

# Sex Reassignment of Adolescent Transsexuals: A Follow-up Study

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## ABSTRACT

**Objective:** To investigate postoperative functioning of the first 22 consecutive adolescent transsexual patients of our gender clinic who underwent sex reassignment surgery. **Method:** The subjects were interviewed by an independent psychologist and filled out a test battery containing questionnaires on their psychological, social, and sexual functioning. All subjects had undergone surgery no less than 1 year before the study took place. Twelve subjects had started hormone treatment between 16 and 18 years of age. The post-treatment data of each patient were compared with his or her own pre-treatment data. **Results:** Postoperatively the group was no longer gender-dysphoric: they scored in the normal range with respect to a number of different psychological measures and they were socially functioning quite well. Not a single subject expressed feelings of regret concerning the decision to undergo sex reassignment.

**Conclusions.** Starting the sex reassignment procedure before adulthood results in favourable postoperative functioning, provided that careful diagnosis takes place in a specialized gender team and that the criteria for starting the procedure early are stringent. *J. Am. Acad. Child Adolesc. Psychiatry*, 1997, 36(2):263-271.

Strong feelings of belonging to the opposite sex and corresponding behavioural manifestations have been reported as beginning as early as 2 to 3 years of age (Zucker and Green, 1992). Prospective studies have shown that most children with gender identity disorder will not grow up to become transsexuals (Green, 1987; Zuger, 1984). In a few, however, the cross-gender feelings will remain. These individuals become adolescents who will attend gender identity clinics to obtain sex reassignment surgery (SRS). Despite the early onset of the disorder, in most countries it is common practice not to start the actual SRS procedure earlier than 18 or even 21 years of age. There are several reasons for this long delay.

In pre-pubertal children medical treatment is never considered because of the previously mentioned discontinuity between gender identity disorder of childhood and adult transsexualism. However, there is a general reluctance to commence rather invasive procedures such as hormone treatment even in post-pubertal children. Adolescence is a phase in which many identities, e.g. political or religious, are developed. Professionals fear that experimenting with certain aspects of gender, such as gender role behaviour, will lead adolescents to conclude that they have a gender identity problem and that they, will as a result wrongly seek a medical means of resolving their confusion. The chance of making the wrong diagnosis and the consequent risk of postoperative regret is therefore felt to be higher in adolescents than in adults, as a consequence of the developmental phase itself. A more practical reason for delaying the start of sex reassignment is that adolescents in many countries are still legally dependent on the consent of their parents when deciding on medical treatment. Even when the diagnostician and patient agree that the SRS procedure should be started, parents may not give their consent. Resistance from parents thus forms an extra complicating factor in the treatment process and the clinician runs an increased risk of litigation.

There are, however, arguments in favor of commencing the administration of hormones (and therefore the SRS procedure) earlier than adulthood. Some adolescents, who have shown an extreme pattern of cross-gender identification from their earliest years, suffer deeply from the fact that they cannot be open about their gender feelings. As a consequence of their gender identity disorder, they sometimes develop other problems, which around the time of puberty increase and/or become aggravated. Knowing that they will have to await treatment for many years engenders feelings of hopelessness and slows down their social, psychological, and

intellectual development. They have to cope with adverse consequences of living with a self-concept that is never socially acknowledged or reinforced. In such cases, early treatment would prevent much unnecessary, suffering.

Another argument for starting the sex reassignment procedure in adolescents concerns their appearance. The physical outcome of an early treatment can be expected to be more satisfactory by comparison with starting later, especially, in male-to-female patients. This is obviously an enormous and lifelong advantage: instead of having to live with a deep voice and facial scarring due to electrical epilation one can easily pass as a female. Ross and Need (1989) found that postoperative psychopathology was primarily associated with factors that made it difficult for postoperative transsexuals to pass as their new gender or that continued to remind them of their transsexualism.

Finally, on the basis of numerous follow-up studies, one can conclude that unfavorable postoperative outcome seems to be related to a late rather than an early start of the SRS procedure (for reviews see Green and Fleming, 1990; Pfafflin and Junge, 1992). Age at assessment also emerged as a factor differentiating two small groups of male-to-female transsexuals with and without postoperative regrets (Lindemalm et al., 1987).

With some rare exceptions (e.g., Dulcan and Lee, 1984), clinicians have been hesitant to use forms of treatment other than psychotherapy or environmental therapy for adolescent SRS applicants. As mentioned earlier, a major problem is that it is not yet known for certain who will and will not profit from early SRS. The ultimate answer to the question of who would benefit from which treatment would come from research in which adolescent applicants (with either more "fixed" or more "fluid" gender identities) are randomly assigned to sex reassignment or non-sex-reassignment treatment conditions, with adequate operationalizations of gender identity and a long-term follow-up. For ethical reasons such studies are obviously not possible.

