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Sex Reassignment Surgery: A Study of 141 Dutch Transsexuals

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*This is an evaluation of the therapeutic effect of sex reassignment surgery on 36 female-to-male transsexuals and 105 male-to-female transsexuals in the Netherlands. Data were collected by means of structured interviews. The evaluation was made on the basis of subjective data only, that is on what the persons themselves reported on their gender identity, gender role, and physical condition. Allowing for the restrictive methodology of the (*ex post facto*) study, it is concluded that there is no reason to doubt the therapeutic effect of sex reassignment surgery. No specific differences were found between those who were still in medical treatment and those who had completed treatment. The findings obtained in the female-to-male transsexuals compare favorably with those obtained in male-to-female transsexuals. Finally, the conclusion is drawn that more attention ought to be paid to psychosocial guidance in addition to medical guidance.*

KEY WORDS: transsexuality; gender dysphoria; sex reassignment surgery; follow-up study.

INTRODUCTION

The provision of care to transsexuals usually proceeds from the postulate that sex reassignment surgery (SRS) affords the best possible solution to the gender problems experienced by these persons. Notwithstanding the

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fact that some authors (e.g., McCauley and Ehrhardt, 1984) suggest that supportive problem-solving psychotherapy with transsexual applicants in some cases might lead to the rejection of SRS, this view firmly holds. SRS is defined as the total process of adjustment to the other gender in social, legal, psychological, and physical terms.

Many studies have been performed to assess effects of SRS (e.g., Hertz *et al.*, 1961; Pauly, 1965, 1968, 1981; Benjamin, 1966; Randell, 1969; Money and Ehrhardt, 1970; Hoenig *et al.*, 1970, 1971; Alanko and Achté, 1971; Walinder and Thuwe, 1975; Hore *et al.*, 1975; Stürup, 1976; Fisk, 1978; Hastings and Markland, 1978; Jayaram *et al.*, 1978; Meyer and Reter, 1979; Hunt and Hamptson, 1980; Lothstein, 1980, 1982; Spengler, 1980; Kröhn, 1981; Sørensen, 1981a, 1981b; Blanchard *et al.*, 1985; Lindemalm *et al.*, 1986). Although most investigators describe the outcome of SRS as satisfactory, there can be no consensus about *the* effect of SRS because the studies differ widely in variables measured, outcome criteria applied, methods of evaluation used, and detail of presentation of results. Nevertheless it is possible to discern a trend in these reports that the subjective well-being of the transsexuals has increased, whereas an "improvement" in their actual life situation is not always observed. Lundström *et al.* (1984) concluded that the outcome as presented by the various authors is more satisfactory in female-to-male transsexuals; that a satisfactory outcome depends largely, but not solely, on good cosmetic and functional operative results; and that personal and social instability as well as age over 30 at the start of therapy correlates with an unsatisfactory outcome.

This paper presents the results of an evaluation study performed by the authors at the request of the Netherlands Gender Center Foundation (NGCF), which is the principal organization in the provision of care to transsexuals in The Netherlands. The study was prompted by the advice of a committee of the Health Council, which is the highest medical advisory body of the Minister of Public Health.

The problem question in this study was: "Does sex reassignment surgery (SRS) produce a therapeutic effect in that it alleviates or abolishes the gender dysphoria experienced by transsesuals?" An ancillary question was: "How do transsexuals evaluate the care provided?"

Definitions

We define transsexuality as "an extreme form of gender dysphoria accompanied by the desire to be delivered from one's own primary and secondary sex characters and to live entirely as a person of the opposite sex." Gender dysphoria is defined as " a sense of discomfort, which the person in question ascribes to the incongruence between his/her gender identity (subjectively

experienced gender) on the one side and his/her gender role and physical gender (primary and secondary sex characters) on the other side." Male-to-female (female-to-male) transsexuals feel incapable of functioning as biological men (biological women) are generally expected to function. This deep-rooted feeling of belonging to the opposite sex is often associated with aversion to their own body.

Outcome Criterion

In this study we measured the outcome of SRS on the basis of gender dysphoria. Since it is impossible to establish gender dysphoria objectively, the principle of "self-diagnosis" is applied in the provision of care to transsexuals. This principle is based on the notion that only the person in question can decide whether they experience gender dysphoria and whether SRS is advisable and feasible. In this respect the provision of care in The Netherlands is similar to that in other countries (for a complete review, see Kuiper *et al.*, 1985). We consider it consistent and appropriate to proceed from such a self-evaluation in the context of the problem statement of this study. In our opinion an evaluation of SRS can be made only on the basis of subjective data, because SRS is intended to solve a problem that cannot be determined objectively. With this postulate we differ from other follow-up studies which use (partly) objective data to evaluate the outcome of SRS.

