies of the determinants mentioned have focused on adolescent contraceptive practice, with its typical characteristics and problems (see Morrison [18] for an extensive review). Most of the information about the determinants of contraceptive use in more heterogeneous populations originates from studies conducted in the United States [5-7,10,13,16,19,20]. Furthermore, the large majority of the US studies related specifically to college samples (the sole exception being the study of Davidson and Jaccard [6,7]). Could the findings of these studies be extrapolated to achieve a better understanding of contraceptive use in the general population of Western Europe? It has been well-documented that the United States situation with respect to contraception differs from that in many Western European countries. Moral aspects play a more prominent role and sexuality and contraception are reportedly more a taboo subject, both issues having consequences for public information provision and communication about contraception [1]. In college samples young, single women are overrepresented, so that some issues might get more emphasis than would be found in the general population (e.g. AIDS prevention), whereas others would be underestimated (e.g. health risks relevant for older women only, such as the risk, associated with oral contraceptive use, of cardiovascular disease in smokers older than 35 years). Therefore, it remains to be investigated whether the determinants assessed in these studies are equally relevant in the Western European general population.

3.1.3. The present study

Large scale population surveys in Great Britain and Germany (updates of earlier surveys) offered the opportunity to investigate the determinants of contraceptive use in representative samples of women aged 15-45. On the basis of the questionnaire of the earlier surveys on contraceptive use and perceptions of the advantages and disadvantages of various contraceptive methods [2], measurement constructs were developed for attitude, social influences and self-efficacy. These measurements were related to the use of oral contraceptives (OCs), intrauterine devices, sterilization, condoms and periodic abstinence. A pilot survey was carried out in a random probability sample of 97 West German women aged 15-45. Provided that of any contraceptive method a sufficient number of users would be included to conduct

relevant analyses, the research question of this pilot survey was to detect whether attitude, social influences and self-efficacy were to any great extent related to the use of this method in the heterogeneous sample and, if so, which individual items were, or were not, strongly associated with its use. Answers to these questions would enable comparison with the results of important psychological studies on the determinants of contraceptive use conducted previously. The numbers of OC users and condom users in the pilot survey proved to be sufficiently large to conduct analyses.

3.2. Methods

3.2.1. Theoretical considerations

Fishbein and Ajzen postulated that use of a contraceptive method is the result of a reasoned intention to use the method, which in turn is determined by two factors: the 'attitude' and 'subjective norms' [11]. The 'attitude' concerned perceptions ("beliefs") of the positive and negative consequences of using the method (e.g. avoiding pregnancy, possible side-effects), weighted by the evaluation of those consequences. 'Subjective norms' were seen as perceived opinions of other people weighted by the subject's motivation to comply with the opinion of those other people. Whereas in the original model attitude and subjective norms were viewed as determinants of an intention (which in turn determined contraceptive use), more recent investigators have considered attitude and subjective norms also as direct determinants of contraceptive use [7,10,12].

Rather than subjective norms, Condelli [13] and Diclemente [14] related reported advice to use a method and perceptions of the contraceptive use of other people to a subject's current contraceptive use. Bandura [21] postulated that a behaviour is determined by perceived volitional control over the behaviour (self-efficacy). More recently Ajzen and Madden [22] proposed that self-efficacy (E) acts as a third determinant of contraceptive use, in connection with both the attitude (A) and subjective norms (S; the ASE model [23]).

3.2.2. Development of the study instrument

Originally, attitude, subjective norms, and self-efficacy constructs were included in the questionnaire, drawing completely on the ASE-model. The perception items were identical to those of the previous surveys [2]. After thirteen open interviews with German women a few other relevant perceptions were added (concerning AIDS and cost issues), as well as subjective norm and self-efficacy items.

Furthermore, evaluation items corresponding to the perceptions addressed were formulated. The resulting questionnaire was tested among 35 British and German women, who evaluated it as long and complicated; respondents (who completed the questionnaire in private and could not ask for further explanation or clarification) appeared to have had problems, particularly with the Ajzen and Fishbein measurement of subjective norms (they reported it was repetitive and that they failed to grasp its relevance). These experiences prompted us to replace these parts of the questionnaire with more direct measurements of social influences, i.e. advice reportedly received from the partner and the physician to use a method and perceptions of contraceptive use of close friends (the latter as a measurement of perceived behaviour which might model a person's own behaviour).

3.2.3. *The study instrument*

The final version of the questionnaire contained two types of (attitude) perception items:

- items concerning advantages or disadvantages of the contraceptive methods (e.g. "Do you think your periods will be more regular if you use the pill?"; scored: 0 = no to 2 = yes, certainly);
- more bidirectional items concerning aspects which can be considered both as advantages and disadvantages of the methods (e.g. "How reliable is the pill in your view?"; scored: -2 = very unreliable to +2 = very reliable).

The items are presented in Table 1 (for OCs) and Table 3 (for condoms). The internal consistency (Cronbach's alpha) of the OC items was 0.67. The ten items for condoms had an internal consistency of 0.45. The items about cancer protection, the ease of obtaining condoms, and cost correlated less strongly with the remaining items, but elimination of these items did not improve the internal consistency of the scale. Given on the one hand the fact that a low alpha for an attitude scale about condom use is not unusual (De Wit et al. reported an alpha of 0.30 [8]), and on the other hand the relevance of the items mentioned for the actual use of condoms, it was decided to include all items in the scale.

Evaluations of these attitude perceptions were scored on 3-point scales (e.g. "That a method of contraception is reliable is": 0 = unimportant to +2 = very important). Scores on perceptions and corresponding evaluations were multiplied (where unidirectional items concerned disadvantages, the reversed scores were considered: 0 = no to -2 = yes, certainly) and subsequently summed to obtain a total attitude score.

Social influence items were binary (0 = no advice obtained to use the pill, not

many friends use the pill, 1 = advice obtained to use the pill, many friends use the pill). Social influence scores were summed to obtain a total social influences score. *Self-efficacy* items (e.g. "Would you feel able to remember the pill every day?") were scored on 4-point scales (ranging from 1 = certainly not able and 4 = certainly able). The self-efficacy items concerned are presented in Table 1 and 3 (one self-efficacy item with respect to condoms reads somewhat different than those described above, i.e. "Would you feel embarrassed when buying condoms in a shop", the scores ranging from 1 = certainly feeling embarrassed to 4 = certainly not feeling embarrassed). Self efficacy scores were summed to yield a total self-efficacy score.

Contraceptive use was measured by a question on the "main contraceptive method that you (and your partner) have relied on to prevent pregnancy" during the 6 months prior to the survey. Respondents who reported they had principally relied on OCs received the score 1 for OC use, others 0. The variable condom use was shaped in a similar fashion.

3.2.4. Sample and procedure

Respondents were selected by quota sampling in parts of Germany that previously constituted West Germany. Specially trained field workers from a collaborating survey organization (INFAS, Munich) invited women aged 15-45 according to quotas for age, degree of urbanization and region. The field workers were in principle free in their choice of respondents, provided that they did not include friends or members of their families, and that the quotas were respected. The quota set would ensure that women were selected from all age strata, from rural as well as urban areas, and from all West German regions. Of the 147 women who were invited to participate, 97 were included in the survey (response rate 66%).

The questionnaire was distributed for self-administration to respondents and an appointment was made for collection of the completed questionnaire. Accordingly, the questionnaire was collected in a sealed envelope by the field workers at the respondent's home. Some respondents preferred to return the questionnaire to the survey organization by mail.

3.2.5. Analysis

Data on contraceptive use and its determinants were analyzed only for women for whom it was necessary to use contraception, i.e. fertile, sexually active women, who were not pregnant and did not want to become pregnant at the time of the survey ('exposed' women).

Table 1. Mean scores on attitude items (multiplied perceptions and evaluations), social influence items and self-efficacy items with respect to oral contraceptive use according to actual use ('exposed' women only)

<i>Attitude</i>	<i>Users (n = 46)</i>	<i>Non-users (n = 43)</i>
Can cause cardiovascular disease ^a	0.85	0.84
Can cause cancer ^a	0.04	0.42*
Cause weight gain ^a	0.63	1.41*
Cause depressive feelings ^a	0.28	1.02*
Cause headache ^a	0.21	0.72*
Cause painful tense breasts ^a	0.33	0.77*
Cause nausea ^a	0.11	0.47*
Bothersome daily intake ^a	0.35	1.02*
Expensive ^a	0.74	0.84
Prevent cancer	0.30	0.56
More regular periods	1.87	1.56
Less painful periods	2.00	1.07*
Less heavy periods	1.30	0.81
Improve skin disorders	1.13	0.60
Easy to obtain	2.83	2.00*
AIDS protection	0.17	0.21
Reliable method ^b	3.17	2.12***
Safe for health ^b	1.22	-1.19***
Do not disturb sex life ^b	3.33	2.67*
Easy to use ^b	2.83	2.00*
Total attitude score	14.37 (SD = 4.59)	9.40*** (SD = 7.25)
<i>Social influences</i>		
Partner's advice	0.72	0.16***
Physician's advice	0.87	0.14***
Many friends perceived as using the method concerned	0.91	0.77**
Total social influences score	2.50 (SD = 0.75)	1.07*** (SD = 0.84)
<i>Self-efficacy</i>		
Feeling able to remember the pill every day	3.30	3.30
Feeling able to remember the pill every day in holidays	3.20	3.19
Feeling able to ask physician for a prescription of the pill	3.83	3.74
Feeling able to fill the prescription in a pharmacy	3.64	3.77
Total self-efficacy score	13.76 (SD = 2.85)	13.74 (SD = 3.09)

^a The inverse value was used for the total attitude score (disadvantage items). ^b Bidirectional items.
* $P < 0.05$, t test. ** $P < 0.01$, t test. *** $P < 0.001$, t test. SD = standard deviation.

The total attitude scores, social influence scores and self-efficacy scores were analyzed separately against OC use and condom use as dependent variables, respectively. In order to assess which individual attitude, social influence and self-efficacy items contributed to the (possible) relationships between the determinants considered and contraceptive use, mean scores for these items were analyzed according to use of the contraceptive method the items related to. Given the small numbers of OC and condom users in this pilot survey, we felt that (complex) multifactorial techniques were inappropriate and restricted the analyses to unifactorial methods (*t*-tests and Pearson correlation coefficients).

3.3. Results

Of the women in the sample 32% were aged 15-24 years, 36% 25-34 years and 32% 35-45 years. Twenty-nine percent had had only primary education, 55% any form of secondary education, and 15% were of university level. Fifty-three percent of the respondents were married, 15% cohabiting, 25% single and 7% divorced. Every West German county (Bundesland) was represented. Of the 90 'exposed' respondents 52% had used OCs during the six months prior to the survey and 31% condoms (the remaining 17% had used other contraceptive methods).

Table 2. Pearson correlation coefficients of actual oral contraceptive use and total scores for attitude, social influences and self-efficacy with respect to use of this method (95% confidence intervals in parentheses; 'exposed' women only; n = 89)

	<i>Attitude</i>	<i>Social influences</i>	<i>Self-efficacy</i>
<i>Attitude</i>	–		
<i>Social influences</i>	0.43*** (0.24 to 0.59)	–	
<i>Self-efficacy</i>	0.23 (0.09 to 0.47)	0.02 (-0.19 to 0.23)	–
Oral contraceptive use	0.55*** (0.39 to 0.68)	0.68*** (0.55 to 0.78)	0.02 (-0.19 to 0.23)

*** $P < 0.001$.

It emerged that OC use was associated with the measurements studied (total scores in Table 1). Pearson correlation coefficients (and 95% confidence intervals) indicated that the factors social influence and attitude were strongly related to OC use, as well as the attitude (Table 2).

Self-efficacy did not play a role of statistical significance. Analyses of the mean scores showed that OC users in particular were more convinced that OCs were reliable and safe for health (Table 1). Non-users attributed significantly more side-

Table 3. Mean scores on attitude items (multiplied perceptions and evaluations), social influence items and self-efficacy items with respect to condom use according to actual use ('exposed' women only)

<i>Attitude</i>	<i>Users</i> (<i>n</i> = 28)	<i>Non-users</i> (<i>n</i> = 62)
Tear easily during intercourse ^a	1.54	1.74
Expensive ^a	0.32	0.37
Prevent cancer	0.86	0.15*
AIDS protection	1.82	1.74
Easy to obtain	1.21	2.45*
Natural method	1.57	0.69*
Reliable method ^b	1.32	-0.42*
Safe for health ^b	2.96	3.18
Do not disturb sex life ^b	0.93	0.44
Easy to use ^b	1.07	1.03
Total attitude score	8.21 (SD = 6.90)	4.81** (SD = 4.59)
<i>Social influences</i>		
Partner's advice	0.54	0.02***
Physician's advice	0.32	0.00***
Most friends perceived as using the method concerned	0.23	0.04*
Total social influences score	1.07 (SD = 1.05)	0.05*** (SD = 0.22)
<i>Self-efficacy</i>		
Not feeling embarrassed when buying condoms in a shop	3.11	3.10
Feeling able to abstain from sexual intercourse when partner refuses to use the condom	2.74	2.81
Feeling able to use a condom with every intercourse	3.11	2.44**
Total self-efficacy score	8.64 (SD = 2.56)	8.16 (SD = 2.28)

^a The inverse value was used for the total attitude score (disadvantage items). ^b Bidirectional items.
* $P < 0.05$, *t* test. ** $P < 0.01$, *t* test. *** $P < 0.001$, *t* test. SD = standard deviation.

effects and health risks to OC use. It emerged that the strong interrelationship between social influences and OC use was due to the large majority of OC users having received advice to use OCs from their partner (72%) and physician (87%), and their perception that many of their friends were using OCs (91%). Self-efficacy was not significantly related to OC use, users and non-users having almost equal scores on the individual items: most users and non-users felt certainly able to ask a physician to prescribe the pill and to fill the prescription at a pharmacy. Furthermore, both groups

expressed similar doubts as to whether they would always be able to remember the pill.

With respect to condom use, the relationship between social influences and use of this method outweighed the two other factors considered by far (Table 3-4).

This was mainly associated with the fact that non-users had hardly ever received the advice to use condoms. Attitude was weakly, but significantly, related to condom use (Table 4). Users and non-users differed in their perception of the reliability of condoms, the ability of condoms to prevent certain types of cancer, and their being natural (Table 3). Self-efficacy did not play a role as a determinant of condom use, with both users and non-users expressing the same degree of embarrassment about buying condoms and the same doubts about their ability to abstain from intercourse should their partner refuse to use the condom.

Table 4. Pearson correlation coefficients of actual condom use and total scores for attitude, social influences and self-efficacy with respect to use of this method (95% confidence intervals in parentheses; 'exposed' women only; n = 90)

	<i>Attitude</i>	<i>Social influences</i>	<i>Self-efficacy</i>
Attitude	–		
Social influences	0.20* (-0.01 to 0.39)	–	
Self-efficacy	0.13 (-0.08 to 0.33)	0.02 (-0.19 to 0.21)	–
Condom use	0.17* (-0.04 to 0.36)	0.62*** (0.48 to 0.73)	-0.004 (-0.21 to 0.20)

* $P < 0.05$, *** $P < 0.001$.

3.4. Discussion

In this paper attention was drawn to the fact that the determinants of contraceptive use have mostly been studied in rather specific samples (adolescents, college students) and in the United States. This could imply that the results of the studies concerned do not apply in another context, such as that of more heterogeneous general population samples. Our preliminary results indicate that in general population samples OC use and condom use may be mainly associated with social influences (advice received from others and perceived use by others) and attitude. Although the findings need to be substantiated in larger samples than currently addressed, the results suggest some conclusions about the relevance of carrying out this kind of research in samples which go beyond those classically studied.

The most remarkable result concerned the fact that self-efficacy did not play a role as a determinant of contraceptive use. Previous research, conducted in the

contexts described above, consistently showed that self-efficacy was an important factor [15,17,24-26]). The self-efficacy items in the present study did not differ substantially from those addressed previously, but respondents were equally optimistic (in the case of OCs) or had equal doubts (for condoms), irrespective of whether they were users or non-users of the methods concerned. The difference between our results and those of previous studies in this respect might be attributable to the study population which, in contrast to most of the other studies, consisted of women who were in most cases experienced contraceptive users. In the current study, non-users were generally more optimistic about their ability to use the method than was previously observed. It is tempting to suggest that fears about possibly not being able to use a method might be less characteristic, and play a minor role, in women with some contraceptive experience as compared with 'starters', who were mostly addressed in previous research [15,17,24-26].

The relationship between attitude and OC and condom use was (moderately) weak, as compared with social influences. This applied particularly in the case of condom use, which might be related to the operationalization of condom use. Use was defined as the main contraceptive method used during the 6 months prior to the survey. Respondents who had used condoms incidentally rather than consistently (an issue not addressed by the question used in the survey), might not have indicated condom use as their principal method and were thus included in the non-user group, despite their possibly positive attitude towards this method. Consequently, the relationship between the attitude with respect to condoms and actual use, as defined in the study, might have been less weak when incidental condom users had also been included in the group of condom users. However, with respect to the determinants of contraceptive use, which basically aims at pregnancy prevention, we felt that the method which had been principally, and preferably consistently, used was the most relevant to be addressed in the analyses.

Although the relevance of the above-outlined issue could not be discarded, it was remarkable to note that the weak relationship between attitude and condom use seemed to be mainly related to the fact that even many users of the method expressed doubts about various aspects of their method (see Table 3). In the case of OC use the same phenomenon was observed (Table 1). This would imply that women sometimes used OCs and condoms on the advice of important others (physician, friends) despite their own doubtful attitude. As far as we know this has not been documented before. Further substantiation of this finding would be relevant for a better understanding of why, for example, in practice most women have been found to switch eventually to other methods (intrauterine devices and sterilization, but also periodic abstinence,

coitus interruptus and no method at all) after several years of use [1]. The finding suggests that omnipresent doubts about the two methods might play an important role in this respect.

As for the individual perceptions of the advantages and disadvantages which discriminated between OC users and non-users, similar perceptions were found as in previous studies, i.e. those concerning reliability and health safety [5,6,8,27]. Ease of use aspects were less important than was documented before. In the case of condoms it is important to note that AIDS considerations did not play a role in discriminating between users and non-users, which might be due to the majority of the sample assumedly having a stable sexual relationship (married or cohabiting).

In all, the results of this study demonstrated that social influences and attitude were relevant determinants of OC and condom use among West German women aged 15-45. These findings were also important in illustrating the marked differences between the determinants of contraceptive use found in more heterogeneous Western European population samples as compared with those obtained in the classic college and US samples. Simple extrapolation of the findings from the latter studies would result in skewed views as to which determinants of contraceptive use are important in the population as a whole. Therefore, future studies addressing heterogeneous population samples are of evident value.

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Chapter 4

Contraceptive use and attitudes in Great Britain

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4.1. Introduction

Abortion rates in Great Britain are relatively high [1]. Indeed, the rate in England and Wales was recently reported to be three times that in the Netherlands [2]. In the case of Scotland, the rate was found to be considerably lower than that in England and Wales, but was still 1.6 times higher than that in the Netherlands [3].

High abortion rates are generally related to high use rates of unreliable contraceptive methods [4]. The 1989 General Household Survey in Great Britain showed that 9.7% of sexually active, fertile women who wished to avoid pregnancy nevertheless relied on periodic abstinence or coitus interruptus or did not use any contraceptive method at all [5]. This percentage was 1.5 times higher than that reported for the Netherlands [6].

Previous research has shown that the use of unreliable contraception is associated with general negative feelings about the available reliable methods, i.e. oral contraceptives (OCs), intrauterine devices (IUDs) and sterilization [7,8]. In particular, fears regarding side effects and health risks attributed to reliable contraceptive methods were shown to make people decide against using these and to opt for less reliable methods instead [8-11].

As far as we were aware in 1992 there were no recent national studies into contraceptive use in Britain and what British people thought about the available reliable contraceptive methods, i.e. their attitudes. The above-mentioned 1989 General Household Survey [5] had been the last survey to be conducted on contraceptive use, while the last national survey on contraceptive attitudes had been carried out in 1984 [12]. We accordingly conducted a national survey in 1992, the results of which are presented in this paper.

4.2. Subjects and methods

All the women who took part in a consumer survey carried out by National Opinion Poll (NOP) Services (London) and who were aged 15-45 were invited to participate in the present study. These women had been selected according to a two-stage stratified design. A systematic sample of 180 constituencies had been drawn from 631 parliamentary constituencies in the United Kingdom (with the exception of Northern Ireland), on the basis of the size of the electorate in each constituency. Subsequently, the respondents' names were randomly drawn from the Electoral Registers for the selected constituencies. The women concerned were contacted in

their homes by specially trained fieldworkers. If the selected women were not found to be at home, call-back visits were made, mainly during the evening, on up to a maximum of four occasions. Women aged 15-17 (who were not on the Electoral Registers) were invited to take part by selection from within the households visited. Where more than one of those appeared to belong to the household their first names were listed in alphabetical order and one of them was invited to take part according to ranking numbers indicated on the questionnaires. This procedure was adopted in order to ensure that the subsample of women aged 15-17 was as random as possible.

The women constituting the final NOP sample received a questionnaire on contraception containing mainly questions of the closed type, together with a return envelope on which the postage was prepaid. Owing to the design of the consumer survey no reminders could be sent, so the initiative to return the questionnaire was left entirely to the women themselves. The questionnaire was of the self-administration type in order to avoid bias owing to the intimate nature of the questions asked. These covered demographic characteristics, current contraceptive use, information sources, motives for using the current contraceptive method and attitudes towards various contraceptive methods.

The fieldwork for this study was carried out in January and February 1992. Of the 1753 women invited to take part, 967 (55.2%) returned the questionnaire. Comparison of the respondents with all the invited women with respect to age, civil status, gainful employment and education revealed that fewer women of low educational level than women of higher educational level returned the questionnaire (27.8% of the invited sample being of low educational level as against 17.1% of the respondents). The overall sample and the subsample of actual respondents corresponded fairly well with regard to the remaining characteristics. Comparison of selected demographic characteristics against the most recent national statistics showed that women under 20 and women of low educational level were underrepresented among the respondents (Table 1).

In order to compensate for the atypical distribution of respondents in comparison with national statistics, the data were weighted statistically, taking age, region, civil status and education into consideration as correction factors (similar to the weighting procedure of Catania and co-workers) [15]. Data were analyzed for all respondents, but the analysis of contraceptive use was limited to women who were 'exposed' to the risk of conception according to the definition of Riphagen and Lehert [12]. This meant that only fertile, sexually active women who were not pregnant at the time of the study and not trying to get pregnant were included in the analysis.

Table 1. Selected demographic characteristics of the respondents compared against national demographic statistics[#]

	<i>Respondents</i>		<i>National</i>
	No	%	%
Age			
15-19	74	7.7	15.9
20-24	141	14.6	18.3
25-29	167	17.3	18.3
30-34	209	21.6	15.8
35-39	175	18.1	15.2
40-45	201	20.8	16.3
Education			
Primary	161	17.1	46.4
GCE 'O' level or equivalent	439	46.6	29.7
GCE 'A' level or above	342	36.3	23.9
Marital status			
Single	318	33.0	39.5
Married	564	58.6	53.6
Divorced	80	8.3	6.6
Widowed	1	0.1	0.4
Region			
North	62	7.5	5.5
Yorkshire/Humberside	63	7.6	8.8
East Midlands	43	5.2	7.2
East Anglia	26	3.1	3.6
South East	249	30.1	31.6
South West	64	7.7	8.2
West Midlands	67	8.1	9.3
North West	90	10.9	11.4
Scotland	106	12.8	9.3
Wales	56	6.8	5.0

[#] For national demographic statistics, see Refs [5,13,14]

4.3. Results

Four percent (4.0%) of the respondents indicated that they were "physically incapable of becoming pregnant" (for reasons other than sterilization). The numbers who were pregnant or trying to get pregnant represented 10.2%, while 21.0% were currently not sexually active. The percentage of 'exposed' respondents was 67.1% (649 women), there being a certain overlap between pregnant women, infertile women and women who were not sexually active. Current contraceptive use by these 'exposed' women is shown in Table 2 (weighted and unweighted data are presented in

order to show that the confidence intervals were not too greatly threatened by the weighting). Of the barrier method users, 87.4% favoured condoms and 2.2% used a diaphragm. The remaining 10.4% used combinations of condoms, diaphragms and spermicides.

Table 2. Current use of contraception by 'exposed' women[#]

	1984 ^a	1986 ^b	1989 ^c	1992 unweighted % (95% CI)	1992 weighted % (95% CI)
	%	%	%		
Oral contraceptives (OCs)	38	34.9	33.0	34.6 (31.1-38.2)	36.0 (32.3-39.7)
OCs + barrier	NI	NI	NI	2.6 (1.6- 3.9)	3.3 (2.1- 4.8)
Barrier methods	17	19.7	22.2	22.7 (19.7-25.9)	20.8 (17.8-24.1)
Periodic abstinence	1	2.3	2.2	2.2 (1.2- 3.4)	1.5 (0.7- 2.6)
Coitus interruptus	3	5.2	5.0	1.2 (0.5- 2.1)	1.1 (0.4- 2.0)
Intrauterine device	8	10.0	7.4	7.3 (5.5- 9.3)	7.3 (5.4- 9.4)
Female sterilization	[23	14.5	13.1	10.0 (7.9-12.4)	10.1 (7.9-12.5)
Male sterilization	[14.5	14.7	16.0 (13.4-18.8)	16.0 (13.2-18.9)
No method	10	2.3	2.5	2.9 (1.8- 4.3)	3.6 (2.3- 5.2)
Age of the samples	15-44	16-44	16-44	15-45	15-45

[#] 'exposed' = sexually active, not pregnant or wishing to get pregnant, and not infertile. ^a From Ref. [12]. ^b From Ref. [16]. ^c From Ref. [5]. 95% CI = 95% confidence interval. NI = not indicated.

Comparison with the results of previous surveys which enabled contraceptive use by 'exposed' women to be calculated revealed that since 1986 there had been only minor changes in contraceptive practice in Britain (Table 2).

In Table 3 current contraceptive use by 'exposed' women is presented according to age, marital status, educational level and whether or not they had a regular sexual partner. Similar analyses were carried out in the 1984 study [12]. Apart from changes in overall contraceptive practice, as can be seen from Table 2, it emerged that the use rate for barrier methods had doubled in the 15-24 age group since 1984. Table 3 shows that single women and women aged 20-24 were those most likely to be using the unreliable method of coitus interruptus, although even in these groups the percentages using this method were low. Adolescents, 40-45 year-old women, women of low educational level and women with occasional sexual partners were found to be those most likely not to use any contraceptive method at all, the percentages ranging between 5% and 10%.

The main sources of information on the contraceptive method in current use, as indicated by the users of all methods considered together, are shown in Table 4. More than one answer could be given, which explains why the percentage total exceeds 100. It emerged that physicians constituted the most important information source.

Table 3. Current contraceptive use by 'exposed' women only according to age, marital status, educational level and whether or not they had a regular sexual partner (percentages)

	<i>Age</i>						<i>Marital status</i>		
	<i>15-19</i>	<i>20-24</i>	<i>25-29</i>	<i>30-34</i>	<i>35-39</i>	<i>40-45</i>	<i>Single</i>	<i>Married</i>	<i>Divorced</i>
Oral contraceptives	52.5	57.6	50.5	39.5	16.5	11.7	52.0	26.2	48.5
Oral contraceptives + barrier	11.9	12.1	1.2	0.5	0.6	0.0	9.7	0.0	3.1
Barrier methods	26.6	21.1	20.4	16.3	23.4	20.3	23.7	20.4	10.5
Periodic abstinence	0.0	0.0	1.8	3.1	1.2	1.8	0.9	2.0	0.0
Coitus interruptus	0.0	2.1	1.2	0.5	1.2	0.9	1.8	0.8	0.0
Intrauterine device	0.0	3.0	11.0	6.5	8.2	9.4	3.2	8.0	21.1
Female sterilization	0.0	0.0	5.8	9.5	19.1	18.9	3.3	14.0	6.3
Male sterilization	0.0	3.1	5.5	21.2	28.6	27.7	1.3	24.7	5.9
No method	8.9	1.0	0.6	2.9	1.2	9.2	3.6	3.5	4.6
	Age effect $X^2 = 247.1, P < 0.001$						Marital status effect. $X^2 = 153.4, P < 0.001$		
	<i>Educational level</i>			<i>Regular partner</i>					
	<i>Primary</i>	<i>GCE 'O' level or equivalent</i>	<i>GCE 'A' level or above</i>	<i>Yes</i>	<i>No</i>				
Oral contraceptives	28.3	40.6	38.4	36.3	30.5				
Oral contraceptives + barrier	2.0	2.6	5.1	2.9	10.0				
Barrier methods	16.2	17.8	31.1	20.2	31.8				
Periodic abstinence	0.0	1.1	3.5	1.5	1.8				
Coitus interruptus	1.0	1.0	1.2	1.1	0.0				
Intrauterine device	9.1	7.8	4.5	7.4	1.8				
Female sterilization	15.2	9.6	5.0	10.1	9.4				
Male sterilization	23.2	15.1	8.9	16.8	1.7				
No method	5.1	3.8	2.0	3.0	12.9				
	Educational level effect $X^2 = 59.2, P < 0.001$			Partner effect. $X^2 = 24.0, P < 0.005$					

Indeed, 55.1% of users indicated that a general practitioner and/or gynaecologist had been their main source of information. If family planning clinics are included in this category the percentage rises to 64.5%. Newspapers, magazines, radio and/or television appeared to have been the information sources of 25.5% of the users.

In general, reliability, non-disturbance of sex life and ease of use were indicated as motives for choosing the contraceptive method in current use (Table 5). Substantial percentages of women relying on sterilization, barrier methods or an IUD indicated that the choice of their current method had also been influenced by problems experienced with a previously used method. The most frequently used previous methods in the case of all current IUD users had been OCs (85.4%) and condoms

Table 4. Main sources of information on the contraceptive method currently used (percentages)

General practitioner	47.0
Friends	25.9
Family planning clinic	22.5
Leaflets	18.8
Partner	17.4
Magazines	15.3
School	11.6
Books	10.6
Parents	9.0
Gynaecologist	8.8
Newspapers	5.5
Television	5.1
Radio	1.4
Women's group	1.0

Total exceeds 100 because more than one answer could be given.

(65.0%). These two methods had also been those most often used previously among all women currently relying on sterilization (OCs: 83.3%; condoms: 56.6%). The majority (77.1%) of all current barrier method users had previously used OCs.

Table 5. Motives for choosing contraceptive method currently used (percentages)

	<i>OCs</i>	<i>Barrier</i>	<i>IUD</i>	<i>Steri- lization</i>	<i>OCs + Barrier</i>
Reliability	87.2	44.8	68.5	63.8	90.8
Non-disturbance of sex life	65.3	7.8	47.9	38.1	43.7
Only occasional intercourse	0.9	15.3	1.8	1.7	3.9
Easy to use	68.5	40.3	47.3	7.2	44.5
AIDS/STD prevention	1.4	25.6	0.0	0.0	70.6
Health concerns	1.8	31.6	11.1	17.5	0.0
Menstrual problems	29.3	1.4	1.4	1.1	48.7
Skin disorders	2.1	1.5	0.0	0.0	13.0
Partner wished to be involved	0.0	11.3	0.0	11.9	19.0
Advice by doctor	12.4	6.8	39.0	13.7	8.4
Problems with former method	7.3	36.8	40.8	15.5	0.0

Total exceeds 100 because more than one answer could be given. OCs = oral contraceptives, IUD = intrauterine device.

The mean ratings for certain key characteristics of OCs, condoms, IUDs, periodic abstinence and sterilization are presented in Figure 1. Some of these were also assessed in 1984, and, as Figure 1 shows, a number of the ratings were found to have changed. Table 6 shows the perceived advantages and disadvantages of these

five contraceptive methods. Respondents were asked whether they would personally benefit from the advantages listed or be affected by the disadvantages if they imagined they were using the method concerned themselves. In this table no distinction is made between 'yes' and 'possible' responses, because we felt that this would be somewhat artificial. The group that gave the 'possible' responses might reasonably be expected to have included women who generally tended to avoid clear-cut 'yes' responses. On the other hand, both responses indicated that respondents perceived the advantage or disadvantage as being associated to some extent with the method concerned, which in our opinion justified combining them (a strategy previously employed by Riphagen and Lehert [12]).

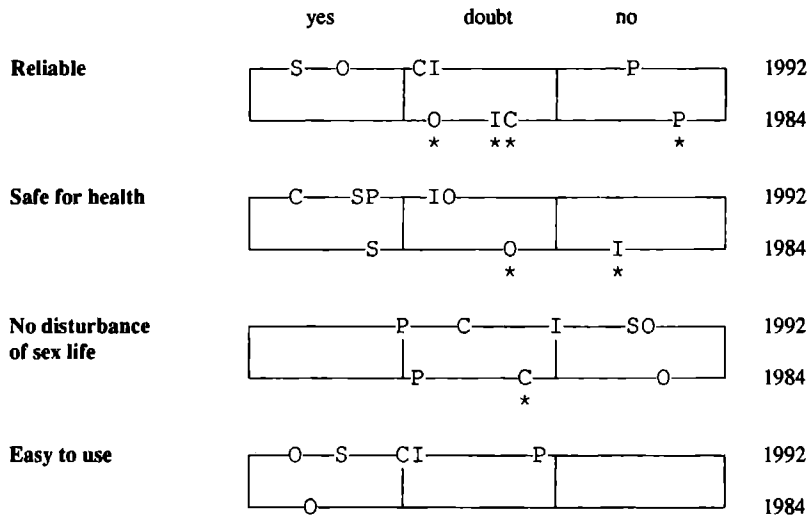


Figure 1. Mean ratings for reliability, safety for health, non-disturbance of sex life and ease of use of various contraceptive methods compared against available 1984 data [12]. O = oral contraceptives, I = intrauterine device, S = sterilization, C = condoms, P = periodic abstinence. * 1992 versus 1984; $P < 0.05$, *t* test.

From the answers to questions concerning the practical daily problems encountered when using the five methods it emerged that 19.5% of the sample felt they might have difficulty in remembering to take OCs on a daily basis, while 23.3% thought they might forget to take them during their holidays. It was felt by 56.5% that they would be embarrassed if they had to buy condoms in a shop. A substantial proportion (44.0%) were not confident that a condom would be used every time they had intercourse and 20.2% thought they would not be able to refuse intercourse if

their partner was unwilling to use a condom. Fear was expressed by 58.7% regarding sterilization and by 67.7% about using an IUD. In the case of periodic abstinence, 80.5% of the respondents did not feel capable of calculating the 'safe' period and 72.4% thought they would be unable to avoid intercourse on 'unsafe' days.

Table 6. 'Yes' and 'possibly' responses regarding disadvantages and advantages attributed to oral contraceptives, condoms, intrauterine devices, sterilization and periodic abstinence (percentages)

Oral contraceptives	
Weight gain	73.1
Headache	45.1
Cardiovascular disease	45.0
Depression	43.5
Cancer risk	41.4
Painful tense breasts	35.4
Nausea	30.1
Regular periods	85.6
Less painful periods	84.4
Less heavy periods	83.5
Relief of skin disorders	28.0
Cancer prevention	18.8
AIDS/STD prevention	4.2
Condoms	
Tear easily	56.3
Messy method	46.3
AIDS/STD prevention	95.5
Natural method	39.3
Cancer prevention	30.3
Intrauterine devices	
Abdominal cramps	73.9
Infection	72.6
Something strange that does not belong in the body	69.6
Heavier periods	61.8
Infertility	34.7
Sterilization	
Major operation	60.2
Feel less feminine	42.2
Periodic abstinence	
Complicated method	66.0
Learn to know body better	26.1
Natural method	53.8
Partner involved	29.6

4.4. Discussion

The survey reported upon in this paper was conducted in order to update current knowledge on contraceptive use and attitudes in Britain. The response rate (55%) was fairly low, there being a number of possible explanations for this. First, the fact that low response rates have often been obtained in other surveys on contraceptive use suggests that the intimate nature of the subject played a role [17]. Secondly, since more women of secondary and higher educational level than women of low educational level responded to our survey, the length of the questionnaire might also have been a factor. Thirdly, women aged 15-17 (non-electors) were underrepresented in the survey due to the fact that the selection of these non-electors did not yield sufficient numbers. Finally, it was not possible in the present study to send reminders to non-responders, which might otherwise have increased the response rate.

