CHAPTER 4

Pre- and postoperative functioning of transsexual subtypes

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Abstract

Background: The present study investigates whether transsexuals can be validly subdivided into subtypes on the basis of sexual orientation and whether this distinction reveals differences in postoperative functioning. **Method**: A large sample (*n* = 187) of homosexual and *non*homosexual transsexuals were compared on a number of characteristics before and after treatment. We also investigated whether the differences between the two subtypes of transsexuals were similar for male-to-female and female-to-male transsexuals. **Results**: At pretest, homosexual transsexuals reported more childhood gender nonconformity, were younger when applying for sex reassignment, had an appearance that was already more compatible with the desired sex, and psychologically functioned better than *non*homosexual transsexuals. A lower percentage of the homosexual than of the *non*homosexual transsexuals reported being or having been married and (a history of) sexual arousal while cross-dressing. No differences between the two subtypes were found however, in height, weight, or body mass index. At follow-up, many of the pretest differences in psychological functioning had disappeared. Both groups indicated an absence of gender dysphoria. The patterns of differences between homosexual and *non*homosexual transsexuals were not entirely similar for male-to-female and female-to male transsexuals. **Conclusion**: To distinguish between subtypes of transsexuals on the basis of sexual orientation is theoretically and clinically meaningful. A *non*homosexual preference is not necessarily a contraindication for sex reassignment, yet, may require additional guidance during and after treatment.

Introduction

In 1918 Hirschfeld published the first classification of cross-gender behavior. He distinguished five types of (habitual or persistent) cross-dresser. He estimated that 35% of cross-dressers are homosexual, 35% are heterosexual, 15% are bisexual, and that the remaining 15% consisted mostly of automonosexuals (men who are erotically aroused by the thought or image of themselves as women) and a few asexual cases. Here, the terms homosexual and heterosexual are applied to transsexuals exactly as they are to other individuals, to refer to erotic attraction to members of the same or the opposite biological sex, respectively. Later, several other authors (Bentler, 1976; Buhrich and McConaghy, 1978; Freund et al., 1982; Hamburger, 1953; Money and Gaskin, 1970-1971; Person and Ovesey, 1974a, 1974b; Randall, 1959; Wålinder, 1967) identified and classified different types of transsexuals and arrived at a similar distinction. Although these authors may have differed in the names and the number of subtypes or in the percentages each of their subtypes consisted of, they identified and labeled a homosexual type more consistently than any other category of transsexual (see also Blanchard, 1989a).

On the basis of the results of three studies (Blanchard, 1985; 1988; 1989b) with male transsexuals only, Blanchard concluded that there are indeed only two fundamentally different types of transsexualism: homosexual and *non*homosexual. He showed that the *non*homosexual group is heterogeneous, but that the various subgroups constitute a family of related disorders (*non*homosexual transsexuals are men sexually attracted to women, to both sexes, or to neither sex; Blanchard, 1989b). Differences found between homosexual and *non*homosexual male transsexuals were that only a minority of the homosexuals reported a history of erotic arousal while being cross-dressed, whereas a majority of the *non*homosexual groups acknowledged such a history. Furthermore, the *non*homosexual groups were older at initial presentation, reported less feminine identification, and were more likely to report sexual stimulation by cross-gender fantasy (the thought or image of themselves as women) than the homosexual group (Blanchard, 1985; 1988; 1989b).

Another difference was found between probably comparable subtypes of male transsexuals. One sexually inactive and another, sexually active, transsexual group that derived pleasure from their penis in sexual activity, displayed more masculinity in their development and more evidence of emotional disturbance than a sexually active group

that avoided using their penis in sexual activity. The latter group was called the "nuclear" group, which might be compared with the homosexual subtype (Leavitt and Berger, 1990).

A few physical differences were also found. Compared with the *non*homosexual male transsexuals, the homosexual male transsexuals were shorter, lighter, and lighter in proportion to their height. The homosexual transsexuals were also shorter than men in the general population were, whereas the *non*homosexual transsexuals were not (Blanchard et al., 1995).