Although an alleviation of gender problems can be expected to go hand in hand with objective improvement (in work, for instance), we do not consider such improvement a primary outcome criterion but only as a possible derivative of it. Objective conditions may be viewed as potentially influencing subjective well-being, but cannot be regarded as inherent to it or as a necessary part of it (Diener, 1984).

Operationalization

In the approach to the problem question the investigators had no access to a scale for measuring gender dysphoria nor to data on the persons from the period preceding SRS (so far as gender dysphoria was concerned). The approach is therefore based entirely on what the persons reported at the time of the study on their gender identity, gender role, and physical condition. The focus is above all on subjective well-being, for gender dysphoria always involves a state of discomfort. We define subjective well-being as "experience associated with feelings of happiness and satisfaction." With Veenhoven (1984) we regard happiness as "the extent to which a person assesses the general quality of his/her life-in-its-totality as positive."

It should be noted that data on the sexual situation are not discussed in this article. Transsexuality, and therefore SRS, *de facto,* involves gender identity problems rather than sexual problems. In this respect the term transsexuality is rather misleading. Data on sexuality, social situation, and psychological functioning will be presented elsewhere.

METHOD

Subjects

For the sake of simplicity the term FMs is henceforth used to refer to female-to-male transsexuals, while the term MFs will apply to male-to-female transsexuals.

Via the NGCF, recruitment letters were sent to all persons diagnosed by the foundation as transsexuals and who in the context of the "two-year real-life diagnostic test" (Money and Ambinder, 1978) had at least started hormonal therapy. One reminder was sent to those who failed to respond to the first letter. In addition, some persons were recruited through an advertisement in four nationwide dailies and weeklies, and through personal contacts.

A total of 141 persons entered the study: 36 FMs (female-to-male transsexuals) and 105 MFs (male-to-female transsexuals). In all, 3 FMs and 4 MFs refused to cooperate for various reasons, 6 FMs and 33 MFs did not respond, and 9 FMs and 33 MFs could not be traced.

Not all persons studied were in the same phase of therapy. With respect to the evaluation of the research data the population was subdivided into persons who were still in medical treatment (FMs-ti and MFs-ti; ti = treatment incomplete) and persons who had completed medical treatment (FMs-tc and MFs-tc; tc = treatment completed). The four groups included the following persons: FMs-ti (n = 11): 6 had only started hormonal therapy, 3 had undergone only mastectomy, 1 had undergone mastecomy and hysterectomy, and 1 mastectomy and oophorectomy. MFs-ti (n = 50): 36 had started hormonal therapy, 2 had undergone only castration, and 12 castration and penectomy. FMs-tc (n = 25): 21 had undergone mastectomy, hysterectomy, and oophorectomy, and 4 had had a penoplasty. In view of the grave risk of complications and the often disappointing results, penoplasty is likely to be omitted in the remaining FMs. This means that medical treatment can be regarded as completed in a total of 25 FMs. MFs-tc (n = 55): all had a neovagina constructed.

Table I shows the average age of the different groups, and the mean interval between the start of the treatment (in this case hormonal therapy) and the present study. There appeared to be no difference in age between

Table I. Age and Interval Between Start of Treatment and Study Evaluation

	FMs-ti (N = 11)	FMs-tc (N = 25)	MFs-ti (N = 50)	MFs-tc (N = 55)
Age				
$\bar{X}$	29.1	28.0	37.2	36.5
Range	19–50	19–44	21–69	20–58
SD	7.7	3.6	10.2	7.9
Interval				
$\bar{X}$ (years)	2.5	5.1	3.2	5.4
Range	1 month–12.5 years	13 months–13 years	1 month–12 years	1 month–14.8 years
SD	2.6	2.7	2.5	2.5

the two FMs groups nor between the two MFs groups. However the FMs averaged younger than the MFs, $t = 7.14$, $df = 139$, $p<0.001$. With regard to the time interval there was no difference between the FMs-ti and the MFs-ti, and between the FMs-tc and MFs-tc. So, in this respect the FMs and MFs did correspond. Obviously a difference existed between between the FMs-ti and the FMs-tc as well as between the MFs-ti and MFs-tc, respectively: $t = 2.73$, $df = 34$, $p<0.05$, and $t = 4.37$, $df = 103$, $p<0.001$).

To determine the representativity of the population, available intake data were used to compare those persons who had entered the study (respondents), those who had refused (refusers) to enter, and those who failed to respond at all (nonrespondents). The three groups were compared as to age, sex, civil status, steady relationship, work situation, occupational level, self-mutilation, suicide, psychiatric treatments, acceptance by family and friends, date of first interview, number of interviews, start of hormonal therapy, dates of operations. No differences were found (χ^2 test; $p<0.05$). Although the interval between the intake period and the evaluation study averaged 5 years, it can be concluded that the groups at the beginning of the treatment did not differ as measured by the above variables.

