SEX REASSIGNMENT

Predictors and outcomes of treatment for transsexuals

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Sex Reassignment:

Predictors and Outcomes of Treatment for Transsexuals

Geslachtsaanpassing:

Predictoren en Effecten van de Behandeling van Transseksuelen

(met een samenvatting in het Nederlands)

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Aan mijn ouders

Voor Aldert en Micky

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"… Ik zie wie ik ben, de persoon die ik nooit heb gezien, maar heel goed ken de persoon in de spiegel, mijn gezicht passend bij mijn lichaam, alles in evenwicht

Ik zal de wereld bewijzen en laten zien dat ik ook een normaal leven verdien ik ben gewoon een mens van deze tijd die aan een genderstoornis lijdt…"

Tommy van Loenen

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CHAPTER 1

Introduction

Transsexualism and sex reassignment

Introduction

The phenomenon of transsexualism refers to individuals who experience an irreconcilable discrepancy between the biological sex they were born with and the opposite biological sex they feel they belong to. Transsexuals often express to feel alienated from their body. The experienced discrepancy is not in the least restricted to the sexual functions of the individual. Resolve of this discrepancy is characteristically sought in a pursuit of sex reassignment (SR).

In modern Western societies individuals pursuing SR have not always been taken seriously. The wish to undergo such invasive and irreversible surgery as SR, while having a normal and healthy body, has often been considered delusional. This view of persons with cross-gender identity and/or behavior, however, is not universal. In India, for instance, the Hijaras are castrated men or men with ambiguous genitals, who dress and experience themselves as women. They constitute an institutionalized third gender role that is not only tolerated, but also appreciated. A few thousands Hijaras are estimated to live in India (Jani and Rosenberg, 1990; Nanda, 1985). Another example is the country of Oman, where certain males dress, unlike other males, in colored clothes, though they are not allowed to wear the traditional female attire. They wear make-up and perfume and are permitted to share the social life and activities of women, but retain their male name. These men, called "xanith", have a distinct, but not necessarily lower status (Wikan, 1977).

Cross-dressing by men as well as by women has been done since ancient times and has been reported in western and non-western cultures (see Kuiper, 1991). Transsexualism is also assumed to have been present since early times by some authors (Bullough, 1975; Green, 1968; Pauly, 1965). Cross-gender identity and/or behavior appear to be signs of an old phenomenon that has only recently been identified. It is very likely that a proportion of the persons who exhibited cross-gender behavior in earlier times would presently be diagnosed as transsexuals. Before medical knowledge and expertise was developed enough to provide transsexuals with hormone and surgical treatment, living as someone of the opposite sex, but, with the bodily and sexual characteristics of their own biological sex, was the only solution for their psychological suffering. Not an ideal one, as may be concluded from the relatively high percentages of suicides (± 15%) and auto-mutilation: tying away the breasts in female-to-male transsexuals (40%), who had not (yet) undergone SR, and pushing up of the testicles and/or pushing away of the penis (60%), mutilation of the scrotum (6%), and occasionally self-castration or penectomy (amputation of the penis) in male-to-female transsexuals (Eicher, 1984).

In 1966, the influential book of Harry Benjamin, "The Transsexual Phenomenon" (Benjamin, 1966), made many clinicians aware of potential benefits of SR. This undoubtedly prompted the rapidly increasing flow of articles on transsexualism since that time. It also contributed to the changing attitude towards SR among professionals over the past thirty years. Nowadays, in several countries transsexuals are diagnosed and treated by specialists, sometimes even in multidisciplinary gender teams. In honor of Harry Benjamin and his merits in the advancement of professional care for transsexuals, the international professional organization in the field of transsexualism and other gender identity disorders was named after him (The Harry Benjamin International Gender Dysphoria Association, HBIGDA). Meanwhile, more progress has been made in the treatment of transsexuals. In many countries, SR is often paid for by national health insurance (Cohen-Kettenis and Wålinder, 1987; Peterson and Dickey, 1995) and legal provisions have made birth certificate adaptations possible (Will, 1995).

In this chapter we will consider the most commonly used definitions, describe the development of gender identity disorder and persistence into adulthood, give figures on prevalence and sex ratio, summarize the main etiological theories, and discuss relevant aspects of clinical practice.