Until recently, most studies were conducted with only male transsexuals. In only one study, homosexual (n = 21) and *non*homosexual (n = 17) female-to-male (FM) transsexuals were compared on a number of variables. Compared with *non*homosexual FMs, homosexual FMs were found to report: "greater childhood gender nonconformity, preferred more feminine partners, experienced greater sexual rather than emotional jealousy, were more sexually assertive, had more sexual partners, had a greater desire for phalloplasty, and had more interest in visual sexual stimuli" (Chivers and Bailey, 2000).

With respect to outcome of sex reassignment (SR) Blanchard et al. (1989c) investigated whether *non*homosexual males are more likely to regret SR than homosexual males or females. They found that none of the 61 homosexual females or 36 homosexual males consciously regretted surgery, compared to 4 of the 14 *non*homosexual males. They only compared groups that showed postoperative regret with those that did not. They did not use a continuous variable indicating postoperative functioning.

The findings above indeed seem to indicate that there are two subtypes of transsexuals that follow different developmental routes. One group has been extremely cross-gendered from early in life, never had any sexual interest in cross-dressing, is attracted to same-sex partners and pursues SR relatively early in life. The other group has been more stereotypical with regard to sex role behaviors as a child, is (or used to be) sexually aroused when cross-dressing, and is attracted to the opposite sex. This group applies for SR after a much longer time trying to live in the social role (e.g., by marrying) that matches their own gender. There are some indications that the first group functions postoperatively better than the second group.

These first findings made us further examine differences between the subtypes of homosexual and *non*homosexual transsexuals. Firstly, we were interested whether similar differences could be found in childhood gender nonconformity and whether these would

be related to differences in the intensity of gender dysphoria and body dissatisfaction in adulthood. Secondly, we wanted to replicate the reported differences in appearance (height, weight and body mass) and explore whether these differences would be related to better or worse possibilities to pass as a member of the opposite sex. Thirdly, we were interested whether the sexual orientation distinction is associated with differences in psychological functioning before treatment. Fourthly, we aimed to find out whether sexual orientation generates differences in postoperative functioning, particularly since *non*homosexual transsexuals were more likely to regret SR than homosexual transsexuals (Blanchard et al., 1989c). Finally, we sought to identify whether differences between homosexual and *non*homosexual transsexuals are similar in MFs and FMs, as the FMs have hardly been studied.

The present study examined a large sample of transsexual subjects (n =187). We investigated whether differences could be found between homo- and *non*homosexual transsexuals at assessment. Besides replicating previous findings (age at presentation, childhood gender nonconformity, marital status, erotic arousal while cross-dressing, physical differences), we examined whether differences could be found in intensity of gender dysphoria, body dissatisfaction, psychological and emotional functioning, and physical appearance. We also measured intelligence and reported parental psychopathology, because these factors might be related to psychological functioning. Next, we investigated whether there were differences between the two groups in postoperative functioning. Finally, we compared FMs and MFs to identify whether the pattern of differences between homosexuals and *non*homosexuals were similar among these groups.

Method

Subjects

A group of 196 consecutive patients, who had applied and were considered eligible for SR at University Medical Center Utrecht (UMCU) or at the Gender Clinic at Free University Medical Center in Amsterdam (FUMC), completed SR. From 187 patients we gathered complete sets of pretest data. On the basis of self-reported sexual preference (see below: BVT), 113 of the 187 patients were classified with a homosexual preference (61 MFs and 52 FMs) and the other 74 with a *non*homosexual preference (52 MFs and 22 FMs). At follow-up, some of the participants had moved abroad, while others were not traceable,

which resulted in a sample of 150 subjects, who could be interviewed. The follow-up data available for different measures varied from 124 to 150 subjects, because not all participants were willing to spend their time on both an interview and filling out questionnaires.

Procedure

After their agreement to participate, an interview and testing session were arranged shortly after application. Each session took two to three hours. Posttreatment data were gathered at least one year after surgery. Appointments for an interview and testing were usually made in combination with the patient's hormone checkup at FUMC. If a UMCU patient considered it to be more convenient, an appointment was made at UMCU. Again, each session took two to three hours. In order to avoid socially desirable responses the subjects were seen, both at the pre- and posttest session, by independent researchers who were not clinically involved. The Ethics Committees of UMCU and FUMC approved the study.