Naturally, if a complete reversal of extreme and lifelong cross-gender identity were possible by treatment methods other than SRS, clinicians should refrain from SRS in adolescents, and indeed in older patients. However, the few published case studies of transsexuals (only some of them adolescents) who were "cured" after psychotherapy (Barlow et al., 1973, 1979; Davenport and Harrison, 1977; Dellaert and Kunke, 1969; Kronberg et al., 1981; for a review see Cohen-Kettenis and Kuiper, 1984) do not permit us to draw such conclusions, for several reasons. First, operationalizations of gender identity differ considerably from report to report. Consequently, treatment success has been evaluated on the basis of diverse and sometimes questionable criteria. Second, few reports mention a long-term follow-up. Clinicians working with transsexuals know that some applicants refrain from SRS, even without psychotherapy, but, many years later, return to continue the procedure. So even the claimed cures might in fact have been postponements of SRS. Finally, the case studies usually describe patients who were highly motivated to "change" their gender identity, a characteristic rarely encountered in most of our applicants.

We believe that non-SRS treatment may be helpful in cases of gender confusion or certain - mild - forms of gender dysphoria. However, we doubt that the reported cases reflect a complete and stable (re)establishment of a gender identity corresponding with genital sex in persons with a lifelong and extreme cross-gender identity. Moreover, despite many years of intensive psychotherapy, permanent gender identity change is, even in the "milder" cases, not always achieved (Dulcan and Lee, 1984; Lothstein, 1980). These considerations have led us and many others to favor SRS as a treatment option for transsexuals. On the basis of the above arguments we also try to explore carefully the treatment boundaries for younger age groups.

In our hospital, children and adolescents with gender identity disorder are seen at an outpatient gender identity clinic. The recommended procedure in the Standards of Care of the Harry Benjamin International Gender Dysphoria Association (Walker et al., 1985), a professional organization in the field of transsexualism, is to arrive at a diagnosis in two phases. In the first phase one gathers information necessary for differentiating between the extreme gender identity disorder, called transsexualism, and other types of gender disorders. Also, possible risk factors for serious problems during the reassignment period and for negative postoperative outcome are estimated.

At our clinic, in the first phase the child and family are interviewed on the general and gender development of the child, the way the parents have dealt with their child's gender deviancy, and the family backgrounds of the parents themselves. By means of a semistructured interview with the adolescent, a list of topics is discussed (e.g., identification figures, relationship with same-sex and opposite-sex parent, first conscious cross-gender feelings, emotional reaction of the child to the maturation of the body). Many aspects of sexuality are included in the discussion (such as sexual fantasies, sexual orientation, anxieties, the meaning of cross-dressing, deviant sexual behavior). Current issues such as school/career choice or school problems, relationship problems at home or with peers, and romantic involvements are also addressed. During these sessions several general aspects of the child's functioning (problem-solving abilities, interpersonal functioning, reality testing, stability of the SRS wish, etc.) can be observed, along with his or her gender role behavior. Psychodiagnostic assessment is another element of the first phase. The adolescent undergoes intelligence and personality testing and, if necessary, neuropsychological testing. Our standard test battery also contains some specific instruments, such as a body image scale (Lindgren and Pauly, 1975) and a self-developed gender dysphoria scale (see below). The first phase may take several weeks, months, or even years (Cohen-Kettenis, 1992, 1994).

Nontranssexual patients are not allowed to start the second diagnostic phase or "real-life diagnostic test" (Money and Ambinder, 1978). Instead, in cases of transvestitism, ego-dystonic homosexuality, forms of gender confusion, etc., psychotherapy, family therapy, or other forms of treatment are offered. In transsexual patients the second diagnostic phase is started, if the risks of unfavorable postoperative outcome are considered to be low. Because we are still in a pioneering phase for adolescents, additional criteria are used for referral to the second diagnostic phase. First, they must have shown a lifelong extreme and complete crossgender identity/role. Around puberty these feelings and behaviors must have become more rather than less pronounced. Second, they must be

psychologically stable (with the exception of depressed feelings, which often are a consequence of their living in the unwanted gender role) and function socially without problems (e.g., have a supportive family, do well at school). If applicants meet the above requirements, they are allowed to proceed to the second diagnostic phase, even if they are younger than 18 years of age (but they must be older than 16). If they are diagnosed transsexuals but do not meet the additional criteria, the second diagnostic phase is postponed.

The second phase implies the start of the real-life test, supported by a (partial) hormone treatment (Cohen-Kettenis, 1994). In Holland adolescents are referred for hormonal treatment (and surgery) to members of the Free University Hospital Gender Team, which is responsible for the treatment of 95% of the Dutch adult patients. Partial hormone treatment blocks the action of sex steroids in a reversible way: the male-to-female bodies do not masculinize any further, and the female-to-male patients stop menstruating and sometimes experience a weakening of breast tissue (Gooren and Delemarre-van de Waal, 1996). Full hormone treatment is not reversible and masculinizes the female body, or feminizes the male body. It is given before the age of 18 only when the patient has responded favorably to the partial hormone treatment.