Data Collection

The data were collected by means of interviews, held on the basis of a self-constructed questionnaire in which nearly all questions had fixed-answer categories (multiple-choice system). A few questions were discussed in depth. The interviews were conducted by the two investigators and eight assistants (clinical psychologists) who had been thoroughly trained. All but three in-

terviews were held at the interviewed person's home. The interviewees were free to indicate whether they wanted a man or a woman to interview them. One FM expressed a preference for a man and 8 MFs preferred a woman. The remaining persons expressed no preference. Data on satisfaction with their own body were collected with the Body Image Scale (Lindgren and Pauly, 1975). The research situation differed from other follow-up studies in that neither the investigators nor the assistants were members of the gender team in charge of treatment.

Control Groups

We intended to use two control groups. The first was to have comprised persons not considered eligible for treatment but still desirous of it, and the second was to have consisted of persons who after psychotherapy had decided to refrain from SRS. Unfortunately, neither group could actually be formed. Of the first group all persons ($n = 7$) refused to cooperate, and for the second no candidate was available. The data on body perception were compared with those of 100 male and 100 female students.

Methodology: *Ex Post Facto*

The method of investigation used can be characterized as *ex post facto*. Because this imposes various restrictions on the interpretation of the research material, the methodological aspects of this type of study are discussed briefly. Kerlinger (1964) defined *ex post facto* research as, "that research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables." The present study was an *ex post facto* study because the sample was not taken at random, treatment was not randomly assigned to the persons involved, no control groups were used, and there was no manipulation of independent variables. It is characteristic of *ex post facto* research that the independent variables cannot be verified and, consequently, no definite conclusions can be formulated concerning the causality between the dependent variable (gender dysphoria) and the independent variables (e.g., hormonal therapy, surgical interventions).

The assumption in this study was that SRS would alleviate the gender dysphoria. In view of the method used, any conclusion concerning the plausibility of this assumption should be drawn with caution. In the absence of premeasurements it is impossible to determine the exact extent and direction of changes that may have occurred in the gender dysphoria. The method used dictates that SRS be evaluated on the basis of observations on the current feelings of gender dysphoria.

Statistical Analysis

Unless stated differently, the chi-square test has been used in the statistical analysis of the data. The critical limit was set at $p < 0.05$.

RESULTS

The results are presented under the headings of the questions to which the interviewed persons responded.

Subjective Well-Being

How happy or unhappy are you feeling currently? Of all the subjects ($n = 141$) 92 persons (65.2%) indicates they felt happy or very happy, 33 persons (23.4%) were moderately happy, and 16 (11.3%) were unhappy or very unhappy (Table II). The four groups did not differ in this respect, although there were slightly more MFs who reported being unhappy or very unhappy.

Why do you feel (very/moderately) (un)happy? Qualitative analysis of the reasons for subjective well-being roughly reveals the following. Feeling happy correlated with improved psychosocial functioning. The persons reported feeling more free, experiencing more inner calm, being relieved and glad that desire and reality had become one. Positive references to the SRS were made directly or indirectly. In many cases, moreover, having a steady partner is mentioned as the principal factor in the experienced happiness. Feeling unhappy usually correlated with a sense of loneliness. Loneliness was often accompanied by feelings of sorrow, uncertainty, and anxiety. Absence or termination of a steady partnership is of decisive significance in this respect for many persons. No subject ascribed feelings of dysphoria to intrapsychic

Table II. Subjective Well-Being

	FMs-ti ($N = 11$)		FMs-tc ($N = 25$)		MFs-ti ($N = 50$)		MFs-tc ($N = 55$)	
	n	%	*n*	%	*n*	%	*n*	%
Very happy	–		6	24.0	8	16.0	9	16.4
Happy	9	81.8	11	44.0	25	50.0	24	43.6
Moderately happy	2	18.2	7	28.0	10	20.0	14	25.5
Unhappy	–		1	4.0	5	10.0	7	12.7
Very unhappy	–		–		2	4.0	1	1.8

problems attending the social and/or emotional and/or physical functioning as a person of the newly assumed gender. Concerning the subjective well-being in MFs a relation was found with reported satisfaction with social relations ($\chi^2 = 50.18$, df = 12, $p = 0.001$) and with feelings of loneliness ($\chi^2 = 43.79$, df = 8, $p = 0.001$).