Instruments

Biographical Data

Biographical data were obtained from a semistructured interview (Biographical Questionnaire for Transsexuals, BVT) (see Doorn et al., 1994; Verschoor and Poortinga, 1988). This instrument was used to gather background data at assessment. Self-report of the subject on the item: "What is your current sexual preference?" was applied to classify the applicant into the homosexual or *non*homosexual group. Subjects who exclusively reported a homosexual preference were included in the homosexual transsexual group, whereas subjects who reported an asexual, heterosexual, and/or bisexual preference, were included in the *non*homosexual transsexual group. The following items served as a general and objective indication of their social situation at application: marital status, level of education, and employment. The item: "Have you ever been sexually aroused while cross-dressing between 12 and 18 years" was used to indicate sexual arousal while being cross-dressed.

GID Symptoms in Childhood

The Gender Identity Disorder in Childhood Scale (GIDICS) was constructed from the BVT questionnaire to measure the self-reported presence of GID symptoms in childhood. The scale consisted of 11 items (Cronbach's alpha: .81). The items concerned strong wishes to be of the opposite sex in early childhood, cross-gender appearance of the child, cross-dressing, play- and peer preference, and cross-gender behavior in general, as a child. Answering format of the first three areas of questions contained three answering categories, while the last three areas of questions contained four answering categories. Each answer on the 11 items above was recoded into a dichotomous score: whether or not a particular GID symptom was present in childhood. Thus, the total score could range from 0 to 11, with higher scores indicating the presence of more GID symptoms in childhood.

Gender Dysphoria

Gender dysphoria was measured with the Utrecht Gender Dysphoria Scale (UGS), consisting of 12 items on which the subject rated his/her agreement on a 5-point scale. The higher the score, the more gender dysphoria was indicated (for psychometric data, see Cohen-Kettenis and van Goozen, 1997).

Physical Appearance/Body Dissatisfaction

On the 14-item Appraisal of Appearance Inventory (AAI) three independent observers (the diagnostician, a nurse of the gender team, and the researcher) rated their subjective appraisal of the appearance of the subject on a 5-point scale of femininity/masculinity. Only the diagnostician might have been aware of the sexual orientation when rating the subject. Higher scores represent an appearance that is more incompatible with the new gender. Intraclass correlation coefficients between the three observers for each of the 14 items ranged from .68 to .79.

A Body Image Scale (BIS) (Lindgren and Pauly, 1975), which had been adapted for a Dutch sample (Kuiper, 1991) was used. The scale consists of 30 items divided into three subscales: primary, secondary, and neutral sexual characteristics, with higher scores representing more dissatisfaction.

Height, Weight, and Body Mass Index

Height, weight, and body mass index (BMI) at assessment were extracted from medical files. Height was measured in centimeters, and weight in kilograms. Standard BMI is calculated dividing weight by squared height. Because these data were gathered as a part of another study no measurements of all our subjects were available (n = 162).

Intelligence

The Dutch versions of the Wechsler scales, which are the WISC-R (Vandersteene et al., 1986), and the WAIS (Stinissen et al., 1970), were used to measure IQ.

Psychological Problems in Parents

We constructed a list of Psychological Problems in Parents (PPP). Subjects were asked to indicate if their parents had ever suffered from one or more of the following eight psychological symptoms or problems: depression, alcohol abuse, severe anxiety, obsessions, aggressive behavior, hallucinations, drugs abuse, and strong feelings of insecurity. The items contained four response categories: 1) no, neither parent; 2) yes, father; 3) yes, mother; 4) yes, both. Three separate sum scores were calculated: for presence of psychological problems in father, in mother, and in both. Total scores ranged from 0 to 8 for each of these three answering categories, with higher scores indicating more problems.

Psychological Functioning

The Dutch Short MMPI (NVM) (Luteyn et al., 1980) is an 83-item shortened Dutch version of the MMPI, measuring the following five concepts: Negativism, Somatization, Shyness, Psychopathology, and Extroversion. Higher scores indicate more psychological dysfunction on the first four subscales, while these reflect less psychological dysfunction on the subscale Extroversion.

The Dutch version of the Symptom CheckList (SCL-90) (Derogatis et al., 1973; Dutch version: Arrindell and Ettema, 1986) is a 90-item inventory inquiring about the presence of various complaints the week prior to the interview. Subscales are: Agoraphobia, Anxiety, Depression, Somatization, Obsession/compulsion, Suspicion, Hostility, Sleeping problems, and Psychoneuroticism, which is, as a total score of the subscales, an indicator of overall psychopathology.