During the real-life test applicants have to live full-time in the desired gender role. Thus they can discover whether they are able to pass as someone of the opposite sex and experience all advantages and disadvantages of the new situation. Depending on the situation, the role change may occur gradually or at once. If the real-life test is successfully passed, the patient is referred for surgery. Counting from the start of the full cross-hormone treatment, the minimal duration of the real-life test is 1 year for the FMs and 1.5 year for MFs. This difference is due to the fact that the gender role change seems to have more impact on the life of male-to-females (MFs) than on that of female-to-males (FMs), and MFs therefore need more time to adjust to the new situation.

Because the very first patients going through this procedure have experienced life in the desired gender situation for quite some time, we decided to conduct a follow-up study. To our knowledge no follow-up studies have ever been conducted on transsexuals treated so early in life. We expected that the outcome of this young group would be relatively favorable compared with the outcome among older groups. In the first follow-up study among adult Dutch transsexuals ( $N=141$ ) who had undergone SRS (Cohen-Kettenis and Kuiper 1988; Kuiper and Cohen-Kettenis, 1988), SRS was found to solve gender problems but had not necessarily alleviated other problems. Similar results have been found in non-Dutch samples (for a review of 79 follow-up studies, see Pfafflin and Junge, 1992). The less positive results among adults may, in our view, be due to the fact that they have had to live under adverse circumstances for a longer period than individuals who are treated in adolescence.

The current study focused primarily on postoperative gender feelings (regrets), gender functioning, and an evaluation of the treatment. An alleviation of gender dysphoria can be expected to be closely associated with improvement in other areas of life, such as psychological, social, and sexual functioning. Although not considered a primary outcome criterion, we also included these domains in our study.

## METHOD

### Subjects

For the follow-up study the first 22 patients (15 FM and 7 MFs) who had undergone their last surgery at least 1 year before the start of the study were invited to participate. During the period that these subjects applied for SRS, eight other applicants did not receive the diagnosis of transsexualism and hence did not start the real-life test. Three others were diagnosed as transsexuals, but their real-life test was postponed because of severe concurring psychopathology and/or adverse social circumstances. Two of the invited patients (1 FM and 1 MF) refused to be interviewed. One patient (an MF) did not respond to our letters. This resulted in a posttreatment sample of 14 FMs and 5 MFs.

### Instruments

*IQ Tests.* IQ tests used were the WISC-R (van Haasen et al., 1986), WAIS (Stinissen et al., 1970), and *Groninger Intelligentie Test* (Luteyn and van der Ploeg, 1983).

*Gender Dysphoria Scale.* The Utrecht Gender Dysphoria Scale is a specially developed scale to measure gender dysphoria. In the initial factor analyses of responses to this measure, 12 of 32 items appeared to form a homogeneous scale: Cronbach's alpha values were .80 for FMs ( $n = 56$ ), .80 for MFs ( $n = 87$ ), .81 for female controls ( $n = 65$ ), and .66 for male controls ( $n = 58$ ). In a new sample of 202 SRS applicants who were either diagnosed transsexuals or gender-dysphoric but not transsexual and who were participating in a 5-year prospective study, the alpha values were .92 for male applicants and .78 for female applicants ( $n = 82$ ). The scale showed excellent discriminant validity  $v$  between the transsexual and nontranssexual subjects in the first study ( $p < .001$ ) and between SRS applicants who were and were not referred for SRS ( $p < .001$ ) (Doorn et al., 1996). Examples of items are "I feel a continuous desire to be treated as a man/woman" and "Every time someone treats me as a woman/man I feel hurt."

*Body Image Scale.* A body image scale (Lindgren and Pauly, 1975) that had been adapted for a Dutch population (Kuiper, 1991) was used.

*Personality Inventories.* The NVM is an 83-item shortened Dutch version of the Minnesota Multiphasic Personality Inventory measuring the concepts of negativism, somatization, shyness, psychopathology, and extroversion (Cronbach's alpha values in a group of 894 psychiatric patients and 294 nonpatients ranged from .71 to .86; validation studies are reported by Luteyn et al., 1980).

The Dutch Personality Questionnaire or NPV is a widely used 133-item personality questionnaire measuring feelings of inadequacy, social inadequacy, rigidity, hostility, complacency, dominance, and self-esteem (the median of the Cronbach's alpha values in 10 normative groups ranged from .70 to .86; validation studies are reported by Luteyn et al., 1985).

*Treatment Evaluation.* Subjects completed a semistructured oral interview with 27 questions about their treatment outcome, their experiences during and after sex reassignment (e.g., "In what ways do you feel hindered in your daily functioning as a man/woman?"), their evaluation of the treatment (e.g., "If you would have to start treatment with the knowledge you have now, which aspects of the treatment should be different from what has happened to you?"), feelings of regret (e.g., "How often do you contemplate living as a man/woman again?"), and confidence in the possibility of "passing" in the new gender role (e.g., "How often do you feel insecure about your masculinity/femininity?") In the interview 46 questions were asked about the subjects' current life situation (e.g., work/education, financial situation, living circumstances, contacts with family and friends, partnership, sexuality, feelings of loneliness, alcohol and drug abuse, and sleeping problems) (Doorn et al., 1996).