To make it possible to extrapolate the results to the general population of British women aged 15-45, the final sample was weighted on the basis of population statistics. Comparison of sales figures for OCs and IUDs (kindly provided by Organon International, Netherlands) with the results obtained in the survey suggests that the weighted assessments were reasonably reliable, despite the low response rate. Sales figures for 1991 indicated that 4,480,000 British women aged 15-50 used OCs that year, whereas we arrived at a total of 4,298,000 OC users among women aged 15-45 (based on a population of 12,459,000 women aged 15-45) [13]. According to sales figures, 656,000 women aged 15-45 used an IUD, whereas our finding was that there were 698,000 IUD users.

In interpreting the results of the present survey two important requirements of 'good' contraceptive practice should be borne in mind. First, use rates of unreliable contraceptive methods should be minimal, so that unplanned pregnancies and abortions are avoided [4,18]. The threat of AIDS and sexually transmitted diseases (STDs) imposes another requirement, viz. that those at risk of contracting these diseases should use barrier methods. As regards the lower degree of reliability of barrier methods, it has been advocated that the use of barrier methods alone should not be encouraged, but rather that the use of these methods should be recommended in addition to, and not instead of, a reliable method [19].

To start with the second requirement, it was observed that there had been a small but steady increase in the use of barrier methods since 1984. In the subgroup of women aged 15-24 years barrier method use had even doubled. These developments warrant the conclusion that British AIDS information campaigns have changed contraceptive practice to some extent. Nevertheless, among women who had

occasional sexual partners, 58% reported that they did not use barrier methods. Moreover, hardly any use was made of barrier methods in addition to a reliable contraceptive method, it being found that only 3% of 'exposed' respondents used both OCs and condoms. Among women with occasional sexual partners the percentage rose, but only to a mere 10%. Obviously, AIDS campaigns had had a certain effect, but too many women were still found to be at risk of AIDS and STDs.

With respect to the overall use rate of reliable contraceptive methods it was observed that the total percentage of OC, IUD and sterilization users had remained almost stable since 1986 (73.9% in 1986, 68.2% in 1989 and 72.7% in 1992). Why more women did not use these reliable contraceptive methods can be understood from the ambivalent attitudes towards them revealed by the present survey. The advantages, in terms of reliability, ease of use, non-disturbance of sex life and, in the case of OCs, cycle regulation, were widely recognized and often mentioned as reasons that motivated their use. Nevertheless, many respondents also had doubts about the safety of these methods. Moreover, the majority of women were simply afraid of using an IUD or being sterilized.

If we examine in more detail what women thought of the safety of reliable contraceptive methods, it would appear that many respondents attributed serious side effects and health risks to these methods. However, their perceptions are not generally substantiated by recent scientific evidence. Many respondents felt that they would be likely to suffer from cardiovascular disease or cancer if they used OCs, whereas scientific reports have shown that this would generally not be the case [20,21]. Moreover, weight gain has not been found to be related to use of modern low-dose OCs [22-25], and genital infections and infertility appear to be related to having multiple sexual partners rather than using an IUD [26]. Furthermore, as regards sterilization, modern laparoscopy tubal ligation and vasectomy procedures are neither major nor risky operations [27,28]. Obviously, recent scientific findings concerning the safety aspects of these methods have not yet been adequately brought to the attention of the lay public. Active counselling of women about the true advantages and disadvantages of reliable contraceptive methods might help British women to base their contraceptive decisions on better knowledge and more accurate facts.

Two groups at risk of using unreliable methods were identified, viz. adolescents and women over 40, which accords with earlier observations [1,29,30]. The latter stressed the need to improve British sex education in schools, which was reported as not being optimal [29]. On the other hand, they also emphasized the importance of devoting special attention to women over 40. Previous reports have suggested that women over 40 sometimes erroneously underestimate their fertility and consider

various reliable contraceptive methods, in particular OCs, as no longer being suitable for them [31]. Special attention must clearly be paid to these aspects when counselling women over 40.

The main information source on contraception was found to be the medical profession. This suggests that the profession might play an important role in the future improvement of contraceptive practice in Britain. However, mass media reporting of the health risks of IUDs and OCs had a tremendous influence on the use of these methods in the recent past and many of the currently observed misconceptions about these methods can be assumed to have had their origin in such media publicity [32-34]. The potential role of the mass media in improving contraceptive practice in Britain should therefore not be underestimated. Indeed, the concerted efforts of the medical profession and the mass media might result in more women benefiting from 'good' contraceptive practice.

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Chapter 5

Contraceptive use and attitudes in reunified Germany

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5.1. Introduction

The unmet contraceptive needs of people living in developing countries represent an important global issue [1,2]. This does not, however, imply that developed countries are trouble-free as regards contraceptive use. At least 2¼ million abortions are carried out each year in Western Europe and the United States [3]. Many West European women wishing to avoid pregnancy were found to be using unreliable contraceptive methods (periodic abstinence, coitus interruptus) or no contraceptive method at all [4], and it has been established that there are also compliance problems among oral contraceptive (OC) users [5].

The use of unreliable methods is related to concerns over the safety of available reliable contraceptive methods [6-8]. Moreover, it has been suggested that OC compliance problems are at least partly due to specific concerns of this kind [5]. Surveys showed that women are afraid that OCs may cause side effects and increase the risk of cardiovascular disease and cancer [4]. Intrauterine devices (IUDs) were perceived as being associated with genital infections and infertility. Sterilization was reported to be seen as involving a risky operation with a number of negative health and psychological consequences [9].

What people know and believe about contraceptive methods depends upon the information they receive. In the case of OCs, mass media coverage of studies linking OC use to cardiovascular disease (1977) and breast cancer (1983) had a tremendous impact on OC use and attitudes towards OCs [10-11]. In West Germany, in addition, 127 articles (of which 29,060,400 copies were distributed) appeared in the lay press in 1989 on the thromboembolic risks suspected to be associated with a particular combined OC [12]. The fears in the case of IUDs probably arose out of the Dalcon Shield affair [13] and persisted owing to scientific uncertainty in this respect, which was not resolved until 1992 [14].

The last study on West German contraceptive use was conducted in 1989 [15], at a time when there was a spate of negative publicity in West Germany about thromboembolic risks associated with certain OCs. The last survey on attitudes towards various contraceptive methods was carried out in 1985 [16]. As far as East German contraceptive practice was concerned, studies suggested that it did not differ greatly from that in West Germany, i.e. that women relied primarily on OCs, followed, in descending order, by condoms, IUDs and the remaining methods [12]. In the present study we assessed contraceptive use and attitudes towards several contraceptive methods in reunified Germany.

5.2. Subjects and methods

The sample for this survey was obtained by random-walk sampling, whereby fieldworkers from a survey agency which collaborated in carrying out the study followed designated routes throughout the country, starting from 257 predetermined locations. They identified suitable subjects aged 15-45 by visiting their homes and inviting the woman in each household whose birthday fell first to participate in the study. A questionnaire was handed over for self-administration and this was picked up approximately one week later. Potential bias on the part of the interviewer and through the interview setting were avoided by the use of this self-administration procedure. Of the 1265 women invited to take part, 1064 (84.1%) actually participated. Reasons for non-response were not being at home or illness (1.0%), refusal to take part (5.5%) and not having completed the questionnaire fully when it was collected (9.4%).

Table 1. Selected demographic characteristics of the respondents compared against national demographic statistics*

	Respondents		National
	No.	%	%
Age			
15-19	60	5.6	13.4
20-24	114	10.7	19.0
25-29	219	20.6	19.9
30-34	246	23.1	17.5
35-39	217	20.4	16.5
40-45	209	19.6	13.7
Education			
Primary	323	31.1	48.9 ^a
Secondary	425	40.9	31.1 ^a
University	290	27.9	20.0 ^a
Marital status			
Married	693	65.2	50.6
Divorced	60	5.6	5.4
Single	297	27.9	43.2
Widowed	13	1.2	0.7
Former country			
West Germany	814	76.5	77.1
East Germany	193	18.1	18.3
Berlin	57	5.4	4.5

* For national demographic statistics, see Refs. [18-21]. ^a West Germany only (no national data available for East Germany).

Comparison of the sociodemographic characteristics of the respondents with national statistics revealed that mainly women in the youngest age groups and women of low educational level were underrepresented (Table 1). With respect to the level of urbanisation and distribution over the provinces ('Bundesländer') the sample reflected the German population very well. In order to compensate for the possible bias caused by the non-typical distribution of respondents in comparison with national statistics, statistical weighting was applied. Age, region, marital status and education were taken into consideration as correction factors. Depending on these characteristics individual respondents were given weightings ranging between 0.486 and 2.433 (these being determined by the differences between the characteristics of the sample and the census data, a procedure similar to that used by Catania and co-workers [17]).

The questionnaire concerned sociodemographic characteristics, current contraceptive use, information sources and motives for using the current contraceptive method. Three types of information on the attitudes of the respondents were obtained; examples of the questions and possible answers are given in parentheses. Firstly, respondents were asked to rate several main characteristics of OCs, condoms, IUDs, periodic abstinence and sterilization, viz. reliability, safety for health, non-disturbance of sex life and ease of use ('How reliable is the pill in your view?', the possible answers being 'completely reliable', 'fairly reliable', 'fairly unreliable' and 'unreliable'). Secondly, they were asked whether they thought they would personally benefit from certain advantages or be affected by certain disadvantages of these five methods if they imagined they were using the method concerned themselves ('Do you believe you will be more likely to develop cardiovascular disease if you use the pill?', the possible answers being 'yes', 'possibly' and 'no' - see Table 5). Finally, it was asked whether respondents felt able to cope with several practical implications of these methods, some of them concerning compliance ('Do you think you would remember to take the pill every day?', the possible answers being 'yes, certainly', 'yes, possibly', 'probably not' and 'absolutely not' - see Table 6). The comprehensibility and accuracy of the questionnaire had previously been tested in two pilot surveys among 20 and 97 German women, respectively, after which they were amended as necessary. The development, pilot testing and details of the full version of the questionnaire have been described elsewhere [22].

The data on all the women surveyed were analyzed. However, in the analysis of current contraceptive use only women who were 'exposed' to the risk of conception were taken into account. According to the definition of Riphagen and Lehert [16], these 'exposed' women were those respondents who were fertile, sexually active, not pregnant and not trying to get pregnant at the time of the survey. The question on

contraceptive use concerned the 'main method currently used'. However, various combinations of contraceptive methods were incidentally reported. Women using combinations of several barrier methods were grouped together with users of a single barrier method in the 'barrier methods' category. Users of combinations of different periodic abstinence techniques and users of combinations of periodic abstinence and barrier methods on 'unsafe' days were classified into a 'periodic abstinence' category. The only remaining combination - of OCs and barrier methods - was classified as a separate category. This classification was closely in line with conventions adopted in previous surveys on contraception [4,23]. Where data were analyzed according to previous country (West or East Germany), Berlin women were not taken into account, since it was not known whether they originated from West or East Germany before reunification. The numbers of respondents from each previous country enabled us to detect true differences in results between these two countries ranging from 7.85% (in the case of results near 50%) to 1.56% (in that of results near 1% or 99%) with the level of significance taken as 5%, which was considered sufficient for the topics under study. Proportions were compared using the chi-square test and *t* test, and the level of significance was taken as 5%. Confidence intervals for proportions were calculated using the standard error formula [24].

5.3. Results

Of the 1064 women surveyed, 75.7% were defined as being 'exposed'; 3.8% stated they were infertile, 4.2% were currently pregnant, 4.0% intended to get pregnant and 15.6% were not sexually active. Some of the infertile and pregnant women were not sexually active either, which explains why the total percentage exceeds 100.

The pattern of current contraceptive use by these 'exposed' women is presented in Table 2 (unweighted and weighted values are given in order to show that the confidence intervals were not too greatly threatened by the weighting). The barrier methods used comprised condoms (10.4%), diaphragms (0.9%), spermicides (0.6%), and combinations of condoms and spermicides (0.4%), of diaphragms and spermicides (0.1%) and of diaphragms and condoms (0.2%).

The majority of exposed German women appeared to use reliable methods, viz. OCs, IUDs and sterilization (75.7% in total). This overall percentage was almost equally high among the surveyed women living in West Germany (75.7%) and those living in East Germany (76.4%). Generally, the differences between East German and

Table 2. Current use of contraception by 'exposed' women[#], according to former country

	1992 Unweighted Germany		1985		
	%	(95% CI)	East %	West %	West ^a %
Oral contraceptives	49.0	(45.7 - 52.4)	61.3	49.1	33
Oral contraceptives + barrier	1.3	(0.7 - 2.2)	0.5	1.7	NI
Barrier methods	13.4	(11.1 - 15.8)	10.4	13.4	7
Periodic abstinence	8.4	(6.6 - 10.3)	8.7	7.1	14
Coitus interruptus	1.3	(0.7 - 2.2)	3.0	0.7	10
Intrauterine device	13.0	(10.8 - 15.4)	11.6	13.1	10
Female sterilization	6.7	(5.1 - 8.5)	3.0	8.6	7
Male sterilization	3.3	(2.2 - 4.7)	0.0	3.2	
No method	3.3	(2.2 - 4.7)	1.5	2.7	19

[#]'exposed' = sexually active, not pregnant or wishing to get pregnant, and not infertile ^a From Ref. [16] 95% CI = 95% confidence interval NI = not indicated

West German women were small, except for the higher OC use rate in East Germany and the fact that fewer East German women relied on sterilization (either male or female).

In comparison with 1985, the West German OC use rate showed an increase, as was also the case for barrier methods. In contrast, the use of periodic abstinence, of coitus interruptus and of no method at all had decreased tremendously. Comparison with the results of the abovementioned 1989 West German survey [15] was not possible, since a different classification was used to define current contraceptive use in that survey.

In this current study contraceptive use appeared to be significantly related to age, educational level and whether or not there was a regular sexual partner (Table 3). In the 1985 West German survey the data on contraceptive use were presented

Table 3. Current contraceptive use by 'exposed' women only, according to age, educational level and whether or not they had a regular sexual partner (percentages)

	<i>Age</i>					
	<i>15-19</i>	<i>20-24</i>	<i>25-29</i>	<i>30-34</i>	<i>35-39</i>	<i>40-45</i>
Oral contraceptives	76.6	64.9	63.6	52.7	43.1	29.0
Oral contraceptives + barrier	0.0	6.2	2.0	0.3	0.4	0.0
Barrier methods	12.9	14.7	13.4	10.0	13.5	11.9
Periodic abstinence	4.1	12.9	3.5	8.4	7.1	6.8
Cotus interruptus	0.0	0.0	1.0	1.5	1.6	2.1
Intrauterine device	4.1	0.0	9.0	17.5	19.3	16.3
Female sterilization	0.0	1.3	4.1	2.5	8.3	23.2
Male sterilization	0.0	0.0	0.0	4.6	4.7	4.2
No method	2.3	0.0	3.4	2.5	2.0	5.3

	<i>Educational level</i>			<i>Regular partner</i>	
	<i>Primary</i>	<i>Secondary</i>	<i>University</i>	<i>Yes</i>	<i>No</i>
Oral contraceptives	46.7	58.3	52.0	52.4	46.8
Oral contraceptives + barrier	0.4	1.1	4.5	1.4	5.7
Barrier methods	11.3	12.3	14.3	11.9	28.1
Periodic abstinence	3.5	7.3	15.6	7.4	12.4
Cotus interruptus	1.6	1.0	0.9	1.1	0.0
Intrauterine device	16.7	9.3	8.4	12.6	2.9
Female sterilization	13.6	4.4	0.8	7.6	4.1
Male sterilization	3.1	2.8	1.8	2.7	0.0
No method	2.7	3.3	1.7	2.8	0.0

Age effect: $\chi^2 = 208.1$, $P < 0.001$, educational level effect: $\chi^2 = 84.1$, $P < 0.001$; partner effect: $\chi^2 = 21.0$, $P < 0.05$.

according to age and also educational level [16]. Whereas more West German women relied on sterilization in 1992 than in 1985, there was no increase among women in the highest educational level category (7% in 1985 versus 5.5% currently). It also emerged that the number of 'exposed' women using no contraceptive method at all had fallen least among women aged 40-44 (8% in 1985 versus 5.0% currently).

The reasons for choosing the current contraceptive method are presented in Table 4. Because of the relatively small numbers of users of the other methods the reasons were further analyzed according to previous country only in the case of OC use. East German women cited the reasons mentioned in Table 4 as often as West German women ($P > 0.05$; chi-square test), except for AIDS and sexually transmitted disease prevention (1.1% and 5.8% respectively, $P < 0.05$; chi-square test) and alleviation of skin disorders (2.3% and 12.5% respectively, $P < 0.01$; chi-square test).

Information on contraception appeared to have been obtained mainly from

Table 4. Motives for choosing contraceptive method currently used (percentages)

	<i>OCs</i>	<i>Barrier</i>	<i>IUD</i>	<i>Periodic abstinence</i>	<i>Steri- lization</i>
Reliability	94.0	33.9	65.5	22.7	52.3
Non-disturbance of sex life	61.6	18.0	43.0	25.0	19.6
Only occasional intercourse	1.8	26.3	1.3	33.0	0.0
Easy to use	50.7	27.4	40.5	31.1	1.8
AIDS/STD prevention	2.2	29.0	0.0	15.0	0.0
Health concerns	1.0	36.0	21.4	45.7	33.9
Menstrual problems	33.1	0.0	0.6	2.8	3.6
Skin disorders	9.3	0.0	0.6	0.9	1.8
Partner wished to be involved	2.0	23.7	0.0	19.1	14.5
Advice by doctor	20.5	4.0	43.2	6.6	31.8
Problems with former method	2.9	29.8	38.9	35.5	33.0

Total exceeds 100 because more than one answer could be given. OCs = oral contraceptives, IUD = intrauterine device.

gynaecologists (67.7%) and friends (30.9%) (more than one answer could be given). Magazines, newspapers, television and/or radio constituted the main source of information for 18.4% of the sample.

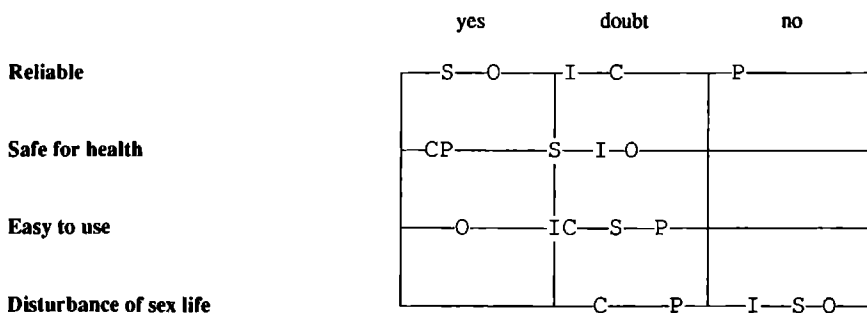


Figure 1. Mean ratings for reliability, safety for health, ease of use and disturbance of sex life for various contraceptive methods. O = oral contraceptives; P = periodic abstinence; C = condoms; S = sterilization; I = intrauterine devices.

Figure 1 illustrates the perceptions of the reliability, safety for health, non-disturbance of sex life and ease of use of five major contraceptive methods. When the perceptions were analyzed according to previous country, it emerged that sterilization was rated less favourably on its safety and ease of use in East Germany than in West Germany, and that periodic abstinence was seen as causing more disturbance to sex

life in East Germany (Figure 2). Comparison of current West German data with those available for 1985 revealed that OCs, IUDs, barrier methods and periodic abstinence were seen as more reliable in 1992 than in 1985; the fact that periodic abstinence did not disturb sex life was also rated more favourably.

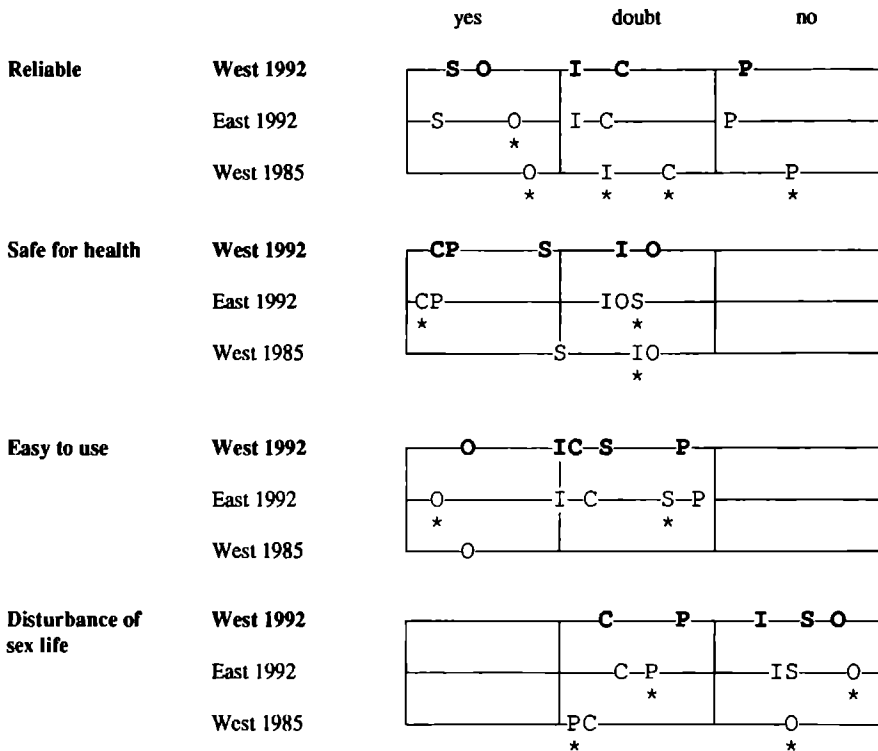


Figure 2. Mean ratings for reliability, safety for health, ease of use and disturbance of sex life for various contraceptive methods - comparison of West German data against East German data and available 1985 data [16] respectively. O = oral contraceptives; P = periodic abstinence; C = condoms; S = sterilization; I = intrauterine devices. *P < 0.05; t-test (versus West Germany 1992).

Concern about health safety with regard to medically prescribed contraceptive methods was also reflected in the associated disadvantages from which respondents felt they were likely to suffer (Table 5). Weight gain appeared to be the most frequently perceived disadvantage of OC use. The majority of the respondents, however, also considered that they would benefit from cycle regulation if they used OCs. IUDs were generally seen as likely to cause infections and the majority felt that sterilization was a major and risky operation. It was generally recognized that

Table 5. 'Yes' and 'possibly' responses regarding advantages and disadvantages attributed to oral contraceptives, condoms, intrauterine devices, sterilization and periodic abstinence according to former country (percentages)

	<i>Whole country</i>	<i>West</i>	<i>East</i>
Oral contraceptives			
Cardiovascular disease risk	40.1	42.3	30.7**
Cancer risk	24.7	24.7	26.7
Weight gain	59.8	60.5	59.4
Depression	32.4	33.5	21.3**
Headache	29.5	28.4	29.5
Painful tense breasts	35.8	36.6	25.2**
Nausea	22.8	22.8	18.7
Cancer prevention	28.7	29.3	30.2
Alleviation of skin disorders	54.7	56.3	43.1**
Regular periods	80.0	77.6	85.1*
Less painful periods	71.9	70.6	71.0
Less heavy periods	74.8	74.9	74.2
Condoms			
Messy method	38.4	39.6	33.9
Tear easily	60.2	59.1	63.8
Cancer prevention	16.8	16.9	19.8
AIDS/STD prevention	88.0	87.5	89.5
Natural method	48.1	45.0	57.3**
Intrauterine devices			
Infection	71.3	71.2	70.1
Infertility	39.4	42.1	28.8**
Abdominal cramps	50.4	52.5	40.1**
Heavier periods	46.9	49.9	36.7**
Something strange that does not belong in the body	77.5	77.3	82.8
Sterilization			
Major operation	68.0	66.9	77.6*
Feel less feminine	48.4	47.1	53.3
Periodic abstinence			
Complicated method	72.2	74.8	67.7
Learn to know body better	65.0	65.0	62.6
Partner involved	56.2	57.7	52.2
Natural method	40.3	42.9	34.9

* $P < 0.05$; chi-square test (West versus East Germany). ** $P < 0.01$; chi-square test (West versus East Germany).

condoms prevent AIDS and other sexually transmitted diseases, but their reliability (they were thought to tear easily) was questioned. Most respondents thought periodic

abstinence was a complicated method of contraception. Certain disadvantages of OCs and IUDs were less frequently perceived in East Germany than in West Germany, whereas East German women were more frequently of the opinion that sterilization was a major and risky operation.

Many respondents felt they would be able to use OCs consistently, even in situations where regular patterns of daily activities were interrupted, such as during holidays (Table 6). Nevertheless, one in seven women still perceived problems in this respect. As regards condom use and periodic abstinence, one-half and one-third respectively of the respondents thought they might have compliance problems. The majority of the sample expressed general fears about having an IUD inserted or undergoing sterilization.

Table 6. Perceived problems with use of various contraceptive methods according to former country - percentages stating 'yes' and 'probably'

	<i>Whole country</i>	<i>West</i>	<i>East</i>
Not able to remember to take OCs daily	13.8	13.3	8.5
Not able to remember to take OCs daily during holidays	14.2	15.7	10.3
Embarrassment when buying condoms in a shop	37.0	34.9	47.6**
Not able to refuse intercourse when partner refuses condom use	31.9	32.6	29.5
Not able to use condoms every time coitus takes place	48.1	46.5	48.5
Not able to calculate the 'safe days' when using periodic abstinence	35.0	37.2	30.7
Not able to avoid intercourse on 'unsafe days' when using periodic abstinence	34.0	34.3	30.5
Afraid of sterilization	76.1	74.4	82.4*
Afraid of IUD	76.1	75.1	82.7*

* $P < 0.05$; chi-square test (West versus East Germany). ** $P < 0.01$; chi-square test (West versus East Germany).

5.4. Discussion

5.4.1. Contraceptive practice

The total percentage of German women who relied on the most reliable contraceptive methods available (OCs, IUDs and sterilization) was found to be very

high as compared with other West European countries [4,25]. Remarkably, reliance on these methods was notably high in the classical risk groups for the use of unreliable methods, viz. adolescents, women over 35 and women of low educational level [4,25]. Only among the women with no regular sexual partner was the total percentage for the most reliable methods substantially lower, this being due to the high percentage of condom users in this group, since the condom was highly rated for protection against AIDS and other sexually transmitted diseases. The higher use rate for barrier methods among such women did not, however, imply that AIDS prevention was adequate, since 66% did not use such methods.

In reunified Germany the number of 'exposed' women who used periodic abstinence was high in comparison with other West European countries [4,25]. Periodic abstinence use rates were also found to be relatively high in previous surveys in Germany [12,16]. This above-average level of interest in periodic abstinence, and in particular in 'natural family planning' (the symptothermal method), could be considered to be a general German characteristic [12]. Introductory courses on this method are available throughout the country, the attitude of German physicians towards the method is fairly positive and the former West German government actually set up a research programme to investigate and promote the method [26,27]. Despite its relative popularity, however, the attention paid to natural family planning probably made more women aware of the method's disadvantages. While the number of women who had heard of the method increased, the corresponding level of interest remained static in West Germany between 1985 and 1989 [15]. Indeed, in the present study we found that its use in West Germany declined between 1985 and 1992.

The striking difference in contraceptive practice between West and East Germany was seen in the percentage of women who relied on sterilization (male or female), this being much lower in East Germany. The explanation for this is that prior to reunification it was fairly difficult to have sterilization performed in East Germany [28]. Women had to obtain the written opinion of a gynaecologist attesting to the medical necessity of the procedure, while the ultimate decision was taken by a public district commission after it had discussed the social and economic aspects of the case. Recent reports from the Magdeburg Women's Hospital have indicated that the number of sterilizations performed among East German women has been increasing rapidly since reunification [28].

Although the thromboembolic risks suspected in 1989 of being linked specifically with gestodene-containing OCs were widely covered in the West German press, the use rate of OCs appeared to have increased between 1985 and 1992. Although the suspected risks could not be replicated by further research, the use rate

of this particular type of OC fell considerably [29]. In conjunction with our present findings, this warrants the conclusion that it was not so much a 'pill scare' as a 'brand scare' that occurred at around that time in West Germany. It is nevertheless possible that this scare might have had an effect on attitudes towards OCs in general, as will be discussed below.

5.4.2. Attitudes

The attitudes towards OCs, IUDs and sterilization revealed by the present study may best be summarized as ambivalent: advantages were recognized, although not always, while many disadvantages were also reported. OCs were seen as reliable, as causing no disturbance to sex life and as easy to use. However, they were also considered to be the most unsafe contraceptive method for health, especially in West Germany. The perceived risks of OCs were associated with cardiovascular disease, cancer and side effects (weight gain, painful tense breasts, depression, headache and nausea).

In the 1985 West German study the respondents referred to similar risks [16], but the percentages were higher than those in our present study. This can be explained by the fact that in 1985 the respondents were asked whether they thought such risks were associated generally with OC use, whereas in the present study we focused on whether respondents thought that they themselves would be likely to run such risks if they used OCs. When the latter, personal approach is used, people tend to consider that the chances of exposure to risk are lower than when they are asked about 'general' associations. Nevertheless, the percentage of respondents indicating that OC use carried a cardiovascular disease risk was approximately the same in 1985 (44%) as in the present study (42%), whereas a lower percentage might have been expected currently as a result of the changed formulation of the question. This inclines us to conclude that the 'brand scare' might have had an impact on West German women's perceptions of the cardiovascular disease risk associated with OCs.

As regards attitudes to OCs, East German women were more aware of the advantages of cycle control and less concerned about cardiovascular disease (since the 'brand scare' affected West Germany rather than East Germany), depression and painful tense breasts. However, they were less aware of the ability of certain OCs to alleviate skin disorders, such as acne. East German women also stated less frequently that they had opted for OCs because of skin disorders. This was probably due to the fact that cyproterone-acetate-containing OCs were not available in East Germany before reunification [30].

Condoms were generally considered to be of doubtful reliability and to cause

some degree of disturbance to sex life. The majority of the sample knew, however, that they protect against AIDS and sexually transmitted diseases. Intrauterine devices simply had a bad reputation: both their reliability and their safety were generally underestimated. Despite recent evidence that IUDs do not increase the risk of contracting genital infections [14] a large majority of respondents thought they did. Respondents were also concerned about infertility risk and side effects such as abdominal cramps and heavier periods. A better informed attitude towards IUDs might result in more women benefiting from this generally reliable and safe method of contraception.

Despite the government's efforts to promote periodic abstinence, most women thought the method was complicated and unreliable, and that it tended to disturb sex life. Remarkably, women who relied on periodic abstinence often stated that they used it for health reasons. In our opinion the only health advantage of periodic abstinence is that potential health risks associated with medical contraceptive methods are avoided. Periodic abstinence might therefore often have been chosen not because of its advantages *per se*, but because of the suspected health risks of other methods. There was great doubt about the safety of sterilization in East Germany and women there thought that the use of this method was rather problematic. This is understandable in view of the difficulty of having sterilization performed in East Germany, as was explained earlier.

5.4.3. *Perceived problems*

The majority of the sample indicated that they would, in principle, be able to remember to take OCs every day - even when they were on holiday. Given the actual number of forgotten OC doses reported among OC users [5], it might be concluded that these women to some extent overestimated their ability in this respect. This phenomenon should be borne in mind when addressing OC compliance problems.

Consistent condom use was considered to be more difficult. Consequently, in future AIDS campaigns, more attention needs to be paid to the practical implications of condom use.

In line with the unfavourable attitude found regarding the safety of IUDs, women were afraid of having an IUD inserted. Most women were also afraid of sterilization, despite the established scientific consensus that modern tubal ligation by laparoscopy is an easy and risk-free procedure [31].

5.5. Conclusion

It was found that contraceptive use had increased considerably in West Germany since 1985, this being consistent with the results of Freundl et al. [15]. East Germany was found to be characterized by a high use rate of reliable contraceptive methods, unlike other former Communist countries [32,33]. This accords with the fact that the East German abortion rate was considerably lower than that in Central and Eastern European countries [3].

From the point of view of AIDS prevention, further efforts must be made to increase condom use among women at risk of contracting AIDS. The existence of a generally unfavourable attitude towards condoms and of perceived use problems should be taken into consideration in this connection.

The attitude of German women towards OCs and IUDs appeared to be dominated by concerns about the safety of these methods, concerns which seem outdated in the light of recent research findings [34].

These concerns might be interpreted as the long-term effects of the past media attention that was focused on suspected health risks associated with these methods. This is an aspect of which physicians clearly need to be aware. When they counsel women about contraception, they also need to take into account and deal with the general fears women have about sterilization.

If German women based their contraceptive decisions on a more reasoned appraisal of the true advantages and disadvantages of modern contraceptive methods, current contraceptive practice in Germany, which is reasonably effective, might even be expected to improve.

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Chapter 6

The dynamics of oral contraceptive use: starting, discontinuation and switching in the Netherlands 1990-93

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6.1. Introduction

Contraceptive prevalence rates have been assessed for many countries throughout the world [1,2]. The dynamics of contraceptive use, in terms of choice of method, continued use and switching, are currently attracting greater interest, but so far the available information remains relatively poor [3]. In the case of oral contraceptives (OCs), the numbers of current users in the developed countries are well known [2,4,5], but we have hardly any knowledge as to how many women annually start and stop using OCs or switch to another type.

In these respects only a few indications are available. From the United States (US) it was reported that, for the period 1970-73, 50% of OC users discontinued use within 2-4 years after adopting the method [6]. In 1982, 13% of married women aged 15-44 in the US currently used OCs and 80% had used them at some time during their life [7]. Assuming that current users had never temporarily interrupted use, this implied that at least 67% of married women aged 15-44 in the US had discontinued OC use at some stage. In Great Britain, Germany and Italy we found that 56.4%, 49.1% and 73.2% of current OC users, respectively, had been using the method for less than 6 years, which is a relatively short time in comparison with the total span of fertile age [8-10]. All in all, therefore, the number of women who annually discontinue OC use must be considerable.

The practice of switching to other OCs is, as far as we know, an issue that has not been adequately studied. Discontinuation of OC use in the US appeared to be related mainly to the occurrence of physical problems during OC use [6,7]. According to clinical guidelines, however, the actual experience of physical problems with OC use might often be an indication for changing the type of OC rather than for completely rejecting the method. Side effects may be eliminated and poor cycle control corrected by simply switching to another OC and any health problems that may arise which constitute contraindications to oestrogen use may warrant switching to a progestogen-only pill [11]. Although we had the impression that such OC switching is common practice in Western Europe, we did not find any data to substantiate this. Finally, the starting rates of OC use have been assessed only with respect to first sexual intercourse [12-14], and have not to our knowledge been reported for the total population of women of fertile age.

For the purpose of this current report we wished to ascertain how many OC users had annually started OC use, discontinued use and switched to another OC type. We accordingly analyzed data which had been obtained from an ongoing series of surveys on contraceptive use among Dutch women. These surveys also yielded some

information on women's reasons for discontinuation and switching.