Both the NVM and the SCL-90 have good psychometric properties.

Treatment Evaluation and Posttreatment Functioning

Patients completed a semistructured interview about treatment outcomes, experiences during and after SR, treatment evaluation, and feelings of regret. For purposes of this study the following three items were used: "Do you currently regret to have undergone SR? Have you ever had any feelings of regret since your decision to live as someone of the opposite sex? If you were to decide about undergoing SR again or not, would you make the same decision?" Answering categories for the first two questions were: 1. No; 2. Yes, somewhat; 3. Yes, very much; for the last question: 1. Yes, I would make the same decision; 2. Yes, but I would do things differently; 3. No, I would make a different decision.

To investigate the level of posttreatment functioning in various areas, we also examined if there were differences between the homosexual and *non*homosexual group in gender dysphoria, as reported on the UGS, and if there were differences in psychological functioning, as reflected in the NVM and SCL-90 scores.

Statistical Analyses

To determine differences between the homosexual and the *non*homosexual transsexuals at the time of assessment and at follow-up, pre- and posttest data of the homosexual group were compared with pre- and posttest data from the *non*homosexual group with univariate or multivariate ANOVA's for ratio or interval data. MANCOVA'S were used for the NVM scores, with IQ scores as co-variate, because IQ- and NVM scores were correlated. Because we were not able, for practical reasons, to measure IQ in the very beginning of the study, we only had 144 IQ scores, reducing the NVM data to 141 at pretest and to 106 at posttest. To replicate the findings concerning height, weight, and BMI, we used ANCOVA's, with age as covariate, for weight and BMI, and Independent Samples *t* Test for height. Nominal or ordinal data were analyzed per item by means of Chi-Square Test or Mann-Whitney U Test, respectively.

To determine pre- and posttreatment differences in psychological functioning within the homosexual and within the *non*homosexual group, data of the NVM and SCL-90 were analyzed by means of a repeated measures analysis of variance, with "Group" (homosexuals versus *non*homosexuals) as between-subjects factor and "Time" as within-subjects factor (pretest versus posttest).

Finally, to investigate whether the results were similar or different for MFs and FMs, univariate and multivariate AN(C)OVA's were executed with "Group" (homosexuals versus *non*homosexuals) and "Sex" (MF versus FM) as independent between-subjects factors.

Results and *p* values of MANOVA's are only reported in the text, whereas results and *p* values of ANOVA's are also presented in Table 1.

Results

Age at Application, Marital Status, Education, Employment

The homosexual group applied for SR at a younger age (Table 1) than the *non*homosexual group ($p = .013$). A main sex effect was found, with FMs applying for SR earlier than MFs ($p < .001$). This difference can be primarily attributed to the *non*homosexual MFs, who were much older than the other subgroups, contributing to an interaction effect ($p = .005$).

A significantly lower percentage of the homosexual group (20.4%, $n = 23$) was or had been married with someone of the opposite biological sex, compared with the *non*homosexuals (34.2%, $n = 25$) at pretest ($p = .034$). Fewer FM (14.9%, $n = 11$) than MF transsexuals (33.0%, $n = 37$) were or had been married with someone of the opposite biological sex ($p = .006$). When comparisons were made within each sex, a significant difference was found in the MF group, with less homo- (21.3%, $n = 13$) than *non*homosexual (47.1%, $n = 24$) MFs being (or having been) married ($p = .004$), but no differences were found between the homo- and *non*homosexual FM groups.

No differences were found between the homosexual and the *non*homosexual group in level of education or employment status. However, a significantly larger ($p = .015$) percentage of the FMs (69.9%, $n = 51$) than of the MFs (51.8%, $n = 58$) was employed or studied. Comparing the two groups within both sexes, no differences were found on these two variables.

Between 12 and 18 years, the homosexual transsexuals had experienced sexual arousal while cross-dressing significantly less often ($p = .002$) than the *non*homosexual transsexuals. When comparisons were made within the sexes, the homosexual MFs were significantly less often ($p = .004$) sexually aroused while cross-dressing between 12 and 18 years than the *non*homosexual MFs, whereas no differences were found between the homo- and *non*homosexual FM groups. As expected, as a group the FMs were significantly less often ($p = .0002$) sexually aroused while cross-dressing than the MFs.