Definitions

Hirschfeld was the first to describe a definition of the term transsexual in 1923 (Hirschfeld, 1923). In those days, variants of gender identity problems, such as transvestism, effeminate homosexuality, and transsexualism, were not yet being distinguished. It was not until the late forties, that the term was used to designate individuals we currently diagnose as transsexuals: those who aspire to or actually live permanently in the social role of the opposite gender and who want to undergo SR (Cauldwell, 1949). The desire for SR originates from an experienced discrepancy between one's sex of assignment (biological sex), on the one hand, and one's basic sense of self as a male or female (gender identity), on the other hand (Cohen-Kettenis and Gooren, 1999). Gender role is the public manifestation of someone's gender identity (Money, 1994). Gender dysphoria is the term used for distress resulting from the irreconcilable discrepancy between the individual's gender

identity and sex of assignment.

In 1980, transsexualism was introduced in the Diagnostic and Statistical Manual of Mental Disorders-Third Edition (DSM-III, American Psychiatric Association, APA, 1980). In the DSM-IV (APA, 1995), the most recent version of this widely used psychiatric classification system the term transsexualism is abandoned. Instead, the term Gender Identity Disorder (GID) is applied. The term is used for individuals who show a strong and persistent cross-gender identification and a persistent discomfort with their anatomical sex or a sense of inappropriateness in the gender role of that sex, as manifested by a preoccupation with getting rid of one's sex characteristics or the belief to be born in the wrong sex. The term GID encompasses transsexualism as well as other severe GIDs. The diagnosis GID is consequently more extensive than the diagnosis of transsexualism, and no longer implies a specific treatment (see Table 1). The other currently used classification system is the International Statistical Classification of Diseases and Related Health Problems-Tenth Revision (ICD-10 of the World Health Organization, 1992). This system still lists transsexualism as a diagnosis, which makes it easier to make treatment decisions (i.e., referral for SR) on the basis of the diagnosis (i.e., transsexualism). The ICD-10, however, like earlier DSM-versions, still applies different criteria for boys and girls in the diagnosis of GID in childhood.

Table 1: DSM-IV Diagnostic Criteria for Gender Identity Disorder

A. A strong and persistent cross-gender identification (not merely a desire for any perceived cultural advantages of being the other sex).

   In children, the disturbance is manifested by four (or more) of the following:

   (1) repeatedly stated desire to be, or insistence that he or she is, the other sex.

   (2) in boys, preference for cross-dressing or simulating female attire; in girls, insistence on wearing only stereotypical masculine clothing.

   (3) strong and persistent preferences for cross-sex roles in make believe play or persistent fantasies of being the other sex.

   (4) intense desire to participate in stereotypical games and pastimes of the other sex.

   (5) strong preference for playmates of the other sex.

In adolescents and adults, the disturbance is manifested by symptoms such as a stated desire to be the other sex, frequent passing as the other sex, desire to live or be treated as the other sex, or the conviction that he or she has the typical feelings and reactions of the other sex.

B. Persistent discomfort with his or her sex or sense of inappropriateness in the gender role of that sex.

In children, the disturbance is manifested by any of the following: in boys, assertion that his penis or testes are disgusting or will disappear or assertion that it would be better not to have a penis, or aversion toward rough-and-tumble play and rejection of male stereotypical toys, games, and activities; in girls, rejection of urinating in a sitting position, assertion that she has or will grow a penis, or assertion that she does not want to grow breasts or menstruate, or marked aversion toward normative feminine clothing.

In adolescents and adults, the disturbance is manifested by symptoms such as preoccupation with getting rid of primary and secondary sex characteristics (e.g., request for hormones, surgery, or other procedures to physically alter sexual characteristics to simulate the other sex) or belief that he or she was born the wrong sex.

C. The disturbance is not concurrent with a physical intersex condition.

D. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Code based on current age:

302.6 Gender Identity Disorder in Children

302.85 Gender Identity Disorder in Adolescents or Adults

Specify if (for sexually mature individuals):

Sexually Attracted to Males

Sexually Attracted to Females

Sexually Attracted to Both

Sexually Attracted to Neither

Cross-gender development

Regular adult gender identity and gender role behavior develop gradually over a long period of time and are influenced by multiple, interacting factors, active at different developmental periods (Fagot, 1985; Golombok and Fivush, 1994; Maccoby, 1988; Maccoby and Jacklin, 1987). Much of the evolvement of this complex process has been revealed to us over the last decades, yet a large part of it still remains elusive, as can be witnessed from the manifestation of one particular atypical gender development: the phenomenon of transsexualism.