6.2. Subjects and methods

The study was based on an annual survey of contraceptive use among women aged 15-49 residing in the Netherlands who constitute a panel set up by the survey organization AGB Interact. The original panel was organized in order to conduct regular surveys on a variety of topics. This panel is representative for the Dutch population with respect to various demographic characteristics, such as sex, age, parity, educational level, degree of urbanization, family income and employment status. Since 1989, random stratified samples of women aged 15-49 belonging to the panel have been approached on a yearly basis to conduct a cross-sectional survey on contraception. The 1989 survey retrospectively assessed contraceptive behaviour and related topics with reference to the 6-month period prior to the survey, whereas since 1990 these issues have been studied with reference to the 12-month period preceding the survey. The present paper reports on the study years 1990-93. The study instrument was a questionnaire of the self-administration type, which was mailed to potential respondents, who returned it themselves after completion. Response rates were 90% in 1990, 89% in 1991, 90% in 1992 and 89% in 1993. The samples obtained comprised 4573, 4563, 4621 and 4560 women respectively. Small deviations from the demographic characteristics for the total population of Dutch women aged 15-49 were corrected by statistical weighting.

Table 1. Oral contraceptive discontinuation, starting, switching and continuous unchanged use during the 12 months prior to the survey (percentages of all women who had used oral contraceptives at some time during that period)

	1990	1991	1992	1993
Discontinued OC use	15.0	12.6	12.2	12.2
Started OC use	11.6	15.7	15.0	9.4
Started OC use and switched OC type in same year ^a				5.6
Switched OC type	8.9	10.1	11.7	8.0
No change	64.4	61.7	61.0	64.8

OC = oral contraceptives. ^aData available only for 1993; for the other years these women are included in the 'switched OC type' category.

The questionnaire covered current contraceptive use, reasons for using the

current method, changes in the method used during the 12 months prior to the survey, motives for changing, advice received from physicians and information obtained via the mass media. Most questions were of the closed type, but those relating to reasons for changing were open-ended, since they had a lower priority in the context of the original primary aim of the survey, which was to collect data on contraceptive use. Various related questions on method changes and OC type changes were scattered throughout the questionnaire, so that the internal consistency of the replies could be checked and, where necessary, corrected.

Table 2. Current contraceptive use by women who discontinued oral contraceptive use during the 12 months prior to the survey (percentages)

	1990	1991	1992	1993
Female sterilization	4.0	1.9	4.6	4.1
Male sterilization	5.7	4.3	7.8	5.5
Intrauterine device	2.0	0.9	2.3	3.2
Condoms	16.2	16.1	18.4	16.9
No contraception	70.4	74.4	65.9	69.4
Other	1.6	2.4	0.9	0.9

6.3. Results

In the years 1990-93, respectively, 35.3%, 36.9%, 39.0% and 39.3% of the women in the samples, were using OCs at the time the surveys were conducted. During the 12 months prior to the surveys, 41.5%, 42.2%, 44.4% and 44.7%, respectively, had used OCs at some time. Most had used the same type of OC throughout the 12-month period, but 12.2-15.0% had discontinued use and 8.9-13.6% had switched to another OC type (Table 1). In the 1993 survey, switchers were subdivided into those who had started OC use during the 12-month period and subsequently switched within that same period, and those who had switched during the 12-month period but had started use before its commencement. The data did not enable this subdivision to be made for the other years and the two groups of switchers are considered together in Table 1.

The contraceptive methods which were used at the time of the survey by women who had discontinued OC use during the 12 months prior to the survey are presented in Table 2. Most women who stopped OC use did not adopt another method. For this

Table 3. Reasons for discontinuing oral contraceptive use indicated by respondents using no contraceptive method at time of survey (percentages)[†]

	1990	1991	1992	1993
Pregnancy (actual or trying)	66.7	65.0	55.9	59.8
No more children	0.6	0.6	-	-
Breast-feeding	-	-	-	0.7
Only occasional intercourse	-	-	1.4	-
Other / no partner	8.0	12.1	7.0	2.0
OC side effects / poor cycle control	11.5	11.5	14.7	9.2
General dissatisfaction with OCs	1.7	-	-	0.7
Advice by physician	7.5	6.4	5.6	4.6
Other	8.6	3.2	8.4	5.3
No specific reason indicated / no reply	1.7	7.6	19.6	21.7

[†]More than one answer possible. OCs = oral contraceptives.

relatively large group it was possible to analyze the reasons for discontinuation in greater detail, and the majority appeared to have stopped use in order to get pregnant (Table 3). The initiative for switching to another type of OC was the woman's own, the physician's or in 1992 only the pharmacist's (Table 4). In the latter case this was related to health-care reforms which came into effect in that year in the Netherlands (see below). The reasons for switching are presented in Table 5, the most important being a desire for better cycle control and perceived side effects.

Table 4. Initiative for switching (percentages of all women who had switched to another oral contraceptive type during the 12 months prior to the survey)

	1990	1991	1992	1993
Own initiative	30.6	57.1	57.7	80.0
Physician's initiative	46.9	42.9	37.0	20.0
Pharmacist's initiative	-	-	5.3	-
Unknown	22.4	-	-	-

6.4. Discussion

This report is probably the first to provide an insight into women's motive for starting or discontinuing OC use and for switching to other OC types. The data were obtained from an ongoing series of large-scale surveys which are conducted with the aim of gathering data on contraceptive use in the Netherlands. For the current report this implied a number of strong points and one particular weakness. The strong points

were the large sample sizes, the high response rates and the careful internal consistency checks on the respondents' replies. The OC use rates assessed in the surveys appeared to accord well with those reported in national surveys carried out by the Dutch Central Bureau of Statistics [15]. The weakness arose from the fact that reasons for discontinuation and switching, which were not specified as part of the original objectives of the surveys, were studied in a rather general way through open-ended questions which a number of respondents appear not to have answered in sufficient detail. This explains the substantial percentages that appear under 'no specific reason indicated/no reply' in Tables 3 and 5.

Table 5. Reasons for switching to another oral contraceptive (percentages)*

	1990	1991	1992	1993
Side effects experienced	41.5	44.7	34.6	28.6
For better cycle control	38.1	27.6	30.3	18.8
For relief from acne	11.6	3.5	4.8	4.9
'Other OC better'	3.4	5.9	2.4	4.5
'More hormones were indicated'	7.5	4.7	5.8	1.6
'Less hormones were indicated'	5.4	14.7	5.8	3.7
Physician's advice - unspecified	3.4	4.1	0.5	1.6
Cheaper OC	-	0.6	14.9	1.6
Other	10.9	7.1	2.4	8.6
No specific reason indicated / no reply	25.9	17.1	32.7	56.3

*More than one answer possible. OC = oral contraceptive.

The data demonstrated that OC use is a very dynamic phenomenon. Of all OC users, 12-16% were starters, 12-15% stoppers and 9-14% switchers. Contrary to the findings of some early studies conducted in the US [6,7], most women who discontinued OC use did so in order to get pregnant and not because of dissatisfaction with OCs. Nevertheless, for 10-15% of the women who stopped OC use and did not adopt another contraceptive method, dissatisfaction with OCs (in terms of side effects, poor cycle control and/or generally negative feelings) did play a role. Extra attention therefore needs to be paid by physicians to the possibility that all forms of contraception may be abandoned in the event of dissatisfaction with OCs.

Dissatisfaction with the OC type used previously was found to be the major motive for switching to another type. Perceived side effects and a desire for better cycle control were indicated as the principal considerations, as well as some general reasons which might have reflected physicians' advice or other influences in this respect ('other OC better', 'more hormones were indicated' and 'less hormones were indicated'). Physicians' advice and initiatives played a substantial role in the decisions

taken to switch to another type of OC. It was noteworthy that some of the 1992 respondents reported that they had switched OCs on the initiative of pharmacists and for cost reasons.

In 1992, the Dutch government introduced a new national reimbursement system for medicines [16]. Clusters of medicines which were considered to be basically equivalent were defined by the government and the maximum refundable prices per cluster were fixed, based on the average price within a cluster. For the more expensive medicines within a cluster, the differences between their prices and the maximum refundable price for the cluster concerned had to be paid by the users themselves as, for example, in the case of the so-called new generation progestogen OCs. Pharmacists initiated the use of cheaper variants from among those in the relevant cluster when prescriptions were written for the more expensive products (in consultation with the prescriber, often by phone). The data showed that, once the new reimbursement system was established and physicians and women were used to it, the pharmacist's role in initiating OC switching virtually disappeared.

The rather substantial OC switching rates found in this survey indicated that OC use reflects an active search by women and physicians for the OC which is best tolerated. Switching may occur even in the early months of use (37% of all women who started OC use within the 12-month study period in 1993 switched to another OC within that same period). Since dissatisfaction with the OC used previously played a major role in motivating users to switch, close monitoring of OC users with respect to their satisfaction with the OC used is highly relevant. From the perspective of the product itself, it cannot be expected that any (future) OC type will be optimal for all women. The availability of a wide range of OCs and the development and introduction of newer types is therefore of crucial importance to enable contraceptive use to be tailored as optimally as possible to individual needs.

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Chapter 7

Evaluation of the effect of contraceptive prices on demand in eight West European countries

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7.1. Introduction

In their extensive review of contraceptive practices in developed countries, Jones *et al.* showed that there is a tremendous variation in the use rates of contraceptive methods among these countries [1]. Such a variation was also observed in surveys carried out by the International Health Foundation in Western Europe, which were in general of more recent date than the survey data used by Jones *et al.* [2-5]. Ketting and Van Praag had noticed earlier, in a smaller scale study, that such a variation parallels a variation in abortion rates, so highlighting the relevance of the variation in use [6].

Jones *et al.* suggested that, among other factors, reimbursement might play a role as an explanatory variable for the observed cross-national variation in contraceptive practices. However, their basis for this suggestion was not very convincing. Close examination of their data reveals that three out of five countries in which consultations and oral contraceptive supplies had to be paid for had a medium or low acceptance rate for this method, while this was also the case in two out of five countries in which consultations and supplies were free of charge. Moreover, one out of three countries in which sterilization was paid for in full by the client had a medium level of acceptance, as compared with four out of twelve countries in which no or only a very moderate charge was made.

Although their evidence might not have been entirely convincing, the suggestion made by Jones *et al.* to the effect that the variation in contraceptive practices among developed countries might be due to reimbursement differences or, in general, the price payable for contraception by the consumer, warranted further investigation.

We therefore calculated consumer expenditure on four main contraception methods, viz. oral contraceptives, intrauterine devices (IUDs), sterilization and condoms, in eight Western European countries (Italy, France, the United Kingdom, Spain, West Germany, Austria, Sweden and Denmark). We calculated both what had to be paid annually for these methods and what had to be paid by users in the first year of use, since in two cases (IUDs and sterilization) the expenditure is considerably higher in the first year of use and might even be so high that it acts as a barrier to their initial use. Subsequently, expenditure was related to the acceptance rates of the different methods, the relevant data being drawn from the previous International Health Foundation surveys [2-5]. It was ensured that acceptance rates and expenditure corresponded exactly in the year of assessment, in order to avoid bias due to time dependent changes in each case.

7.2. Methods

In the first half of 1991 a questionnaire was sent out to workers in the family planning field in each of the countries investigated, asking them to describe in detail how the contraceptive services and reimbursement systems were organized in their countries.

The questionnaire also contained detailed questions about physicians' fees for consultations and several related issues, and a particular effort was made to obtain this information from doctors' professional associations. Only in Germany was the national association of gynaecologists and obstetricians unwilling to provide this information, so five gynaecologists based in different parts of the country were subsequently consulted. Care was also taken to ensure that the fees related to the corresponding years of the contraceptive practice surveys, viz. 1984 for Italy, France and the United Kingdom, 1985 for Spain and West Germany, 1987 for Austria and Sweden, and 1988 for Denmark. It was possible to obtain this information for the survey years in all the countries except France and West Germany. Reported 1991 levels for these countries were adapted to the 1984 and 1985 situations respectively by applying average medical care and health services price indexes provided by the Organization for Economic Cooperation and Development (OECD) [7]. The information obtained was further checked by contacting one or two practising physicians involved in family planning in the countries concerned.

In the questionnaire, respondents were finally asked to contact condom outlet points for information on prices and a check was made to be sure that at least two outlets had been approached in each country. Unfortunately, it was only possible to ask for an estimate of the price levels for the reference years, since information on the actual prices was no longer available. The 1991 levels were therefore requested as well and both levels were subsequently compared with the pharmaceutical price indexes provided by the OECD in order to check whether the estimates were reasonable [7].

As a second step, the supply costs of intrauterine devices and oral contraceptives, reflecting the situation in the reference years, were obtained with the extensive help of the market research departments of Schering AG and Cilag GmbH (West Germany) and Organon International (Netherlands). For this purpose, only the major brands were considered, i.e. those which together accounted for 80% of the market share, the average price of these brands being calculated subsequently.

Table 1. Calculation of expenditure: cost factors taken into consideration

	<i>Supplies</i>	<i>Consultation</i>	<i>Including</i>
Oral contraceptives ¹	13 cycles/year	First prescription First check-up at 3 months Annual follow-up	Pelvic examination Pelvic examination Pelvic exam/smear
Intrauterine devices ¹	1 IUD/3 years 1 IUD/3 years	Insertion First check-up at 3 months Annual follow-up New insertion 3rd year	Pelvic examination Pelvic examination
Sterilization ²		Consultation Procedure	Semen analysis ³
Condoms ¹	100 condoms/year		

¹Duration of use: 15-44 years. ²Duration of use: 30-44 years. ³Only for male sterilization.

By combining the information from the abovementioned sources consumer expenditure on contraception was calculated, taking into account several important cost factors, which are summarized in Table 1. First, reimbursement policy was considered. Where reimbursement did not cover all the expenses, the consultation and supply or material costs were summed for the fertile-age period, which was arbitrarily set at 15-44 years. This seemed to be a reasonable approach, bearing in mind, that while many women will go on using contraception until their early fifties they will not use any contraception for several years during the fertile period because they wish to conceive.

In the case of oral contraceptives the calculations took into account the initial prescription, the first follow-up with a cervical smear at three months, the annual follow-up including a cervical smear and thirteen pill cycles per year. For those countries in which a pelvic examination was charged as a separate item, it was assumed that this was part of each consultation. Although usual practice undoubtedly varies between individual family planning workers, these assumptions, based on the recommendations in the F.I.G.O. Manual of Human Reproduction [8], probably reflect the average practice in the countries concerned in the reference years.

A similar approach was used for IUDs. The initial insertion and pelvic examination, the first follow-up after three months and annual follow-ups thereafter were taken into account, as well as a life of three years for the IUD itself. Although this has recently been extended considerably [9], a longer period was far from common practice in the reference years. Cervical smears were not included, since for other than oral contraceptives they are not strictly related to use of the method itself.

The assumptions concerning IUD use were based on the recommendations of the United States Food and Drug Administration at that time and the situation as reported in 1987 by the World Health Organization [10,11].

Table 2. Organization of family planning services and reimbursement policy according to country

	<i>Main provider</i>	<i>Reimbursement</i>		
		<i>Supplies</i>	<i>Consultation</i>	<i>Sterilization</i>
Italy	Gynaecologist	Nil	¹	Nil ²
France	Gynaecologist/obstetrician	Part	Part	Full
UK	GP/family planning clinic	Full	Full	Full ³
Spain	Gynaecologist	Nil	¹	¹
W-Germany	Gynaecologist	Nil	Full	Full
Austria	Gynaecologist	Nil	Nil	Nil
Sweden	Midwives	⁴	Full	⁴
Denmark	GPs	Nil	Full	Full

¹Depends on provider: public sector partly to fully reimbursed; private sector not reimbursed. ²Mainly performed in private practice. ³Unless performed in private practice. ⁴Small fixed charge.

In the case of sterilization the average age at which the procedure was performed was taken as 30 years [12]. The cost of the initial consultation, the procedure itself, and, for male sterilization, a postoperative semen analysis were all taken into account. For condoms an annual coital frequency of 100 was assumed, with the use of one condom without spermicides each time [13].

The level of consumer expenditure in many countries depends largely on the kind of physician consulted - general practitioner, family planning clinic doctor, gynaecologist or private consultant [14]. Since actual consultation fees for family planning were not available for most of the countries investigated, the findings of the International Health Foundation surveys were used [2-5]. These showed that the physician was considered to be the most important source of information regarding the method in current use, and also indicated the contribution made by each type of physician to the information process. Although the most important information source is not necessarily always the actual provider, this was felt on average to be the most accurate information available. Expenditure was weighted according to the contribution made by each type of physician to information provision on the method in current use.

Expenditure was arbitrarily expressed in Swiss francs. The average annual expenditure and the costs in the first year of use were calculated.

Finally, the calculated expenditure levels were related to the use rates of the various contraceptive methods for sexually active, fertile women aged 15-44 who were neither pregnant nor willing to get pregnant. The necessary data were obtained from the International Health Foundation surveys [2-5]. Pearson and Spearman rank correlation coefficients were calculated.

7.3. Results

Table 2 provides a broad overview of the organization of family planning services and cost reimbursement policy in the countries investigated. In most cases the gynaecologist appeared to be the main provider of contraception. Only in the United Kingdom and Denmark were general practitioners involved in family planning to any large extent, and the United Kingdom appeared to be the only country in which family planning clinics played a rather important consultation and prescribing role. In Sweden, approximately 60% of family planning consultations were handled by specially trained midwives under the supervision of a physician.

Most countries appeared to provide some sort of reimbursement for contraception costs, the exception being Austria. In general, the fees of physicians working in the public sector were reimbursed to some extent, whereas those of private physicians were not. Although sterilization could be obtained free of charge in the United Kingdom under the National Health Service, one-third of sterilizations were performed in private practice due to long waiting lists in the public sector and were consequently not reimbursed.

Table 3. Average annual consumer expenditure and costs in the first year of use, according to contraceptive method* (Swiss Francs)

	<i>Year</i>	<i>Annual</i>				<i>First year of use</i>			
		<i>OC</i>	<i>IUD</i>	<i>Condom</i>	<i>Ster.</i>	<i>OC</i>	<i>IUD</i>	<i>Condom</i>	<i>Ster.</i>
Italy	84	75.04	53.31	90.51	48.40	94.65	119.28	90.51	677.57
France	84	51.86	28.49	82.78	0.00	65.56	57.04	82.78	0.00
UK	84	0.00	0.00	57.44	19.24	0.00	0.00	57.44	269.42
Spain	85	78.49	58.01	105.95	9.84	101.69	130.53	105.95	137.75
W. Germ.	85	141.22	57.96	58.02	0.00	141.22	173.88	58.02	0.00
Austria	87	172.32	212.89	88.59	27.81	263.46	449.87	88.59	389.40
Sweden	87	63.45	0.00	61.16	2.01	63.45	0.00	61.16	28.20
Denmark	88	98.21	18.87	65.47	0.00	98.21	56.63	65.47	0.00

*OC = oral contraceptives, IUD = intrauterine device, Ster. = sterilization (average male and female).

Table 3 shows average annual consumer expenditure on contraception and costs in the first year of use.

Annual supply costs for oral contraceptives appeared to range from nil in the United Kingdom to 141.22 Swiss francs in West Germany. Annual consultation costs for having oral contraceptives prescribed ranged from nil in the United Kingdom, West Germany, Sweden and Denmark to 76.50 Swiss francs in Austria. There was no charge for an IUD in the United Kingdom, whereas women in Austria paid 60.47 Swiss francs. Consultation costs for the first year of IUD use ranged from nil in the United Kingdom, Sweden and Denmark to 389.40 Swiss francs in Austria. Annual expenditure on condoms varied from 57.44 Swiss francs in the United Kingdom to 105.95 Swiss francs in Spain. Sterilization was most expensive in Italy (677.57 Swiss francs) but did not cost anything in France, West Germany and Denmark. The high cost in Italy was due to the fact that sterilization was at that time performed almost exclusively in private practice, and not in the much less expensive public sector. In general, contraception costs were lower in the United Kingdom, because of the extensive coverage by the National Health Service, whereas Austrian users paid the most.

Table 4. Correlation between contraceptive method used and annual expenditure on contraception, and cost in the first year of use (correlation coefficients)

	<u>Annual</u>		<u>First year of use</u>	
	<i>Pearson</i>	<i>Spearman</i>	<i>Pearson</i>	<i>Spearman</i>
Oral contraceptives	0.17 (NS)	0.12 (NS)	0.17 (NS)	-0.02 (NS)
Intrauterine devices	-0.55 (NS)	-0.45 (NS)	-0.58 (NS)	-0.48 (NS)
Condoms	0.15 (NS)	0.16 (NS)	0.15 (NS)	0.16 (NS)
Sterilization	-0.25 (NS)	-0.45 (NS)	-0.25 (NS)	-0.45 (NS)

NS = $P > 0.05$

Subsequently, annual expenditure and costs in the first year of use were related to the use rates in the country concerned for the year investigated. Pearson and Spearman rank correlation coefficients are presented in Table 4. These failed to detect any significant correlation between the use of a method and what was paid for it ($P > 0.05$; lowest P value observed: $p = 0.13$). The absence of any relation between expenditure levels and use rates is also illustrated in Figures 1-4.

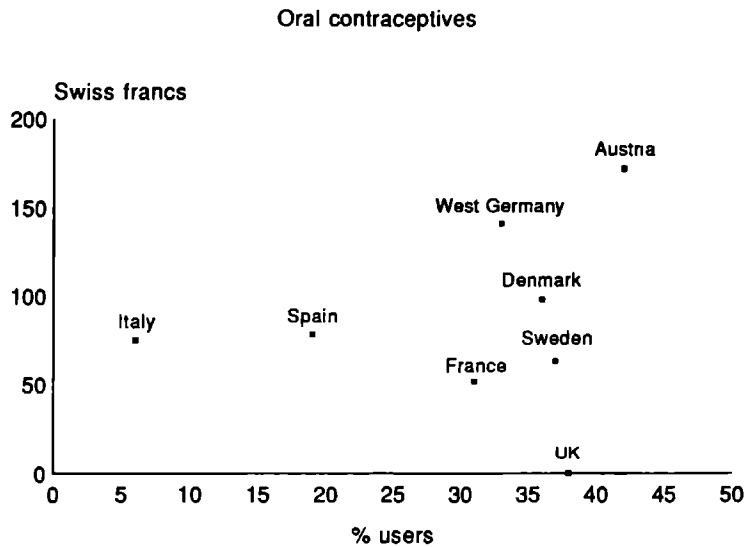


Figure 1. Annual expenditure on oral contraceptives and percentage of users (only sexually active, fertile women who were not pregnant, nor willing to get pregnant) according to country

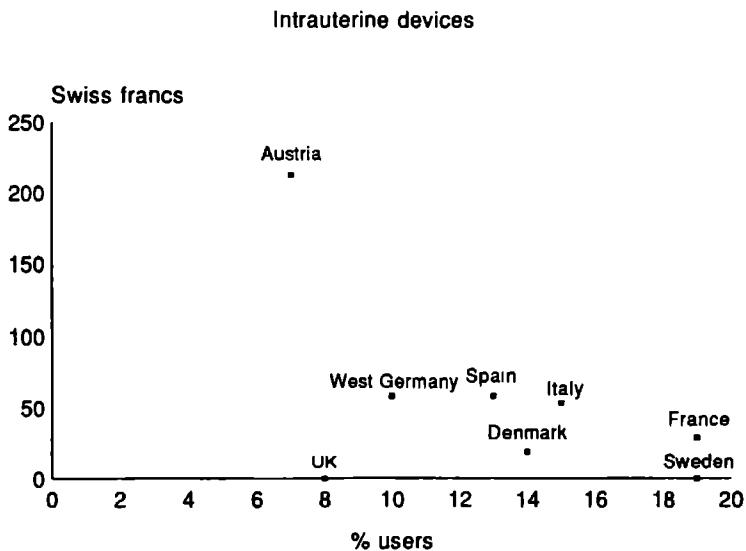


Figure 2. Annual expenditure on intrauterine devices and percentage of users (only sexually active, fertile women who were not pregnant, nor willing to get pregnant) according to country

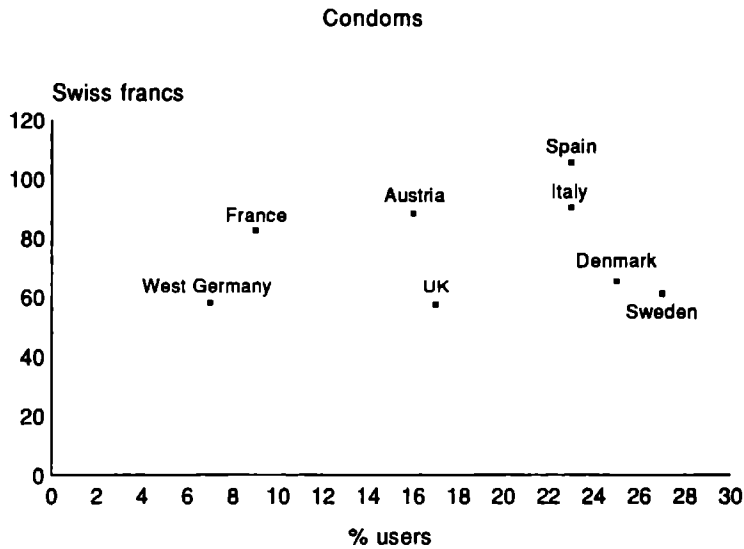


Figure 3. Annual expenditure on condoms and percentage of users (only sexually active, fertile women who were not pregnant, nor willing to get pregnant) according to country

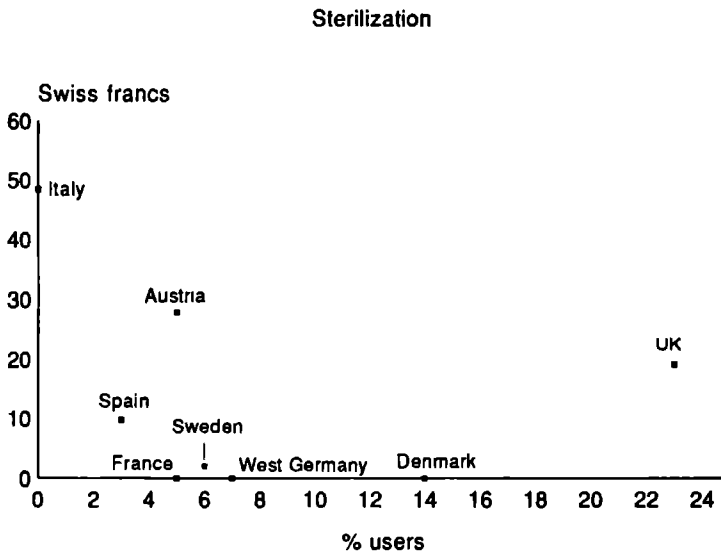


Figure 4. Annual expenditure on sterilization and percentage of users (only sexually active, fertile women who were not pregnant, nor willing to get pregnant, and who relied on their own or their partner's sterilization) according to country

7.4. Discussion

In order to assess whether differences in consumer expenditure on contraception might explain some of the variations in contraceptive practices that appeared to exist among Western European countries, the costs to users were calculated for eight countries. The charges payable for contraception appeared to vary tremendously; they were lowest in the United Kingdom and highest in Austria. This variation was largely explained by differences in reimbursement policy, as is illustrated by the fact that contraception costs are not reimbursed at all in Austria, whereas they are highly subsidised in the United Kingdom. Countries with intermediate expenditure levels (Sweden and Denmark) also appeared to have a fairly extensively developed reimbursement system.

Apart from the effects of reimbursement differences, the variations in expenditure were explained to a smaller extent by differences in the prices of supplies and materials. This factor was reported earlier by Kestelman [15], the differences probably being the result of policy decisions taken by health care officials and the marketing strategies adopted by pharmaceutical manufacturers, wholesalers and pharmacies in the countries concerned.

When consumer expenditure levels were related to the use rates of the various methods by sexually active, fertile women who were neither pregnant nor willing to get pregnant, no statistically significant association could be found.

In defining the calculation method used in this study it was necessary to make several assumptions. Check-up intervals and the diagnostic procedures used were somewhat arbitrarily determined, as was the number of condoms used annually. Moreover, in calculating annual expenditure it was assumed that couples would rely on a particular method throughout their fertile life, whereas use is generally made of several methods. However, in comparison with previous research work [16], or economic research in general [17], the calculations were based on quite detailed information, and the assumptions made as regards check-up frequency and diagnostic procedures may approximate common practice in the reference years. The results may therefore be a fairly accurate estimate of what users paid for their contraception in those years.

The finding that use rates were not related to expenditure on contraception adds an important nuance to the explanations adduced for the international variation in contraceptive practice. It suggests that, on average, costs do not affect acceptance, although there might of course be minorities for whom the expenses involved acts as a barrier to initial use of a method. The finding in fact applies to the general

population, and small subpopulations might not reflect the general behaviour pattern.

The fact that actual contraceptive prices payable by users do not appear to affect demand, as the present study indicates, does not imply that perceptions of those costs may retain people from adopting a method. Nevertheless, in this respect results of a study conducted among young single American women by Tanfer and Rosenbaum suggest that the perceived expenditure on a method does not determine whether women use a method either [18].

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Chapter 8

Demographic determinants of contraceptive use in Great Britain and Germany

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8.1. Introduction

In Western countries, modern, reliable methods of contraception, such as oral contraceptives (OCs), intrauterine devices (IUDs) and sterilization became available to the general public during the 1960s [1]. Almost immediately, from the 1960s onwards, research started into contraceptive use and related factors [2]. If we restrict our view to Western Europe, studies indicated that the use of a particular contraceptive method was related to characteristics such as age, educational level, socio-economic status, marital status, parity and religious persuasion [3-10]. The International Health Foundation surveys conducted in Western Europe during the 1980s indicated that an additional characteristic should be considered as being a relevant correlate of contraceptive use, namely the country concerned [6]. Despite the fact that the West European countries studied were relatively similar in terms of culture and economy, their contraceptive use patterns varied widely.

Our understanding of the determinants of contraceptive use is, however, still patchy. Many of the abovementioned correlates are interrelated (e.g. age and marital status, age and educational level, etc.) and few studies have undertaken multifactorial analyses in order to assess which of these correlates are independently related to contraceptive use. Questions remain, for example, as to whether the impact of marital status on contraceptive use might be secondary to that of age [5]. With respect to the country factor, it remains open to speculation whether the differences observed in contraceptive use were due entirely to 'cultural' differences (in terms of medical tradition, information provision or women's preferences [11,12,10]) or to some extent secondary to demographic differences between the populations concerned (as regards, for example, age, educational level and employment status). It is still not really known which characteristics might be considered to be the principal determinants of contraceptive use. Nevertheless, further information on these aspects might be expected to provide a valuable insight into the backgrounds to decisions taken in regard to contraceptive use.

Within this context, we explored in the present study the data from two representative national surveys conducted in Great Britain and Germany on contraceptive use among women. The results regarding contraceptive use itself have been presented elsewhere [13,14]. In the present paper, we focused on obtaining clearer information on the demographic determinants of this use (which included age, educational level, employment status, frequency of church attendance and the country concerned). Using multifactorial statistical techniques we sought to identify which of the factors studied were among the principal independent determinants of

contraceptive use.

8.2. Methods

8.2.1. Data

The data explored in the current study were from two population surveys that were conducted in Great Britain and reunified Germany in 1992. The fieldwork for these surveys has been described extensively elsewhere [13,14]. To summarize briefly, random samples of women aged 15-45 were selected, in Great Britain from the Electoral Registers ($n = 1,753$) and in Germany by random walk sampling ($n = 1,265$). Potential respondents were invited to participate by the fieldworkers in person and were handed a questionnaire to complete themselves and return by mail (Great Britain) or place in a sealed envelope to be collected at a later date by the fieldworkers (Germany).

The response rates were 55.2% and 84.1% respectively. The considerably lower rate in Great Britain was due to the fact that response depended entirely on the respondents' own initiative, whereas in Germany the fieldworkers' pick-up visits reinforced the commitment to participate.

In order to check whether there had been any major selection bias in the recruitment of the samples, certain demographic characteristics were compared against national census data. The comparisons showed that adolescents and women of low educational level were somewhat underrepresented in the samples, especially in Great Britain. The data for both countries were statistically weighted to correct for the atypical distribution as compared with the national figures. In the case of the British data a further check was made by comparing the weighted data on the use of oral contraceptives and intrauterine devices with available sales figures [13]. This latter comparison indicated that the weighted British results were reasonably accurate.

The questionnaire used in the surveys was identical for the two countries. The aspects covered by the questions included demographic characteristics, current pregnancy, desire to become pregnant, sexual activity, infertility problems, and current contraceptive use. The demographic characteristics investigated were age, degree of urbanization, marital status, parity, educational level, employment status, frequency of church attendance, having a steady sexual partner or not, and the wish to have (more) children. The relevant questions were all of the closed type, the possible answers being indicated in Tables 2 and 3. In the case of marital status these were 'married', 'cohabitating', 'divorced', 'widowed' or 'single'. The replies were

subsequently combined into two categories, viz. 'never married' and 'ever married'. The highest level of education reached by a respondent was 'primary', 'GCE O level or equivalent' and 'GCE A level or above' (Great Britain) and 'Grundschule', 'Realschule/Berufsfachschule' and 'Gymnasium/ Fachhochschule/ Universität' (Germany). Despite the differences in the educational systems in the countries studied, these levels were considered to correspond and will be referred to as 'primary', 'secondary' and 'higher' in this report. For the German women, the previous country (West or East Germany) was derived from a question about the province of residence. Since it was not known whether women from Berlin originated from West or East Germany before reunification, they were not included in analyses where the previous-country variable was taken into account.

The question on contraceptive use related to the 'main method currently used'. However, various combinations of contraceptive methods were reported incidentally. In this paper, the users of combinations of OCs and barrier methods (double protection against pregnancy and sexually transmitted diseases) were grouped together with the users of OCs only. The users of combinations of different periodic abstinence techniques and the users of combinations of periodic abstinence and barrier methods on 'unsafe' days were classified into a single 'periodic abstinence' category. This system of classification of contraceptive use was closely in line with the conventions adopted in previous surveys [6,15].

8.2.2. Analysis

Since our aim was to study contraceptive use, women who did not need contraception were excluded from the analysis. Consequently, data were analyzed only for those respondents who defined themselves as fertile and who were sexually active, not pregnant and not trying to get pregnant at the time of the survey, i.e. 'exposed' women [5].

Current contraceptive use by 'exposed' respondents was analyzed against the abovementioned demographic characteristics as potential explanatory variables. After initial unifactorial analyses, unrotated principal components analysis was carried out to determine the extent to which the explanatory variables studied were related to contraceptive use and in how far their impact was interrelated. Principal components analysis extracts factors which are unrelated to each other from a given set of quantitative and/or qualitative variables, without requiring any particular assumption as to the underlying patterns of causality [16]. In the present study, this technique was applied to the frequency counts corresponding to use of each contraceptive method within the categories of the potential explanatory variables. This method yielded

factor loadings for use of the contraceptive methods and estimated factor scores for the original explanatory variable categories. Subsequently, the factors extracted served as the axes of a scatter plot in which the various variables and contraceptive methods were graphically presented according to their scores and loadings. By means of this procedure, it was possible to show in visual form the relationships between contraceptive use and the explanatory variables, as well as interrelated influences exerted by the latter: the greater the distance between a specific variable and the use of a contraceptive method in the scatter plot, the less related they were, and vice versa. The closer together two explanatory variables were when plotted, the more interrelated was their impact on contraceptive use, and vice versa.