Self-Perception

Do you ever have doubts about your sense of being a man (or woman)? There was a high degree of constancy in the self-perception of the FMs and MFs (Table III): 136 persons (97.1%) reported no or hardly any doubts about their own gender identity; only 1 FM (2.7%) (FM-ti) and 3 MFs (2.9%) (MFs-ti) felt occasional doubts.

Satisfaction With Own Behavior

How satisfied are you with your own behavior as a man (FMs) or a woman (MFs)? The majority were satisfied with the way in which they can and do substantiate the new gender role behaviorally and emotionally (Table IV). Contrary to the FMs, a number of MFs feel more or less dissatisfied with their own behavior (7.7%) (especially MFs-ti).

Integration of Gender Role

How well do you in your opinion pass as a member of the newly assumed gender? Virtually all FMs and almost 80% of the MFs describe integration as good or very good by their own standards (Table V). Three MFs (2.9%) take a negative view of their social integration in view of insufficient social contacts and discrimination experienced. Some 50% reported having no problems of integration. Most of the problems reported by the other 50% can be divided into two categories: (i) physical problems like a too low-pitched

Table III. Self-Perception

	FMs-ti ($N = 11$)		FMs-tc ($N = 25$)		MFs-ti ($N = 50$)		MFs-tc ($N = 54$)	
	n	%	*n*	%	*n*	%	*n*	%
Never doubts	7	63.6	23	92.0	37	74.0	30	55.6
Hardly any doubts	3	27.3	2	8.0	10	20.0	24	44.4
Occasionally doubts	1	9.0	–		3	6.0	–	
Frequently doubts	–		–		–		–	

Table IV. Satisfaction With Own Behavior

	FMs-ti (N = 11)		FMs-tc (N = 24)		MFs-ti (N = 50)		MFs-tc (N = 54)	
	n	%	n	%	n	%	n	%
Very satisfied	1	9.0	4	16.7	4	8.0	18	33.3
Satisfied	5	45.5	16	66.6	30	60.0	28	51.9
Neutral	5	45.5	4	16.7	10	20.0	6	11.1
Dissatisfied	–		–		5	10.0	2	3.7
Very dissatisfied	–		–		1	2.0	–	

voice, an oversized stature, no penis, no vagina (as yet), no breasts, etc.; (ii) problems in overt management of their transsexual background in relation to a new partner, colleagues, or parents-in-law. Lack of understanding and discrimination are mentioned by 6 FMs and 17 MFs as problems impeding integration. Strikingly, the FMs mention only lack of understanding, whereas the MFs emphasize discrimination. Although this difference might be due to a difference in the way FMs and MFs perceive similar situations, the interviews show that some MFs receive reactions from the social enviroment that give them more reasons to feel discriminated than not understood.

There are no indications that one particular problem comes to the fore in the integration of the new gender role in day-to-day life, nor that the problems experienced as such preclude integration. For instance, a sense of loneliness (moderate in about 25% of the FMs and the MFs, and marked in about 25% of the MFs), unemployment (in 36% of the FMs and 60% of the MFs), or lack of a partner (33.3% of the FMs and 59% of the MFs) are not regarded by the persons involved as incompatible with adequate integration.

Confidence in New Gender Role

How confident are you to maintain yourself in your new gender role as FM (or MF)? The majority of the FMs and of the MFs express consider-

Table V. Integration of Gender Role

	FMs-ti (N = 10)		FMs-tc (N = 25)		MFs-ti (N = 50)		MFs-tc (N = 55)	
	n	%	n	%	n	%	n	%
Very good	3	30.0	17	68.0	16	32.0	22	40.0
Good	7	70.0	6	24.0	23	46.0	23	41.8
Moderately	–		2	8.0	10	20.0	8	14.5
Poor	–		–		1	2.0	–	
Very poor	–		–		–		2	3.6

able confidence in the new gender role (Table VI). They are firmly convinced they will be able to (continue to) maintain themselves in their new gender role. Lack of this confidence is mostly ascribed by the persons involved to a sense of loneliness.

Body Satisfaction

What feeling applies most to the following body part (in succession: vagina, clitoris, penis, testes, ovaries/uterus, breast, voice, facial, and body hair)? There were 5 possible answers to this multiple-choice question: highly satisfied, satisfied, neutral, dissatisfied, highly dissatisfied. The mean scores are listed in Table VII (highly satisfied scored 1, satisfied scored 2, etc.). The phase of physical adjustment was taken into account in the calculations, therefore FMs were divided into three groups: A (n = 6), hormonal therapy only; B (n = 26), mastectomy (accompanied by hysterectomy and oophorectomy in 21 FMs, with oophorectomy only in 1 FM and with hysterectomy only in 1 FM); C: (n = 4), penoplasty. The MFs were also divided into three groups: D: (n = 38), hormonal therapy only (n = 36) and castration (n = 2); E: (n = 12), castration and penectomy; F (N = 55), vaginoplasty. Scores were calculated insofar as the body part in question was still present. Satisfaction with the result of hysterectomy, oophorectomy, penectomy, and castration was not measured, but satisfaction with the result of mastectomy was. Table VII shows the number of persons for whom the mean was calculated. Scores were compared by means of the t-test (for independent random samples with identical variance; two-tailed).