In children, strong feelings of belonging to the opposite sex can begin in toddlerhood (Zucker and Green, 1992). Young children may actually state to be or will eventually become members of the opposite sex. Parents of boys with GID often report that their sons almost exclusively take the role of princess or fairy in fantasy plays, using towels to fake long hair or speaking with a high-pitched voice. Most of these boys strongly prefer girls as playmates. They often show distress about being a boy or having male genitals. Some boys with GID believe that the penis will automatically fall off when they grow up, or, they want to trim it off. Despite attempts from fathers who teach their sons to urinate in a standing position, these boys will sit down when urinating.

Girls are equally early as boys with manifestations of typical cross-gender behavior, but their cross-dressing is less conspicuous. Girls with GID typically wear their hair very short and are regularly mistaken for boys. They prefer boys' toys, and particularly like to engage in sports, ball games, and rough-and-tumble play. For girls with GID, boys are the preferred playmates. Like in boys without GID, friendships of girls with GID seem to be more focused on common activities and interests than on sharing of intimacy. Because cross-gender behavior is more accepted in girls than in boys, girls with GID are less ostracized and teased than boys with GID. Still, they can be very distressed about being a girl and having a female body. Unlike boys with GID, who usually dislike their own genitals, girls with GID are often preoccupied with wanting to have a penis. Some girls put handkerchiefs or tiny stuffed animals in their underpants to pretend they have a penis. Whereas boys sit down when urinating, girls attempt to urinate as males, usually in a standing position.

In a recent study young children with GID were found to less likely label the sexes correctly than children without GID, and to make more mistakes when answering questions regarding the stability of gender in time and across situations (Zucker et al., 1999).

This suggests a developmental lag with regard to several aspects of gender learning, implying that children with GID are more cognitively confused about gender than other children. On the other hand, these "cognitive errors" might actually be distortions of reality, motivated by a strong wish to be someone of the opposite sex. Frequently, when children with GID are confronted with adverse reactions to their cross-gender behavior and desires, they decide to keep their wish to belong to the opposite sex to themselves. As a result, the continuity of their wish to change sex does not become evident until SR is pursued after puberty.

Adolescents attending gender clinics because of their extreme forms of GID have usually been children with GID. They have attempted to deal with their gender feelings in many different ways. Some parents who have witnessed extreme and continuous cross-gender behavior of their children for years, allowed them to change their social role at very early ages. Consequently, many of these children started high school as a clearly cross-gendered child. An increasing number of young adolescents already lives completely in the opposite sex role when they apply for SR. As they mature, falling in love is also part of growing up for youngsters with GID. Some have sexual relationships with same-sex peers. Adolescents handle such contacts in various ways, ranging from having crushes at a great distance from the person they care for to actual dating and sexual activity. Whenever youngsters participate in sexual activity, they invariably exclude involvement of their primary sex characteristics from their lovemaking.

In contrast, a second group with extreme GID consists of adolescents that try to adjust to gender typical norms, mostly because they fear the consequences if their gender problem would become public. They prefer to conceal their gender problem by dressing and behaving as inconspicuously as possible. For them, the pace at which they will make changes in their appearance and behavior, in agreement with their cross-gender identity, and when they confide in others about themselves, largely depends on the attitudes and support from those others. The GID in these adolescents does not always become apparent from their overt behavior or appearance.

Adolescents with less extreme forms of GID are a heterogeneous group. They show a mixed pattern of past and present gender and non-gender related symptoms. Some initially have a strong desire for SR, but change their minds when they understand other non-gender issues need to be attended first. Others do not even have a wish for SR.

Instead, they are confused about their gender identity and want to explore their feelings. Some of these adolescents turn out to be ego-dystonic homosexuals. In even others the gender problem seems to be secondary to psychopathology, like in pervasive developmental disorder.

Persistence of childhood GID

Most children with GID will turn out not to be transsexuals after puberty. This phenomenon, as appears from prospective studies (Green, 1987; Money and Russo, 1979; Zucker and Bradley, 1995; Zuger, 1984), is more strongly related to later homosexuality than to later transsexualism. This finding is supported by retrospective studies, in which male and female homosexuals were found to recall more cross-gender behavior in childhood than male and female heterosexuals (e.g., Bell and Weinberg, 1981; Whitam and Mathy, 1986).