In order to evaluate further the independent effects of the explanatory variables on contraceptive use, we applied the ELISEE method (Exploration des Liaisons et Interactions par Segmentation d'un Ensemble Expérimental; [17]). ELISEE is an exploratory, discriminant analysis technique of the stepwise segmentation type which is suitable for categorical variables (such as the contraceptive use variable). In brief, the dependent variable (contraceptive use) was analyzed against all potential explanatory variables, which had been transformed into new binary variables, the number of which depended on the number of categories into which the original variable fell, e.g. educational level (three categories) was dichotomized into three new binary variables, and age (six categories) into fifteen such variables. The strength of the associations between the new binary variables and contraceptive use was expressed by a discrimination ratio based on Cramer's *phi* coefficients and the variance of contraceptive use in the total sample. Statistical significance was assessed by means of *chi*-square tests. The binary explanatory variable which showed the strongest association with contraceptive use was retained as the first correlate of contraceptive use. According to this variable, the original study population was subdivided into two subgroups (segments) and the procedure was then repeated with the remaining explanatory variables for the contraceptive use patterns observed in these segments. Analysis ceased where the number of respondents in a segment was lower than 30 or the associations between contraceptive use and the remaining explanatory variables were no longer significant. The results were summarized in the form of a tree diagram in which the retained (dichotomized) variables, their discrimination ratios and the resulting sample segments were represented. The effects of each explanatory variable, taking into account the effects of previously selected variables, could then be seen from the contraceptive use patterns in the resulting sample segments.

8.3. Results

Of the 967 British and 1064 German women surveyed, 67.1% and 75.7% respectively were defined as being 'exposed'. Data on contraceptive use were available for 646 and 803 of these women respectively.

In Tables 1 to 3 contraceptive use by 'exposed' respondents is presented according to the various demographic characteristics considered. The contraceptive use categories distinguished were OCs, IUDs, condoms, periodic abstinence, female sterilization, male sterilization, a combined coitus interruptus and no method at all group, and a small remaining group ('other') which included the use of diaphragms, spermicides and injectable steroids.

Table 1. Current contraceptive use according to (previous) country, expressed as percentages ('exposed' women^a only)

	<i>OC</i>	<i>IUD</i>	<i>CD</i>	<i>PA</i>	<i>FST</i>	<i>MST</i>	<i>CINO</i>	<i>Other</i>	<i>n</i>
- West Germany	50.8	13.1	11.7	7.1	8.6	3.2	3.4	1.9	582
- East Germany	61.8	11.6	10.4	8.7	3.0	0.0	4.5	0.0	128
- Great Britain	39.3	7.3	19.6	1.5	10.1	16.0	4.7	1.6	646

$X^2 = 145.1, P < 0.001$

^a 'exposed' = fertile, sexually active women who were not pregnant at the time of the survey and did not wish to get pregnant. OC = oral contraceptives, IUD = intrauterine device, CD = condoms, PA = periodic abstinence, FST = female sterilization, MST = male sterilization, CINO = coitus interruptus or not using any method.

8.3.1. Associations between the various demographic characteristics and contraceptive use

Table 1 shows that there were distinct differences in contraceptive use patterns among the countries studied. East Germany was treated as a specific previous country in this Table, while Berlin women and German women whose place of residence was not known were excluded. Marked differences were seen between the two Germanies and Great Britain. In West and East Germany the OC and periodic abstinence use rates were higher and that of sterilization lower than in Great Britain.

In the Tables 2 and 3 the results are shown separately for Great Britain and Germany as a whole (given the fairly small number of respondents from East Germany and the similarities in contraceptive use there and in West Germany, all the German respondents included in the survey were grouped together in these Tables). Taking the aforementioned general differences between the countries into consideration, the specific associations between the demographic characteristics and

Table 2. Current contraceptive use by country according to age, degree of urbanization, marital status and parity, expressed as percentages ('exposed' women only)

<i>Characteristics</i>	<i>OC</i>	<i>IUD</i>	<i>CD</i>	<i>PA</i>	<i>FST</i>	<i>MST</i>	<i>CINO</i>	<i>Other</i>	<i>n</i>
Age									
Germany									
- 15-19 years	76.6	4.1	8.8	4.1	0.0	0.0	2.3	4.1	59
- 20-24 years	71.1	0.0	12.1	12.9	1.3	0.0	0.0	2.6	135
- 25-29 years	65.6	9.0	12.4	3.5	4.1	0.0	4.4	1.0	137
- 30-34 years	53.0	17.5	7.8	8.4	2.5	4.6	4.0	2.2	159
- 35-39 years	43.5	19.3	12.7	7.1	8.3	4.7	3.6	0.7	154
- 40-45 years	29.0	16.3	11.6	6.8	23.2	4.2	7.4	1.5	159
$X^2 = 183.2, P < 0.001$									
Great Britain									
- 15-19 years	64.4	0.0	26.6	0.0	0.0	0.0	8.9	0.0	54
- 20-24 years	69.7	3.0	21.1	0.0	0.0	3.1	3.1	0.0	99
- 25-29 years	51.7	11.0	20.4	1.8	5.8	5.5	1.8	1.8	136
- 30-34 years	40.0	6.5	14.8	3.1	9.5	21.2	3.4	1.5	111
- 35-39 years	17.1	8.2	20.5	1.2	19.1	28.6	2.3	2.9	115
- 40-45 years	11.7	9.4	18.0	1.8	18.9	27.7	10.1	2.3	131
$X^2 = 204.1, P < 0.001$									
Degree of urbanization									
Germany									
- < 10,000 inhabitants	53.3	12.6	13.8	6.4	7.7	2.9	2.7	0.6	220
- 10,000 - 100,000	51.9	13.6	10.9	6.4	10.6	2.1	4.2	0.4	267
- > 100,000	53.7	11.1	9.4	9.3	5.3	3.1	4.1	4.0	297
$X^2 = 23.7, P < 0.05$									
Great Britain									
- < 10,000 inhabitants	32.8	8.2	18.9	1.1	13.4	18.5	5.6	1.5	224
- 10,000 - 100,000	38.5	6.8	20.3	1.0	10.6	16.5	5.1	1.3	240
- > 100,000	51.3	6.6	21.5	2.7	3.7	8.9	2.6	2.6	154
$X^2 = 28.6, P < 0.05$									
Marital status									
Germany									
- never married	72.0	2.9	10.3	9.9	1.0	0.2	1.4	2.4	249
- ever married	44.9	16.4	11.4	6.3	10.6	3.7	5.0	1.5	554
$X^2 = 87.8, P < 0.001$									
Great Britain									
- never married	61.8	3.2	22.8	0.9	3.3	1.3	5.4	1.3	207
- ever married	28.5	9.2	18.1	1.8	13.3	22.9	4.3	1.8	437
$X^2 = 104.2, P < 0.001$									
Parity									
Germany									
- no children	70.9	3.6	9.9	8.4	1.8	0.4	2.8	2.3	286
- 1-2 children	45.6	18.3	12.2	6.9	8.4	2.8	4.7	1.2	421
- 3 or more children	34.9	11.5	9.8	7.1	21.6	8.7	3.5	3.0	96
$X^2 = 119.3, P < 0.001$									
Great Britain									
- no children	65.4	0.0	22.3	0.9	0.3	3.8	6.0	1.2	187
- 1-2 children	31.4	11.1	21.4	2.3	7.3	21.8	2.8	2.0	318
- 3 or more children	20.7	9.0	11.3	0.5	31.8	20.6	4.7	1.4	130
$X^2 = 186.4, P < 0.001$									

For abbreviations see Table 1

Table 3. Current contraceptive use by country according to educational level, employment status, church attendance, steadiness of relationship and future child wish, expressed as percentages ('exposed' women only)

<i>Characteristics</i>	<i>OC</i>	<i>IUD</i>	<i>CD</i>	<i>PA</i>	<i>FST</i>	<i>MST</i>	<i>CINO</i>	<i>Other</i>	<i>n</i>
Educational level									
Germany									
- primary	47.1	16.7	10.9	3.5	13.6	3.1	4.3	0.8	357
- secondary	59.4	9.3	11.7	7.3	4.4	2.8	4.3	0.8	250
- higher	56.5	8.4	9.0	15.6	0.8	1.8	2.6	5.3	175
$X^2 = 85.5, P < 0.001$									
Great Britain									
- primary	30.3	9.1	16.2	0.0	15.2	23.2	6.1	0.0	208
- secondary	43.2	7.8	16.5	1.1	9.6	15.1	4.8	2.0	242
- higher	43.5	4.5	28.4	3.5	5.0	8.9	3.2	3.1	184
$X^2 = 57.8, P < 0.001$									
Employment status									
Germany									
- no job	56.5	11.6	10.1	8.4	7.6	1.7	1.5	2.6	347
- in paid employment	51.0	12.7	11.8	6.7	7.6	3.4	5.7	1.1	456
$X^2 = 16.1, P < 0.05$									
Great Britain									
- no job	39.2	7.9	20.3	1.4	10.5	14.3	5.1	1.4	283
- in paid employment	39.4	6.8	19.1	1.6	9.8	17.3	4.4	1.8	363
$X^2 = 1.8, P > 0.05$									
Church attendance									
Germany									
- hardly ever	54.5	12.7	11.1	6.7	7.3	2.6	3.5	1.7	636
- once a month	40.6	15.3	6.7	14.7	16.8	1.9	0.9	3.2	55
- once a week	42.5	3.8	22.0	15.5	3.6	4.7	7.1	0.9	52
$X^2 = 32.7, P < 0.01$									
Great Britain									
- hardly ever	42.7	7.0	16.9	1.1	10.2	15.9	4.8	1.4	540
- once a month	16.9	5.9	36.1	5.2	7.1	15.5	9.9	3.3	35
- once a week	21.7	8.5	34.6	3.4	11.6	16.0	0.9	3.4	60
$X^2 = 36.2, P < 0.01$									
Steady sexual partner									
Germany									
- yes	53.8	12.6	10.3	7.4	7.6	2.7	3.9	1.6	715
- no	52.5	2.9	26.9	12.4	4.1	0.0	0.0	1.3	42
$X^2 = 17.5, P < 0.05$									
Great Britain									
- yes	39.2	7.4	18.9	1.5	10.1	16.8	4.1	1.7	610
- no	40.5	1.8	31.8	1.8	9.4	1.7	12.9	0.0	36
$X^2 = 15.6, P < 0.05$									
Wish to have (more) children									
Germany									
- yes	62.8	7.8	12.3	9.4	2.3	0.4	3.3	1.8	413
- no	46.2	16.2	10.5	5.1	10.7	4.8	4.4	2.1	322
$X^2 = 63.0, P < 0.001$									
Great Britain									
- yes	58.3	4.2	23.4	2.0	3.2	2.6	4.9	1.5	326
- no	20.1	10.4	15.8	1.0	17.2	29.4	4.4	1.8	320
$X^2 = 178.7, P < 0.001$									

For abbreviations: see Table 1.

contraceptive use observed in Germany and Great Britain were often of the same nature and magnitude.

It was found in both countries that OC use declined with rising age, whereas the use of IUDs and sterilization increased. The use of coitus interruptus and no method at all was greatest in the oldest age group in the two countries. In Great Britain (but not in Germany) it was observed that the use rate of OCs was higher in urban than in rural areas, whereas the opposite was the case for sterilization. In both countries, the periodic abstinence use rate was somewhat higher in the larger cities, i.e. those with a population of over 100,000.

The use rates of IUDs and sterilization were higher, and that of OCs lower, among married women as compared with women who had never married in both countries. OC use declined with increasing parity, while IUD use was greater after women had had at least 1-2 children. Reliance on sterilization increased progressively with parity. With respect to educational level, OC use was greater among women who had completed at least secondary education and the use of periodic abstinence increased progressively with educational level. In contrast, the use of IUDs, sterilization and coitus interruptus/no method declined with rising educational level.

No clear trends were observed with respect to employment status. Increasing frequency of church attendance was associated with more use of condoms and periodic abstinence and less frequent use of OCs, but it should be noted that the number of respondents who regularly attended church services was small. Having occasional sexual partners was related to a higher condom use rate and lower use rates of IUDs and sterilization. When women who used condoms in combination with another contraceptive method were also taken into account, it emerged that 34% of the women who had occasional sexual partners in Germany and 42% of those in Great Britain used condoms. In Great Britain it was noteworthy that the reliance on coitus interruptus/no method was relatively high in the small group of respondents who had occasional sexual partners. Finally, it was observed that among women who wished to have children in later life, or to have more children, the use rates of OCs and condoms (the latter in Great Britain only) were higher, and those of IUDs and sterilization lower, than among women who had completed their childbearing.

In Table 4 the results are combined for the two countries. Since employment status was not significantly associated with the contraceptive-use variable, it was disregarded in further analyses.

8.3.2. Effects of the demographic characteristics considered together

Up to this stage, only the separate effects of the various demographic

Table 4. Relation between current contraceptive use (percentages) and various demographic characteristics for the two countries combined ('exposed' women only)

<i>Characteristics</i>	<i>OC</i>	<i>IUD</i>	<i>CD</i>	<i>PA</i>	<i>FST</i>	<i>MST</i>	<i>CINO</i>	<i>Other</i>	<i>n</i>
Age									
- 15-19 years	70.8	2.1	17.3	2.1	0.0	0.0	5.5	2.1	113
- 20-24 years	70.5	1.3	16.0	7.4	0.7	1.3	1.3	1.5	234
- 25-29 years	58.7	10.0	16.4	2.6	5.0	2.8	3.1	1.4	273
- 30-34 years	47.7	13.0	10.6	6.2	5.4	11.4	3.8	1.9	270
- 35-39 years	32.2	14.5	16.1	4.6	13.0	14.9	3.1	1.7	268
- 40-45 years	21.2	13.2	14.5	4.6	21.3	14.8	8.6	1.9	290
$X^2 = 328.0, P < 0.001$									
Degree of urbanization									
- < 10,000 inhabitants	42.9	10.4	16.4	3.7	10.6	10.8	4.2	1.0	445
- 10,000 - 100,000	45.6	10.3	15.3	3.8	10.6	8.9	4.6	0.9	507
- > 100,000	52.9	9.6	13.5	7.1	4.8	5.1	3.6	3.5	450
$X^2 = 46.4, P < 0.001$									
Marital status									
- never married	67.4	3.1	16.0	5.8	2.0	0.7	3.2	1.9	456
- ever married	37.7	13.2	14.4	4.3	11.8	12.2	4.7	1.6	991
$X^2 = 176.4, P < 0.001$									
Parity									
- no children	68.7	2.1	14.8	5.4	1.2	1.7	4.1	1.8	473
- 1-2 children	39.5	15.2	16.1	4.9	7.9	11.0	3.9	1.5	739
- 3 or more children	26.7	10.0	10.7	3.3	27.5	15.5	4.2	2.1	226
$X^2 = 294.8, P < 0.001$									
Educational level									
- primary	40.9	13.9	12.8	2.2	14.2	10.5	4.9	0.5	566
- secondary	51.4	8.6	14.1	4.2	6.9	8.9	4.5	1.4	491
- higher	49.8	6.4	18.9	9.4	2.9	5.4	2.9	4.2	360
$X^2 = 112.6, P < 0.001$									
Employment status									
- no job	48.7	9.9	14.7	5.2	8.9	7.3	3.1	2.1	630
- in paid employment	45.8	10.1	15.0	4.4	8.6	9.5	5.1	1.4	819
$X^2 = 7.5, P = 0.05$									
Church attendance									
- hardly ever	49.1	10.0	13.7	4.1	8.6	8.7	4.1	1.5	1176
- once a month	31.4	11.6	18.1	11.0	13.1	7.2	4.4	3.2	89
- once a week	31.3	6.3	28.8	9.0	7.9	10.7	3.8	2.2	112
$X^2 = 45.6, P < 0.001$									
Steady sexual partner									
- yes	47.0	10.3	14.3	4.7	8.8	9.2	4.1	1.7	1325
- no	47.0	2.4	29.1	7.5	6.6	0.8	6.0	0.7	78
$X^2 = 24.2, P < 0.01$									
Wish to have (more) children									
- yes	60.8	6.2	17.2	6.1	2.7	1.4	4.0	1.7	739
- no	33.2	13.3	13.1	3.0	13.9	17.1	4.4	1.9	641
$X^2 = 237.2, P < 0.001$									

For abbreviations see Table 1

characteristics on contraceptive use had been considered. However, as can be seen from Table 5, many of the characteristics investigated were interrelated. In order to explore further the impact of the possible explanatory variables on contraceptive use,

taking interrelated effects into consideration, a principal components analysis was carried out (Table 6). The 'other' group listed under contraceptive methods was disregarded for this purpose.

Table 5. Interrelationships between the various demographic characteristics considered, expressed as level of significance^a ('exposed' women only)

<i>Characteristics</i>	<i>Previous country</i>	<i>Age</i>	<i>Degree of urbanization</i>	<i>Marital status</i>	<i>Parity</i>	<i>Educational level</i>	<i>Church attendance</i>	<i>Steady sexual partner</i>
Previous country	-							
Age	NS	-						
Degree of urbanization	0.000	0.005	-					
Marital status	NS	0.000	0.000	-				
Parity	0.000	0.000	0.000	0.000	-			
Educational level	0.000	0.000	0.000	0.000	0.000	-		
Church attendance	0.022	NS	NS	0.024	NS	0.000	-	
Steady sexual partner	NS	0.000	NS	0.000	0.000	NS	NS	-
Wish to have (more) children	NS	0.000	0.014	0.000	0.00	0.000	NS	0.000

^a *chi*-square test. NS = not significant.

From this analysis, the contraceptive methods investigated emerged in rather distinct positions on the graph, with the exception of the two forms of sterilization, which were grouped together. In Figure 1, the two principal components explained 70.0% of the variance in contraceptive use observed (factor 1: 49.4%; factor 2: 20.6%). The curved lines in Figure 1 did not result from the analysis but were added later in order to facilitate interpretation of the effects of age and parity (see further). The positions of the contraceptive methods relative to the explanatory variables reflected the extent to which they were related to these variables. Consequently, their rather distinct positions on the graph indicated that the users of the methods had distinct profiles with respect to their demographic characteristics, thus confirming many of the observations reflected in Tables 1-4.

As to these profiles, it emerged that OC use was between rather and very close to never having been married ('single'), the wish for (more) children in later life ('child wish+'), current childlessness ('child0') and younger rather than older age. Periodic abstinence use was moderately related to East and West Germany, the 20-24 and 30-34 age strata and the highest degree of urbanization. IUD use was mainly associated with the 30-34 and 35-39 age strata. Reliance on either form of sterilization was between rather and very close to being married, being of lower educational level, living in a rural area, having 3 children or more and having no further wish to bear

children in later life. The use of coitus interruptus/no method was closely associated with being British. It was observed that this category (CINO) fell exactly between the youngest (15-19 years) and oldest (40-45 years) age strata. Condom use appeared to be rather independent within the overall picture, since it was only moderately close to frequent church attendance, being British, the 15-19 age stratum and having occasional sexual partners.

In addition, it should be noted that the impact of the age, parity, marital status, and future child wish factors on contraceptive use evolved in parallel patterns on the graph (as indicated by the curved lines in Figure 1). The factors mentioned largely matched with the first principal component extracted in the analysis, while the variables concerned were highly interrelated (Table 5). Overall, this suggests that these variables expressed the impact of a common underlying characteristic [16], which may, given the variables concerned, be termed the 'reproductive status' of the respondents (either actively postponing or spacing pregnancies, or having completed childbearing).

8.3.3. Principal determinants of contraceptive use

In order to investigate which variables principally explained current contraceptive use, we subsequently carried out an ELISEE segmentation analysis. Users of either form of sterilization were grouped together. The possible explanatory variables considered were age, country, degree of urbanization, educational level, frequency of church attendance, steadiness of sexual relationships and future child wish (to avoid including too many variables that represented a common factor in the analysis, we selected the future child wish variable, rather than parity or marital status, as more accurately reflecting the effects of 'reproductive status' outlined above¹). The results of the ELISEE analysis are presented in tree-diagram form in Figure 2.

Taking the impact of all possible explanatory variables into consideration, the ELISEE analysis identified the future child wish variable as being that most strongly related to current contraceptive use. By reference to this variable, the total sample was subdivided into two segments, one in which relatively greater use was made of OCs (women wishing to have (more) children in later life) and another in which greater

1 Inclusion of parity or marital status, instead of future child wish, in the analysis gave essentially the same results, viz. that the first variables extracted reflected the underlying 'reproductive status' factor (represented by a subsequent combination of age and parity, or age and marital status). However, the predictive value of these alternative analyses was less optimal, the discrimination ratio of the first variable extracted being 211.00 (while inclusion of future child wish resulted in a ratio of 230.75).

Table 6. Principal components analysis of use of the various contraceptive methods according to the demographic characteristics (factor loadings), and factor scores for these characteristics

<i>Factor loadings</i>	<i>Factor 1</i>	<i>Factor 2</i>
Contraceptive method		
- oral contraceptives	0.911	0.035
- intrauterine device	-0.768	0.480
- condoms	0.269	-0.661
- periodic abstinence	0.305	0.543
- female sterilization	-0.913	-0.027
- male sterilization	-0.906	-0.001
- coitus interruptus/no method	-0.466	-0.693
<i>Factor scores</i>	<i>Factor 1</i>	<i>Factor 2</i>
Country		
- West Germany	0.156	0.660
- East Germany	0.573	0.697
- Great Britain	-0.459	-0.690
Age		
- 15-19	0.904	-0.974
- 20-24	1.385	0.444
- 25-29	0.443	0.062
- 30-34	-0.226	0.465
- 35-39	-0.728	0.321
- 40-45	-1.513	-0.558
Degree of urbanization		
- < 10,000 inhabitants	-0.312	-0.030
- 10,000 - 100,000	-0.253	-0.143
- > 100,000	0.345	0.400
Marital status		
- never married	1.017	0.007
- ever married	-0.618	-0.045
Parity		
- no children	0.976	-0.154
- 1-2 children	-0.398	0.228
- 3 or more children	-1.255	0.108
Educational level		
- primary	-0.713	-0.054
- secondary	0.035	0.050
- higher	0.573	0.220
Church attendance		
- hardly ever	-0.089	0.082
- once a month	-0.253	0.424
- once a week	0.093	-0.425
Steady sexual partner		
- yes	-0.130	0.137
- no	0.564	-1.285
Wish to have (more) children		
- yes	0.755	-0.091
- no	-0.874	0.146

use was made of IUDs and sterilization (no future child wish).

Within the subsample of women who wished to have more children, the analysis compared the upper and lower age strata, age being the most discriminating variable within this subsample. The use of IUDs, coitus interruptus/no method and sterilization was more frequent in the small subsample of women aged 35-45 years,

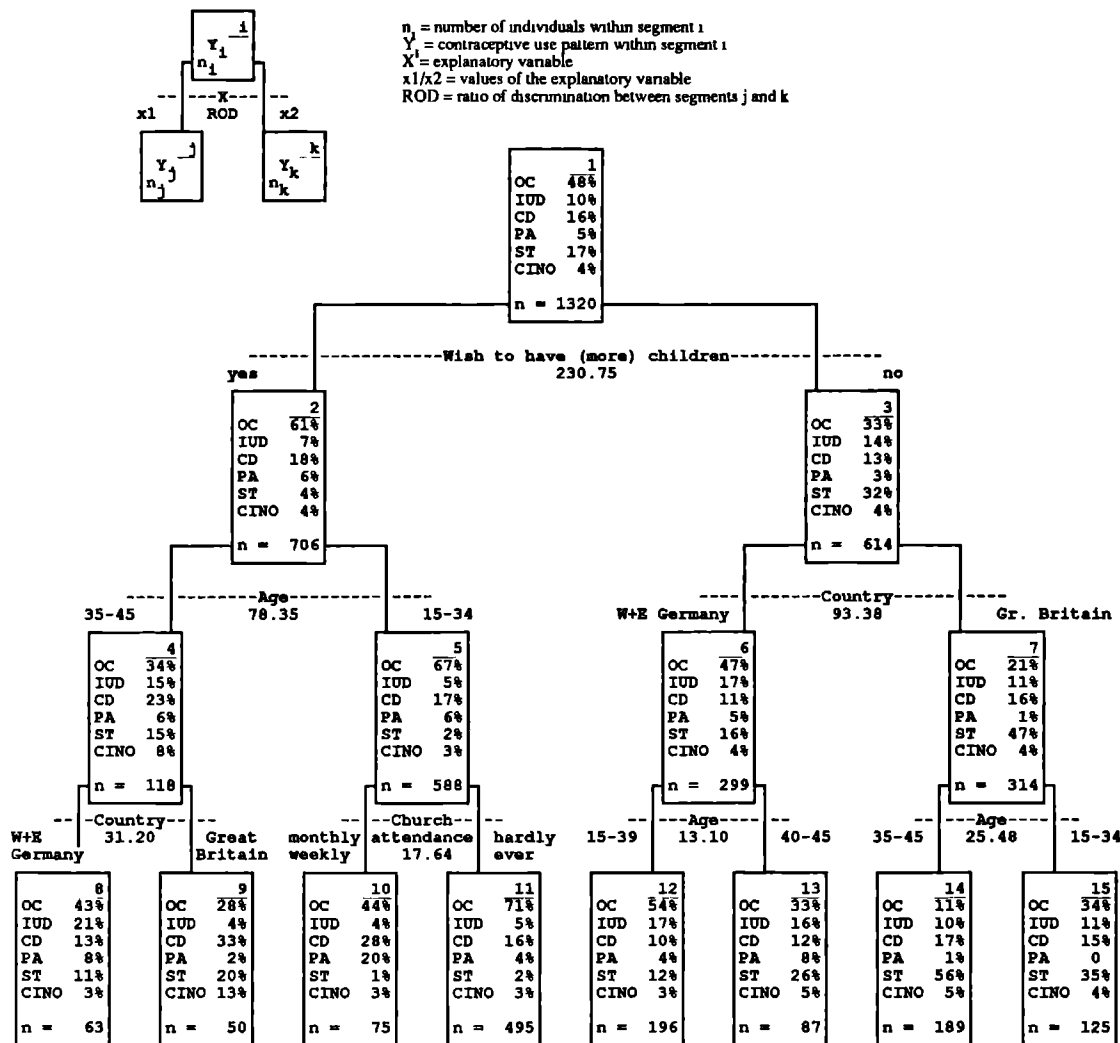


Figure 2. Segmentation analysis of contraceptive use (ELISEE method). OC = oral contraceptives, IUD = intrauterine device, CD = condoms, PA = periodic abstinence, ST = sterilization, CINO = coitus interruptus/ no method.

in the ELISEE analysis), and more use of condoms and sterilization in Great Britain.

In subsequent splits, the country, church attendance and age variables were (again) identified as relevant explanatory variables. The subsamples derived were characterized by a relatively greater use of IUDs and periodic abstinence (segment 8),

condoms and coitus interruptus/no method (9), condoms and periodic abstinence (10), OCs (11), IUDs (12,13), periodic abstinence (13), sterilization (14,15) and OCs (15).

With respect to the various subsamples it can be seen from Figure 2 that current OC use was greatest among women who wished to have (more) children, were aged 15-34, and hardly ever attended church (segment 11). IUD use was greatest among German women of younger but also and mainly older age (segments 4, 6, 8, 12 and 13). Condom use was greatest in the small subsets of British women aged 35-45 who wished to have more children (segment 9) and of women aged 15-34 who regularly attended church services (segment 10). In the subset of British women aged 35-45 with a possible wish for more children (segment 9), it was also found that the use rate of coitus interruptus/no method was the highest observed. Periodic abstinence use was greatest in the small subset of regular church attenders aged 15-34 who wished to have more children (segment 10), but was also relatively high among German women aged over 35 with (segment 8) or without a further child wish (segment 13). The highest sterilization use rates were generally associated with being British (segments 7, 14 and 15).

8.4. Discussion

In order to obtain a better insight into user's contraceptive decisions, we explored demographic determinants of contraceptive use in Great Britain and Germany, since we felt that these might indirectly provide valuable information about the choices made.

It emerged that current contraceptive use varied considerably between the countries studied, the use rates of OCs, IUDs and periodic abstinence being higher in Germany and those of sterilization and condoms being higher in Great Britain. OCs were found to be used more frequently by young, single women of low parity, whereas IUDs and sterilization were used by older, married women of higher parity, which accorded with previous reports [4,6,10]. In Great Britain, in particular, a relatively higher use rate of condoms and coitus interruptus/ no method was noted in the adolescent group. In line with previous studies, OC use was found to be related to higher educational level [3,5,9] and sterilization to lower educational level [5,8].

In addition, it emerged that the use of periodic abstinence was more predominant among women of higher educational level, while that of coitus interruptus/no method was more frequent among women of lower educational level. Periodic abstinence was more frequently used in urban areas and sterilization in rural

areas. As reported in the studies by Riphagen and Lehert [5] and Vennix [7], more frequent church attendance was associated with lower OC use rates and higher use rates of condoms and periodic abstinence. To some extent, having occasional sexual partners determined condom use among the respondents concerned.

Despite the many interrelationships between the factors considered, the multifactorial analyses conducted indicated that the associations we selected for discussion above were relatively independent in nature, and thus not too fully explained by the confounding effects of other correlates. The age, marital status, parity and future child wish factors constituted exceptions, in that their impact on contraceptive use was highly interrelated and seemed to express the effect of a common underlying factor, which might be defined as the 'reproductive status' of the respondents. The segmentation analysis confirmed in a more quantitative way the observations that tentatively emerged from the principal components analysis and indicated that the reproductive status factor was the principal determinant of current contraceptive use in the samples investigated. In addition to the observations made so far, the segmentation analysis highlighted some further differences between the countries studied, there being a relatively higher use rate of OCs and periodic abstinence among older women in Germany and greater use of sterilization and condoms among older women in Great Britain.

8.4.1. Contraceptive choices as against contraceptive careers

The current results indicated that condom use and reliance on luck and coitus interruptus were to a certain extent associated with belonging to the youngest age strata. OCs were the most frequently used method among younger women, but were gradually being replaced by IUDs and, subsequently, sterilization in the older strata. These findings accorded very well with previous reports that young people primarily relied on condoms during their first sexual encounters, but also used no method at all in an estimated 10-30% of cases [18-21]. With increasing sexual and contraceptive experience, women progressively adopted OCs [1] and subsequently changed to IUDs after their first baby had been born (IUDs being less suitable for nulliparous women) or sterilization (male or female) when the final family size had been achieved [22]. The fact that reproductive status currently emerged as the principal determinant of contraceptive use indicated that such a sequence of methods might be regarded as the contraceptive career that is widely followed within the populations studied, albeit in Great Britain to a greater extent than in Germany. Although the relevance of reproductive status to contraceptive use has been indirectly suggested by previous investigations (Riphagen and Lehert [5] found in their unifactorial analyses that age

and future child wish were associated with contraceptive use), this is probably the first report to confirm the overwhelming impact of this factor on contraceptive use.

It has previously been suggested that the decline observed in OC use with advancing age, and subsequent switching to an IUD or sterilization, might be related to still widespread erroneous perceptions that OCs are a less suitable method for older women [23] which should not be used for too long because of the health risks involved [24]. It is important to note that such switching from OCs with increasing age seemed not only to result in higher use rates of IUDs and sterilization, but also in greater use of the less reliable methods of periodic abstinence (Germany) and condoms and coitus interruptus/no method (Great Britain). This might explain the relatively high unplanned pregnancy rates that have generally been observed among women aged over 35 [23,25]. OCs can nowadays be safely used up to the time of the menopause by non-smokers [26], and could have been a valuable option for the older women who adopted less reliable methods. In general, the question arises as to whether more explicit counselling about the complete range of available contraceptive methods, as well as the development of new reliable methods, might not enable couples to make more specific contraceptive choices, rather than follow a kind of predetermined contraceptive career.

8.4.2. Variation in contraceptive use between countries

It clearly emerged that the variation in contraceptive use between the countries studied was inherent to the country factor itself and not due, for example, to the demographic differences between the countries. Demographic influences, such as the employment factor, have been held responsible for differences in fertility and contraceptive transitions across Europe [11], but they were not found to play a role in the countries investigated in the present study. It is open to question whether differences between countries within the Western world [1] are due to sociodemographic differences to any great extent. Other factors which underlie contraceptive decisions might in fact play a more important role. Indeed, further scrutiny of the present results identified some such apparently underlying factors.

We found that British adolescents relied more frequently on condoms and coitus interruptus/no method than German adolescents, who used OCs more often. It might be suggested that sex education is less effective in Britain than in Germany, or that teenagers experience more difficulties in having access to contraceptive services, either because of parental factors or the organization of the services themselves. We are not aware of any comparative data on these aspects in the two countries. There have, however, been repeated reports that British sex education is not organized in the

most optimal fashion [27], that contraceptive services in Britain are not always well adapted to the needs of teenagers [28,29] and that British teenagers fear that their contraceptive consultations might be revealed to their parents [30]. Improvements in these areas might help to reduce the relatively high rate of teenage abortions in Britain [31]. Within Western Europe overall [6], the low use rate of unreliable contraceptive methods among German adolescents was remarkable and accorded with both the comparatively low rate of teenage abortions in Germany and the considerable decline observed in this rate over the past decade [32].

The relative popularity of periodic abstinence that we observed in Germany has been noted previously, and seemed to be related to governmental support for efforts to promote natural family planning methods, in particular the symptothermal method [33]. A high sterilization rate, on the other hand, might be a typical Anglo-Saxon phenomenon (it is also frequently used in the United States [34]). In Great Britain, sterilization was readily accepted as a method of contraception during the 1970s [22]. That this did not occur to the same extent in West Germany was not due to the persistence of the procedure's unclear legal status, as in France and Italy [6], but probably to the fact that most German women consult private gynaecologists for contraception and the latter might be more likely to prescribe OCs or IUDs themselves than refer the patient to a clinic for a sterilization [6]. In East Germany a special situation existed prior to reunification, in that numerous regulations made it difficult to have a sterilization for 'social' reasons [35]. These specific German situations might also account for the considerably higher OC use rates among older women in Germany as compared with Britain. Although German consumers pay more for their contraception than the British, the cost factor is probably not the explanation for the variation in contraceptive use between the two countries, as we have previously shown in a wider West European investigation [36].

It might be concluded that much of the variation in contraceptive use between the two countries could be explained by differences in health care policy and facilities in general, as well as the organization of contraceptive services, the type of providers involved, and teenage sex education in particular. This suggests that the provision of adequate information to target groups [27] is not sufficient and is incapable of solving the contraception problems that exist in Western countries. Health care policy and the organization of the relevant services should therefore also be scrutinized.

8.4.3. AIDS risk and AIDS prevention

Only a limited number of respondents indicated that they had occasional sexual partners rather than stable sexual relationships. Among these respondents the use of

condoms was less frequent than would have been desirable from the AIDS prevention point of view, this finding being in line with those of other, more in-depth studies on this aspect [37,38]. Nevertheless, the occasional sexual partners factor seemed to have played a role in the choice made by current condoms users, as the present analysis has indicated.

8.4.4. Remaining factors

Lower educational level was associated with greater use of unreliable contraception, which might go together with the lower uptake of OCs that we also observed among women of lower educational level. Generally, this seemed to indicate that information about contraception, and medical methods in particular, should be more specifically targeted at this subgroup of women. However, the higher use rates of IUDs and sterilization in this group made us wonder whether the phenomena were not related to the requirement to take OCs daily. According to this reasoning, OC compliance problems would be conducive to higher use rates of sterilization and IUDs on the one hand, as well as reliance on luck and coitus interruptus on the other. Future studies on OC compliance in relation to educational level might serve to explore this hypothesis further.