GID Symptoms in Childhood

The homosexual group reported more ($p < .001$) GID symptoms in childhood than the *non*homosexual group (Table 1). As a group the FMs also reported more GID symptoms in childhood than the MFs ($p < .001$).

Gender Dysphoria

At the time of application there was no difference between the homosexual and the *non*homosexual group in the intensity of gender dysphoria. The FMs, however, reported a stronger sense of gender dysphoria than the MFs ($p < .001$).

Physical Appearance/Body Dissatisfaction

At application, the homosexuals scored lower on the AAI than the *non*homosexuals ($p < .001$), indicating that, according to observers, even before treatment their appearance was more compatible with the new, desired gender. As a group, the FMs' appearance was considered to match the new gender better than that of the MFs' ($p < .001$) as well. Similar to the results of age at pretest, the high (unfavorable) scores of the *non*homosexual MFs contributed to an interaction effect ($p < .022$) (See Table 1).

Multivariate analyses showed no difference between the homosexual and the *non*homosexual group on the BIS, signifying an equal sense of body dissatisfaction within both groups at the time of application. No differences were found between the sexes either.

Height, weight, and body mass index

No differences were found in height, weight, or BMI between homosexual and *non*homosexual transsexuals, or between these two subtypes within MFs or FMs. As expected, differences between the sexes were significant, with the FMs being shorter than the MFs ($p < .001$), and with a higher BMI than the MFs at assessment ($p = .002$).

Intelligence

The homosexual group's mean IQ score (111.2; SD = 16.9) was lower ($p < .001$) than the one of the *non*homosexual group (mean = 122.3; SD = 17.3). There were no differences in IQ scores between the sexes. Mean scores for the different transsexual subgroups were 107.3 (SD = 14.3) for the MF homosexuals, 121.7 (SD = 17.2) for the MF *non*homosexuals, 114.8 (SD = 18.4) for the FM homosexuals, and 123.7 (SD = 17.8) for the FM *non*homosexuals.