Subjects completed a questionnaire concerning functionality of the vagina or penis and satisfaction with surgical results (for MFs 3 items on breast enlargement, 10 on vaginoplasty; for the FMs 5 items on breast removal, 4 on the neoscrotum, 7 on phalloplasty) (Doorn et al., 1996).

*Social Reactions Questionnaire.* A 20-item questionnaire assessed reactions of the social environment to the transsexual (e.g., "People still call me 'sir,' even if I feel I look good") (Doorn et al., 1996).

The IQ tests were administered before treatment; the Utrecht Gender Dysphoria Scale, the body image scale, and the personality questionnaires were completed before as well as after treatment because within-subject changes were expected in these domains; and the other instruments were used after treatment because they contain questions regarding only the postoperative situation.

## **Procedure**

Subjects were invited to come to the Utrecht University Hospital or to combine a hormonal checkup at the Free University of Amsterdam Hospital with the interview and testing. Each session took 2 to 3 hours. To avoid socially desirable responses, the subjects were seen by the second author, who is not involved in the diagnosis or treatment of transsexuals.

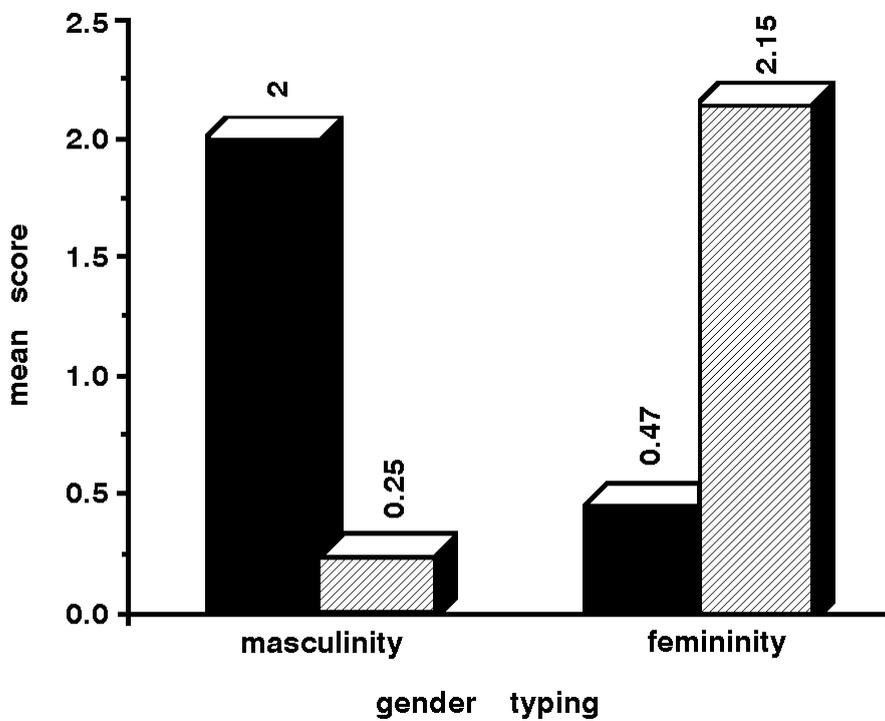
## **RESULTS**

The mean age of the group was 17.5 years (range 15 to 20) at the time of the pretest and 22.0 (range 19 to 27) at the follow-up. Nine of the patients had started the "real-life test" or second diagnostic phase, supported by hormone treatment, before the age of 18. The mean elapsed time between the last operation and the time of the follow-up interview was 2.6 years (range 1 to 5 years). The group's pretreatment mean IQ score was 106 (SD = 14; range 71 to 127).

The group did not differ significantly from a group of 23 diagnosed transsexuals in our clinic, who applied for SRS at a later date and who were therefore not yet 1 year postoperative at the time of our study, with respect to the following variables: age at application, gender dysphoria score, intelligence, and scores on the personality tests (NVM and NPV).

## **Gender Dysphoria**

The difference between pre- and post test score in gender dysphoria was highly significant ( $p < .001$ ) (Table I). The mean post test scores of the MF transsexuals were completely in the range of the mean score of the aforementioned 87 female controls (mean = 15.7; SD = 5.4); likewise, the mean post test score of the FMs did not differ significantly from the mean score of the aforementioned 58 male controls (mean = 14.2; SD = 2.9). In addition, the MF group reported feeling highly feminine and hardly masculine at all in response to questions on masculinity and femininity, while almost exactly the reverse pattern was found in the FM group (Fig. 1).



**Fig 1** Masculinity and femininity of female-to-male (solid bars) and male-to-female (striped bars) transsexuals

None of the subjects expressed feelings of regret about their decision to undergo SRS in response to any of several questions regarding the topic, such as the following. "Do you now have any regrets with regard to your decision to live as someone of the opposite sex?" "Did you ever have any regrets during or after the sex reassignment procedure?" "Would you make the same decision again, knowing what you now know about your sex reassignment?" "Did you ever consider living in your original gender role again?" "Do you sometimes live in your original gender role?" "Did you ever think, during (after) the sex reassignment: I wish I had never started this?"