Finally, the impact of the frequency of church attendance on contraceptive use suggested that moral values in regard to contraception still play a role to some extent in contraceptive decisions, despite current trends towards societal secularisation. Most of the religiously committed respondents were of the Protestant rather than the Roman Catholic faith. This finding cannot therefore be interpreted as being indicative that religious dogma concerning contraception issues has an impact on the individual contraceptive decisions people take. It is more likely that the association points towards the influence of general moral values, the social environment and the life styles associated with regular church attendance.

8.5. Conclusion

The determinants of contraceptive use constitute a complex issue, since contraceptive decisions are influenced by a wide variety of psychological, social and societal influences. Nevertheless, the findings of the present study indicated that in a great number of cases such decisions follow discrete patterns, which depend largely on the individual's situation in terms of reproductive status, country of residence and related structural factors, type of relationship, educational level and religious

commitment. It has been suggested that factors such as knowledge, attitudes and perceived social norms, which were not addressed in the present study, have an impact on contraceptive decisions within the framework of the individual demographic features [39].

The findings of our study indicated that the contraceptive choices are in practice rather limited. It is open to speculation whether some of the women surveyed did not have a wider contraceptive choice than their situation as outlined above would have seemed to dictate. For example, in Great Britain, more older women could have continued with OC use. In Germany, on the other hand, more couples might have opted for sterilization if offered the possibility. Prescribers often tend to follow the contraceptive use pattern described, advising young women to use OCs and older women to consider use of IUDs or sterilization. However, in individual cases they may, together with their clients, indeed discover that the actual contraceptive choice is wider than they and their clients may have thought.

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Chapter 9

Psychological determinants of contraceptive use among women of reproductive age: a population study in Great Britain and Germany

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9.1. Introduction

The choice of a contraceptive method is a complex matter. Contraceptive decisions are determined by a wide variety of psychological, social and cultural factors. Various studies have indicated that such decisions are related, for example, to perceptions of the advantages and disadvantages of available contraceptive methods and perceived norms in the social environment [1-5]. Levinson [6] showed that contraceptive decisions might also be determined by personal confidence in having the ability to use a method correctly and consistently. Other investigators found that knowledge of fertility and communication skills might play a role [7-11].

For Western Europe, there is a wealth of representative, *descriptive* information available about contraceptive use, attitudes, knowledge and information sources [12]. However, an *exploratory* investigation has still to be performed into the extent to which these and other factors have an impact on contraceptive use [13]. Insight into the 'determinants' of contraceptive use has been derived mainly from studies which were conducted outside Europe in the United States and in non-representative samples (adolescents and college students). Owing to the special characteristics of the samples addressed, these studies probably highlighted the specific problems encountered by 'starters' and paid too little attention to those of more experienced users [13]. Given the United States setting, the findings might also relate more specifically to US issues. Since these findings cannot be validly extrapolated to West European general populations, they are of limited value in the search for a better understanding of contraceptive use problems in Europe.

Within this context, we explored in a previous paper the demographic correlates (age, reproductive status, educational level, church attendance frequency, country of residence, etc.) of representative data on contraceptive use that had been obtained among women aged 15-45 years in Great Britain and Germany [14]. We felt that such demographic correlates provided valuable, albeit indirect, information about the factors and motives that had determined the contraceptive decisions of the women surveyed. In the current paper we have addressed such factors and motives more directly by exploring the relationships between psychological factors (attitudes, perceived social influences, self-efficacy, fertility awareness and inter-partner communication) and contraceptive use. We aimed in this way to achieve a better understanding of the extent to which the issues investigated determine women's contraceptive choices.

9.2. Methods

9.2.1. Research model and hypotheses

In establishing the theoretical basis of this study we relied heavily on the research model of Ajzen and Fishbein [15], as extended by Ajzen and Madden [16]. Ajzen and Fishbein had postulated that the use of a contraceptive method was the result of a reasoned intention to use the method concerned, which was in turn determined by 'attitude' and 'subjective norms'. The 'attitude' aspect concerned perceptions of the advantages and disadvantages associated with using the method, weighted by evaluations of those characteristics in relation to personal context and needs. 'Subjective norms' were seen as the perceived opinions of other people weighted by the subject's motivation to comply with those opinions. A third determinant was included in the decision model by Ajzen and Madden [16], viz. 'self-efficacy', which referred in the context of contraceptive use, for example, to perceptions as to personal ability to use a given contraceptive method correctly and consistently.

Experience gained from a pilot study conducted preparatory to the present investigation revealed that use of the model as described above in large-scale population surveys was not entirely feasible [13]. We therefore included 'perceived social influences' rather than 'subjective norms' in the research model. The social influences concept was based on the work of Condelli [17] and Diclemente [18], who reported that advice given by others in favour of using a particular method and perceptions of contraceptive use within the social environment were related to actual contraceptive use. In the pilot study, inclusion of the 'perceived social influences' component in the model yielded more satisfactory results than the original Fishbein-Ajzen-Madden model [13].

Accordingly, in the present study, assessments were made of respondents' perceptions of the advantages and disadvantages of a number of commonly used contraceptive methods, and also of their respective evaluations. The perceptions and corresponding evaluations were multiplied, and subsequently summed, so that they together formed the attitude construct. Perceived social influences and self-efficacy with respect to these contraceptive methods were also investigated.

In addition to the determinants suggested by Fishbein, Ajzen and Madden, assessments of knowledge of fertility (fertility awareness) and inter-partner communication were included in the model. Several investigators have already shown that these factors may be relevant determinants of contraceptive use [7-11]. Since they did not relate to any contraceptive method in particular, these factors could not be

included in the method-specific attitude measurements and were thus regarded as separate determinants.

In a previous study, age and country of domicile were found to act as principal demographic determinants of contraceptive use [14]. According to Ajzen and Fishbein [15], demographic background characteristics exert their influence on contraceptive use indirectly by having an impact on psychological factors. However, given the very strong influence of these factors on contraceptive use [14], we felt it appropriate to consider them in the first instance as separate determinants of use. Evaluation of their impact would then allow us to decide whether they have a direct influence on contraceptive use decisions, or an indirect effect via psychological determinants as originally suggested.

In accordance with studies in which the Fishbein-Ajzen(-Madden) model was applied [1-4,19-21], it was assumed as a hypothesis that the potential determinants would be related directly to actual use of the respective contraceptive methods rather than only indirectly through intentions to use them. Furthermore, the determinants were evaluated simultaneously for various alternative contraceptive methods (as proposed by Ajzen and Fishbein [15]), in order to investigate why women decided to use a particular contraceptive method in preference to the available alternatives. In this sense, the analyses would relate to women's contraceptive choices from among various contraceptive methods rather than the determinants of use or non-use of a single method (similar to Adler *et al.* [22] and Davidson and Morrison [23]).

By analogy with previous research into the determinants of contraceptive use, the present research model may be mathematically expressed by the following (regression) equation:

$$\text{Use} = b_1 \left[\sum E_i P_i \right] + b_2 \text{SI} + b_3 \text{SE} + b_4 \text{CP} + b_5 \text{FA} + b_6 \text{PDF}$$

where

P = attitude perception items

SI = social influences

E = corresponding attitude evaluation items

SE = self-efficacy

i = number of items

CP = communication with partner

$\left[\sum E_i P_i \right]$ = attitude

FA = fertility awareness

b_{1-6} = the respective regression weights

PDF = principal demographic factors

9.2.2. Fieldwork

The data explored in the present study were obtained from two population surveys conducted in Great Britain and in reunified Germany in 1992. The fieldwork for these surveys has been described extensively elsewhere [24,25]. Basically, random

samples of women aged 15-45 were selected, in Great Britain via the Electoral Registers ($n = 1,753$), and in Germany by random-walk sampling ($n = 1,265$). Potential respondents were invited in person to participate by the fieldworkers who helped to conduct the study and subsequently received a questionnaire for self-completion, which they returned by mail (Great Britain) or which was placed in a sealed envelope and picked up later by the fieldworkers (Germany). The response rates obtained were 55.2% and 84.1% respectively. The considerably lower response rate in Great Britain was explained by the fact that further action there was solely dependent on the initiative of the respondents themselves, whereas in Germany the fieldworkers' pick-up visits encouraged respondent participation.

In order to check whether any major selection bias had occurred during the recruitment of the samples, a number of the respondents' demographic characteristics were compared with national census data. The comparisons showed that adolescents and women of low educational level were somewhat underrepresented in the samples, especially in Great Britain. Statistical weighting was applied for both countries to correct for the atypical distribution of respondents in comparison with national statistics. In the case of the British data an extra check was performed by comparing the weighted data on the use of oral contraceptives and intrauterine devices with available sales figures [24]. This latter comparison indicated that the weighted results were reasonably accurate.

9.2.3. *Study instrument*

The questionnaire used in the surveys was identical for both countries. It covered demographic characteristics, current contraceptive use, information sources and motives for using the current contraceptive method. In addition, measurements of the psychological factors outlined above were included.

Perceptions of the advantages and disadvantages were assessed with respect to the five most commonly used contraceptive methods (oral contraceptives, condoms, intrauterine devices, periodic abstinence and female sterilization). Respondents were asked to rate their reliability, safety for health, non-disturbance of sex life and ease of use (for wording used, see example 1, Table 1). Furthermore, they were asked whether they thought they would personally benefit from certain advantages (example 2) or be affected by certain disadvantages (example 3) of these five methods if they used the method concerned themselves.

An assessment was also made of the importance respondents attached to these aspects by asking for their *evaluations* of the various advantages and disadvantages (examples 4-6). For linguistic reasons, particularly in Germany, all of the statements

Table 1. Issues addressed in the questionnaire used in the contraception surveys and examples of the relevant questions and possible answers (scores in brackets) concerning the potential explanatory variables

-
- Sociodemographic characteristics
 - Current contraceptive use
 - Information sources
 - Motives for using the current contraceptive method

 - Perceptions of the advantages and disadvantages of oral contraceptives, condoms, IUDs, periodic abstinence and sterilization:
 1. How reliable is the pill in your view?: completely reliable (2), fairly reliable (1), fairly unreliable (-1), unreliable (-2)
 2. Do you believe it might prevent you from developing cancer in later life if you use the pill?: yes (2), possibly (1), no (0)
 3. Do you believe you will be more likely to develop cardiovascular disease if you use the pill?: yes (-2), possibly (-1), no (0)

 - Evaluations of the advantages and disadvantages addressed:
 4. That a method of contraception is reliable is, in my opinion: very important (2), important (1), unimportant (0)
 5. That a method of contraception does not cause depression is, in my opinion: very important (2), important (1), unimportant (0)
 6. That a method of contraception might increase the risk of developing cancer is, in my opinion: unacceptable (2), do not like it (1), do not care (0)

 - Social influences with respect to the use of oral contraceptives, condoms, IUDs, periodic abstinence and sterilization:
 7. Has your partner ever encouraged you to use the pill?: yes, often (2), sometimes (1), no (0), advised me not to use it (-2)
 8. Has your doctor advised you to use the pill?: yes, often (2), sometimes (1), no (0), advised me not to use it (-2)
 9. How many of your friends use the pill?: most (2), some (1), hardly any (0)

 - Perceptions of self-efficacy as to the use of oral contraceptives, condoms, IUDs, periodic abstinence and sterilization:
 10. Do you think you would be able to remember to take the pill every day?: yes, certainly (4), yes, possibly (3), probably not (2), absolutely not (1)

 - Communication with the partner about contraception:
 11. Did you previously discuss contraception with your partner?: yes, often (2), yes sometimes (1), no (0)
 12. Do you currently discuss contraception with your partner?: yes, often (2), yes sometimes (1), no (0)

 - Fertility awareness:
 13. What do you think your chances are of getting pregnant through having unprotected intercourse (if you do not use any contraception): very high (5), high (4), not so high (3), low (2), very low (1)
-

IUD = intrauterine device. * For the sake of greater clarity the scores for these items are presented in Table 3 without their negative weighing.

concerning the evaluation of the disadvantages could not be phrased in the same way. The questions concerned were therefore ultimately of two types (this also being the case in the English version - examples 5 and 6).

In order to determine which *social influences* had possibly played a role in the respondents' contraceptive decisions, we asked them whether their partners had ever encouraged them to use one or more of the five abovementioned methods (example 7)

and whether their physicians had advised them to use the methods (example 8). They were also asked to indicate whether their perception was that 'most' of their friends, 'some' friends or 'hardly any' friends used these methods (example 9).

In addition, a number of practical implications with regard to use of these five contraceptive methods were addressed, some of them concerning compliance and issues generally associated with respondents' *self-efficacy* (i.e. their perceptions as to their ability to use a method correctly and consistently in practice - example 10).

Finally, we asked respondents whether they had previously communicated with their partner about contraception (example 11), whether they also currently discussed contraception with their partner (example 12) and how they rated their chances of getting pregnant if they had unprotected intercourse (example 13). These latter questions concerned *past* and *current communication* and *fertility awareness* (knowledge of fertility) respectively.

9.2.4. Analysis

Since our aim was to study contraceptive use, women who were not in need of any contraception were excluded from the analysis. Consequently, data were analyzed only for those respondents who had never experienced fertility problems and were sexually active, not pregnant and not trying to get pregnant at the time of the survey, i.e. 'exposed' women [26].

(a) Contraceptive use

Contraceptive use was classified under the categories of oral contraceptives (OCs), intrauterine device (IUD), periodic abstinence (with or without additional barrier method use in the fertile phase), condoms, female sterilization and coitus interruptus/no method (the latter combination being considered as use of no contraception). Users of a combination of OCs and barrier methods (double protection against pregnancy and sexually transmitted diseases) were grouped together with those who used OCs only. Users of other contraceptive methods (diaphragms, spermicides and male sterilization) were not included in the present analysis, since these methods were not addressed in relation to the psychological explanatory variables studied.

(b) Item scores

Scores were assigned to the replies given by respondents with respect to the various items (Table 1). Perceived advantages of the various methods received positive scores (0 where none acknowledged) and perceived disadvantages were

given negative scores (0 where none acknowledged). The corresponding evaluations all received positive scores (the greater the importance attached to the advantage or disadvantage concerned, the higher the score). Perceived instances of advice in favour of using a method were given a positive score, while instances of advice against using the method received a negative score. Self-efficacy items were scored between 1 and 4, the greater a respondent's confidence as to her ability to use the method correctly and consistently, the higher the score. Communication and fertility awareness items also received positive scores. In the case of fertility awareness a higher score indicated an estimated greater risk of getting pregnant through having unprotected intercourse.

(c) Analysis of scores

As a first step in the analysis, mean item scores were calculated according to the contraceptive method used. Statistical significance of differences between users and non-users was assessed by *t* tests and one way analysis of variance. Cramer's *phi* coefficients were computed in order to assess the association between the item scores and the contraceptive use variable.

(d) Indices

Subsequently, indices were established for attitude, the social influences concept, self-efficacy and communication. Each perception of an advantage or disadvantage was multiplied by the score assigned to its corresponding evaluation [15]. The multiplied item scores relating to a particular contraceptive method were subsequently summed to obtain an index for the *attitude* towards that method.^I Scores for social influences items relating to a particular method were summed (three items per method) to obtain a *social influences index*. The same was done for self-efficacy items in order to arrive at a *self-efficacy index*. The two communication items were summed to form a *communication index*. In further analyses, fertility awareness (one item) was taken as it was without any processing.

(e) Unifactorial associations between indices and contraceptive use

The association between the indices so obtained (considered as explanatory variables) and actual use of the various contraceptive methods was explored in the

I The internal consistency (Cronbach's alpha) of the perception items which were combined in the attitude indices were 0.68 for OC items, 0.67 for IUD items, 0.63 for condom items, 0.50 for items relating to periodic abstinence, and 0.62 for sterilization items. The internal consistency for the periodic abstinence scale was less optimal, but identification by factor analysis of items which correlated less strongly with the other items and subsequent elimination of the items so identified did not produce an increase in the internal consistency.

first instance by means of Pearson correlation coefficients. Where statistically significant associations were found, the cross-sectional nature of the data implied in principle that such associations were bidirectional in nature. In other words, it remained open to speculation whether an association detected between an index and use of a contraceptive method was related to the fact that the index predicted use or, conversely, that use predicted the value of the index (see Appendix A).

In order to investigate these bidirectional relationships somewhat further, we determined whether the associations showed asymmetry (Appendix A). Accordingly, unidirectional Somers' d_{AB} and d_{BA} coefficients were computed for each association. By approximation, these coefficients enabled an evaluation to be made of the direction in which the association was strongest, viz. 'index \rightarrow use' or 'use \rightarrow index'. Although this approach does not allow any conclusions to be drawn as to causal relationships, it provides insight into whether contraceptive use is more strongly related to the value of the index, or whether the value of the index is more closely associated with contraceptive use.

(f) Multiple logistic regression

The determinants of use in the case of each contraceptive method (except coitus interruptus and no method) were studied by means of multiple logistic regression analyses (stepwise forward approach; Statistical Package for the Social Sciences [27]). The use of a particular contraceptive method was in each case considered as the dependent variable and age, country and the indices as potential explanatory variables. The (linear) indices were dichotomized around the median^{II}.

The associations between actual use of the various methods and all potential explanatory variables were in the first instance evaluated by means of unifactorial odds ratios. It emerged that the effects of the younger age strata (15-19, 20-24 and 25-29 years) were broadly similar. However, specific methods were not used in some of these age strata, which complicated analysis of the age variable. The same was observed for the various older age strata (30-34, 35-39 and 40-45 years). These strata were accordingly grouped together into two categories: 15-29 and 30-45 years. The country variable was found to be in some instances (notably attitude and social influences) an effect modifier (contrasting Great Britain with Germany). Since its impact was difficult to interpret if included as such in the regression models (given its

II Rather than entering the raw values of the indices in the analyses, which would suggest 'harder' data than can generally be obtained in survey research, the index values were dichotomized around the median value [28]. Given the representativeness of the data, the median value was taken to reflect the 'central scoring tendency in the population' (above median scores representing respondents who were more positive than 'average' and below median scores respondents who were less positive).

categorical nature) and it sometimes modified the effects, the final analyses were stratified by country. In the final models, only those variables were included which significantly changed the odds regarding use of the contraceptive method concerned. Goodness of fit was ascertained according to Hosmer and Brown. In cases of less optimal goodness of fit (< 0.70), alternative models were explored by a more conservative inclusion of explanatory variables.

(g) Principal components analysis

In order to shift the focus from the use of each contraceptive method considered separately to women's choices from among the contraceptive alternatives, principal components analysis was carried out. We were interested in determining the extent to which age, country and the indices were related to use of the various contraceptive methods considered in relation to each other. Principal components analysis extracts factors which are unrelated to each other from a given set of quantitative and/or categorical variables, without requiring any particular assumption about the underlying patterns of causality [29]. In the present study, this technique was applied to the frequency counts corresponding to use of each contraceptive method within the potential explanatory variables categories (index values being dichotomized around the median). This method yielded factor loadings for use of the contraceptive methods and estimated factor scores for the original explanatory variable categories. Subsequently, the factors extracted served as the axes of a scatter plot in which the various variables and contraceptive methods were graphically presented according to their scores and loadings. By means of this procedure, it was possible to show in visual form the relationships between contraceptive use and the explanatory variables, as well as interrelated influences exerted by the latter: the greater the distance between a specific variable and the use of a contraceptive method in the scatter plot, the less related they were, and vice versa. The closer together two explanatory variables were plotted, the more interrelated was their impact on contraceptive use, and vice versa.

(h) Segmentation analysis (ELISEE)

In order to evaluate the principal determinants of contraceptive use, we used ELISEE (Exploration des Liaisons et Interactions par Segmentation d'un Ensemble Expérimental [30]). ELISEE is an exploratory discriminant analysis technique of the stepwise segmentation type which is suitable for categorical dependent variables (such as the contraceptive use variable). In brief, the dependent variable contraceptive use was analyzed against all potential explanatory variables (the index values were

dichotomized around the median and age and country transformed into sets of binary variables). The strength of the associations between the dichotomized and new binary variables and contraceptive use was expressed by a discrimination ratio based on Cramer's *phi* coefficients and the variance of contraceptive use in the total sample. Statistical significance was assessed by means of *chi*-square tests. The explanatory variable which showed the strongest association with contraceptive use was taken as the first determinant of contraceptive use. According to this variable, the original study population was subdivided into two subgroups (segments) and the procedure was then repeated with the remaining explanatory variables for the contraceptive use patterns observed in these segments. Analysis ceased where the number of respondents in a segment was lower than 30 or the associations between contraceptive use and the remaining explanatory variables were no longer significant. The results were summarized in the form of a tree diagram in which the selected variables, their discrimination ratios and resulting sample segments were represented. The effects of each explanatory variable, taking into account the effects of previously selected variables, could then be seen from the contraceptive use patterns in the resulting sample segments.

9.3. Results

Of the 967 British and 1064 German women surveyed, 67.1% and 75.7% respectively were defined as being 'exposed'. Data on contraceptive use were available for 646 and 803 women, respectively, and these are presented in Table 2. In order to obtain an impression of the respondents' replies concerning their various

Table 2. Contraceptive use among 'exposed' women according to country* (percentages)

	<i>Great Britain</i>	<i>West Germany</i>	<i>East Germany</i>
Oral contraceptives	39.3	50.8	61.8
Barrier methods ^a	20.8	13.4	10.4
Periodic abstinence	1.5	7.1	8.7
Coitus interruptus	1.1	0.7	3.0
Intrauterine device	7.3	13.1	11.6
Female sterilization	10.1	8.6	3.0
Male sterilization	16.0	3.2	0.0
No method	3.6	2.7	1.5

'Exposed' = sexually active, not pregnant or wishing to get pregnant, and not infertile. * Berlin women were excluded, since it could not be determined whether they originated from West or East Berlin.

^a Condoms, diaphragms and spermicides.

Table 3. Mean scores for respondents' perceptions of the advantages and disadvantages of oral contraceptives, intrauterine devices, condoms, periodic abstinence and sterilization, according to actual method used, and Cramer's phi coefficients for the relations between these perceptions and contraceptive use (exposed respondents only)

Perceptions	Total mean	SD	Method used						Phi
			OC	IUD	PA	CD	FST	CINO	
Oral contraceptives									
Reliability [£]	1.4	0.7	1.6c	1.2e	1.3	1.3	1.1f	1.2d	0.133z
Safety for health [£]	0.2	1.3	0.7c	-0.3f	1.2f	0.4f	-0.1e	0.1	0.216z
Non-disturbance of sex life [£]	1.5	0.9	1.8c	1.3f	1.2e	1.3f	1.5	1.3d	0.148z
Ease of use [£]	1.6	0.8	1.8c	1.3f	1.3e	1.4d	1.6	1.4	0.149z
Cardiovascular disease	0.5	0.7	0.4f	0.7a	0.8c	0.6a	0.6	0.6	0.116z
Cancer prevention	0.3	0.5	0.3c	0.2	0.2	0.2d	0.2	0.2	0.077y
Regular periods	1.5	0.8	1.6c	1.3e	1.3	1.2f	1.5	1.2e	0.125z
Less painful periods	1.3	0.8	1.4c	1.1e	0.9f	1.2d	1.3	1.0e	0.143z
Less heavy periods	1.3	0.8	1.4c	1.3	1.0e	1.2d	1.2	1.1d	0.113z
Weight gain	1.0	0.8	0.8f	1.3c	1.1	1.2c	1.2b	1.2	0.167z
Depression	0.5	0.7	0.3f	0.8c	0.9c	0.7c	0.4	0.7	0.181z
Cancer risk	0.4	0.6	0.2f	0.4	0.6b	0.5c	0.5	0.4	0.134z
Headache	0.5	0.8	0.3f	0.8c	0.7	0.7b	0.6	0.6	0.148z
Painful tense breasts	0.5	0.7	0.4f	0.7b	0.6	0.5	0.6a	0.5	0.112z
Nausea	0.3	0.6	0.2f	0.5b	0.7c	0.6c	0.4	0.4	0.184z
Relief of skin disorders	0.6	0.8	0.7b	0.6	0.7	0.5	0.5d	0.5	0.066
Expensive	0.4	0.8	0.5	0.5	0.6a	0.4	0.4	0.4	0.054
AIDS/STD prevention	0.1	0.3	0.1b	0.0	0.0	0.0	0.0d	0.1	0.074x
Difficult to obtain	0.1	0.3	0.1	0.0	0.1	0.1	0.1	0.1	0.053
Intrauterine devices									
Reliability [£]	0.5	1.0	0.5	1.3c	0.6	0.5	0.2f	0.6	0.151z
Safety for health [£]	0.3	1.1	0.3	1.3c	0.5f	0.0f	0.2	0.2	0.199z
Non disturbance of sex life [£]	0.6	1.1	0.4f	1.7c	0.5	0.4d	0.4	0.5	0.193z
Ease of use [£]	0.5	1.2	0.2f	1.8c	0.4	0.3e	0.5	0.4	0.230z
Abdominal cramps	0.9	0.8	0.9	0.4f	1.1a	1.0b	0.8	0.9	0.152z
Infection	1.1	0.8	1.2	0.6f	1.5c	1.2	1.1	1.0	0.147z
Infertility	0.5	0.7	0.5	0.3f	1.0c	0.6	0.4d	0.4	0.126z
Heavier periods	0.9	0.9	0.8f	1.2c	1.0	0.9	0.9	0.6d	0.119z
Something strange that does not belong in the body	1.3	0.9	1.5c	0.4f	1.6b	1.4	1.3	1.3	0.234z
Expensive	0.2	0.6	0.3b	0.1d	0.5b	0.2	0.2	0.2	0.094z
AIDS/STD prevention	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.061
Difficult to obtain	0.2	0.5	0.2b	0.0f	0.1	0.2	0.2	0.2	0.087y
Condoms									
Reliability [£]	0.4	1.1	0.3	0.2f	0.6	1.1c	0.0f	0.6	0.174z
Safety for health [£]	1.6	0.8	1.6	1.6	1.7	1.8c	1.4d	1.5	0.078y
Non disturbance of sex life [£]	-0.2	1.3	0.4f	0.5e	0.3	0.9c	0.2	-0.1	0.187z
Ease of use [£]	0.6	1.2	0.5e	0.3f	0.7	1.4c	0.7	0.8	0.151z
Messy method	0.7	0.9	0.8a	1.1c	0.5d	0.2f	0.8	0.7	0.183z
Tear easily	0.8	0.8	1.0c	1.0	0.5e	0.4f	0.9	0.7	0.168z
Cancer prevention	0.3	0.6	0.3d	0.2	0.4	0.5b	0.3	0.2	0.088y
Natural method	0.7	0.9	0.6f	0.6	1.0b	1.2c	0.5e	0.6	0.160z
Expensive	0.4	0.7	0.5	0.5	0.3	0.3e	0.6b	0.3d	0.090z
AIDS/STD prevention	1.6	0.6	1.6e	1.6	1.8a	1.8c	1.6	1.6	0.087y
Difficult to obtain	0.1	0.3	0.1b	0.0	0.0	0.0d	0.0	0.0	0.065
Periodic abstinence									
Reliability [£]	1.0	1.1	1.0	1.2e	0.3c	0.9	1.1	-0.5c	0.191z
Safety for health [£]	1.1	1.2	1.1	1.3a	1.9c	1.1	0.8e	1.3	0.117z
Non disturbance of sex life [£]	0.1	1.3	0.2d	0.2	1.1c	0.0	0.2	0.5c	0.144z
Ease of use [£]	-0.4	1.2	-0.4	0.7e	0.0b	0.4	0.5	0.1	0.101z
Partner involved	0.7	0.9	0.7	0.8	1.5c	0.4f	0.8	0.8	0.155z
Complicated method	1.2	0.9	1.3	1.5c	0.5f	1.2	1.3	0.6f	0.171z
Natural method	0.7	0.9	0.7e	0.8	1.3c	0.8	0.5e	0.8	0.120z
Sterilization									
Reliability [£]	1.5	0.8	1.4f	1.6	1.7	1.5	1.8c	1.4	0.098z
Safety for health [£]	0.8	1.1	0.6f	1.0a	0.2f	0.7	1.6c	0.8	0.157z
Non disturbance of sex life [£]	1.0	1.1	0.8f	1.0	0.8	0.8d	1.8c	0.8	0.136z
Ease of use [£]	0.6	1.4	0.2f	0.6	0.5	0.4	1.5c	0.6	0.145z
Feel less feminine	0.7	0.8	0.8c	0.5	1.1c	0.8a	0.1f	0.7	0.156z
Major risky operation	1.1	0.9	1.3c	0.9f	1.2	1.2	0.5f	0.8e	0.173z
Expensive	0.3	0.7	0.4c	0.2	0.6b	0.4	0.1f	0.2	0.116z
AIDS/STD prevention	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.037

Perceptions marked with £ scored very reliable/safe/etc = 2 to very unreliable/unsafe/etc = 2 For abbreviations and significance (a, f, x, z) see Table 4

Table 4. Mean scores for respondents' evaluations of possible advantages and disadvantages of contraceptive methods, according to actual method used, and Cramer's *phi* coefficients for the relations between these evaluations and contraceptive use (exposed respondents only)

<i>Evaluations</i>	<i>Total mean</i>	<i>SD</i>	<i>Method used:</i>						<i>Phi</i>
			<i>OC</i>	<i>IUD</i>	<i>PA</i>	<i>CD</i>	<i>FST</i>	<i>CINO</i>	
Advantages									
Reliable	1.9	0.4	1.9c	1.9	1.7f	1.8d	1.9	1.7f	0.147z
Safe for health	1.8	0.4	1.7f	1.9	1.9a	1.9b	1.9a	1.7e	0.118z
Non-disturbance of sex life	1.5	0.6	1.6a	1.7b	1.4	1.4f	1.6	1.4d	0.113z
Easy to use	1.6	0.6	1.7	1.7	1.3f	1.6	1.6	1.5	0.104z
Prevents cancer	1.6	0.6	1.6	1.6	1.2f	1.6	1.6	1.6	0.094z
More regular periods	1.1	0.7	1.2c	1.1	0.6f	0.9f	1.2	1.0	0.164z
Less painful periods	1.2	0.7	1.3c	1.1	0.8f	0.9f	1.3a	1.1	0.140z
Less heavy periods	0.9	0.8	1.0c	0.8d	0.5f	0.7e	1.1b	1.0	0.122z
Relief of skin disorders	0.9	0.8	0.9a	0.8d	0.4f	0.9	1.1b	1.0	0.131z
Natural method	1.6	0.6	1.5f	1.6	1.9c	1.7	1.7	1.5	0.098z
Partner involved	1.4	0.7	1.4f	1.3e	1.8c	1.6a	1.5	1.5	0.109z
Prevents AIDS/STD	1.6	0.6	1.6	1.5d	1.5	1.7a	1.7a	1.7	0.096z
Disadvantages									
Cardiovascular disease risk	1.9	0.4	1.8f	1.9	1.9	1.9a	1.9	1.9	0.075x
Cancer risk	1.9	0.4	1.8f	1.9	1.9	1.9	1.9	1.8	0.081y
Infection	1.7	0.5	1.7e	1.6e	1.8	1.8	1.9b	1.7	0.090y
Inferility	1.7	0.6	1.7	1.7	1.8	1.7	1.6	1.6	0.069x
Weight gain	1.3	0.6	1.2f	1.4	1.4	1.5b	1.4	1.4	0.114z
Depression	1.7	0.5	1.7e	1.8a	1.9b	1.7	1.8	1.7	0.073x
Headache	1.6	0.6	1.5f	1.6	1.7d	1.6	1.7a	1.7	0.105z
Painful tense breasts	1.4	0.6	1.3f	1.3	1.4	1.5b	1.4	1.4	0.089y
Nausea	1.6	0.6	1.5f	1.7	1.7	1.7c	1.7a	1.6	0.128z
Abdominal cramps	1.7	0.5	1.6d	1.5e	1.8	1.7	1.7	1.7	0.077x
Heavier periods	1.3	0.6	1.3a	1.1f	1.3	1.4b	1.4	1.4	0.100z
Feel less feminine	1.6	0.6	1.6	1.7a	1.8b	1.5	1.5	1.5	0.073x
Expensive	1.2	0.7	1.3	1.2	1.2	1.1d	1.4a	1.2	0.085y
Difficult to obtain	1.6	0.6	1.6	1.5	1.5	1.6a	1.4d	1.4d	0.064

The more weight/importance attached to experiencing an advantage or not experiencing a disadvantage, the higher the score: from 0 to 2.

SD = standard deviation, OC = oral contraceptives, IUD = intrauterine device, PA = periodic abstinence, CD = condoms, ST = female sterilization, CINO = coitus interruptus or no method. Significance: a-f indicates significance as compared with women not using the method concerned. a = score significantly higher at $P < 0.05$, b = score significantly higher at $P < 0.01$, c = score significantly higher at $P < 0.001$, d = score significantly lower at $P < 0.05$, e = score significantly lower at $P < 0.01$ and f = score significantly lower at $P < 0.001$ (*T* test). Cramer's *phi* coefficients: x = $P < 0.05$, y = $P < 0.01$, z = $P < 0.001$ (ANOVA).

perceptions and evaluations, and the social influences, self-efficacy, communication and fertility awareness parameters, the corresponding mean scores were computed (Tables 3-5).