The data show that FMs are highly dissatisfied with having a vagina, clitoris, ovaries/uterus, and breasts. Those who have undergone a mastectomy are evidently more satisfied with their breasts than those who still await this operation, t = 2.72, df = 22, $p < 0.05$. The 4 FMs with a penis and testes (Group C) are more satisfied with these body parts than the other 32 FMs are with their vagina and clitoris (this difference is not significant). When the data of the FMs in Groups B and C together are compared with those in group A, those in a more advanced phase of therapy (Groups B and

Table VI. Confidence in Opposite Gender Role

	FMs-ti (N = 11)		FMs-tc (N = 24)		MFs-ti (N = 50)		MFs-tc (N = 54)	
	n	%	n	%	n	%	n	%
Much confidence	7	63.6	21	87.5	43	86.0	47	87.0
Moderate confidence	4	36.4	2	8.3	7	14.0	6	11.1
No confidence	–		1	4.2	–		1	1.9

Table VII. Satisfaction With Primary and Secondary Sex Characteristics

	FMs (female-to-male transsexuals)[a]						MFs (male-to-female transsexuals)[b]					
	A		B		C		D		E		F	
	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n	$\bar{X}$	n
Vagina	4.80	5	4.29	24	–		–		–		2.49	55
Clitoris	4.60	5	4.20	24	–		–		–		2.32	55
Penis	–		–		3.25	4	4.72	33	–		–	
Testis	–		–		3.25	4	4.72	33	–		–	
Ovaries/uterus	4.75	4	5.00	3	–		–		–		–	
Breast	5.00	5	3.31	16	2.66	3	3.17	35	2.70	10	2.43	55
Voice	3.60	5	1.96	25	1.75	4	3.68	35	3.70	10	2.74	55
Facial hair	3.60	5	2.54	24	2.75	4	3.97	35	3.70	10	3.31	54
Body hair	3.20	5	2.85	25	2.75	4	3.11	34	3.10	10	2.27	55

[a]A, hormonal therapy only; B, mastectomy; C, penoplasty.
[b]D, hormonal therapy only; E, castration and penectomy; F, vaginoplasty.

C) prove to be more satisfied with their voice, $t = 3.04$, df $= 32$, $p < 0.01$. They are likewise more satisfied with their facial and body hair, but this difference is not significant.

With regard to the MFs the data show that they are highly dissatisfied with a penis and testes; considerably more satisfaction is expressed with having a vagina, $t = 13.11$, df $= 86$, $p < 0.001$, and clitoris, $t = 17.07$, df $= 86$, $p < 0.001$. Comparing the MFs of Group F with those of Group D we find that the former are more satisfied with their breasts, $t = 2.37$, df $= 88$, $p < 0.05$); voice, $t = 3.69$, df $= 88$, $p < 0.001$; facial hair, $t = 2.35$, df $= 87$, $p < 0.05$; and body hair, $t = 3.50$, df $= 87$, $p < 0.001$. Comparison of the data on the transsexuals with those of 100 male students (MS) and 100 female students (FS) revealed that the FMs were significantly more dissatisfied with a vagina and clitoris than the FS, respectively, $t = 15.28$, df $= 127$, $p < 0.001$, and $t = 14.60$, df $= 127$, $p < 0.001$. Because of their limited number ($n = 4$) the FMs with a penis were not compared with the MS. The same applies to the FMs given hormonal therapy only (Group A). The FMs in Groups B and C together were more dissatisfied than the MS with their voice, $t = 6.30$, df $= 127$, $p < 0.001$, and with their body hair, $t = 2.30$, df $= 127$, $p < 0.05$. There was no difference in satisfaction about their breasts and facial hair.

The MFs with a neovagina did not differ from the FS in their satisfaction with this body part. The MFs with a penis and testes were more dissatified with these than the MS, respectively, $t = 21.54$, df $= 131$, $p < 0.001$, and $t = 19.75$, df $= 131$, $p < 0.001$. Compared with the FS the MFs in Group D were more dissatisfied with their breasts, $t = 3.24$, df $=$

133, $p < 0.01$; voice, $t = 7.10$, df $= 183$, $p < 0.001$; and body hair, $t = 2.45$, df $= 132$, $p < 0.05$. The MFs in Groups E and F, whose physical adjustment is more advanced than that of the MFs in Group D, were more dissatisfied than the FS about their facial hair, $t = 4.30$, df $= 162$, $p < 0.001$. In other words, the more the MFs have female physical sex characteristics the more their satisfaction with their body is in accordance with that of a control group of biological women.