**TABLE 1**

### Gender Dysphoria Scale

	No.	Mean	SD	Pretest	Mean	SD	Posttest
All	19	51.7	6.3		14.8	3.2*	
FM	14	52.9	5.4		14.5	2.9*	
MF	5	48.4	7.5		15.8	4.3*	

Note.. FM = female-to-male; MF = male-to-female.

\* $p < .001$ .

### Body Satisfaction

With respect to their general appearance, the majority of the group reported satisfaction: 100% of the MFs and 60% of the FMs were satisfied, while 40% of the FMs were neutral. This is in line with the interviewer's observation that it was difficult to discern any signs of the biological sex. Satisfaction with primary and secondary sexual characteristics after treatment increased significantly. Not included in this analysis was an item on the (neo-) phallus (see below). For MFs, but not for FMs, there was a slight increase in satisfaction with other physical characteristics (Table 2).

### Satisfaction With Surgery

For this group of FMs breast removal is emotionally the most relevant type of surgery. This is because young FMs are advised to postpone metoidioplasty (transformation of the hypertrophic clitoris into a micropenis) or phalloplasty (with or without construction of a neoscrotum) because surgical techniques are steadily improving. Therefore only one FM had, shortly before the interview, undergone a phalloplasty and only two FMs had a neoscrotum. For the MFs, vaginoplasty is the most important surgical intervention.

**TABLE 2****Satisfaction With Primary, Secondary, and Other Physical Characteristics (Body Image Scale)**

	Mean (Pre)	Mean (Post)	<i>F</i> (Type)	<i>F</i> (Time)	<i>F</i> (T x T)
Primary sex characteristics					
FM	4.6	3.1	1.54	102.6**	0.58
MF	4.5	2.17			
Secondary sex characteristics					
FM	3.3	2.5	1.19	41.21**	0.08
MF	3.0	2.2			
Other body characteristics*					
FM	2.3	2.3	0.01	2.41	4.32***
MF	2.6	2.0			

*Note:* Values in the table represent means and results of analyses of variance with "type" as between-subjects factor and "time" as within-subjects factor. Mean values range from 1 to 5, with 1 = very satisfied and 5 = very dissatisfied. FM = female-to-male; MF = male-to-female; T x T = type X time.

\*Nose, feet, chin, shoulders, arms, weight; \*\* $p < .05$ ; \*\*\*  $p < .001$ .

Forty percent of the FMs reported satisfaction with their breast removal, 50% were moderately satisfied, and 10% were dissatisfied with the result. Disappointment about the visibility of the scars was the main reason for not being satisfied with breast removal. Nevertheless, 80% did not have any problems with baring their chest when swimming. Of the MFs, 60% expressed satisfaction with their vaginoplasty. They felt their vaginas looked natural. Three MFs had experienced sexual intercourse, without problems.

### Occupational Status

Slightly fewer than half of the group (43%) were studying (at a school for business administration or at university). Thirty-six percent of the subjects had a job and 21% were unemployed. Of the unemployed, two were not looking for a job.

### Living Situation

Most subjects (79%) lived independently or in student dormitories, 14% of the subjects lived with their partner, and 7% were living with their parents.

### Relationships and Sexuality

The majority of the group (57%) had no partner at the time of the interview or had never had one; 36% had a stable relationship with a partner. One FM (7%) was having casual relationships with several girlfriends. Of the subjects who at the time of the interview had a sexual partner, 71% expressed satisfaction with their sex life, 14% expressed a neutral view, and 14% were dissatisfied. Several FMs mentioned that they found it difficult to live without a penis, especially at moments when they did not know their potential sexual partner very well. Autosexual behavior was not very frequent. Fifty percent of the subjects masturbated less than once a month or never, 43% more than once a month. MFs generally reported a decrease in frequency, while FMs reported no change or an increase in frequency. Of the 13 subjects who were sexually active, 77% regularly achieved orgasm.

### Social Life and Social Contacts

The majority (89%) felt accepted and supported in their new gender role by everyone they knew, while the remainder (11%) felt accepted by several people. As a consequence of the sex reassignment, 68% reported not having lost their relationship with any family member or friend, while 21% had lost a relationship with just one person. One MF had, before treatment, felt so isolated that she had "little to lose." All except one subject had developed new friendships since the beginning of the treatment. Parents and friends were mentioned as the most important people to rely on in hard times (mother 71%, father 43%, friends 50%). More superficial contacts such as with neighbors or shopkeepers were either nonexistent/neutral (21%) or positive (79%). None of the subjects had had experiences of being harassed. Most of the subjects had been approached in a flirtatious manner, 58% regularly and 37% sometimes. Not a single subject had been, since treatment, approached by strangers as if they were someone of the biological sex.