9.3.1. Mean item scores

It was observed from Table 3 that respondents considered sterilization to be the most reliable of the contraceptive methods studied, followed by OCs. Periodic abstinence was seen as an unreliable method. The safety for health of medically prescribed methods (OCs, IUD and sterilization) was considered doubtful, in contrast to that of condoms and periodic abstinence. Medically prescribed methods were

Table 5. Mean scores for the parameters defined as social influences, self-efficacy, communication with partner and fertility awareness, according to actual method used, and Cramer's *phi* coefficients for the relations between these parameters and contraceptive use (exposed respondents only)

	<i>Total mean</i>	<i>SD</i>	<i>Method used:</i>							<i>Phi</i>
			<i>OC</i>	<i>IUD</i>	<i>PA</i>	<i>CD</i>	<i>FST</i>	<i>CINO</i>		
Social influences										
Partner encouraged use of ^f :										
- oral contraceptives	0.5	1.0	0.8c	0.1f	-0.1f	0.2f	0.2d	0.0e	0.209z	
- intrauterine device	0.0	0.6	-0.1f	0.5c	-0.1	-0.1d	0.0	0.0	0.209z	
- condoms	0.3	0.7	0.3e	0.2e	0.6c	0.8c	0.1e	0.1d	0.181z	
- periodic abstinence	0.0	0.5	0.0e	0.0	0.5c	0.0	0.0	0.2b	0.183z	
- sterilization	0.0	0.6	-0.1f	0.0	-0.1d	-0.1e	0.4c	0.0	0.191z	
Doctor advised use of ^f :										
- oral contraceptives	0.7	1.1	1.3c	0.0f	0.4d	0.4f	0.1f	0.2f	0.266z	
- intrauterine device	0.1	0.8	0.0f	1.3c	0.0	-0.1f	0.1	0.0	0.311z	
- condoms	0.2	0.6	0.2	0.1d	0.3	0.4c	0.0e	0.1	0.103z	
- periodic abstinence	0.0	0.4	0.0	0.0	0.2c	0.0	0.0	0.0	0.091z	
- sterilization	0.1	0.6	0.0f	0.0e	0.1	0.0d	0.8c	0.0	0.270z	
Perceived use by friends of ^g :										
- oral contraceptives	1.5	0.7	1.8c	1.4e	1.4	1.4f	1.4e	1.4	0.183z	
- intrauterine device	0.3	0.5	0.3f	0.8c	0.4	0.3	0.4	0.3	0.182z	
- condoms	0.5	0.6	0.5	0.2f	0.7b	0.8c	0.3e	0.3d	0.163z	
- periodic abstinence	0.1	0.4	0.1	0.1	0.5c	0.1	0.1d	0.2	0.142z	
- sterilization	0.2	0.5	0.1f	0.2	0.1	0.2	0.4c	0.1	0.141z	
Self-efficacy⁺										
Able to remember to take OCs daily	3.4	0.9	3.7c	2.8f	3.3	3.1f	3.2	3.3	0.168z	
Able to remember to take OCs daily during holidays	3.3	0.9	3.6c	2.7f	3.2	3.0f	3.1d	3.2	0.169z	
Able to ask doctor for a prescription for OCs	3.8	0.9	3.9c	3.8	3.7d	3.7f	3.9	3.8	0.103z	
Able to go to a pharmacy to get OCs	3.7	0.7	3.8b	3.8	3.6	3.6	3.7	3.7	0.077y	
Not afraid of IUD	2.1	1.1	1.8f	3.8c	1.7e	1.8f	2.4b	2.0	0.312z	
No embarrassment when buying condoms in a shop	2.7	1.1	2.7	2.7	3.0a	2.9b	2.8	2.6	0.070x	
Able to refuse intercourse when partner refuses condom use	3.0	1.0	3.0	2.9	3.0	3.1a	3.0	2.7d	0.077y	
Able to use condoms every time coitus takes place	2.6	1.1	2.4f	2.4d	2.5	3.4c	2.4	2.2e	0.176z	
Able to calculate the 'safe days' when using periodic abstinence	2.4	1.1	2.4	2.4	3.8c	2.1f	2.4	2.4	0.168z	
Able to avoid intercourse on 'unsafe days' when using periodic abstinence	2.5	1.0	2.5	2.5	3.5c	2.3d	2.5	2.8a	0.130z	
Not afraid of sterilization	2.2	1.1	1.9f	2.4b	1.8e	1.9f	3.7c	2.3	0.295z	
Communication with partner^{&}										
Past communication	1.2	0.7	1.1f	1.0	1.4b	1.3b	1.2	1.0	0.109z	
Current communication	0.7	0.7	0.8c	0.6	0.9b	1.0c	0.2f	0.6	0.178z	
Fertility awareness[#]										
Estimated chance of conceiving	3.8	1.3	3.9b	4.0	3.5	4.0a	3.4e	2.9f	0.158z	

For abbreviations and significance (a-f, x-z): see Table 4. Scoring: ^f often = 2, sometimes = 1, no = 0, advised against use = -2. ^g most = 2, some = 1, hardly any = 0. ⁺ the more the respondent believed that she was able to.../not afraid of.../not embarrassed..., the higher the score: from 1 to 4. [&] often = 2, sometimes = 1, no = 0. [#] the higher the estimated chances, the higher the score: from 1 = very low chances, to 5 = very high chances.

associated with serious health risks (cancer, infertility and cardiovascular disease) and side effects, although to a certain extent the scores indicated that in many cases 'possibly' had been given as an answer (scores between 0.4 and 1.3). However, respondents also recognized that these medical methods were easy to use and did not interfere with sex life. Condoms were considered to disturb sex life and periodic abstinence was regarded as difficult. The descriptive results concerning these perception items have been covered in more detail in Refs [24,25].

As to what were considered to be the most important characteristics of a contraceptive method, it was stated by virtually all respondents that the method should be reliable, safe for health and not give rise to increased risk of cardiovascular disease or cancer (the scores almost reached the maximum score of 2 - Table 4). Most other characteristics addressed were seen as being rather important to very important (score over 1.5). There were a few exceptions: not all respondents considered it important for a contraceptive method to provide cycle regulation and relief from skin disorders, or for the method to be inexpensive, as the lower mean scores (0.9-1.2) for these evaluation items indicate.

The mean scores for the social influences parameters (Table 5) indicated that encouragement of the partner or advice from a physician in favour of the use of a certain method most frequently related to OCs. Most respondents indicated that their friends used OCs. The self-efficacy scores were highest where the use of OCs was concerned (respondents felt they would not forget the pill and would have no problems in obtaining supplies) and lowest in the case of IUDs and sterilization (fears were expressed regarding the use of these methods). On average, respondents had previously communicated more often with their partner about contraception than they did currently. Most respondents estimated that their chances of getting pregnant if they did not use any contraceptive method were high (mean score 3.8, where a score of 4 indicated 'high chances').

9.3.2. Mean item scores according to contraceptive use

All the data for the various items were analyzed according to actual use of the selected contraceptive methods. The mean scores per group of users of a specific method were analyzed against those of all respondents in the sample who did not use that particular method (indicated by a-f) in Tables 3-5. Furthermore, the strength of the association between each item and the contraceptive use variable was assessed by means of Cramer's *phi* coefficients (these coefficients ranged between 0 and 1, the higher the coefficient the stronger the association). Given the very large number of statistical tests performed, leading to a higher probability of finding a significant

association or difference between groups just by chance, we evaluated the patterns of associations and differences rather than each association or difference separately.

The *phi* coefficient indicated that contraceptive use was most closely associated with respondents' scores for the social influence parameters, in particular where the items related to medical methods. Strong associations were also observed for the self-efficacy items concerning fears about IUDs or sterilization. The *phi* coefficients were generally somewhat lower with respect to the perceptions of the advantages and disadvantages of the various methods studied. Within this group of items, the highest coefficients related to the perception of an IUD as something alien to the body, its ease of use and its safety for health. The perceived safety for health of OCs was also relatively strongly related to contraceptive use. The *phi* coefficients for the evaluation items were generally low.

It emerged that the strong associations indicated by the *phi* coefficients were related to the fact that users of the method addressed in the item attained a much higher score (or in the case of a disadvantage a much lower score) for that item than the remaining respondents (who did not use the method concerned). In other words, as a general principle, users of a specific method were more positive about the advantages of their method and less negative about its disadvantages than other women; they had been encouraged more frequently to use that method and expected, or experienced, fewer practical problems with its use.

The analysis of communication according to the contraceptive method used revealed that periodic abstinence and condom users ascribed the highest scores to both present and past communication with their partner. OC users had communicated less frequently in the past than they did currently, the converse being reported by sterilization users. With respect to fertility awareness, OC and condom users rated their chances of conceiving as high, whereas sterilization users and coitus interruptus/no method users assessed them as being low.

9.3.3. Indices

For the purposes of further analysis, the individual items were combined into indices for attitude, perceived social influences, self-efficacy, fertility awareness and communication with the partner. The Pearson correlation coefficients for these indices and use of the various contraceptive methods are shown in Table 6. It emerged that a higher score on an index for a particular method was associated with a greater likelihood that the respondent was a user of that method. A lower score for an index that addressed a specific method was sometimes associated with higher use rates of other methods. For example, the lower the score for attitude towards OCs, the more

likely was the woman concerned to use condoms, periodic abstinence or, to a lesser extent, an IUD or sterilization. The communication index was positively correlated with condom and periodic abstinence use and negatively with sterilization. Fertility awareness correlated negatively with coitus interruptus/no method and sterilization and positively with OC use.

Table 6. Pearson correlation coefficients for the indices for attitude, social influences, self-efficacy, communication and fertility awareness and actual method used (exposed respondents only) - Significant^a coefficients only are listed.

<i>Index</i>	<i>Method used</i>					
	<i>OC</i>	<i>IUD</i>	<i>PA</i>	<i>CD</i>	<i>FST</i>	<i>CINO</i>
Attitude towards						
- oral contraceptives	0.53	-0.17	-0.23	-0.23	-	-0.09
- intrauterine devices	-	0.45	-0.13	-0.11	-	-
- periodic abstinence	-0.09	-	0.36	-	-	0.12
- condoms	-0.19	-0.14	0.08	0.43	-	-
- female sterilization	-0.25	0.07	-0.12	-0.07	0.32	-
Social influences concerning						
- oral contraceptives	0.56	-0.22	-0.11	-0.17	-0.15	-0.11
- intrauterine devices	-0.21	0.51	-	-0.11	-	-
- periodic abstinence	-	-	0.27	-	-	0.07
- condoms	-	-0.12	0.10	0.31	-0.12	-0.07
- female sterilization	-0.23 ^b	-	-	-0.07	0.37	-
Self-efficacy with respect to						
- oral contraceptives	0.28	-0.14	-	-0.14	-	-
- intrauterine devices	-0.24	0.51	-0.08	-0.10	0.09	-
- periodic abstinence	-	-	0.28	-0.09	-	-
- condoms	-0.09	-	-	0.23	-	-0.08
- female sterilization	-0.28	0.08	-0.08	-0.10	0.42	-
Communication index	-	-	0.09	0.14 ^b	-0.12	-
Fertility awareness	0.08	-	-	-	-0.09	-0.15

OC = oral contraceptives, IUD = intrauterine device, PA = periodic abstinence, CD = condoms, ST = female sterilization, CINO = coitus interruptus or no method - = Not significant. ^a Given the large number of respondents (n = 1414-1449 for the various indices) the significance level was taken as $P < 0.01$. Somers' *d* coefficients indicated that the association "index → use" was stronger in all cases than the association "use → index", except for the associations marked ^b.

9.3.4. Asymmetry of the associations

The cross-sectional nature of the study implied that the associations detected were in principle bidirectional. Possible asymmetry of the associations was investigated by means of Somers' *d* coefficients. In all but two cases (indicated in Table 6 by ^b) it emerged that the value of Somers' *d* was higher for the "index → use" association than for the "use → index" association ($d_{AB} > d_{BA}$). This suggested with a certain probability that these indices were less strongly related to contraceptive use rather than that contraceptive use was related to the value of the indices.

9.3.5. Explanations for use of the various contraceptive methods

The results of the logistic regression analyses of use of the five main contraceptive methods and the various indices are presented in Table 7. It emerged that above median values for the indices for attitude and social influences that addressed a particular method indicated an increased likelihood of use of that method. The self-efficacy indices with respect to use of that method increased the likelihood to a lesser extent and often appeared in the analyses as secondary to the impact of indices relating to other contraceptive methods. This indicated that the impact of attitude and social influences for the method under investigation was more strongly related to its use than the self-efficacy variable concerned.

Indices relating to contraceptive methods other than that under investigation reduced in all cases the likelihood of its use: women with lower scores used the method under investigation more often. In this sense, indices relating to OCs most frequently played a role in being inversely related to the use of another contraceptive method.

The differences between the two countries were considerable. In Great Britain, the indices related to use of the five methods were different to those in Germany. Age played a role only in the models for OC use. However, in this specific case, age was strongly and independently related to the use of OCs (lower ages being associated with a greater likelihood of OC use).

Fertility awareness and communication with the partner featured only in the models for sterilization. Below median values of these indices increased the likelihood of reliance on female sterilization. However, the possibility could not be excluded that these results were due to the fact that fertility is clearly impaired after sterilization and communication with the partner about contraception is then less relevant.

9.3.6. Explanations for contraceptive use

Principal components analysis and ELISEE segmentation analysis were carried out in order to evaluate the use of the various contraceptive methods in relation to each other.

Figure 1 shows the results of the principal components analysis. The axes represent the factors extracted. Given that most of the data analyzed relied heavily on self-reporting or subjective perceptions, only the first two factors were used; these explained 64% of the observed variance in contraceptive use. The contraceptive methods and explanatory variables were plotted according to their factor loadings and scores (Table 8). The curved lines and shaded areas in Figure 1 did not result from the

Table 7. Multiple odds ratios of use of selected contraceptive methods in relation to age and psychological variables by country of residence, with non-user as reference group. Only significant determinants are included (exposed respondents only).

<i>Dependent variable</i>	<i>OR</i>	<i>95% CI</i>	<i>Dependent variable</i>	<i>OR</i>	<i>95% CI</i>
<i>Goodness of fit: p</i>			<i>Goodness of fit: p</i>		
<i>Hosmer (H)</i>			<i>Hosmer (H)</i>		
<i>Brown (B)</i>			<i>Brown (B)</i>		
Oral contraceptive use			Periodic abstinence use		
Great Britain			Great Britain ^a		
- Attitude OC	6.65	4.47-9.90			
- Social influences OC	5.35	3.66-7.83			
- Self-efficacy OC	1.59	1.07-2.35			
- Age	0.33	0.22-0.49	- Social influences PA	6.54	3.46-12.3
- Attitude CD	0.38	0.26-0.55	- Attitude PA	6.00	2.08-17.3
- Social influences ST	0.43	0.28-0.68	- Attitude OC	0.08	0.03-0.23
- Attitude ST	0.53	0.36-0.79	- Self-efficacy PA	b	
		p = 0.98 (H)			p = 0.97 (H)
		p = 0.25 (B)			p = 0.98 (B)
Germany			Condom use		
- Attitude OC	10.8	6.73-17.3	Great Britain		
- Social influences OC	10.1	6.34-16.2	- Attitude CD	10.3	6.36-16.7
- Self-efficacy OC	2.65	1.67-4.20	- Social influences CD	4.27	2.88-6.33
- Self-efficacy ST	0.18	0.10-0.31	- Attitude OC	0.32	0.23-0.46
- Age	0.38	0.24-0.63			p = 0.96 (H)
- Social influences IUD	0.45	0.28-0.71			p = 0.68 (B)
- Attitude CD	0.45	0.28-0.71	Germany		
- Social influences CD	0.52	0.33-0.83	- Attitude CD	10.3	4.80-22.0
- Self-efficacy CD	0.61	0.39-0.94	- Social influences CD	3.85	2.16-6.86
		p = 0.91 (H)	- Self-efficacy IUD	0.34	0.20-0.57
		p = 0.87 (B)	- Attitude OC	0.42	0.24-0.72
Intrauterine device use					p = 0.58 (H)
Great Britain					p = 0.71 (B)
- Social influences IUD	15.2	7.02-33.0	Female sterilization use		
- Attitude IUD	8.78	3.85-20.0	Great Britain		
- Social influences OC	0.21	0.11-0.41	- Self-efficacy ST	23.1	7.05-75.4
		p = 0.87 (H)	- Social influences ST	5.63	2.96-10.7
		p = 0.94 (B)	- Fertility awareness	0.38	0.21-0.68
Germany					p = 0.62 (H)
- Attitude IUD	24.7	6.84-88.9			p = 0.83 (B)
- Social influences IUD	17.1	7.31-40.0	Germany		
- Self-efficacy IUD	9.42	2.58-34.4	- Self-efficacy ST	14.7	5.72-37.6
- Social influences OC	0.24	0.13-0.46	- Social influences ST	9.95	4.49-22.1
- Attitude OC	0.33	0.17-0.63	- Comm'n with partner	0.28	0.13-0.60
- Social influences PA	0.34	0.20-0.57	- Attitude OC	0.37	0.17-0.82
- Self-efficacy OC	0.38	0.21-0.71			p = 0.82 (H)
- Attitude CD	0.41	0.20-0.78			p = 0.99 (B)
		p = 0.88 (H)			
		p = 0.73 (B)			

OC = oral contraceptives, IUD = intrauterine device, PA = periodic abstinence, CD = condoms, ST = female sterilization. ^a Analysis not possible owing to small number of users. ^b All users scored above median value.

Table 8. Principal components analysis of use of the various contraceptive methods according to the potential explanatory variables considered (factor loadings) and factor scores for the latter variables

<i>Factor loadings</i>	<i>Factor 1</i>	<i>Factor 2</i>
Contraceptive use		
Oral contraceptives	-0.905	0.286
Intrauterine device	0.717	0.296
Periodic abstinence	-0.085	-0.755
Condoms	-0.157	-0.684
Female sterilization	0.857	0.147
Cotus interruptus/ no method	0.507	-0.495
Factor scores	Factor 1	Factor 2
Above median values		
OC:		0.918
- Attitude	-0.809	
- Social influences	-1.052	0.576
- Self-efficacy	-0.493	0.372
IUD:		0.547
- Attitude	0.399	
- Social influences	0.802	0.500
- Self-efficacy	0.304	0.420
PA:		-0.540
- Attitude	0.106	
- Social influences	-0.181	-1.432
- Self-efficacy	0.060	-0.186
CD:		-0.803
- Attitude	-0.173	
- Social influences	-0.405	-0.511
- Self-efficacy	-0.168	-0.354
FST:		0.289
- Attitude	0.645	
- Social influences	1.057	0.366
- Self-efficacy	1.207	0.317
Communication with partner	-0.307	-0.230
Fertility awareness	-0.293	0.202
Below median values		
OC:		-0.816
- Attitude	0.774	
- Social influences	1.114	-0.578
- Self-efficacy	0.505	-0.339
IUD:		-0.471
- Attitude	-0.452	
- Social influences	-0.456	-0.260
- Self-efficacy	-0.494	-0.647
PA:		0.673
- Attitude	-0.123	
- Social influences	-0.009	0.465
- Self-efficacy	-0.027	0.248
CD:		0.878
- Attitude	0.119	
- Social influences	0.397	0.653
- Self-efficacy	0.185	0.285
FST:		-0.312
- Attitude	-0.680	
- Social influences	-0.398	-0.032
- Self-efficacy	-0.659	-0.133
Communication with partner	0.262	0.387
Fertility awareness	0.656	-0.568
Age		
15-19	-1.035	0.043
20-24	-1.403	-0.140
25-29	-0.497	0.218
30-34	-0.030	0.132
35-39	0.516	0.157
40-45	1.491	-0.311
Country		
Great Britain	0.108	-0.103
West Germany	-0.072	0.156
East Germany	-0.489	-0.010

OC = oral contraceptives, IUD = intrauterine device, PA = periodic abstinence, CD = condoms, FST = female sterilization.

The first factor identified in the principal components analysis (represented by the X-axis) closely reflected the age variable and could be interpreted as the underlying impact of 'reproductive status' on contraceptive use [14]. The relation between age and contraceptive use was described as follows: OCs loaded on the left-hand side, close to the younger ages, whereas an IUD and sterilization loaded on the right-hand side, closer to the older age strata. The second factor (the Y-axis) did not coincide with any specific variable, but seemed to reflect a pattern of opposing medically-prescribed methods (on the positive side) to non-medically-prescribed methods (on the negative side). The location of the contraceptive methods in relation to the two factors resulted in three seemingly independent clusters of methods: the first included OCs, the second IUDs and sterilization and the third condoms and periodic abstinence. Placement of methods within a cluster suggested similarities between the users of these methods with respect to the explanatory variables, whereas placement in another cluster indicated differences [29].

The index values appeared in the plot in discrete patterns. The high values of the indices were relatively closely associated with use of the method to which the index related. The disparate position of the indices that addressed periodic abstinence in relation to use of this particular method showed that this phenomenon applied least to these indices. The below median value of indices that addressed medically-prescribed methods was in each case located on the non-medical method side of factor 2. Below median values of indices for non-prescribed methods appeared on the medical method side. In this respect, the principal components analyses provided further insight into the negative relations between use of a specific method and indices that addressed other methods. These negative relations applied mainly to situations where the methods used were medical and the index related to non-medical methods, or vice versa.

With respect to the remaining explanatory variables, the analysis indicated that a low estimation of fertility was strongly related to the use of coitus interruptus/ no method.

The results of the ELISEE segmentation analysis are presented in Figure 2. This analysis indicated which characteristics could be seen as being most predominantly associated with the contraceptive use variable. The age, country, communication and fertility awareness factors and the indices for condoms and periodic abstinence were not identified as being sufficiently strongly related to contraceptive use. The greatest impact was attributed to the index for social influences with respect to OCs, followed in the subdivisions by self-efficacy in regard to sterilization, attitude towards OCs and social influences with respect to sterilization and IUD. The overall hierarchical model

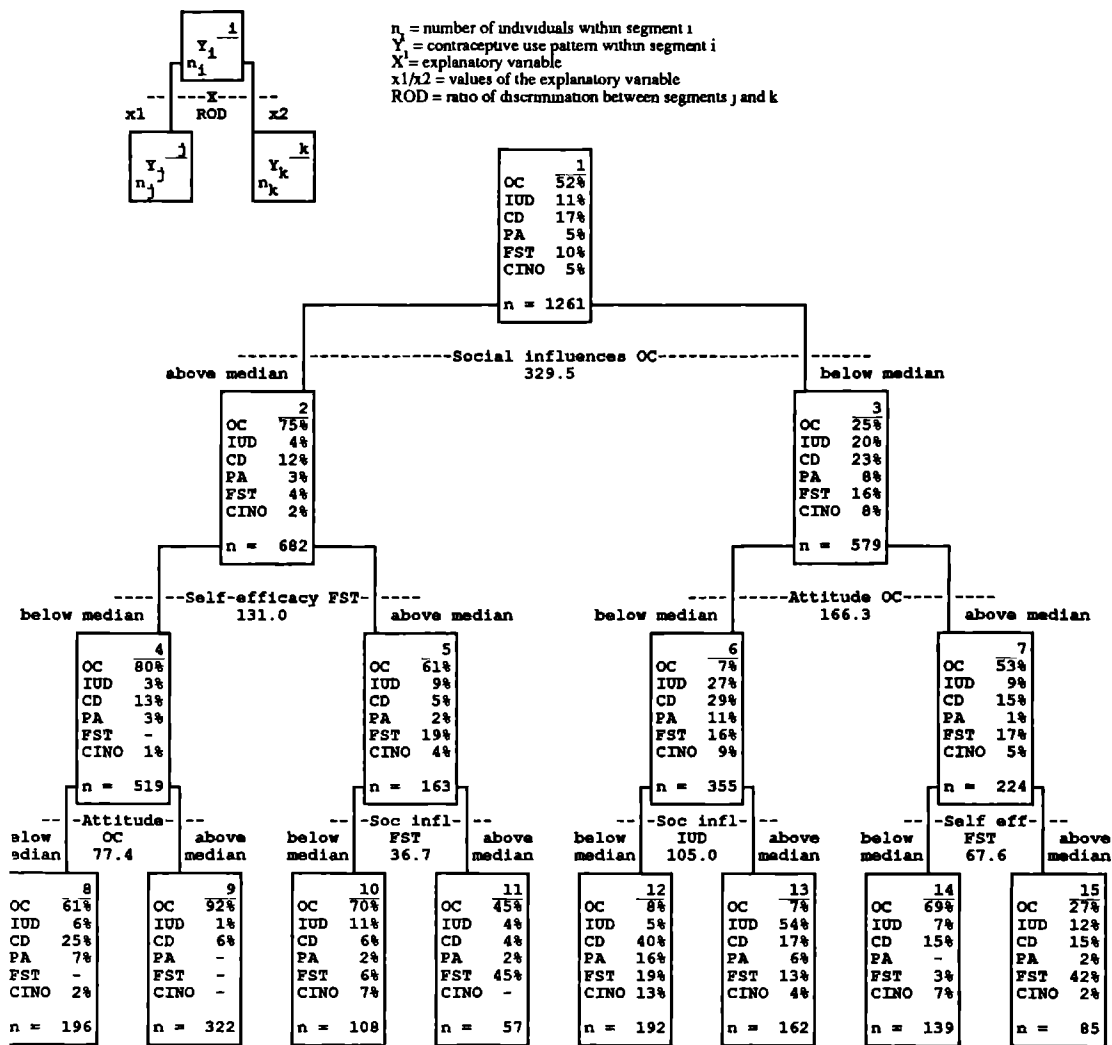


Figure 2. Segmentation analysis of contraceptive use (ELISEE method). OC = oral contraceptives, IUD = intrauterine device, CD = condom, PA = periodic abstinence, FST = sterilization, CINO = coitus interruptus/ no method.

in Figure 2 explained 31% of the variance observed in the contraceptive use variable.

If we focus on the segments where the use of a particular method was greatest and on the 'pathway' that leads to that segment, it emerges that OC use was high where the women had above median scores for the social influences index with respect to OCs (segments 2, 4, 5 and 8-11), and/or where they had an above median

index for the attitude towards OCs (segments 9 and 14). The use of female sterilization was primarily related to an above median score for self-efficacy with respect to the method (segments 11 and 15). Sterilization was the only method other than OCs which had a high prevalence in segments where the OC index values were high. IUD use was found to be greatest where women had below median values for the social influences index with respect to OCs and for the attitude index towards OCs, but an above median value for the social influences index with respect to IUDs (segment 13). Women with similar characteristics, but a below median value for the last variable, scored high on the use of condoms, periodic abstinence and coitus interruptus/ no method (segment 12).

9.4. Discussion

Contraceptive use in developed countries is characterized by specific problems and is still suboptimal. Fifty percent of all pregnancies in the United States are unintended [31], as compared with 31% of all pregnancies in England and Wales [32] and 7% of first pregnancies in the Netherlands (Evert Ketting, Netherlands Institute for Social Sexological Research, personal communication). At least 2 1/4 million abortions are carried out each year in Western Europe and the United States [33]. In this context, studies that address the determinants of contraceptive decisions may contribute substantially to our understanding of how contraceptive practice in developed countries may be further optimized.

The present study was based on nationally representative samples from Great Britain and Germany and is probably the largest model-based exploratory investigation of this kind to have been performed. The study was intended to extend the descriptive observations which are available for Western Europe [12,26,34-36]. The theoretical framework relied heavily on the model of reasoned behaviour of Ajzen and Fishbein [15] and Ajzen and Madden [16], although their subjective norms component was replaced by a social influences measure. This adjustment was considered necessary because of the special requirements imposed by the population-survey nature of the study. In addition, fertility awareness, communication with the partner and principal demographic factors were included as explanatory variables. It might be concluded that we used the rationale of Ajzen and Fishbein, rather than their model in the strict sense, in order to structure the analysis of the many explanatory variables investigated. Despite these divergences from the original model, the present results may nevertheless be considered to be reasonably consistent with those of

previous studies which applied the model more strictly.

9.4.1. Attitude

Contraceptive decisions might be assumed to be related to attitude towards the contraceptive methods concerned [1-4]. In the present study attitude was found to be directly associated with use of the various contraceptive methods. Although users were more positive with respect to the method they used than non-users, it should be noted that they also had doubts about the method, although to a somewhat lesser extent.

The measurements of attitude perceptions and evaluations revealed that no contraceptive method was considered to be ideal by the respondents. The ideal contraceptive method was in fact seen as reliable, easy to use, causing no disturbance to sex life, easy to obtain, natural, free from health risks or side effects, and affording protection against cancer and AIDS/ STD transmission. However, respondents voiced doubts in several of these respects concerning all methods, whether they were users or not.

In the context of the discussions as to whether the price of contraception (especially in the case of OCs) may deter some women from using a particular method [37], it was noted that perceptions of the cost involved were related considerably less significantly to use of a method than perceptions as to reliability and safety for health. Analysis of these perceptions according to country (Appendix B, Table 2) revealed that they were not related to OC use in Germany (a country where the cost factor might be expected to play a role, since the cost of supplies is borne in full by the user; whereas in Great Britain OCs are generally provided free of charge). The corresponding evaluation to the effect that a method must not be expensive was also accorded less weight (mean 1.2) than most other evaluations (1.6-1.9). Taking these observations into account, it might be concluded that the cost associated with contraceptive use plays only a minor role in contraceptive decisions. Thus, it may be taken that the discontinuation of reimbursement for supplies, as was proposed (but not pursued) for OCs in the Netherlands in 1995, would be unlikely to make many women decide not to use the method concerned (Appendix B).

In terms of the contraceptive choice, i.e. the choice made from among the various methods studied, the picture that emerged from the study revealed some remarkable facts which, as far as we know, have not been documented before. The multifactorial analyses indicated that attitude towards medically-prescribed methods (OCs, sterilization and, to a lesser extent, IUDs) played a principal role in decisions to use a medical method, or rather to reject medical methods and consequently to use

condoms, periodic abstinence or coitus interruptus/ no method. In this way, the study showed that the use of non-medical methods might sometimes constitute a negative choice, i.e. one heavily determined by decisions against the use of a medical method.

As we commented previously in the descriptive reports on the data sets that were analyzed, the respondents' attitudes towards the contraceptive methods investigated were ambivalent, although this ambivalence was not entirely justified in the light of medical research findings [24,25]. With respect to OCs, IUDs and sterilization in particular, many of the fears expressed as to their safety for health (cardiovascular disease and weight gain in the case of OCs, infections and infertility in that of IUDs and operating risk as regards sterilization) need to be qualified [38]. Our analyses suggested that such fears are not without significance: they seem to play a distinct role in contraceptive decisions. Therefore, correction of the negative image that these methods have would seem to be highly necessary. It might be speculated that a more realistic image in the case of medically-prescribed methods might also contribute positively to contraceptive decisions with respect to non-medical methods, which might then be chosen more on the basis of their perceived advantages rather than the disadvantages attributed to other methods.

9.4.2. Social influences

Most respondents felt that they had been encouraged to use OCs by their social environment. Advice received from physicians had played an important role in this respect, more in fact than that of partners. It also emerged that in general the respondents believed that OCs were used in their social environment i.e. by their friends. The results of various analyses confirmed previous observations concerning the role of perceptions relating to the (norms of the) social environment in contraceptive decisions [1-4,17,18]. Contraceptive use seemed, partly at least, to be a social behaviour.

By analogy to attitude, social influences in regard to medical methods were most clearly associated with the contraceptive choice. The principal determinant of the contraceptive choice was found on the whole to be the social influences factor with respect to OCs. This suggested the principal role that social influences may play in contraceptive decisions might be explained by the ambivalent attitudes referred to earlier. Given the fact that many users associated disadvantages with their method, stimulation to use the method by the social environment might have convinced women with a more negative attitude to use the method nevertheless.

These findings are of direct relevance in the context of proposals to make OCs available without medical prescription [39,40]. Removal of the need to consult a

physician to obtain an OC prescription has been proposed in order to increase the accessibility of the method. The present results concerning attitude and social influences (and the role of physicians in this respect) indicate that the situation achieved with respect to OC use is probably rather vulnerable. Reduction of the physician's role in stimulating the use of reliable contraceptive methods (including OCs) might lead to a situation where attitude perceptions, which are sometimes unjustified, might play a considerably greater role in contraceptive decisions than at present, and no longer be outweighed by the physician's positive input. In this respect, the principal role played by social influences relating to OC use in the contraceptive choice would indicate that diminution of the physician's role in contraceptive decisions might lead to a lower use rate of OCs and greater use of less reliable contraceptive methods (this situation being represented by segment 12 in the segmentation analysis).

9.4.3. Self-efficacy

Associations between contraceptive use and the perceived ability to use a method correctly (self-efficacy) have been investigated with respect to condom use in particular [5,41,42]. Furthermore, Levinson [6] showed that self-efficacy contributed to the choice of more effective contraceptive methods. In our study, self-efficacy played a less distinct role in contraceptive choice decisions than had been expected on the basis of these previous investigations, particularly as regards condom use. Self-efficacy was generally not found to be a principal determinant (except in the case of sterilization, where it emerged clearly in the segmentation analysis), but entered the picture after attitude and social influences factors. Self-efficacy scores did not point to users and non-users of a method with sufficient certainty. It must be taken into consideration that most respondents were relatively experienced contraceptive users, in contrast to the respondents in the previous studies mentioned (which addressed adolescents and college students). It seems reasonable to suggest that among experienced users perceptions of practical ability are less relevant to actual use than they are among 'starters'.

The individual self-efficacy item scores with respect to OCs were high generally, and very high among users. The fact that OC compliance is suboptimal is well documented, and the present OC findings must be seen in this context - in practice 20% to 30% of women miss a contraceptive pill every month [43]. The lowest expected failure rate of OC use has been suggested to be 0.1%, but in reality this rate may be 3-6%; the difference is believed to be due to incorrect use. The present study findings therefore seemed to indicate that some women had

overestimated their ability to use OCs correctly and consistently. It might even be speculated that over-optimism with respect to OC compliance plays a distinct role in sustaining this major problem.

9.4.4. *Communication with the partner*

Most respondents reported that they communicated frequently with their partner about contraception. These results suggested that communication problems are less prevalent among relatively experienced contraception users than among the young women addressed in previous research [7-9]. Communication with the partner was associated only with the use of sterilization and then negatively, which was probably the result of the fact that communication became less relevant after the procedure had been performed.

9.4.5. *Fertility awareness*

Observational studies have shown that the risk of conceiving following unprotected intercourse is about 90% among women aged 15-19 and is still around 70% among women aged 40-44 years, despite the gradual decline in fertility with age [31]. A high fertility potential should therefore be taken into consideration throughout fertile life up to the time of the menopause. Most respondents in fact considered that their chances of conceiving would be high if they had unprotected intercourse.

Research has indicated that underestimation of fertility may predispose to the use of less reliable contraceptive methods [10,11]. We observed that lower fertility awareness was associated with the use of coitus interruptus/ no method. An underestimation of fertility might thus be a key consideration in understanding why some women choose to use these unreliable contraceptive methods [11]. Fertility awareness did not play a role in the use of other contraceptive methods (except in the case of sterilization, where it seemed to be an *ex post facto* effect rather than a contributing factor).

9.4.6. *Age*

In a previous study we found that the contraceptive choice was very age dependent [14]. Age reflected the impact of 'reproductive status': postponing pregnancy might be achieved more frequently by the use of OCs and women who had finalized childbearing more often opted for an IUD or sterilization. The role of age in determining the use of the various methods, as a reflection of this 'reproductive status' factor, also clearly emerged from the present analyses. Age was found to be a determinant of contraceptive use, and this should be taken into consideration in

addition to the psychological determinants investigated.

9.4.7. Country of residence

In the current study, country effects played a distinct role. In other words, apart from the impact which living in a country (as a socio-cultural environment) might be assumed to have on the psychological determinants investigated [15], the country emerged as having additional effects and sometimes a modifying impact on the extent to which various psychological determinants were involved in contraceptive use. The positions of the countries in the scatter plot of the principal components analysis also suggested that specific national contraceptive traditions had a separate influence. As discussed previously, this might in part reflect differences in contraceptive services and their organization in the countries studied [14]. Country differences would appear to go beyond exerting a socio-cultural impact on perceptions, and their influence needs to be taken into account in cross-national research.

9.4.8. Decision models - limitations of the current approach

Ajzen and Fishbein [15] postulated that contraceptive decisions are the result of a concomitant weighing of the advantages and disadvantages of the various contraceptive methods and of perceptions of the opinions of social referents. Their model is an example of a *compensatory* decision model, in which negative perceptions may, for example, be outweighed by positive ones, resulting in an overall decision in favour of a particular method (as illustrated by our regression analyses). The additional segmentation analysis that was carried out provided a more *hierarchical* approach to the process of contraceptive choice. Whereas a compensatory model assumes the concomitant interplay of various factors, a hierarchical approach is based on the assumption that decisions are sometimes implicitly strongly determined by a first (and in this stage sole) action factor, and that other factors play a role only subsequently to this first factor. In this sense, hierarchical approaches take the less reasoned components of decisions into consideration. Hierarchical approaches have been found useful for the study of contraceptive use [36,44]. In the present study it was interesting to note that the results of the hierarchical approach provided information that was complementary to that supplied by the compensatory analyses. In contraceptive use research both approaches may provide useful data, since contraceptive use decisions might be partly compensatory and partly hierarchical.

Ajzen and Fishbein developed their model with a view to predicting future behaviours (e.g. future contraceptive use). As far as we know, only Davidson and

Jaccard [2,19] have applied their model in a longitudinal study, in which the predictive value of the attitude and social factors was confirmed with respect to future OC use. Other authors applied the model in cross-sectional studies [1,3,4,20,24], in which causal relationships between determinants and contraceptive use cannot be established. To interpret their results, these authors relied on the assumption that associations between determinants and current contraceptive use might provide information about contraceptive decisions that had actually been taken prior to the study. In the present study we also assessed associations between current contraceptive use and possible explanatory factors. However, the results do not shed much light on what came first: the factor or use of the method. Such a global approach yields useful clues as to which factors are involved in contraceptive decisions, but it is important to realize that it does not provide 'hard' evidence. The findings must be substantiated in longitudinal studies. In order to evaluate with a certain probability whether the methods used were more closely related to the factors investigated or whether these factors were related to the methods used, analyses were made of the asymmetry of the associations that were detected. These analyses suggested that in most instances the contraceptive decisions were at least partly determined by the psychological factors studied.