Attitude Towards Surgical Intervention

Do you ever doubt whether it was right to have the operations that were performed on you? Neither the FMs nor the MFs to whom this question applied felt any significant doubts about the decision to get rid of their own primary and secondary sex characteristics and to have the body surgically adjusted to the characteristics of the opposite sex (Table VIII). Only one FM did not back this decision. This person nevertheless mentioned no doubts about the decision of living as a member of the opposite sex.

Evaluation of Therapy

How satisfied are you with the care provided? About 80% of the FMs and 50% of the MFs are satisfied of highly satisfied (Table IX). They generally expressed themselves in a positive sense about the medical and psychological aspects of treatment. Those who were only moderately satisfied, dissatisfied, or highly dissatisfied, mentioned the development of physical complications (closure of the vagina, pain caused by fistula, etc.) as negative points, but more especially deplored the lack of adequate psychosocial guidance before, during, or after SRS. The fact that these persons, if compared with those who are satisfied, less often have a partner, experience less acceptance from their direct enviroment (especially family), more often have lost social contacts and their job, and feel lonelier, contributes quite signifi-

Table VIII. Attitude Towards Surgical Intervention

	FMs-ti ($N = 5$)		FMs-tc ($N = 25$)		MFs-ti ($N = 16$)		MFs-tc ($N = 55$)	
	n	%	*n*	%	*n*	%	*n*	%
Chronic doubts	–		1	4.0	–		–	
Occasional, but strong doubts	–		–		–		–	
Occasional, but moderate doubts	1	20.0	–		–		3	9.1
No doubts	4	80.0	24	96.0	16	100	50	90.9

Table IX. Evaluation of Therapy

	FMs-ti (*N* = 10)		FMs-tc (*N* = 25)		MFs-ti (*N* = 49)		MFs-tc (*N* = 55)	
	n	%	*n*	%	*n*	%	*n*	%
Very satisfied	2	20.0	8	32.0	9	18.4	10	18.2
Satisfied	7	70.0	11	44.0	18	36.7	17	30.9
Moderately satisfied	–		5	20.0	15	30.6	14	25.5
Dissatisfied	1	10.0	1	4.0	2	4.1	7	12.7
Very dissatisfied	–		–		5	10.2	7	12.7

cantly to their need for specific support from care providers. Those who are dissatisfied do not more frequently express any wish for supplementary cosmetic surgery than those who are satisfied. No relation was found between reported satisfaction, or lack of it, and the attitude towards the original interventions (Table VIII).

Suicide

Have you ever attempted suicide since you have started therapy? One of the FMs attempted suicide, about 2 years after starting treatment (Table X); 15 MFs attempted suicide, mostly within 2 to 5 years of starting therapy. Ten were motivated in their attempt by psychosocial problems and the associated feelings of loneliness and depression. According to data supplied by the NGCF, three MFs and not a single FM have committed suicide after starting therapy in the past 10 years. Intake data from the NGCF about suicide attempts were available on 21 FMs and 72 MFs involved in this study. The data show that 19.0% of the FMs and 23.6% of the MFs had attempted suicide before treatment. Two of the MFs-ti and four of the MFs-tc attempted suicide before as well as after treatment.

Supplementary Analyses

Although subjective well-being is the primary guideline in evaluating the outcome of the treatment, it is important for an evaluation of the results

Table X. Suicide Attempt

	FMs-ti (*N* = 10)		FMs-tc (*N* = 25)		MFs-ti (*N* = 48)		MFs-tc (*N* = 55)	
	n	%	*n*	%	*n*	%	*n*	%
Yes	–		1	4.0	5	10.4	10	18.2
No	10	100	24	96.0	43	89.6	45	81.8

to gain some insight into the reliability of the the data. We realize that the subjective nature of the data places restrictions on any attempt to answer the question of reliability, because it is impossible to apply hard, objective criteria. Nevertheless, an attempt was made to answer this question by comparing the self-reported subjective well-being with a number of other variables in the study. The postulate was that composite data on these variables could be an indication of subjective well-being. The 10 variables considered were employment; acceptance by family; partnership; sense of loneliness; satisfaction with relations in general; gender role behavior; integration of new gender role in day-to-day life; general satisfaction with sex life; certainty about one's own gender identity; and suicidal attempts. Per "level of happiness" it was determined on how many of these variables the persons in question scored unfavorably (Table XI). For this calculation, only the most unfavorable category (no work, no steady partner, very lonely, suicidal attempt) was counted for variables with two or three answer categories, while only the two most unfavorable categories were counted for the other variables (with four or five categories). All variables were of equal weight (0 or 1), and consequently it was possible to score from 1 to 10.