### Psychological Functioning

After treatment, a significant increase in extroversion (NVM) (Table 3) was found, indicating a tendency to be more active toward social contacts. When both pre- and posttest group means were compared with Dutch normative data, all scores turned out to be

within the average range. We also found a significant increase in dominance and self-esteem and a significant decrease in inadequacy (NPV) (Table 4). Again, pre and posttest group means were all in the below average to average range, when compared with Dutch norms.

**TABLE 3**

Psychological Functioning Before and After Sex Reassignment Surgery (NVM)

	Mean	Pretest		Posttest	
		SD	Mean	SD	
Negativism	21.8	9.3	19.0	6.7	
Somatization	7.9	7.3	6.0	5.7	
Shyness	11.0	8.8	10.0	7.7	
Psychopathology	3.6	4.3	3.1	2.3	
Extroversion	15.9	5.6	19.5	4.1*	

*Note:* Results were analysed by means of paired *t* tests. The NVM is a shortened Dutch version of the Minnesota Multiphasic Personality Inventory.

\**p* = .002.

**TABLE 4**

Psychological Functioning Before and After Sex Reassignment Surgery (NPV)

	Mean	Pretest		Posttest	
		SD	Mean	SD	
Inadequacy	16.2	10.2	12.0	6.7**	
Social inadequacy	9.9	8.7	8.2	5.5	
Rigidity	18.2	7.8	19.9	6.7	
Hostility	18.2	5.4	17.1	5.6	
Complacency	14.8	5.4	12.5	3.9	
Dominance	13.9	7.0	18.6	6.8***	
Self-esteem	24.3	6.8	27.9	7.1*	

*Note:* Results were analysed by means of paired *t* tests. NPV = Dutch Personality Questionnaire.

\**p* = .05; \*\**p* = .04; \*\*\**p* = .0003.

**General Functioning**

Three patients seemed to have problems to the point that they expressed only moderate satisfaction with their lives and feelings of moderate happiness, in contrast to the rest of the group, who felt satisfied or very satisfied and happy. The problems of two of these three patients seemed to be primarily related to their unemployment. One FM had dropped out of school and could not find a steady job. His girlfriend had to support him financially, and he found this difficult to bear. The other, a bright MF, had many diplomas, but poor social skills. She had expected her diplomas to guarantee her a job in the world of business, but she did not succeed in getting one. For this reason she had started a social skills training and had hopes this would help her in her career. The third, an FM had rather low self-esteem. Despite an absence of negative pre- and posttreatment social experiences, good looks, and a steady girlfriend, he had trouble overcoming, his uncertainties.

Some information, albeit not very systematically gathered, is available concerning the three patients who declined to participate in this study. All three patients still visit the Free University Hospital Department of Andrology for their hormonal checkups. Here we were informed that one FM had a partner with children from a previous marriage and that he was unemployed. One MF had a job and was involved in a steady relationship. The other MF was studying and had just broken up with her boyfriend. On their visits to the hospital for hormonal checkups, none of them had ever expressed regrets with regard to their SRS. All three easily pass in their new gender role. Neither the endocrinologists nor other Gender Team staff members believed these patients' non-participation in the study was due to an unfavorable postoperative outcome.

## DISCUSSION

In this adolescent group, 1 to 5 years after surgery, sex reassignment seems to have been therapeutic and beneficial. SRS has resolved the patients' gender identity problem and enabled them to live in the new gender role in quite an inconspicuous way. Socially and psychologically these adolescents do not seem to function very differently from nontranssexual peers, perhaps with the exception of a greater reluctance among those in the FM group to get involved in short-term or incidental sexual encounters. Relief of gender dysphoria, however, does not necessarily mean relief of unhappiness in general. In some cases, after SRS, certain non-transsexualism-related problems had disappeared, such as shyness or bad school grades. But in other cases such changes had not occurred, or the new situation had created new problems, such as (in the majority of the FMs) living as a man without a penis. This condition may cause practical problems, e.g., showering in a group setting after sports activities, and emotional problems, e.g., being frustrated because of the impossibility of having "real sex" with one's girlfriend. The extent to which such unfavorable factors hamper postsurgical functioning depends largely on the individual's psychological strength. That the group functioned quite well from a psychological point of view suggests that they were capable of handling their problems adequately.

In the previously mentioned study of adult Dutch transsexuals who had undergone SRS (Kuiper and Cohen-Kettenis, 1988), SRS was also found to be an effective treatment for transsexuals. Several similar instruments were used in the two studies and all subjects were treated in the same country. Therefore, data from our study are easier to compare with data from this adult group than with data from non-Dutch samples. Compared with the adult group, the adolescents function better psychologically (Kuiper, 1991). In addition, they appear to have far fewer social problems and they receive much more support from their families and friends (Cohen-Kettenis and Kuiper, 1988). A comparison of the adults and adolescents with respect to sexuality was difficult to make because the majority of the data from the adult transsexuals concern sexuality with a partner, and this is not true of the adolescents.