Table 1: Pretest and posttest-scores of homo- and *non*homosexual MFs and FMs

TEST	H/MF mean	H/MF SD	NH/MF mean	NH/MF SD	H/FM mean	H/FM SD	NH/FM mean	NH/FM SD	F Group (G)	F Sex (S)	F (GxS)
AGE PRETEST	28.3	10.8	36.8	11.5	24.4	8.4	23.8	6.2	6.3**	28.5****	8.2***
GIDICS	5.6	2.4	3.1	2.3	7.2	2.5	5.4	2.4	31.3****	26.8****	1.0
UGS PRETEST	53.8	5.8	51.6	9.1	56.8	4.0	57.8	2.9	0.4	21.0****	2.3
UGS POSTTEST	15.1	2.9	15.7	3.3	13.9	3.0	13.8	2.1	0.3	8.3***	0.4
AAI PRETEST	42.1	10.2	50.2	7.1	39.5	6.1	41.9	5.0	17.9****	19.2****	5.3**
BIS PRETEST											
primary	17.7	3.6	18.3	2.1	18.4	2.3	17.3	2.7	0.3	0.2	3.8
secondary	31.7	7.9	35.7	6.7	33.5	6.6	34.7	6.1	5.0	0.1	1.6
neutral	43.8	10.2	49.1	9.9	43.6	8.3	44.9	6.5	4.6	2.1	1.7
NVM PRETEST											
negativism	21.1	7.5	21.5	8.6	23.0	7.1	26.5	7.3	0.4	4.9**	1.8
somatization	8.2	6.7	9.0	6.4	6.9	7.5	12.1	9.6	9.8***	1.0	2.3
psychopathology	3.3	3.1	3.0	3.1	3.0	2.6	3.4	3.3	1.0	0.3	0.2
shyness	15.9	8.7	15.7	8.6	9.7	7.7	16.7	9.1	3.8*	3.1*	5.9**
extroversion	15.1	6.2	12.0	5.9	17.0	6.0	14.4	7.3	3.6*	5.0**	0.1
NVM POSTTEST											
negativism	17.5	7.3	19.4	8.1	17.1	7.9	19.0	6.5	0.8	0.1	0.1
somatization	6.5	6.4	8.3	6.1	5.6	6.2	7.2	4.8	4.8**	0.2	0.1
psychopathology	2.9	3.5	2.4	1.9	2.3	1.9	2.8	2.3	0.2	0.1	0.8
shyness	11.2	8.1	12.5	7.1	7.1	6.2	12.8	6.6	8.1***	1.4	2.4
extroversion	15.6	6.0	12.8	4.9	18.9	4.6	15.8	6.4	6.1**	8.3	0.1
SCL-90 PRETEST											
agoraphobia	9.7	3.9	9.4	4.2	8.6	3.4	10.5	3.0	1.5	0.1	3.4
anxiety	15.7	6.5	15.2	5.5	14.1	5.3	17.7	5.4	2.9	0.3	5.1
depression	29.7	11.9	28.8	10.7	27.0	10.6	35.4	14.4	4.1	1.1	6.4
sensitivity	30.0	9.9	28.9	9.6	25.9	7.3	31.8	10.9	2.5	0.2	5.6
obsession/compulsion	15.7	6.2	15.6	5.8	15.0	5.3	17.9	6.9	2.0	0.7	2.4
hostility	8.2	3.0	7.4	2.2	8.1	2.8	10.2	4.5	2.1	8.4***	9.3
sleeping problems	5.2	2.7	5.6	3.2	4.8	2.4	6.6	3.7	5.4	0.4	2.2
somatization	16.8	6.2	17.6	6.4	16.8	6.1	21.3	8.3	6.4	3.2*	3.2
SCL-90 POSTTEST											
agoraphobia	9.6	4.8	8.6	2.6	7.5	0.9	8.5	1.5	0.1	4.4**	3.4*
anxiety	13.5	5.4	12.6	2.9	13.1	6.1	13.4	3.5	0.1	0.1	0.4
depression	23.6	8.9	24.8	10.0	21.1	9.2	21.1	4.4	0.1	3.5*	0.1
sensitivity	25.7	8.2	25.3	6.6	22.8	7.1	25.8	5.9	1.0	0.8	1.7
obsession/compulsion	13.9	4.3	14.0	5.3	13.0	4.2	13.6	4.5	0.1	0.5	0.1
hostility	7.1	1.5	7.2	2.1	7.8	2.4	8.2	2.1	0.8	4.8**	0.1
sleeping problems	4.7	2.4	4.6	1.7	4.3	2.3	5.7	3.3	2.4	0.5	3.0*
somatization	14.9	3.1	18.1	5.0	15.8	5.2	17.0	4.0	6.7**	0.1	1.3

Note: H = homosexual, NH = *non*homosexual, MF = male-to-females, FM = female-to-males.
Age pretest: n =187, GIDICS: n =180, UGS pretest: n =184, UGS posttest: n =127, AAI pretest: n =185, BIS pretest: n =178, NVM pretest: n =140, SCL-90 pretest: n =183, NVM posttest: n =105, and SCL-90 posttest: n =125.
* $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$

Psychological Problems in Parents

The percentage of the homosexual group (7.1%, $n = 8$) who reported that both parents had suffered from one or two symptoms was significantly lower ($p = .048$) than that of the *non*homosexual group (16.2%, $n = 12$), who reported that both parents had suffered from one to three symptoms of the PPP-list. It is not likely that the difference is related to differences in growing up with one or two parents, as the groups were similar in this respect.

No differences were found between the homosexual and *non*homosexual group in the degree to which they reported only their father or only their mother had suffered from psychological symptoms. Finally, no differences were found between the sexes on any of the three measured variables.

Psychological Functioning

The homosexual group scored lower than the *non*homosexual group on the MANOVA NVM ($p = .022$) and on the ANOVA SCL-90 scale Psychoneuroticism, which is the total score of all SCL-90 subscales ($p = .035$). Both results reflect less psychological problems in the homosexual group at the time of application. Univariate analyses of the NVM revealed a more favorable score of the homosexual group on the scale Somatization (see Table 1). Trendful p values ($p < .10$) were found on the scales Shyness ($p = .052$) and Extroversion ($p = .059$), again, indicating more favorable scores in the homosexual group.

Differences between the sexes were also found. The FMs scored higher on the MANOVA NVM ($p = .027$) as well as on the MANOVA SCL-90 ($p = .032$) (see Table 1). Finally, an interaction effect ($p < .009$) was found on the ANOVA SCL-90 scale Psychoneuroticism, due to a lower score of the homosexual FMs and a higher score of the *non*homosexual FMs compared with their MF counterparts.