Ajzen and Fishbein assumed that demographic background characteristics would exert an impact on contraceptive use via psychological factors. However, we found that in some cases the age variable had an impact on contraceptive use in addition to rather than through the psychological factors studied. These observations indicated that other, unmeasured determinants were involved in contraceptive-use decisions in Great Britain as compared with Germany. Furthermore, the country variable determined the extent to which psychological factors influenced contraceptive use. Obviously, the assumptions made by Ajzen and Fishbein in this respect were not corroborated by the present data. In future investigations, it would be better to consider principal demographic factors as having a possible impact on contraceptive use which acts in parallel and interaction with psychological factors.

9.5. Conclusions

In a great number of cases contraceptive decisions develop in discrete patterns which depend largely on individual situations in terms of reproductive status, country of residence, type of relationship, educational level and depth of religious commitment [14]. The present study indicated that, within these specific situations, a

number of psychological factors may further influence the contraceptive choice that is made. Attitudes towards OCs, IUDs and sterilization, as well as perceived social influences with respect to these medically prescribed methods, were found to be associated with contraceptive decisions, even where the decisions concerned related to actual use of condoms, periodic abstinence or coitus interruptus/ no method. A 'medical or non-medical' decision criterion seemed to play an important role in contraceptive use. In this context, a certain prejudice with respect to the health safety of medical methods could not be discounted.

Contraceptive use was found in part to be a social behaviour. Friends and their perceptions of the advantages and disadvantages of a particular contraceptive method might model the contraceptive behaviour of others. Health-care providers seemed to have a considerable (and sometimes corrective) impact on contraceptive decisions. Any reduction in the counselling role of providers might result in more frequent decisions in favour of less reliable contraceptive methods. It might even be concluded that increased efforts on the part of health-care providers to inform couples about contraception are still necessary, so that contraceptive decisions may be taken on the basis of an appraisal of the true advantages and disadvantages of the available contraceptive methods. More information about fertility potential also seems to be needed and might serve to reduce the use rates of coitus interruptus/ no method.

All in all, the present results indicated that the contraceptive choice that is made depends on a number of psychological and principal demographic factors which must be taken into account when action is initiated to reduce the contraceptive problems that still exist today in developed countries or when consideration is being given to changes in health-care policy with respect to contraception.

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Appendix A - Bidirectional associations and asymmetry: Somers' d coefficients

In a cross-sectional study the associations between two variables are in principle bidirectional in nature. In order to be able to interpret such bidirectional associations further, we explored their asymmetry. Since the procedure is not often applied, we will elaborate upon it here in greater detail.

In a cross-sectional study, a positive association between two variables, e.g. attitude towards OCs and OC use, implies that women with a positive attitude might be more likely to have opted for OCs, but it does not exclude the possibility that the women concerned may have developed their more positive attitude only after starting OC use (prompted, for example, by the beneficial effects). However, in the case of this particular bidirectional relationship, OC use might still be more closely related to the attitude than the attitude is to OC use. This implies a relatively greater probability that women with a more positive attitude would have started using OCs than that the attitude of women who started to use OCs would subsequently become more positive. In the diagrammatic presentation below, situation A would apply with a greater probability than situation B or C (please note that what is involved here is the *relative* direction of the association and that in principle they remain bidirectional):

A) Attitude $\xrightarrow{\text{---}}$ Use B) Attitude $\xleftarrow{\text{---}}$ Use C) Attitude $\xleftrightarrow{\text{---}}$ Use

The relative direction of a bidirectional association can be explored by means of Somers' d coefficients, which detect the asymmetry in an association (use more strongly associated with attitude than attitude with use, or vice versa). Somers' d coefficients may provide an approximation of the strength of the association both in one direction (d_{AB}), and in the opposite direction (d_{BA}) [1]. In the present study, it was decided that the values of the indices were more strongly associated with use of the contraceptive method (situation A) when $d_{AB} > d_{BA}$. Nevertheless, it should be kept in mind that the associations investigated remained bidirectional in nature and that this procedure did not allow conclusions to be drawn as to which factor (index or use) was causally related to the other.

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Appendix B - Cost of oral contraceptives and their acceptance

It is sometimes assumed that if the cost of contraception is high it might have a negative impact on its use, since some women might no longer be able to afford it. In the Netherlands, it was proposed in 1995 to discontinue reimbursing the cost of OC supplies (currently reimbursed in full), which aroused fears about an increase in unintended pregnancies. The proposal was subsequently withdrawn. In a previous study we showed that price does not seem to have a major impact on the acceptance (use rate) of OCs [1]. In Figure 1 the absence of any relationship between OC acceptance and cost reimbursement level is illustrated.

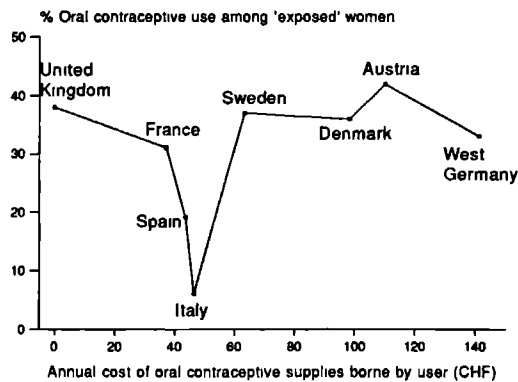


Figure 1. Relationship between annual cost of oral contraceptive supplies borne by the user (taking reimbursement into account) and acceptance of oral contraceptives (1984-1989). Data adapted from Ref. [1].

Table 1. Would the 'pill' be expensive for you?

	Great Britain %	Germany %
Yes	3	30
Possibly	7	11
No	90	59
n	893	912

The present study revealed that perceptions of the price of OCs were considerably less strongly related to OC use than perceptions concerning their reliability, safety for health and ease of use. Evaluation criteria concerning the cost

received lower ratings than those concerning other characteristics. Nevertheless, in Germany the cost of OC supplies is borne by the user herself, so that affordability might be a relevant issue. The perceptions regarding the cost of OCs in Table 1 reveal price awareness in Germany but not in Great Britain (where OCs are free under the National Health Service). If we look at the relationship between cost perception and actual OC use (Table 2), it can be seen that the perception that OCs are costly is not associated with a lower use rate in Germany. The British results are rather puzzling, since OCs are generally supplied free of charge. The few British women who erroneously believe that OCs have to be paid for obviously include a greater proportion of non-users. All in all, the results indicated that among women who

Table 2. Percentage of oral contraceptive users according to perceptions as to price of oral contraceptives^a

	<i>Great Britain</i>		<i>Germany</i>	
	%	(n)	%	(n)
Expensive	18	(4/24)	51	(108/212)
Possibly expensive	20	(7/33)	58	(38/66)
Not expensive	42	(234/558)	53	(226/427)

Country effect: $P < 0.001$ (ANOVA); perception effect: $P > 0.05$ (ANOVA). ^a Women not in need of contraception (not sexually active, infertile, pregnant or seeking pregnancy) were excluded from the analysis

Table 3. Average reimbursement per user (absolute value and as percentage of the market price paid by the user), actual annual cost of OC supplies borne by the user, total annual cost to the user (including consultation) and OC acceptance in the corresponding years

	<i>Reimbursement for supplies</i>		<i>Actual costs</i>		<i>Acceptance (%)</i>
	<i>% reimbursement</i>	<i>% of cost paid by user</i>	<i>Supplies (CHF)</i>	<i>Total cost (CHF)</i>	
Italy 1984	24	76	46.60	75.04	6
France 1984	61	39	37.17	51.86	31
Spain 1985	5	95	43.69	78.49	19
West Germany 1985	0	100	141.22	141.22	33
United Kingdom 1985	100	0	0.00	0.00	38
Austria 1987	0	100	110.07	172.32	42
Sweden 1987	7	93	63.45	63.45	37
Denmark 1988	0	100	98.21	98.21	36
Belgium 1989	25	75	--	--	48

Data adapted from Refs [1,2].

perceived (and may have known from actual experience) that OCs were relatively costly (which was the case only in Germany), affordability problems do not deter a significant number from using them. In conjunction with the differences in cost levels

and use rates between countries, this indicates that an increase in the cost of OCs resulting from the discontinuation of reimbursement would be unlikely to result in lower use rates. The elastic nature of the price of OCs can be seen from the fact that current price levels are low compared with those of many other of the necessities of life (viz. CHF 0 - 14.36 per month; Table 3). Overall, these findings indicate that political debate concerning reimbursement for OCs should concentrate on the societal and policy aspects without entering into considerations of a more medical nature (low OC acceptance).

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Chapter 10

Summary and general discussion

B.J. ODDENS

10.1. Introduction

This thesis embraces a series of studies which were aimed at assessing contraceptive use and related issues in Great Britain, Germany and the Netherlands. In 1992, large population surveys were carried out for this purpose in Great Britain (n = 967) and Germany (n = 1,064). In addition, an examination was made of the results of surveys conducted between 1990 and 1993 in the Netherlands (n = 4,560 - 4,621). The determinants of contraceptive use were further investigated by conducting a pilot survey in Germany (n = 97), a cross-national study covering eight West European countries to determine the contraception costs payable by users, and exploratory analyses of data obtained from the abovementioned British and German surveys.

The present investigations were designed to address the following research questions:

- (a) which contraceptive methods are currently used in Great Britain and Germany?
- (b) to what extent do the contraceptive use patterns in these countries differ from those observed in 1984 and 1985 respectively?
- (c) can changes in contraceptive use observed over time be attributed to pill scares and AIDS campaigning in these countries?
- (d) what are the current attitudes towards the various methods that are available in the two countries?
- (e) which factors (including attitudes) can be considered to be the principal determinants of contraceptive use?
- (f) which factors might contribute to the international variation in contraceptive use observed within Western Europe?

It was considered important that the investigations concerned should be nationally representative, in order to ensure that the results would be valid for the general female population rather than subgroups of specific, but limited, interest. The countries investigated were considered to be fair representatives of the situation in the northern part of Western Europe. The findings as to the determinants of contraceptive use obtained in the present study were expected to contribute to our understanding of how women in Western countries make their choices from the range of contraceptive methods available.

10.2. Current contraceptive use in Great Britain and Germany: differences in comparison with 1984-85

Chapters 4 and 5

Contraceptive practice in Britain was not found to have changed greatly in recent years, despite publicly expressed concern about the relatively high British abortion rate. Two groups at evident risk of using unreliable contraceptive methods were identified, viz. adolescents and women aged over 40. With respect to AIDS-prevention behaviour, it was noted that barrier method use (condoms and diaphragms) had recently doubled among young women. Nevertheless, 58% of women who had occasional sexual partners still did not use barrier methods.

In contrast to the situation in Great Britain, the use rates of effective contraceptive methods had increased considerably in West Germany between 1985 and 1992 (no direct comparison with previous studies could be made for East Germany owing to methodological differences). Contraceptive practice had improved least among women in the most highly educated stratum and women aged 40-44 years. Nevertheless, it was noted that the use rate of effective contraceptive methods was high among the 'classical' risk groups for the use of unreliable contraception, viz. adolescents, women aged over 35 and women of low educational level. Sixty-six (66) percent of German women who had occasional sexual partners were not using barrier methods.

In East Germany, more women used oral contraceptives (OCs) than in West Germany and fewer women relied on sterilization. As compared with the pattern of use in Great Britain, more German women used OCs and periodic abstinence, and fewer relied on barrier methods, an intrauterine device (IUD) or sterilization.

10.3. Attitudes and self-efficacy: effects of pill scares and AIDS campaigns

Chapters 4 and 5

Attitudes towards the various available contraceptive methods were ambivalent in Britain and Germany. Condoms and periodic abstinence were perceived as being free from health risks and side effects. However, they were also seen as being rather difficult to use and disturbing to sex life. Medical methods (OCs, IUDs and sterilization) were considered to be very reliable, relatively to very easy to use and non-inhibiting, but also as posing potential health threats. In other words, no method was perceived as ideal.

When asked about side effects and health risks, respondents indicated that they expected to suffer when they used the methods concerned. Many associated OCs with weight gain, headache, depression, painful and tense breasts, nausea, cardiovascular disease and cancer. High percentages also feared infections and infertility with IUD use and perceived sterilization as a major and risky operation. Despite their high prevalences, these beliefs are no longer justified in the light of modern medical research evidence, which indicates that the contraceptive methods concerned are generally very safe for health. Apparently, this medical evidence had not been adequately disseminated to the lay public. Accordingly, it could not be concluded that the effects of previous pill scares had disappeared over time. The 1991 pill scare that occurred in Germany, which associated specific OCs with thromboembolism, seemed to have had a lasting impact on attitudes among German women, since in 1992 considerably more respondents were found to be afraid of developing cardiovascular disease when using OCs than had been expected on the basis of previous survey results.

Measurements of the perceived ability to use a specific method (self-efficacy) revealed that women were generally afraid of an IUD or sterilization. Taking OCs on a daily basis was not considered to be difficult. Where respondents would have been willing to use condoms, many (almost one in every two women) feared that their use would be inconsistent. Embarrassment about buying condoms in a shop was expressed by similar percentages. A large majority of British women expected to have problems with the correct and consistent use of periodic abstinence, as compared with only one in three women in Germany.

In Great Britain and Germany most respondents were aware that condoms prevent the transmission of AIDS and other sexually transmitted diseases. These high levels of awareness can be attributed to the extensive AIDS information campaigns that had been carried out in the two countries.

10.4. Dynamics of oral contraceptive use

Chapter 6

It has been reported in the literature that a change to another contraceptive method is often motivated by a wish to discontinue OC use. Indications to this effect were also found in the British and German studies. Dissatisfaction with OCs is generally related to having suffered side effects and poor cycle control, and possibly also to negative attitudes towards OCs (fears concerning health risks). Nevertheless,

there is no detailed recent information showing, on an annual basis, how many women start or stop OC use or switch to another OC type (this being another sign of dissatisfaction with the OC used previously). Earlier studies suggested that most women who were dissatisfied with OCs for physical reasons stopped using them completely. Over recent decades, however, experts have taken the view that physical discomfort caused by OC use is an indication for switching OC type rather than completely rejecting the method.

In order to gain a better knowledge of these issues, data obtained in representative surveys in the Netherlands in 1990-93 were explored further. It emerged that 12-15% of all respondents who had used OCs during the 12 months prior to the surveys had discontinued OC use within this period, 12-16% were starters and 9-14% had switched to another OC type. Discontinuation of OC use was most frequently related to a wish to get pregnant. However, poor cycle control, side effects and/or general dissatisfaction constituted the main reasons for some of the women who discontinued OC use and did not adopt any other contraceptive method. Apparently, there was yet a subgroup of OC users in the Netherlands who stopped OC use because of dissatisfaction with the method and did not subsequently adopt another reliable method. Poor cycle control and perceived side effects were also among the principal reasons for switching OC type. In these latter cases close monitoring of client satisfaction by health-care professionals had prevented the women concerned from rejecting a method which, after a longer period of 'trial and error', was bound to provide them with the benefits they were seeking.

The Netherlands is situated at the top of the family-planning efficiency scale and has, for example, the lowest abortion and unplanned pregnancy rates in the world. This high efficiency is also reflected in the fact that the number of women who switch OCs owing to dissatisfaction is far greater than the number who discontinue their use. This may imply that OC discontinuation rates are substantially higher in Western countries in which family planning efficiency is of a lower order. Although attitudes towards OCs are no less ambivalent in the Netherlands than elsewhere, the personal interest taken by physicians in proper contraceptive use by their women patients is probably much greater. The results thus highlighted the relevance of close monitoring of client satisfaction with OC use and the provision of expert advice where use problems arose. On the other hand, they showed that even in the exemplary case of the Netherlands there is a need for increased awareness on the part of health-care professionals of the risk that women might abandon all forms of contraception because of dissatisfaction with OCs.

10.5. Understanding contraceptive choices: the determinants of contraceptive use

Chapters 2, 3, 7, 8 and 9

10.5.1. Previous studies

Many studies have addressed the determinants of contraceptive use. Among the relevant factors identified were demographic characteristics (age, parity, marital status, education, religion, ethnic origin and country of residence), accurate assessment of fertility (fertility awareness), AIDS awareness, inter-partner communication, attitudes towards available methods, perceptions as to social approval of the use of a particular method, confidence in own ability to use a method, and, possibly, the total number of sexual partners and coital frequency.

However, such past studies have had a number of shortcomings, making it impossible to extrapolate the findings to the general population or the West European situation. The studies relating to the demographic determinants of contraceptive use looked at Western Europe and were based on national representative data, but they did not generally take into consideration the fact that the demographic characteristics considered were in many instances interrelated. For example, suggested marital status effects on contraceptive use decisions might have reflected underlying age effects (since married women are on average older than single women). Furthermore, country effects might have been the result of differences in educational level between the populations concerned. In other words, information as to the independent effects of these demographic factors was virtually non-existent, the same being true of knowledge of the principal determinants of contraceptive use in this specific connection.

The studies relating to the psychological determinants of contraceptive use were conducted in specific groups and settings, viz. adolescents, young women and the United States. Consequently, their findings are likely to be more relevant to the specific situation of the subpopulations concerned than to the general population as a whole. Although the results may provide useful suggestions as to ways of optimizing contraceptive care for such specific subpopulations, it is not unlikely that they are entirely irrelevant to the problems of other subpopulations not addressed in the studies (e.g. women over 40, who emerged in Britain as a risk group for the use of unreliable contraception). Furthermore, the findings of these studies do not provide the key answers necessary to improve contraceptive use within the overall population. Finally, we are left in the dark to some extent as to how women in general make their contraceptive choices from the range of methods available.

It may be hypothesized that health-care organization and policy, including

reimbursement schemes, have an impact on individual contraceptive decisions. Hardly any of the past studies examined these issues in detail, and the few which did used descriptive rather than quantitative approaches. However, in order to evaluate the possible consequences of changes in health-care policy on contraceptive use (such as reductions in reimbursements for cost-saving reasons), it is of vital importance to gather better information.

10.5.2. Current investigations: health-care organization and policy

From the various studies reported in this thesis it emerged clearly that the organization of health care and health-care policy affected contraceptive use patterns. As mentioned above, AIDS information campaigns undoubtedly had some effect on contraceptive use among young women. The more complex analyses confirmed that having occasional sexual partners as opposed to a steady sexual relationship determined the use of condoms to some extent. Although the practising of 'safe sex' was not as widespread as desirable, the findings highlighted the relevance of AIDS information campaigns and showed that these have not only increased public awareness of the problem, but have also changed contraceptive practices. It is obviously necessary to continue these campaigns in order to promote increased use of preventive methods.

The types of provider involved in contraceptive counselling (general practitioners and family planning clinics in Great Britain and independent gynaecologists in Germany) also influenced the contraceptive choices made. Hence, in Germany, more women were found to be using OCs, and fewer had had recourse to sterilization than in Great Britain. It seemed reasonable to conclude that British women had easier access than German women to female sterilization and their partners to vasectomy (in Britain the latter procedure is often performed by general practitioners in the larger surgeries). It should be noted that in East Germany, a restrictive government ruling with respect to sterilization made it very difficult to have this procedure performed. Consequently, the East German sterilization rate was very low and East German women were less convinced of the advantages of the method, despite the fact that the legal obstacles were removed after reunification.

Government-sponsored efforts to promote any specific contraceptive method were found to affect contraceptive practice. Heightened public awareness of the symptothermal method of 'natural family planning' (a sophisticated and more reliable variant of periodic abstinence) probably led to the wider use of this method in Germany as compared with Britain. In recent years, however, such efforts have also made women aware of the disadvantages of this method (not always reliable,

complicated, etc.) and the use rate seems to have peaked. These results indicate that government efforts with respect to a specific contraceptive problem may indeed bring about the desired changes in contraceptive practice. The adolescent contraceptive problems observed in Great Britain highlighted the need for government action to improve sex education in schools, to adapt contraceptive services better to the needs of adolescents and to make teenagers aware of their contraceptive needs and the existing contraceptive possibilities.

Reimbursement of the cost of contraceptive services and supplies might theoretically improve access to contraception. However, the present investigations did not reveal any trends to substantiate this hypothesis. Indeed, given the reasonably low price levels for contraception in Western Europe, it was found that the actual use rate did not depend on the contraception costs that had to be borne by the users themselves. Furthermore, women who considered OCs to be expensive were just as likely to use them as women who found them inexpensive.

However, these findings do not exclude the possibility that specific subpopulations might have difficulty in affording contraceptives. Given the low price levels, the real problem would seem to be a basic lack of access to money rather than affordability in general terms. Therefore, it might be the case that teenagers constitute the sole subpopulation that benefits from reimbursement of contraception costs. The ending of the reimbursement of contraception costs for women over 18 is thus unlikely to affect contraceptive use to any considerable extent. Although reimbursement can be seen as an acquired right from the past, its discontinuation for women aged over 18 probably will not have the disastrous effects on the efficacy of family planning which have been suggested in recent political debates on the issue (cf. the Netherlands 1995). Therefore, it would not seem appropriate to include medical arguments (diminished family planning efficacy) in such debates, but rather to address the issue from the purely societal and political points of view.

10.5.3. Demographic determinants

Contraceptive use was found to be closely related to a number of demographic characteristics among the women concerned. Careful examination of the relationships between the effects of the various characteristics on contraceptive practice revealed a number of relatively independent effects which had a considerable influence on the choice of contraceptive. The principal effect was associated with the respondents' 'reproductive status', as a combined expression of the individual effects of age, parity, marital status and future child wish that had been observed in previous studies, and which determined contraceptive use more powerfully than any of these factors singly.

The relevant demographic findings indicated that many women followed some sort of standard contraceptive career, which was by no means entirely based on the possibilities offered by the various contraceptive methods. After their preliminary adolescent sexual experiences (when they relied on condoms or 'luck') most women seemed to adopt OCs. After having their first child, a considerable number changed to an IUD and subsequently, after completing their childbearing, to sterilization. The fact that women sometimes also changed to less reliable methods (periodic abstinence, condoms, coitus interruptus or reliance on 'luck') revealed the negative side of this standard career. It is possible that the respondents over-emphasized their fears regarding the long-term health risks of OCs, causing them to stop OC use too often, without having any reasonable alternative in mind.

The consequent increased use that is made of unreliable contraception might possibly be reduced by the effective provision of information about the true health risks and benefits of OCs and their suitability for use by older women. Such information needs to be specifically directed at the women concerned. Health-care professionals probably tend to believe that older women are so experienced in the area of contraceptive use that there is no need to treat them as a special target group for information about contraception. The present findings show that if this is so, the professionals concerned are labouring under a misapprehension.

Apart from reproductive status, contraceptive practice proved to be determined by the country of residence, having occasional sexual partners (as discussed above), educational level and religious commitment. The mechanisms underlying the effect of educational level on contraceptive use are of particular relevance, since a lower educational level increased the likelihood that no method at all or coitus interruptus would be used, which might explain the lower OC uptake among the women in the demographic group concerned. It was postulated that OC compliance problems might constitute a key factor which could serve to explain the lower use rate of OCs and higher use rates of unreliable methods among women of lower educational level. Further research in this connection could usefully explore this tentative hypothesis.

The distinct impact of a woman's demographic characteristics on her contraceptive decisions that was observed suggested a certain contraceptive predestination rather than any real freedom of choice. It is important for family planning professionals to be aware of the fact that a woman's specific contraceptive needs reduce her contraceptive options to a considerable extent. It is obviously necessary to tailor counselling to meet these needs. On the other hand, there might be more contraceptive options available in individual cases than the demographic situation would seem to dictate (continued OC use by older women, recourse to

sterilization in Germany, the use of injectable or implantable contraceptive steroids, etc.). In open discussions with family planning advisers many clients might discover that the range of contraceptive choices is wider than they might think.

10.5.4. Psychological determinants

It is important to note that the psychological factors described here subsequently determined specific contraceptive choices which had to be made from a number of options that had already been reduced considerably by the demographic situations of the women concerned. For example, a woman who wished to postpone her first pregnancy would have seen the possible choices reduced to OCs, coitus-dependent methods or no method at all (IUDs or sterilization obviously being excluded). Within this reduced range of choices, it was postulated that psychological factors might modify the final decision for or against a specific method.

One basic mechanism identified in the investigations was a process of discrimination between medical and non-medical methods. A positive attitude towards medical methods (OCs, IUDs and sterilization) and social support for their use were closely related to actual use of these methods. The use of condoms, periodic abstinence, coitus interruptus and no method at all was at least as strongly related to a dislike of medical methods as to a positive attitude towards non-medical methods. In other words, the range of contraceptive choices, already reduced by a woman's demographic situation, is in turn further limited by the acceptability or otherwise of particular medical methods to the woman concerned.

As indicated above, the attitude of respondents towards the health safety aspects of medical methods was rather negative. We have already seen in the case of the Netherlands that health considerations motivated women to switch OC type or stop using OCs altogether. Analysis of the psychological determinants also suggested that negative attitudes played a distinct role in contraceptive use decisions. The elimination of unfounded doubts in this respect should at least reassure the users of these methods and may make them feel more at ease about using them. Furthermore, the removal of such doubts might favourably influence the attitudes of users of unreliable methods, rendering them more likely to switch to reliable methods. However, longitudinal research is necessary to ascertain whether users of unreliable methods would actually change to a more reliable method if their attitude towards the latter were to be positively influenced. The present cross-sectional study design (with its inherent 'chicken-or-egg' problem) yields no direct evidence in this connection. Furthermore, research is needed to determine how unfounded negative attitudes can

most effectively be modified.

In this latter respect, the studies suggested that physicians and other health-care professionals could play an important role. The results indicated that in many cases sceptical attitudes could be redressed by professional advice in support of use of the method concerned. This was also illustrated by the Dutch findings indicating that advice from a physician could dissuade women from discontinuing OC use where they complained of physical discomfort (a situation in which their attitudes towards OCs were undoubtedly negative). This highlights the principal role to be played by health-care professionals in informing women about their contraceptive options. If OCs were to be made available over the counter, a situation would arise in which the counselling role of health-care providers would be effectively diminished, which could result in a decline in OC use, more cases of early discontinuation and increased use of less effective methods. Policy makers must therefore take the possibility of a deterioration in effective family planning seriously into consideration when putting forward proposals concerning the over the counter sale of OCs.

In contrast to what was reported in previous studies, the other psychological factors were found to be of less relevance to current contraceptive use. Self-efficacy (the perceived ability to use a method correctly and consistently) was probably more relevant to contraception 'starters' than to the population as a whole. Communication with the partner was found to have less influence on the contraceptive choices made than had been expected. Nevertheless, the erroneous underestimation of fertility might be further an explanatory factor as to why some women opted for coitus interruptus or no method at all.

In summary, the psychological factors which influenced decisions on contraceptive use were predominantly professional advice and social support, followed by attitudes and, in the case of the most unreliable methods, underestimation of fertility. Within the framework of the demographic situation, health-care professionals seemed well placed to improve the contraceptive choices made by their clients. The provision of extensive professional information (at the initiative of the health-care professional where not explicitly requested by the client) about the advantages and disadvantages of the methods currently available, reassurance as to the health safety of medical methods and eradication of erroneous or inadequate knowledge about fertility may ultimately result in fewer women having to suffer unintended pregnancies.

10.6. Differences between countries

Chapters 7, 8 and 9

There are wide differences in contraceptive practice between West European countries. Throughout this thesis we have attempted to evaluate whether the variation is attributable to differences with respect to other determinants of contraceptive use than country of residence. However, the impact of the country factor persisted after all other possible explanatory factors had been taken into account. Differences between countries were not explained by differences between reimbursement schemes for contraception costs. Nor were they related to demographic differences between the populations concerned. Differences in attitude and perceived social influences were observed between the two countries, but the country of residence proved to have an additional and separate impact on contraceptive use, quite apart from the impact of the socio-cultural environment on the psychological determinants.

When a further attempt was made to explain the influence of the country of residence on contraceptive decisions, it was noted that some of the specific differences could be attributed to health-care organization and policy differences. Lower sterilization use rates in Germany were associated with the fact that independent gynaecologists (with no facilities to perform minor surgery) rather than general practitioners (who often had such facilities in Britain) were the main care providers. East German legislation prior to reunification was held responsible for the virtually non-existent use of sterilization in that region. In Britain, ineffective teenage sex education and contraceptive services that were not adapted to teenagers' needs (they had to visit the family physician, which they saw as involving a risk of their parents being informed) would appear to explain why British teenagers too frequently relied on 'luck'. Finally, government-sponsored 'natural family planning' programmes might have led to the higher awareness of that method observed in Germany.

The conclusion that can be drawn from these observations is that country-related differences in contraceptive use extend further than the effects of a socio-cultural impact on perceptions. In order to improve contraceptive practice in a given country, the implicit effects of its health-care organization and policy must be carefully scrutinized and any necessary remedial action taken.

10.7. Conclusion

Contrary to popular belief, contraceptive practice is not without problems in

Western Europe. The 'contraceptive revolution' has taken place gradually over the past 30 years, but a situation in which optimum use is made of effective family planning within the community has still not yet been achieved. Efforts to improve this state of affairs on the part of policy makers and family planning providers (by informing the lay public about the true advantages and disadvantages of the various methods that are available and dispelling popular misconceptions) as well as those of innovative manufacturers (in developing reliable, safe and easy-to-use methods) remain of the utmost importance. Contraceptive choices are currently unnecessarily limited by demographic influences on the contraceptive decisions people take. Furthermore, discrimination between 'medical' and 'non-medical' methods limits contraceptive choices even further. Indeed, contraceptive decisions are sometimes driven more by fear than logic. In these respects, family planning providers are those best placed to change the current situation. Extensive information-provision and counselling are necessary to turn average clients into informed clients, whether novices or experienced users. It is to be expected that informed clients will take informed decisions, which will ultimately be in their own best interests.

Hoofdstuk 10

Samenvatting en algemene beschouwing

B.J. ODDENS

10.1. Inleiding

In dit proefschrift wordt een aantal onderzoeken beschreven naar verschillende aspecten van het anticonceptiegebruik van vrouwen in Groot Brittannië, Duitsland en Nederland. In 1992 werden in dit verband grootschalige bevolkingsonderzoeken uitgevoerd in Groot Brittannië (n = 967) en Duitsland (n = 1.064). Bovendien werden de gegevens geanalyseerd die verkregen waren door onderzoek bij vrouwen in Nederland tussen 1990 en 1993 (n = 4.560 - 4.621). Verder werden de determinanten van het anticonceptiegebruik onderzocht, door middel van een verkennend onderzoek in Duitsland (n = 97), een internationale vergelijking van acht West Europese landen naar de kostprijs van anticonceptie voor de gebruiker en een nadere analyse van de bovenvermelde Britse en Duitse gegevens.

Deze onderzoeken hadden tot doel antwoord te bieden op de volgende vragen:

- (a) welke anticonceptiemethoden worden heden ten dage gebruikt in Groot Brittannië en Duitsland?
- (b) in hoeverre verschilt het huidig anticonceptiepatroon in deze landen van dat van respectievelijk 1984 en 1985?
- (c) kunnen veranderingen in het anticonceptiegebruik in deze landen toegeschreven worden aan AIDS campagnes en de effecten van "pill scares" (een stroom van negatieve berichtgeving in de media over vermoede gezondheidsrisico's van de pil)?
- (d) hoe beoordelen vrouwen in deze landen de verschillende anticonceptiemethoden?
- (e) welke factoren (inclusief de houding van vrouwen ten aanzien van de verschillende anticonceptiemethoden) kunnen beschouwd worden als de belangrijkste determinanten van anticonceptiegebruik?
- (f) welke factoren dragen bij tot de internationale variatie in anticonceptiegebruik binnen West Europa?

Wij vonden het belangrijk dat de resultaten van de onderzoeken representatief zouden zijn voor de gehele vrouwelijke bevolking van het betreffende land en niet alleen op specifieke deelgroepen van toepassing zouden zijn. De genoemde landen werden gekozen aangezien zij kunnen gelden als redelijke representanten van de situatie in Noord-West Europa. Wij verwachtten dat de resultaten met betrekking tot de determinanten van het anticonceptiegebruik zouden kunnen bijdragen tot een beter inzicht in de wijze waarop vrouwen in westerse landen in het algemeen hun keuze maken uit de beschikbare anticonceptiemethoden.

10.2. Het anticonceptiegebruik in Groot Brittannië en Duitsland: verschillen met 1984-1985

Hoofdstuk 4 en 5

Het anticonceptiegebruik in Groot Brittannië bleek de laatste jaren weinig veranderd te zijn, ondanks publiekelijk geuite bezorgdheid over het relatief hoog abortuscijfer. Twee duidelijke risicogroepen van vrouwen die vaker dan andere onbetrouwbare methoden gebruiken werden onderscheiden, namelijk adolescenten en vrouwen ouder dan 40 jaar. In verband met AIDS preventief gedrag werd vastgesteld dat, in vergelijking met 1984, het gebruik van barrièremethoden (condooms en in mindere mate pessaria) onder jonge vrouwen twee maal zo hoog was. Nochtans gebruikte slechts 42% van de vrouwen met wisselende seksuele contacten barrièremethoden.

In tegenstelling tot Groot Brittannië was het gebruik van effectieve anticonceptiemethoden in West Duitsland sinds 1985 aanzienlijk gestegen (voor Oost Duitsland kon geen vergelijking met resultaten van eerder onderzoek gemaakt worden door verschillen in methodiek). De verbetering van het anticonceptiegebruik was het minst uitgesproken onder vrouwen met een hoog opleidingsniveau en vrouwen in de leeftijd van 40-44 jaar. Het gebruik van effectieve anticonceptiemethoden was, in vergelijking met andere West-Europese landen, relatief hoog in de klassieke risicogroepen van gebruikers van onbetrouwbare methoden (adolescenten, vrouwen boven de 35 en vrouwen met een laag opleidingsniveau), zowel in West als Oost Duitsland. Slechts 34% van de Duitse vrouwen met wisselende seksuele contacten gebruikte barrièremethoden.

In Oost Duitsland gebruikten vrouwen vaker de pil dan in West Duitsland, terwijl zij (en hun partners) minder vaak tot sterilisatie (tubasterilisatie of vasectomie) beslisten. In vergelijking met Groot Brittannië verkozen Duitse vrouwen vaker de pil of periodieke onthouding en minder vaak barrièremethoden, een spiraaltje of sterilisatie.

10.3. Attitude en eigen-effectiviteit: effecten van 'pill scares' en AIDS campagnes

Hoofdstuk 4 en 5

De houding van Britse en Duitse vrouwen ten opzichte van de verschillende anticonceptiemethoden kan het best als ambivalent omschreven worden. Condooms en periodieke onthouding werden beschouwd als methoden zonder bijwerkingen of

gezondheidsrisico's. Deze methoden zijn volgens de vrouwen echter wel lastig in het gebruik en verstoren het sexleven. Medische anticonceptie daarentegen (de pil, het spiraaltje en sterilisatie) werd beschouwd als zeer betrouwbaar en vrij tot zeer gemakkelijk te gebruiken. Zij verstoren het sexleven niet, doch kunnen volgens de vrouwen wel schade toebrengen aan de gezondheid. Kortom, geen enkele methode werd als ideaal ervaren.