Part of the adolescents' better functioning might be due to the fact that they more easily pass in the desired gender role, because of their convincing appearance. With the exception of one MF, the voices of the MFs were not noticeably male sounding, and all MFs had only sparse beard growth at the time of hormonal treatment. The early antiandrogen treatment apparently had acted in a timely way to block the facial hair growth and the lowering of the voice.

Another aspect of this relatively positive outcome may be attributable to the criteria for treatment eligibility. As explained in the introduction, additional criteria are applied for applicants who want to start the real-life test before the age of 18. This implies that those patients selected for early treatment not only are among the best-functioning applicants, but probably they also belong to the subtype of so-called "homosexual transsexuals" (that is, individuals who are, before SRS, sexually attracted to same-sex partners) (Blanchard, 1985). They are also referred to as "primary" or "early-onset" transsexuals (Doorn et al., 1994; Person and Ovesey, 1974a,b). "Homosexual transsexuals" have been found, among other things, to present earlier for treatment, to report more childhood cross-gender identification, and to show less postoperative regrets than "nonhomosexual transsexuals" (Blanchard, 1985, 1988; Blanchard et al., 1989, Doorn et al., 1994). It is also possible that the biological factors recently found to be associated with transsexualism are of greater etiological significance in the early-onset than in the late-onset group (Zhou et al., 1995). Postoperative regrets in the nonhomosexual group (which probably largely coincide with the late-onset group) are more likely because they usually have a much longer and more inconsistent history of untreated gender dysphoria, have for a longer period tried unsuccessfully to live in the original gender role, and, as a consequence, have stronger ties to their original role (as a partner, a father, or a colleague). Finally, most of the transsexuals in our study were FMs. From other studies we know that FMs in many respects fare better than MFs postoperatively (Pfafflin and Junge, 1992).

Sex reassignment of adolescent transsexuals is a matter of considerable debate (Cohen-Kettenis, 1994, 1995; Meyenburg, 1994). On the basis of the findings of this study, it seems reasonable to conclude that transsexuals treated during or shortly after adolescence will not function worse postoperatively than transsexuals treated later. It is true that they will have to confront difficulties during a vulnerable phase of their lives. Not every transsexual adolescent will be capable of handling these adequately. When diagnosing adolescent transsexuals one should therefore be even more careful and when referring for hormone treatment one should be more strict than one would be with adults. Thus, in psychologically unstable applicants or applicants living in unfortunate social/family circumstances, it seems sensible to address these factors before proceeding to the real-life test.

Even adolescent applicants who are functioning well will need a lot of guidance through the process of sex reassignment. However, provided they manage to pass SRS without problems, they have a lot to gain. They can catch up with their peers and devote their attention to friendships, partnership, and career.

In the Netherlands medical health care and legislation are relatively favorable for transsexuals: the treatment is paid for by insurance companies or by national health insurance and a change of birth certificate is legally possible. Both the general public and general practitioners are well aware of the phenomenon of transsexualism and the existence of specialized gender clinics. It is likely that in societies with more negative attitudes toward the phenomenon, transsexuals will try to hide their condition for a longer period or will psychologically be more damaged at the moment of application. It is also likely that in such societies it is harder to conduct studies similar to ours, because of a scarcity of suitable candidates and a hesitance of clinicians to engage in non-established treatment methods. But before arriving at definitive conclusions regarding sex reassignment for adolescents, solid prospective studies should be carried out with special attention for necessary and sufficient criteria for SRS eligibility.