Evaluation and Posttreatment Functioning

At follow-up, the vast majority of all the treated transsexuals did not express any feelings of regret about the choice or consequences of treatment. However, one transsexual expressed strong and another some feelings of regret, during and after treatment. Both patients were *non*homosexual MFs. Although five *non*homosexuals (4 MFs and 1 FM) and one homosexual (MF) reported to have had some feelings of regret during the SR procedure, they related these feelings not so much to the treatment as to the lack of support and

acceptance they had experienced from their environment.

At posttest, the homosexual and the *non*homosexual group reported an equally low sense of gender dysphoria, with the FMs scoring even lower on the UGS than the MFs ($p = .005$). Still, all four subgroups (MF and FM homosexuals; MF and FM *non*homosexuals) scored lower than 16 on the UGS, designating an absence of gender dysphoria after SR.

Psychological functioning within the homosexual as well as within the *non*homosexual group had improved after SR, which was reflected in the main effects of time on all the scales of the NVM (all five p values $< .05$) and of the SCL-90 (all nine p values $< .01$). No significant differences were found between the two groups at follow-up. However, at a trend level ($p < .10$) a similar group difference was found as at application. The *non*homosexual group showed slightly less improvement than the homosexual group on the MANOVA NVM ($p = .058$) and on the MANOVA SCL-90 ($p = .072$) (see Table 1, where univariate p values $< .05$ are indicated for these particular trend differences).

In contrast with the higher scores of the FMs in comparison with the MFs on the MANOVA SCL-90 ($p = .032$) at the time of application, the FMs appeared to psychologically function better than the MFs at follow-up, as reflected in their significantly lower scores on the MANOVA SCL-90 ($p = .003$). Univariate analyses showed that the FMs scored lower on Agoraphobia ($p = .037$), yet continued to score higher on Hostility ($p = .030$) than the MFs, albeit to a lesser degree than at pretest. Finally, a main interaction effect was found on the MANOVA SCL-90 ($p = .045$) (see Table 1), which, however, revealed no differences on any of the subscales at a univariate level of analyses.

Discussion

The first aim of the present study was directed at replicating and expanding previous findings on subtypes of transsexuals. In this study homosexual and *non*homosexual transsexuals were indeed found to differ on many characteristics. Our data support earlier findings that, compared with *non*homosexual transsexuals, homosexual transsexuals have a stronger sense of childhood gender nonconformity, report less sexual arousal while cross-dressing, are or have been less often married, and apply for SR at a younger age. We did, however, not find differences in height, weight or BMI, as Blanchard et al. (1995) did.

We also found that the homosexual group was, despite their more cross-gendered childhood, not different from the *non*homosexual group in gender dysphoria and body dissatisfaction. However, the homosexual group functioned psychologically better than the *non*homosexual group. Finally, we found that, at pretest, observers already considered the appearance of the homosexual transsexuals to be more compatible with the new, desired gender than the appearance of the *non*homosexual transsexuals.

Our data suggest that the different developmental routes towards SR do not imply less severe gender dysphoria at the time of application. Yet, for the *non*homosexual males, it takes more time to reach the decision to apply for SR. There are various explanations for this finding among males. First, the gender dysphoria of *non*homosexuals may increase over time and not reach a critical level until later in life. The development of gender dysphoric feelings into adulthood certainly needs to be more systematically investigated in future studies. Second, it might be that certain aspects of being male (e.g., sexual arousal when cross-dressing) are rewarding for the *non*homosexuals. For them, the decision to leave everything behind may be a more difficult one than for the homosexuals, who never experienced any pleasure in typical masculine activities or characteristics. Third, the more masculine appearance of the *non*homosexuals may increase their hesitance to permanently start living as a woman. Understandably so, because the chances to pass as a woman seem to be smaller for the *non*homosexuals than for the homosexuals. Naturally, combinations of the above factors may also explain our findings.

The similarity between homo- and *non*homosexual FMs in age at application may be attributed to an absence of rewarding feminine activities or characteristics in both groups, and to an appearance in both groups that facilitates living in the opposite sex role. For FMs, the most important criterion to apply for SR seems to be the conviction that SR may resolve their gender problem. Despite the less extreme gender nonconformity of the *non*homosexual FMs, they come to this conclusion at about the same age as the homosexual FMs do.