The data thus obtained show a degree of consistency in the answers. Those who reported being moderately happy, unhappy, or very unhappy average higher scores than those who report being happy or very happy. The FMs scored somewhat lower than the MFs; the difference is found mostly in the variables loneliness, satisfaction with relations, and work. The correlation between subjective well-being and the 10 variables taken together was $r = 0.3026$, $p = 0.001$ (Pearson product-moment correlation).

Finally, whether the research findings differed with regard to sex (FMs-ti with MFs-ti, FMs-tc with MFs-tc), phase of therapy (FMs-ti with FMs-tc, FMs-ti with MFs-tc), age, interval between the present study and start of therapy was examined. In addition, whether there was a relation between subjective well-being and the other research findings (for age, time interval, and subjective well-being the FMs and MFs were considered separately) was

Table XI. Supplementary Analyses of the Reported Subjective Well-Being

	FMs ($N = 36$) (female-to-male transsexuals)		MFs ($N = 105$) (male-to-female transsexuals)	
	$\bar{X}$	n	$\bar{X}$	n
Very happy	0.66	6	1.88	17
Happy	1.40	20	1.85	49
Moderately happy	1.77	9	3.75	24
Unhappy	1.00	1	4.25	12
Very unhappy	–		4.33	3

examined. With regard to sex a difference was found only between FMs-tc and MFs-tc in reported self-perception (sense of being a man/woman) ($\chi^2 = 10.76$, df = 2, $p < 0.01$). FMs-tc had less doubts. As regards phase of therapy, FMs-tc were more positive about the integration of the new gender role in daily life than FMs-ti ($\chi^2 = 6.73$, df = 2, $p < 0.05$). Furthermore, MFs-ti and MFs-tc differed on self-perception ($\chi^2 = 10.41$, df = 3, $p < 0.05$, MFs-ti have less doubts), and on satisfaction with their own gender-related behavior ($\chi^2 = 15.71$, df = 4, $p < 0.01$; MFs-tc are more satisfied). As regards age and time interval, no differences were found. Concerning subjective well-being, a relation was found in the MFs with their own opinion about the integration of the new gender role ($\chi^2 = 59.71$, df = 16, $p < 0.001$) and with their confidence in the gender role ($\chi^2 = 27.43$, df = 8, $p < 0.001$), and both in the FMs and MFs with evaluation of the care provided (respectively, $\chi^2 = 19.11$, df = 9, $p < 0.05$, and $\chi^2 = 31.07$, df = 16, $p < 0.05$). For the sake of completeness, we note that no relation was found between subjective well-being and the other four factors (sex, phase of therapy, age, time interval between present study, and start of therapy).

DISCUSSION

The question whether SRS leads to alleviation or abolition of gender dysphoria experienced by transsexuals is the central focus of the present study. The principle result, therefore, is the finding that the majority of the persons interviewed report being happy or very happy, and that those who report dysphoric feelings do not ascribe these feelings to gender problems. Although the degree of gender dysphoria that existed prior to therapy is unknown, we assume that these findings indicate diminished gender dysphoria, for the feeling reported at the follow-up would not as such constitute an indication for SRS. Prior to therapy, however, the situation was apparently such as to prompt the decision to seek SRS.

These research finding seem equivocal. They may mean that feelings of gender dysphoria have indeed disappeared or have been so alleviated that they no longer play a significant role in the emotional lives of the interviewed persons. Looking at the self-reported subjective well-being and its motivations, this seems to be a plausible interpretation. However, two alternative interpretations are likewise possible. It is possible that now that SRS has started or even been completed, there is cognitive dissonance reduction in the sense that the persons simply cannot accept the notion that all has been in vain. The self-reported happiness may have been distorted by wishful thinking. The expectation that the treatment would abolish the previously experienced gender dysphoria and thus lead to happiness may have positively

colored the answers. The evaluation of the subjective well-being (Table XI) suggests that insofar as positive distortion may be involved, this distortion should be systematic over all the subjects to explain the outcome. Whether this is the case is difficult to answer. Taking into account that the evaluation has been marginal and does not warrant far-reaching conclusions, we assume that the research findings do not indicate that the reported subjective well-being should be regarded as unreliable or misleading. The fact that the research situation does not prompt the interviewed persons to deliberately describe their situation as better than it really was, can be regarded as a supporting argument. Transsexuals who had yet to complete medical treatment were not in a position of dependence on the investigators, because the investigators were not involved in the treatment.