## REFERENCES

- Barlow DH, Abel GG, Blanchard EB (1979), Gender identity change in transsexuals: follow-up and replication. *Arch Gen Psychiatry* 36:1001-1007
- Barlow DH, Reynolds EJ, Agras WS (1973), Gender identity change in a transsexual. *Arch Gen Psychiatry* 28:569-576
- Blanchard R (1985), Research methods for the typological study of gender disorders in males. In: *Gender Dysphoria Development, Research, Management*, Steiner BW, ed. New York: Plenum
- Blanchard R (1988), Nonhomosexual gender dysphoria. *J Sex Res* 24:188-193
- Blanchard R, Steiner BW, Clemmensen LH, Dickey R (1989), Prediction of regrets in postoperative transsexuals. *Can J Psychiatry* 34:43-45
- Cohen-Kettenis PT (1992), A gender clinic for children and adolescents: the Dutch model. Proceedings of the conference on Gender Identity and Development in Childhood and Adolescence, London
- Cohen-Kettenis PT (1994), Die Behandlung von Kindern und Jugendliche mit Geschlechtsidentitätsstörungen an die Universität Utrecht. *Z Sexualforsch* 7:321-329
- Cohen-Kettenis PT (1995), Replik auf Bernd Meyenburgs "Kritik der hormonellen Behandlung Jugendlicher mit Geschlechtsidentitätsstörungen." *Z Sexualforsch* 8:165-167
- Cohen-Kettenis PT, Kuiper AJ (1984), Transseksualiteit en psychotherapie. *Tijdschr Psychoth* 3:153-166
- Cohen-Kettenis PT, Kuiper AJ (1988), Social aspects of sex reassignment surgery. In: *Sexology*, Eicher W, Kockott G, eds. Berlin: Springer-Verlag, pp 187-191
- Davenport CW, Harrison SI (1977). Gender identity change in a female adolescent transsexual. *Arch Sex Behav* 4:327-339
- Dellaert T, Kunke T (1969), Investigations on a case of male transsexualism. *Psychother Psychosom* 17: 89-107
- Doorn CD, Kuiper AJ, Verschoor AM, Cohen-Kettenis PT (1996), *Het verloop van de geslachtsaanpassing een 5-jarige prospectieve studie* (The course of sex reassignment: a 5-Year prospective study). Rapport voor de Nederlandse Ziekenfondsraad (Report for the Dutch National Health Council)
- Doorn CD, Poortinga J, Verschoor AM (1994), Cross-gender identity in transvestites and male transsexuals. *Arch Sex Behav* 23:185-201
- Dulcan M K, Lee PA (1984), Transsexualism in the adolescent girl. *J Am Acad Child Psychiatry* 23:354-361
- Gooren LJG, Delemarre-van de Waal H (1996), The feasibility of endocrine interventions in juvenile transsexuals. *J Psychol Hum Sex* 8:69-74
- Green R (1987), *The "Sissy boy Syndrome" and the Development of Homosexuality*, New Haven. CT: Yale University Press
- Green R, Fleming DT (1990). Transsexual surgery follow-up: status in the 1990s. *Annu Rev Sex Re.* 1;163-174
- Kronberg J, Tyano S, Apter A, Wiisenbeek H (1981). Treatment of transsexualism in adolescence. *J Adolesc* 4:177-185
- Kuiper M (1991), *Transsexualiteit evaluatie van de geslachtsaanpassende behandeling*. Amsterdam: Free University Press
- Kuiper AJ, Cohen-Kettenis PT (1988). Sex reassignment surgery: a study of 141 Dutch transsexuals. *Arch Sex Behav* 17:439-457
- Lindemalm G, Korlin D, Uddenberg N (1987). Prognostic factors vs outcome in male-to-female Transsexualism: a follow up of 13 cases. *Acta Psychiatr Scand* 74:268-274
- Lindgren T, Pauly I (1975). A body image scale for evaluating transsexuals. *Arch Sex Behav* 4:639-656
- Lothstein LM (1980). The adolescent gender dysphoric patient: an approach to treatment and management. *J Pediatr Psychol* 5:93-109

- Luteyn F, Kok AR, van der Ploeg FAE (1980). NVM. *Nederlandse Verkorte MMPI. Handleiding*. Lisse: Swetz en Zeitlinger
- Luteyn F, Starren J, van Dijk H (1985). *Handleiding bij de NPV*. Lisse: Swetz en Zeitlinger
- Luteyn F, van der Ploeg FAE (1983). *Handleiding Groninger Intelligentie Test (GIT)*. Lisse: Swetz en Zeitlinger
- Meyenburg B (1994). Kritik der hormonellen Behandlung Jugendlicher mit Geschlechtsidentitätsstörungen. *Z Sexualforsch* 7:343-349
- Money J, Ambinder R (1978). Two-Year, real-life diagnostic test: rehabilitation versus cure. In *Controversy in Psychiatry*. Brady JP, Brodie HKH, eds. Philadelphia: Saunders. pp 833-845
- Person E, Ovesey I (1974a). The transsexual syndrome in males: I. Primary transsexualism. *Am J Psychother* 28:4-29
- Person E, Ovesey I (1974b). The transsexual syndrome in males: II. Secondary transsexualism. *Am J Psychother* 28:174-193
- Pfafflin F, Junge A (1992). *Geschlechtsumwandlung: Abhandlungen zur Transsexualität*. Stuttgart: Schartauer
- Ross MW, Need JA (1989). Effects of adequacy of gender reassignment surgery on psychological adjustment: a follow-up of fourteen male-to-female patients. *Arch Sex Behav* 18:145-153
- Stinissen J, Willems PJ, Coetsier P, Hulsman WLL (1970). *Handleiding WAIS. Nederlandstalige bewerking*. Amsterdam: Swetz en Zeitlinger
- van Haasen PP, de Bruyn EEJ, Pijl YJ et al (1986). *Wechsler Intelligence Scale for Children-Revised. Nederlandstalige uitgave*. Lisse: Swetz en Zeirlinger
- Walker PA, Berger JC, Green R, Laub DR, Reynolds CL, Wollman L (1985). Standards of care: the hormonal and surgical sex reassignment of gender dysphoric patients. *Arch Sex Behav* 14:79-90
- Zhou J, Hoffman MA, Gooren LJG, Swaab DF (1995). A sex difference in the human brain and its relation to transsexuality. *Nature* 378:68-70
- Zucker KJ, Green R (1992). Psychosexual disorders in children and adolescents. *J Child Psychol Psychiatry* 33:107-151
- Zuger B (1984). Early effeminate behavior in boys: outcome and significance for homosexuality. *J Nerv Ment Dis* 172:90-97