Toen de vrouwen gevraagd werd voor welke gezondheidsrisico's en bijwerkingen van medische anticonceptiemethoden zij bang zouden zijn als zij deze zelf zouden gebruiken, noemden velen bij de pil gewichtstoename, hoofdpijn, neerslachtigheid, pijnlijk gespannen borsten, misselijkheid, hart- en vaatziekten en kanker. Bij het spiraaltje was men vooral bang voor ontstekingen en onvruchtbaarheid en bij een sterilisatie vreesde men dat het een grote, riskante ingreep zou kunnen zijn. Volgens de medisch-wetenschappelijke literatuur zijn deze angsten niet gerechtvaardigd. Recent onderzoek toont aan dat de genoemde anticonceptiemethoden in het algemeen niet schadelijk zijn voor de gezondheid. Kennelijk heeft deze vaststelling het grote publiek nog niet bereikt en blijven de effecten van de zogenaamde 'pill scares' van de jaren 80 (media-ophef over mogelijke risico's van de pil) nawerken. Bovendien werd in het huidige onderzoek gevonden dat een pill scare in 1991 in Duitsland, over vermoede thrombose-risico's van de pil, de houding van Duitse vrouwen beïnvloed heeft. Wij vonden namelijk dat meer Duitse vrouwen bevreesd waren voor de mogelijkheid dat de pil hart- en vaatziekten veroorzaakt dan op grond van eerder onderzoek verwacht kon worden.

Uit metingen van de eigen inschatting een methode in de praktijk correct en consistent te kunnen gebruiken (eigen-effectiviteit) bleek dat vrouwen in het algemeen bang waren voor een spiraaltje en voor sterilisatie. Het dagelijks (moeten) innemen van de pil werd niet als lastig ervaren. In geval van condoomgebruik vreesde bijna de helft van de vrouwen dat zij deze niet consistent zouden kunnen gebruiken. Evenveel vrouwen zouden zich beschaamd voelen om condooms in een winkel te kopen. De meeste Britse vrouwen verwachtten problemen met de consistente en correcte toepassing van periodieke onthouding. Tweederde van de Duitse vrouwen was er echter van overtuigd dit wel te kunnen.

Zowel in Groot Brittannië als in Duitsland wisten de meeste vrouwen dat het gebruik van condooms AIDS en andere sexueel overdraagbare aandoeningen voorkomt. Blijkbaar hebben uitgebreide AIDS campagnes op dit punt effect gehad.

10.4. De pil: starten, stoppen en wisselen van type

Hoofdstuk 6

Eerder onderzoek toonde aan dat vrouwen die van de pil op een andere anticonceptiemethode overstappen dit vaak vooral doen vanuit de wens om met de pil te stoppen. Wij vonden hiervoor ook aanwijzingen in het Britse en Duitse onderzoek. Deze ontevredenheid met de pil komt in het algemeen voort uit de ervaring van bijwerkingen, slechte cycluscontrole en, mogelijk, een negatieve houding ten aanzien van de pil (angst voor gezondheidsrisico's). Desalniettemin zijn er geen recente cijfers over het aantal vrouwen dat jaarlijks met de pil begint, pilgebruik stopt of wisselt van type pil (ook een uiting van ontevredenheid met de pil die tot dan gebruikt werd). Vroegere studies suggereerden dat de meeste vrouwen die ontevreden waren vanwege lichamelijke bijwerkingen of ongemak eenvoudigweg stopten met het gebruik van de pil. Deskundigen adviseerden echter dat het eerder is aangewezen in zulke gevallen een ander type pil te proberen, in plaats van definitief te stoppen.

Om een beter inzicht te krijgen in deze aspecten van pilgebruik werden data van representatieve onderzoeken in Nederland uit de periode 1990-1993 nader geanalyseerd. Het bleek dat 12-15% van de vrouwen die gedurende de referentieperiode van 12 maanden ooit de pil had gebruikt hiermee inmiddels gestopt was. Voorts was 12-16% in deze periode juist met pilgebruik begonnen en was 9-14% op een ander type pil overgestapt. Het stoppen met de pil hing meestal samen met de wens om zwanger te worden; voor sommigen die daarna geen enkele andere methode gebruikten, vormden slechte cycluscontrole, bijwerkingen en/of algemene ontevredenheid echter de voornaamste redenen. Kennelijk bestond er in Nederland nog steeds een subgroep van pilgebruiksters die stopte vanwege ontevredenheid en daarna geen andere betrouwbare methode gebruikte. Slechte cycluscontrole en het ervaren van bijwerkingen waren ook de belangrijkste redenen om van type pil te wisselen. In deze gevallen voorkwam de huisarts door intensieve begeleiding dat de betreffende vrouwen de pil als bruikbare anticonceptiemogelijkheid verwierpen, zodat zij later, na langer zoeken, toch een pil vonden met de verwachte voordelen.

Nederland kent een zeer efficiënt anticonceptiegebruik en heeft bijvoorbeeld het laagst aantal ongewenste zwangerschappen en abortussen ter wereld. Deze hoge graad van efficiëntie komt ook tot uitdrukking in de huidige bevinding dat het aantal vrouwen dat vanwege ontevredenheid met de pil wisselde veel groter was dan het aantal dat daarom stopte. Dit zou kunnen impliceren dat het aantal gebruiksters dat jaarlijks met de pil stopt beduidend hoger is in westerse landen waarin het anticonceptiegebruik een minder hoge graad van efficiëntie bereikt heeft. Hoewel de

attitude van vrouwen ten aanzien van de pil in Nederland even ambivalent is als elders is de belangstelling van (huis)artsen voor effectief anticonceptiegebruik onder hun cliënten waarschijnlijk veel groter. De resultaten geven derhalve aan dat het van belang is de tevredenheid van cliënten met de gebruikte pil nauwlettend te observeren en in geval van problemen deskundig advies te geven. Anderzijds blijkt ook dat zelfs in het exemplarisch geval van Nederland extra aandacht van artsen en andere gezondheidsdeskundigen noodzakelijk is, omdat er nog steeds mensen zijn die volledig ophouden met anticonceptiegebruik omdat zij niet tevreden zijn over de pil.

10.5. Een beter begrip van de anticonceptiekeuze: de determinanten van anticonceptiegebruik

Hoofdstuk 2, 3, 7, 8 en 9

10.5.1. Eerder onderzoek

De determinanten van anticonceptiegebruik komen in vele studies aan de orde. Men concludeerde dat dit gebruik samenhangt met een aantal demografische achtergrondkenmerken (leeftijd, aantal kinderen, burgerlijke staat, opleidingsniveau, religie, ethnische origine, en het land waar men woont), alsmede met het correct inschatten van de eigen vruchtbaarheid, kennis van AIDS, de mate van communicatie met de partner over anticonceptie, de attitude ten aanzien van de beschikbare methoden, percepties dat de sociale omgeving gebruik ervan goedkeurt, de eigen inschatting in staat te zijn een methode te gebruiken en, mogelijkerwijze, het aantal seksuele partners dat men ooit heeft gehad en de frequentie van het geslachtsverkeer.

Toch kennen deze eerdere onderzoeken een aantal tekortkomingen, zodat het onmogelijk is de resultaten ervan te extrapoleren naar de gehele vrouwelijke bevolking of naar de West Europese situatie. Onderzoek naar de demografische determinanten van anticonceptiegebruik in West Europa was gebaseerd op nationaal representatieve gegevens, maar nam de samenhang tussen de bestudeerde achtergrondkenmerken niet in beschouwing. Het verband tussen de burgerlijke staat en anticonceptiegebruik, dat gesuggereerd werd, is bijvoorbeeld mogelijk toe te schrijven aan onderliggende leeftijdseffecten (aangezien getrouwde vrouwen gemiddeld ouder zijn dan ongetrouwde). Evenzo zouden verschillen tussen landen wellicht toe te schrijven kunnen zijn aan onderliggende verschillen in het opleidingsniveau van de betreffende bevolkingen. Met andere woorden, inzichten in de onafhankelijke effecten van deze demografische kenmerken op anticonceptiegebruik waren beperkt. Dit gold eveneens voor informatie over de

primaire determinanten van anticonceptiegebruik in deze zin.

Onderzoek naar de psychologische determinanten van anticonceptiegebruik werd meestal uitgevoerd onder adolescenten en jonge vrouwen (en ook meestal in de Verenigde Staten). De resultaten van dit onderzoek zeggen wellicht meer over de specifieke situatie van deze vrouwen dan over de bevolking als geheel. Hoewel deze studies belangrijke indicaties kunnen opleveren voor verbetering van de anticonceptiezorg voor deze vrouwen, worden de problemen van andere bevolkingsgroepen over het hoofd gezien (bijvoorbeeld vrouwen ouder dan 40 jaar, die in Groot Brittannië een risicogroep voor het gebruik van onbetrouwbare methoden bleken te vormen). Bovendien geven zij geen antwoord op de vraag welke maatregelen kunnen bijdragen tot verbetering van het anticonceptiegebruik in de gehele bevolking. Ten slotte vertellen zij weinig over de wijze waarop vrouwen in het algemeen tot hun anticonceptiekeuze komen.

Men zou kunnen veronderstellen dat de organisatie van de gezondheidszorg en het gezondheidszorgbeleid (vergoedingssystemen voor geneesmiddelen inbegrepen) een invloed hebben op de anticonceptiekeuze. Er bestaan echter maar weinig studies die op deze hypothesen ingaan. De weinige die dat wel deden maakten gebruik van beschrijvende in plaats van kwantitatieve methoden. Toch is inzicht in deze zaken van uitzonderlijk belang, zeker om de mogelijke gevolgen van hervormingen in de gezondheidszorg (zoals het afschaffen van de 'collectief betaalde pil' uit budgettaire overwegingen) te evalueren.

10.5.2. Huidige bevindingen: gezondheidszorgorganisatie en -beleid

De resultaten van verschillende onderzoeken die in dit proefschrift beschreven zijn geven duidelijk aan dat de organisatie van de gezondheidszorg en het gezondheids(zorg)beleid effect kunnen hebben op het anticonceptiegebruik. Zoals eerder aangegeven bleken AIDS campagnes een zekere invloed gehad te hebben op het anticonceptiegebruik van jonge vrouwen. De complexere analyses bevestigden dat condoomgebruik enigermate mede bepaald werd door het hebben van wisselende seksuele contacten in plaats van een vaste partner. Hoewel de praktijk van 'veilig vrijen' nog niet zo was ingeburgerd als wenselijk, toonden de resultaten dat AIDS campagnes niet alleen de kennis over AIDS verbeterd hebben, maar ook het anticonceptiegebruik beïnvloed hebben. Deze campagnes hebben hun nut en dienen derhalve te worden voortgezet.

Het type voorschrijver (huisartsen en centra voor geboortenregeling in Groot Brittannië en vrij gevestigde gynaecologen in Duitsland) bleek eveneens een rol te spelen bij de anticonceptiekeuze. In vergelijking met Groot Brittannië, gebruikten in

Duitsland meer vrouwen de pil en vertrouwden minder vrouwen op sterilisatie (van henzelf of hun partner). Britse vrouwen hadden gemakkelijk toegang tot sterilisatie (snelle doorverwijzing in tegenstelling tot Duitsland) en hun partners tot vasectomie (Britse huisartsen in de grotere groepspraktijken verrichtten deze ingreep vaak zelf). In Oost Duitsland was het lange tijd vanwege overheidsregelingen zeer moeilijk een sterilisatie te laten uitvoeren. Het aantal Oost-Duitse paren dat voor sterilisatie koos was dan ook zeer laag, en veel Oost-Duitse vrouwen waren niet overtuigd van de voordelen van de methode, ondanks het feit dat de belemmeringen voor sterilisatie na de Duitse hereniging volledig verdwenen waren.

Overheidsmaatregelen om het gebruik van een bepaalde anticonceptiemethode te stimuleren hebben een effect op het anticonceptiegebruik. Aandacht van de Duitse overheid voor de sympto-thermale methode van 'natuurlijke geboortenregeling' (een meer verfijnde en betrouwbare variant van periodieke onthouding) verklaarde waarschijnlijk waarom meer Duitse dan Britse vrouwen deze methode gebruikten. Deze aandacht heeft er de laatste jaren echter ook toe bijgedragen dat meer Duitse vrouwen zich bewust zijn geworden van de nadelen van deze methode (niet altijd betrouwbaar, toepassing is lastig) en waarschijnlijk heeft het aantal vrouwen dat er gebruik van maakt zijn piek bereikt. Deze resultaten geven aan dat pogingen van de overheid om het anticonceptiegebruik te beïnvloeden inderdaad tot veranderingen in dit gebruik kunnen leiden. De problemen van adolescenten met het gebruik van anticonceptie in Groot-Brittannië nopen daarom tot overheidsmaatregelen met betrekking tot de seksuele opvoeding in scholen, de aanpassing van anticonceptiezorg aan de behoeften van adolescenten en hun bewustmaking van de noodzaak van anticonceptiegebruik en van de mogelijkheden die hiervoor bestaan.

Hypothetisch gezien vergroot vergoeding van de kosten van anticonceptiezorg en anticonceptiemiddelen de toegankelijkheid van anticonceptiegebruik. De huidige resultaten bleken deze veronderstelling niet te staven. Gezien de vrij lage prijs van anticonceptie in West Europa was het gebruik ervan niet afhankelijk van de mate waarin het middel al dan niet door de gebruiker zelf betaald diende te worden. Bovendien bleek dat gebruiksters die de pil duur vonden (hetgeen in Duitsland het geval kon zijn, aangezien gebruik voor eigen rekening is voor vrouwen boven de 18 jaar) even vaak de pil gebruiken als vrouwen die haar goedkoop vonden.

Toch sluiten deze resultaten niet uit dat er specifieke bevolkingsgroepen zijn voor wie de prijs een probleem vormt. In het licht van het relatief lage kostenniveau van anticonceptie ligt het probleem echter meer bij de toegang tot geld dan bij het werkelijk niet hebben ervan. De conclusie ligt voor de hand dat de prijs alleen voor adolescenten onoverkomelijk zou kunnen zijn en dat zij als enigen baat hebben bij

dekking door het ziekenfonds. Het is derhalve niet waarschijnlijk dat afschaffing van de dekking voor vrouwen boven de 18 jaar gevolgen heeft voor het anticonceptiegebruik. Hoewel dekking doorgaat als een verworven recht, lijkt het er niet op dat afschaffing daarvan voor vrouwen van boven de 18 jaar disastreuze gevolgen zou hebben voor de efficiëntie van het anticonceptiegebruik, zoals in recente Nederlandse politieke debatten werd gesteld. Hiermee zij aangegeven dat dergelijke debatten zuiverder zijn wanneer zij zich beperken tot louter maatschappelijke en politieke argumenten en de veronderstelling dat het afschaffen van dekking door het ziekenfonds leidt tot een daling van het pilgebruik als argument buiten beschouwing laten.

10.5.3. Demografische determinanten

Het anticonceptiegebruik bleek sterk samen te hangen met een aantal demografische achtergrondskennmerken van de onderzochte vrouwen. Nader onderzoek van de relatie tussen deze kenmerken en het anticonceptiegebruik leerde dat het hier om een aantal onafhankelijke effecten ging, die tezamen de anticonceptiekeuze in grote mate bepaalden. Het belangrijkste effect was dat van de 'reproductieve status' van de respondenten. Deze status omvatte gecombineerde effecten van de factoren leeftijd, kindertal, burgerlijke staat en kindwens, en bepaalde het anticonceptiegebruik in sterkere mate dan elk van deze factoren alleen.

Wat deze 'reproductieve status' betreft gaven de bevindingen aan dat veel vrouwen een soort standaard anticonceptie-carrière volgen, die maar weinig samenhangt met de mogelijkheden die de verschillende anticonceptiemethoden bieden. Na de eerste sexuele ervaringen van de adolescentie (waarbij veel van condoms en coitus interruptus gebruik gemaakt wordt) gaan de meeste vrouwen de pil gebruiken. Na het eerste kind gaat een aantal vrouwen over op een spiraaltje en nadat het gewenste aantal kinderen bereikt is, wordt tot sterilisatie (van man of vrouw) beslist. Een aantal vrouwen kiest na de pil echter voor minder effectieve methoden (periodieke onthouding, condoms, coitus interruptus of vertrouwen 'op goed geluk') en dit geeft de negatieve kant van deze standaard carrière aan. Men kan zich afvragen of de respondenten niet teveel nadruk legden op angsten voor gezondheidsrisico's van de pil, waardoor zij er nogal eens mee ophielden zonder redelijk alternatief. Het gebruik van minder betrouwbare methoden, dat daarvan het gevolg was, kan mogelijk worden gereduceerd door aan wat oudere vrouwen meer informatie te geven over de werkelijke gezondheidsrisico's en -voordelen van de pil en de geschiktheid van de pil voor deze groep van vrouwen. Voorschrijvers denken waarschijnlijk in een aantal gevallen dat de wat oudere vrouw voldoende ervaring met

anticonceptie heeft, zodat zij daarover geen informatie meer behoeft. De huidige resultaten lieten zien dat een dergelijke veronderstelling niet gegrond is.

Naast reproductieve status, werd het anticonceptiegebruik bepaald door het land waar men woont, het wel of niet hebben van wisselende seksuele contacten (zie eerder), het opleidingsniveau en de frequentie van kerkbezoek. Met name het effect van het opleidingsniveau, en de mogelijke achtergrond van dit effect, is van belang, aangezien een lager opleidingsniveau de kans vergrootte dat de vrouw in kwestie geen enkele anticonceptiemethode gebruikte of op coitus interruptus vertrouwde. Dit hing samen met het relatief lager gebruik van de pil in deze groep. Wij veronderstelden dat het probleem van het 'vergeten' van de pil een belangrijk element vormt voor het lager gebruik ervan onder vrouwen met een laag opleidingsniveau en vaker leidde tot beslissingen om andere, onbetrouwbare methoden te gebruiken. Verder onderzoek is echter nodig om deze veronderstelling te toetsen aan de realiteit.

De duidelijke invloed van de demografische context op het anticonceptiegebruik van de individuele vrouw bleek meer weg te hebben van contraceptieve predestinatie dan van een werkelijk vrije keuze. Het is belangrijk dat voorschrijvers zich ervan bewust zijn dat de anticonceptiebehoefte van een vrouw haar anticonceptiemogelijkheden in feite aanzienlijk beperkt. Informatie moet op deze behoefte worden afgestemd. Anderzijds is het niet onwaarschijnlijk dat er in individuele gevallen meer mogelijkheden bestaan dan de demografische situatie lijkt te dicteren (de pil kan in veel gevallen best worden genomen tot op oudere leeftijd; een sterilisatie zou in Duitsland vaker kunnen worden aangeraden; het gebruik van de prikpil behoort tot de mogelijkheden, enz.). Veel vrouwen en mannen zouden in open overleg met de voorschrijver kunnen ontdekken dat hun werkelijke anticonceptiekeuze groter is dan zij zelf meenden.

10.5.4. Psychologische determinanten

Het is belangrijk te onderkennen dat de hierna beschreven psychologische determinanten hun invloed hadden op een anticonceptiegebruik dat reeds in belangrijke mate beperkt was door de demografische situatie. Een vrouw die haar eerste zwangerschap wil uitstellen heeft bijvoorbeeld enkel de keuze tussen de pil, de prikpil, coitus afhankelijk methoden en het niet gebruiken van enige vorm van anticonceptie (spiraaltjes of een sterilisatie zijn immers geen relevante opties). Binnen deze beperkte keuze werd verondersteld dat psychologische factoren de uiteindelijke anticonceptiekeuze verder zouden kunnen bepalen.

Het onderzoek gaf aan dat de keuze sterk samenhangt met een scherpe tegenstelling in de houding tegenover enerzijds medische en anderzijds niet-medische

methoden. Een positieve grondhouding ten aanzien van medische methoden (pil, spiraaltje of sterilisatie) en de sociale steun om deze te gebruiken hing nauw samen met het gebruik ervan. Het gebruik van condooms, periodieke onthouding, coitus interruptus en geen methode, daarentegen, hing minstens zo sterk samen met afschuw van medische methoden als met een positieve waardering van de niet-medische methoden. Met andere woorden, binnen de context van een keuze die reeds door de demografische situatie werd begrensd, werd de anticonceptiekeuze nog verder beperkt door de psychische acceptatie van medische anticonceptiemethoden door de vrouw in kwestie.

Zoals eerder werd aangegeven, was de attitude van de respondenten ten aanzien van de veiligheid voor de gezondheid van medische anticonceptiemethoden behoorlijk negatief. Wij zagen ook in de Nederlandse studie dat gezondheids-overwegingen vrouwen motiveerden om van type pil te wisselen of er helemaal mee te stoppen. Analyse van de psychologische determinanten van anticonceptiegebruik toonde eveneens aan dat negatieve attitudes een grote rol speelden in beslissingen omtrent anticonceptiegebruik. Een reductie van niet terechte zorgen zal gebruikers ten minste geruststellen en hen meer op hun gemak doen voelen met de methode die zij gebruiken. Bovendien zou zulks gebruikers van onbetrouwbare methoden wellicht kunnen motiveren een betrouwbaardere methode te gebruiken. Toch is longitudinaal onderzoek noodzakelijk om na te gaan of deze laatste inderdaad overstappen op een betrouwbaardere methode wanneer hun attitude ten aanzien van deze methoden positiever wordt. Het cross-sectionele karakter van het huidige onderzoek (met het inherente 'kip-of-ei' probleem) verschaft dienaangaande geen direct bewijs. Vanzelfsprekend is eveneens verder onderzoek nodig om na te gaan hoe deze niet terechte negatieve attitude het best aangepakt kan worden.

De huidige studies suggereerden hieromtrent dat artsen en andere deskundigen in de gezondheidszorg een belangrijke rol kunnen spelen. In veel gevallen bleek professioneel advies over een methode de twijfels van vrouwen te kunnen compenseren. Ook de Nederlandse resultaten lieten zien dat het advies van een arts kon voorkomen dat vrouwen met gebruik van de pil ophielden wanneer zij er lichamelijke klachten van ondervonden (een situatie waarin hun attitude ten aanzien van de pil ongetwijfeld minder positief was). Dit geeft aan dat de rol van artsen en andere gezondheidswerkers in het informeren van vrouwen over anticonceptie groot is. Het is derhalve de vraag of het creëren van de mogelijkheid de pil zonder medisch voorschrift te verkrijgen ("de pil bij de drogist"), met als gevolg minder mogelijkheden tot het geven van professioneel advies aan vrouwen, niet zal leiden tot een daling van het pilgebruik, meer vrouwen die vroeg stoppen met de pil en een

toename van het gebruik van onbetrouwbare anticonceptie. Beleidsmakers dienen zich rekenschap te geven van dergelijke negatieve gevolgen, wanneer zij voorstellen de pil zonder voorschrift ter beschikking te stellen.

In tegenstelling tot eerder onderzoek werd hier gevonden dat de overige psychologische factoren die bestudeerd werden minder relevant waren voor het anticonceptiegebruik. Eigen-effectiviteit (de inschatting in staat te zijn een bepaalde methode correct en consistent te gebruiken) speelt waarschijnlijk meer een rol voor 'starters' dan voor de bevolking als geheel. Communicatie met de partner was minder belangrijk dan verwacht werd. Onderschatting van de eigen vruchtbaarheid bleek wel een factor van belang te zijn. Een dergelijke onderschatting deed sommige vrouwen op coitus interruptus of 'goed geluk' vertrouwen.

Samenvattend kan gesteld worden dat een aantal psychologische factoren een rol spelen in anticonceptiebeslissingen: met name professioneel advies en sociale steun, gevolgd door de attitude en, in geval van gebruik van de onbetrouwbaarste methoden, onderschatting van de eigen vruchtbaarheid. Binnen de context van de demografische situatie, hebben artsen, verpleegkundigen, etc. de mogelijkheid het anticonceptiegebruik van vrouwen te verbeteren. Uitgebreide informatie door deskundigen over de voor- en nadelen van de beschikbare anticonceptiemethoden (zelfs wanneer de cliënt er niet expliciet om vraagt) en verbetering van de kennis over vruchtbaarheid zou uiteindelijk kunnen leiden tot minder ongewenste zwangerschappen.

10.6. Verschillen tussen landen

Hoofdstuk 7, 8 en 9

Wat anticonceptiegebruik betreft bestaan er grote verschillen tussen West Europese landen. In de afzonderlijke delen van dit proefschrift trachtten wij steeds na te gaan in hoeverre deze variatie toe te schrijven is aan verschillen in andere determinanten van het anticonceptiegebruik dan het land waar men woont. Nadat de effecten van andere verklarende factoren in beschouwing waren genomen bleef de factor 'land' echter steeds een rol spelen. De verschillen tussen West Europese landen waren niet toe te schrijven aan de mate waarin zelf voor het anticonceptiegebruik betaald moest worden. Zij hadden ook weinig te maken met verschillen in demografische achtergrondskennmerken van de bevolking. Er werden verschillen gevonden in de attitudes en gepercipieerde sociale invloeden in de twee landen, maar het land bleek toch een bijkomende, aparte invloed op het anticonceptiegebruik te

hebben, afgezien van de invloed van de sociaal-culturele omgeving (die het land vormt) op de psychologische determinanten.

Bij het zoeken naar verklaringen voor deze invloed viel op dat veel van de specifieke verschillen toegeschreven konden worden aan de wijze van organisatie van de gezondheidszorg in het betreffende land en de verschillen in gezondheids(zorg)beleid. Het feit dat in Duitsland vrij gevestigde gynaecologen (zonder operatie faciliteiten) de voornaamste voorschrijvers waren, in plaats van huisartsen (die in Groot-Brittannië vaak over dergelijke faciliteiten voor kleine ingrepen als vasectomie beschikten), zou kunnen verklaren waarom Duitse paren minder vaak voor sterilisatie kozen. In Oost Duitsland was dit aantal nog veel lager dan in West Duitsland, aangezien de vroegere Oost Duitse wetgeving een sterilisatie praktisch onmogelijk maakte. In Groot Brittannië gebruikten tieners vrij vaak geen anticonceptie, wat zou kunnen samenhangen met het feit dat goede sexuele educatie nog niet overal is ingeburgerd en de anticonceptiezorg voor tieners nog niet altijd is aangepast aan hun behoeften (zij bezoeken de gezinsarts met, in hun ogen, het risico dat hun ouders hierover geïnformeerd worden). In Duitsland daarentegen zouden programma's voor de verspreiding van 'natuurlijke geboortenregeling', die met steun van de overheid zijn opgezet, bijgedragen hebben tot de grotere bekendheid van deze methode.

Deze bevindingen geven aan dat verschillen tussen landen wat anticonceptiegebruik betreft niet alleen toe te schrijven zijn aan sociaal-culturele invloeden. Om het anticonceptiegebruik in een land te bevorderen moeten de impliciete effecten van de organisatie van de gezondheidszorg en het gezondheids(zorg)beleid zorgvuldig geanalyseerd worden.

10.7. Conclusie

Het anticonceptiegebruik in West Europa kent nog vele problemen, in tegenstelling tot wat vaak gedacht wordt. Gedurende de afgelopen dertig jaar heeft zich dan wel een 'contraceptieve revolutie' voltrokken, maar optimaal is de situatie nog niet. Inspanningen om deze situatie te verbeteren blijven noodzakelijk, zowel van de kant van beleidsmakers en zorgverleners (om de kennis van het publiek van de verschillende anticonceptiemethoden te verbeteren en onjuiste opvattingen weg te werken) en van de farmaceutische industrie (om eenvoudig toe te passen betrouwbare methoden te ontwikkelen). De anticonceptiekeuze wordt onnodig beperkt door effecten van de demografische situatie. Deze wordt bovendien verder beperkt door

een gepercipieerde tegenstelling tussen 'medische' en 'niet-medische' methoden. De anticonceptiekeuze wordt soms meer door angst ingegeven dan door gezond verstand. Wat dit betreft zijn de zorgverleners het meest geschikt om de huidige situatie te verbeteren. Het actief aanbieden van goede, degelijke informatie kan hun cliënten tot geïnformeerde cliënten maken, of zij nu met anticonceptie beginnen of er reeds jaren gebruik van maken. Geïnformeerde cliënten nemen beslissingen met kennis van zaken, hetgeen uiteindelijk in hun eigen belang is.

Curriculum vitae

Björn Oddens was born on 22 March 1965 in Doetinchem (Netherlands). He spent his youth in Doetinchem, the nearby Westendorp, Vreeswijk (now Nieuwegein) and Ommeren (Betuwe). He received his grammar school education in Tiel and went on from there to Utrecht to commence his medical studies. In 1988 he was awarded a master's degree and in 1991 he graduated as a doctor of medicine, following internships in the Academic Hospital of Utrecht, the Diakonessenhuis (Utrecht), De Lichtenberg Hospital (Amersfoort), Zon en Schild Psychiatric Hospital (idem) and the Elisabeth Hospital (Tilburg).

As a student he played the cello in the Utrecht Students' Orchestra (Utrechtsch Studenten Concert) and the Netherlands Students' Orchestra. He served on the Management Committees of both these orchestras (see Refs [1-3]).

He also took part in research work at the Netherlands Institute of Brain Research in Amsterdam (Head: Professor D. Swaab), the Rudolf Magnus Institute of Neurosciences in Utrecht (Head: Professor D. de Wied) and the Department of Neurology of the Academic Hospital of Utrecht (Head: Professor J. van Gijn) [4]. During his time at Utrecht he was editor of the faculty journal and also worked as a medical journalist for a press agency. During his internships he was the elected representative of the interns in the district hospitals and was a member of the expert panel of the medical faculty's examination committee for medical doctors.

Some months before completing his medical degree he was offered the opportunity to become a research fellow of the International Health Foundation. The Foundation is a private research and information organization, based in Geneva and Brussels, which conducts research and provides information in the fields of family planning, the menopause and involuntary childlessness. The Foundation is governed by a Board of Trustees, currently made up of Professor D. de Wied (Utrecht), Professor I. Brosens (Leuven), Professor T. Eskes (Nijmegen), Professor E. Johannisson (Geneva) and Professor P. Keller (Zürich).

In preparation for the position in Brussels he completed an internship at the International Health Foundation which was tutored within the medical faculty by Dr A.J.M. van Lindert (Department of Obstetrics and Gynaecology, Academic Hospital of Utrecht). After receiving his medical degree he took up his appointment at the Foundation in June 1991 and embarked on the research described in this thesis. Björn Oddens was given responsibility for the Foundation's scientific activities and information programme in June 1993 and he is currently its research director. From

December 1994 to December 1995 he was also employed as resident in gynaecology at the Sint Joseph Hospital in Veldhoven (Tutor: Dr J.H.J.M. Meuwissen).

Björn Oddens has published a number of scientific articles on the subject of patient education in clinical trials, family planning and the menopause, with special emphasis on the integration of medical and psychosocial aspects. He is an honorary member of the Portuguese Association for the Study of the Climacteric, serves on the Executive Committee of the Dutch Society for Patient Education and Counselling (Stichting Voorlichting Patiënten) and is a referee for *Maturitas*, the journal of the climacteric and postmenopause. He has also given postgraduate courses on the epidemiology of the climacteric for the Flemish Institute of General Practitioners and has been invited by various international scientific organizations and pharmaceutical companies to give presentations on his work.

In his leisure time he is a member, together with pianist Aagje Pabbruwe and violinist Frank van der Drift, of the Przwatsky trio, which has given performances of Rachmaninov, Beethoven and Brahms piano trios in Luxembourg, Brussels and Rotterdam. He is also a member of the committee that organizes the concerts given by the Netherlands Students' Orchestra in Brussels and is co-author of a book on the orchestra's history [5]. Björn Oddens has lived in Brussels since 1991.

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**Stellingen
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Determinants of contraceptive use

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- 1 De anticonceptiekeuze wordt nodeloos beperkt door een ruim vertegenwoordigd patroon van contraceptieve predestinatie: als je jong bent gebruik je de pil en daarna een spiraaltje of sterilisatie.
Dit proefschrift
- 2 Of een vrouw voor of tegen medische anticonceptiemethoden is, speelt een grotere rol bij haar anticonceptiekeuze dan een rationele afweging van de voor- en nadelen van de beschikbare methoden.
Dit proefschrift
- 3 Vrouwen hebben veel meer angsten voor de schadelijkheid van de anticonceptiepil, het spiraaltje en sterilisatie dan door medisch onderzoek gestaafd wordt.
Dit proefschrift
- 4 Er zijn nog altijd vrouwen die stoppen met de anticonceptiepil en bij gebrek aan alternatief gaan vertrouwen op "goed geluk".
Dit proefschrift
- 5 Ervaren anticonceptiegebruikers neigen evenzeer als onervaren anticonceptiegebruikers naar riskante anticonceptiebeslissingen, en behoeven derhalve dezelfde actieve informering.
Dit proefschrift
- 6 Anticonceptiegebruik is een sociaal gedrag, waarin zowel professioneel advies als raad en gedrag van vrienden een grote rol vervullen. Het eerste kan leiden tot geruststelling ten aanzien van medische anticonceptiemethoden, het tweede tot het aanwakkeren van angsten dienaangaande.
Dit proefschrift
- 7 Het is onwaarschijnlijk dat het niet langer vergoeden van de anticonceptiepil voor volwassen vrouwen leidt tot meer ongewenste zwangerschappen. Discussies over dergelijke vergoeding zijn derhalve geen medische aangelegenheid en dienen zich tot politieke, maatschappelijke en emancipatoire overwegingen te beperken. Verkrijgbaarheid van de pil via de drogist daarentegen verdient wel medische oppositie aangezien dergelijke verkrijgbaarheid naar alle waarschijnlijkheid meer ongewenste zwangerschappen tot gevolg heeft.
Dit proefschrift

- 8 In Groot Brittannië en Duitsland hadden overheidscampagnes effecten op het anticonceptiegebruik. Wat preventief gedrag ten aanzien van AIDS betreft, waren deze effecten vooral nog onvoldoende.
Dit proefschrift
- 9 Steroiden, waaronder geslachtshormonen, beïnvloeden de ontwikkeling, de regeneratie en het neurofysiologisch functioneren van het brein [1]. In deze context valt op dat er nauwelijks onderzoek gedaan is naar de neuropsychologische effecten van de anticonceptiepil.
- 10 Aangezien vruchtbaarheidsstoornissen voorkomen bij 10% van de paren [2], heeft een vrouw die op de wil van God vertrouwt voor haar voorbehoeding, 90% kans dat zij haar partner voor God aanziet.
- 11 Statistieken over sexualiteit onder de jeugd [3] geven aan dat ouders die menen dat hun tiener nog niet aan sex doet toch maar beter beginnen met voorlichten.
- 12 Het lezen van bijsluiters geeft vaker aanleiding tot het ervaren van bijwerkingen dan het slikken van de anticonceptiepil zelf. Hiervoor zouden bijsluiters moeten waarschuwen.
- 13 In België wordt Nederlands onderzoek gezien als onderzoek dat bevestigt wat iedereen al lang weet.
- 14 Medische congressen zijn er niet om over nieuwe ontwikkelingen te worden geïnformeerd, maar om gezien te worden, zelfs al stelt niemand daar prijs op.
- 15 De moderne operaregisseur is een beproeving voor de toeschouwer. Met zijn "centrale opvoeringsconcept" leidt hij voortdurend de aandacht van de muziek en handeling af.
- 16 Het principe dat het geheel meer is dan de som der delen impliceert dat je er in je relaties met anderen ook een stuk van jezelf bij krijgt.

Referenties

- 1 McEwen BS. Steroid hormones are multifunctional messengers to the brain. *Trends Endocrinol Metab* 1991; 2: 62-67.
- 2 Greenhall E, Vessey M. The prevalence of subfertility: a review of the current confusion and a report of two new studies. *Fertil Steril* 1990; 54: 978-983.
- 3 Anonymous. *YES Liefdesenquête 1994*. Haarlem: YES (Uitgeverij Spaarnestad), 1994: 5.