A second less positive interpretation is in line with the previous one. Particularly those who reported being unhappy or very unhappy might have experienced gender dysphoria without being able or willing to report this. They might have ascribed the feelings of dysphoria to causes other than gender problems while being unaware of a continuing gender conflict. In our opinion there are various other plausible factors that might explain the unhappiness of these persons. Loss or unavailability of a steady partner, lack of understanding, and feelings of loneliness can contribute to the dysphoric feelings without pointing to gender dysphoria. Furthermore, the secondary analyses show that subjective well-being among the transsexual group is related with none of the three variables "self-perception as a 'new' male/female," "satisfaction with the 'new' gender role behavior," and "satisfaction with one's own body."

The question is whether the opined alleviation of gender dysphoria can in fact be the result of the SRS. Although a fair number of persons attribute their feelings of happiness to SRS, there appears to be no direct relation between the subjective well-being and the phase of therapy. Those who have completed SRS are not happier or less happy than those who are still in the intitial phase of therapy. In other words, a person's positive evaluation of his/her life-in-its-totality is not directly related to his/her progress in physical adjustment to the opposite sex. However, it does not seem justifiable to conclude that it is irrelevant to a person's happiness whether physical adjustment has or has not taken place and that the operations could therefore just as well have been omitted. One has to bear in mind that in general the FMs-ti and MFs-ti are happy in the knowledge that the operations will be performed within a reasonable time. They are taking a loan on the future. This expectation effect will disappear if therapy is discontinued. The findings prove that with further progress in therapy there is increasing satisfaction with the changing body (Table VII).

The ancillary question concerned an evaluation of the care provided. The study has shown that a number of persons need more specific, more

frequent psychosocial aid and support in the process of reassignment. One of the principal motives is the confrontation with situations of painful loss. Many transsexuals undergoing SRS (especially MFs) lose their jobs, their relationships with (part of) their families, their partners (if any) and children, and their friends. Many are forced or feel forced to move away from their familiar environment. Even though most of these persons are confident of their new gender role and ability to function socially, social adaptation is not always easy. Not infrequently significant others are lost, social isolation ensues, and a sense of existential loneliness is experienced. It is understandable that such a situation saps the emotional strength of the person. Although the new situation appears to reduce the gender problems experienced, the loss situations unfortunately mar the process of sex reassignment in many cases. Such life situations appear to be the most important factor in the majority of cases of attempted suicide. The fact that 1 in 7 MFs (and 1 in 36 FMs) tried to commit suicide after treatment started is considered a critical signal.

SRS is no panacea. Alleviation of the gender problems does not automatically lead to a happy and lighthearted life. On the contrary, SRS can lead to new problems. Therefore we emphasize that the care provision system should carefully pay attention to psychosocial guidance in addition to medical guidance. Whereas in most follow-up studies few suicide attempts are mentioned, in some studies (Hastings, 1974; Walinder and Thuwe, 1975; Pierce *et al.*, 1979; Hunt and Hampson, 1980) the number or reported suicide attempts after treatment seem comparable with the findings in our study. Contrary to some studies (Walinder and Thuwe, 1975; Sörensen, 1981; Lindemalm *et al.*, 1986), but in accordance with the findings of others (Hunt and Hampson, 1980; Blanchard *et al.*, 1985) none of the persons in our study regretted the decision to undergo SRS. We note finally that the findings obtained in the FMs compare favorably with those obtained in the MFs. This is in agreement with the reports on other follow-up studies (e.g., Pauly, 1968, 1981; Sorensen, 1981a, 1981b; Lundström *et al.*, 1984). There is no immediately apparent explanation for this difference, but we think that three factors may play a role. First, after SRS the FMs are less readily recognizable as a person of the original gender than the MFs; their secondary sex characters (voice, hair) are usually more convincing than those of the MFs. Consequently they are less apprehensive about "discovery" and can move more freely in the social context. Second, society in general is inclined to take a milder view of women who dress and/or behave like men. The fact that the FMs are more readily accepted by their own family than the MFs seems related to this. The pressure to remain a man seems to be greater than the pressure to remain a woman (see also Duncan and Duncan, 1978; Feinman, 1981). Third, in this study the MFs average 9 years older than the FMs, have been more often married, and have children in more instances. The MFs on aver-

age had to cope with a heavier burden of a past life as a person of the original gender than the FMs. Emotional ties to the family often constitute an additional problem in sex reassignment. It is to be noted, however, that no direct relation was found between age and any of the other variables involved in the study.

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