Although observers judged the ability to pass in the new role to be different for homosexual and *non*homosexual groups, we did not find differences between the groups in physical characteristics, such as height, weight and BMI. The possibility exists that femininity and masculinity in appearance are entirely independent of these characteristics. However, we expect that at least (extreme) tallness or shortness contributes to a masculine or feminine impression, as we did find significant differences between the sexes in height and BMI. Thus, the sizes of our homosexual and *non*homosexual samples

may have been too small to detect existing findings.

We found that the psychological functioning of the homosexual group was in many respects more favorable than that of the *non*homosexual group. Considering these findings in relation to differences in development, our data suggest that the road to SR is probably a more troublesome one for *non*homosexual than for homosexual transsexuals. On this road, the *non*homosexuals probably encounter a number of factors that hamper an easy (and early) SR decision and may create psychological problems. Parental psychopathology may complicate these factors, as we found differences between homosexual and *non*homosexual groups in numbers of both parents having psychological problems. On the other hand, *non*homosexual transsexuals may be psychologically more vulnerable than homosexual transsexuals. This difference may exist from birth onwards and may reflect different etiological backgrounds. However, in view of the disappearance (see below) of most differences after treatment, it is unlikely that the two groups are intrinsically different with respect to the areas of psychological functioning we measured.

The second aim of the study was to investigate whether the homosexual and *non*homosexual groups also differed in postoperative functioning, as this might have implications for treatment decisions. We found that both groups had improved significantly in their gender dysphoria to the extent that the symptom had disappeared after the SR procedure. This, of course, is the main goal of SR. Within both groups strong improvement was found in their level of psychological functioning at follow-up. At an individual level we found that the majority of the homosexual as well as the *non*homosexual group expressed no regrets about SR. The two individuals who expressed regrets, during and after SR, were both *non*homosexual transsexuals. It is, however, important to keep in mind that all of the transsexuals that had experienced some feelings of regret only during the SR procedure, related these feelings not so much to the treatment as to the lack of acceptance and support from their environment (such as family, friends or colleagues). Even the two *non*homosexual MFs, who also experienced feelings of regret after SR, indicated that it was their suffering from a critical social environment, as opposed to the treatment itself, that had led them to this conclusion. This finding carries significant implications for clinical practice with *non*homosexual applicants. When they are considered eligible for SR, *non*homosexual transsexuals should be able to receive additional guidance in coping with adverse factors, such as (reactions to) a less compatible physical appearance, a more troublesome level of psychological functioning, or a strongly (perceived) critical environment.

As a third aim of the study, we examined whether the distinction between homosexual and *non*homosexual transsexuals manifested itself similarly in MFs and FMs. The findings of this study indicate that this partly seems to be the case. Whenever differences were found, the results of the homosexual MFs and the homosexual FMs were more favorable than the results of their *non*homosexual counterparts. However, interaction effects were found for age and for appearance at the time of application. These effects were already discussed above. It may be that the routes to SR are more similar between homo- and *non*homosexual FM's than between homo- and *non*homosexual MFs, but that differences exist in other areas of functioning, as Chivers and Bailey's (2000) study on sexuality suggested.

Taking all the findings into account, we conclude that homosexual and *non*homosexual transsexuals differ from each other in many ways, but that the pattern of differences is not entirely similar for MFs and FMs. An important characteristic the sexes do have in common is that *non*homosexuals function psychologically less favorable. The different manifestations of homosexual and *non*homosexual subtypes of transsexualism found in this study might be reflecting different etiologies. This clearly is a topic for future research. Considering the fact that both the homosexual and the *non*homosexual group functioned well in several areas of life at follow-up, the substantial differences between the two groups at application are not enough reason to regard a *non*homosexual preference as a contraindication for SR. However, knowing that the *non*homosexuals are psychologically more vulnerable than the homosexuals, especially before treatment, they need special attention during the diagnostic procedure. They may particularly benefit from more therapeutic support during and after SR.

A limitation of our study concerns the minimum follow-up period of one year. Evidently, longer periods of follow-up are needed to assess whether the decrease in differences between homosexual and *non*homosexual transsexuals that was found after SR in this study continues to be found after such follow-up studies.

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