Zucker and Bradley (1995) described that only 6% of 99 boys with GID, from six North-American follow-up studies, had a transsexual outcome. However, the low rates of transsexuals found in prospective studies might be an underestimation of true numbers (Cohen-Kettenis, 2001). Zucker and Bradley (1995) concluded that 14% of 45 children with GID from their own follow-up study, who were seen at the Child and Adolescent Gender Clinic of the Clarke Institute of Psychiatry in Toronto, had a wish for SR in adolescence. Cohen-Kettenis (2001) reported on children who were seen at the Child and Adolescent Psychiatry Department of the University Medical Center Utrecht. She found that 23% (8 girls and 9 boys) of 74 children with GID applied for SR in adolescence. This is obviously a higher percentage than is usually mentioned in the literature. This higher percentage of SR applicants among the Utrecht patients might be explained by the fact that this clinic is the only gender clinic in a small country. The relatively close distance to the clinic may lower the threshold for parents to seek help, once they are convinced that their children's gender identity problem has remained or intensified.

Nevertheless, it should be noted that most children with GID do not become transsexuals.

Prevalence of GID

Epidemiological studies providing data on the prevalence of childhood GID do not exist. Estimates of transsexualism among adolescents and adults (15 years and above) are usually based on the number of transsexuals that are treated at major centers, or derived from surveys among registered psychiatrists concerning the number of transsexual patients they treat within a particular country or region. The numbers and sex ratio's vary widely across studies. These differences may reflect the relative inaccessibility of SR and the social stigma of transsexuals in the sixties and seventies, resulting in a lower prevalence (Eklund, et al., 1988; Tsoi et al., 1977), differences in methodology (Weitze and Osburg, 1996), differences in the number of subtypes of MFs (Landén et al., 1996), or cultural factors (Brzek and Sipova, 1983; Godlewski, 1988). Recent studies indicate prevalences of about 1:10.000 for males and 1:30.000 for females in the Netherlands (Bakker et al., 1993). The highest prevalence was reported in Singapore with 1:2900 for males and 1:8300 for females (Tsoi, 1988). In most studies, transsexualism is more common in men than in women. Most often a 3:1 ratio is reported (for a review, see Landén et al., 1996).

Theories about cross-gender development

Subtypes of gender identity disorders

From early on gender identity problems have been suggested to consist of various subtypes (Hirschfeld, 1918). Nowadays, professionals working in this field, commonly agree that indeed even the most extreme form of GID is not a homogenous phenomenon. Blanchard distinguishes between various subtypes of *non*homosexual transsexuals and homosexual transsexuals and actually investigated similarities and differences between the groups (1985, 1988, 1989a, 1989b, 1989c). From the studies he concluded that the *non*homosexual subtypes are more similar to each other than any of them is to the homosexual subtype. He suggests that these two subtypes are expressions of two separate but related etiological pathways.

Psychological theories

A wide variety of psychological mechanisms have been put forward to explain the development of a cross-gender identity. Particularly parental factors, such as father absence, problematic psychosexual development of the parents, or parental dynamics, such as a maternal wish for a daughter, and extreme closeness to the mother ("blissful symbiosis"), have been held responsible for the development of GID (Kuchenhoff, 1988; Levine and Lothstein, 1981; Meyer, 1982; Stoller, 1968, 1975, 1979; Springer, 1981). Most theorists

perceived such parental characteristics to deprive children of sufficient possibilities to identify with the same sex parent and/or expose them to cross-gender reinforcement patterns. However, in a number of studies no solid evidence for these hypotheses was found (Green, 1987; Roberts et al., 1987; Zucker et al., 1994; for a review, see Zucker and Bradley, 1995).

Stoller (1968) was the first to observe that boys with GID were relatively attractive. Some studies have found support for this observation in research among boys (Green, 1987; Zucker et al., 1993), whereas the opposite was found for girls with GID (Fridell et al., 1994). Green (1987) found that mothers of boys with GID retrospectively described their sons as more beautiful and feminine than mothers of control boys did.

Thus, the physical (facial) traits of children with GID may indeed have prompted or stimulated parents to apply cross-gender role reinforcement patterns. However, it remains very unlikely that these characteristics will by themselves be sufficient to induce a GID.

Bio-psychological theories

Over the past ten years two rather comprehensive theories have been expounded to explain that GID originates from a combination of biological and psychological factors.

According to Coates' theory (1992), multiple cumulative risk factors that (must) converge during a critical period of development account for the onset of a cross-gender identity. Coates argues that some children are vulnerable to develop GID because of their temperament. She elaborates that this temperament is further shaped by the preference of boys with GID to primarily play with girls in their preschool years. As a result, they have little or no experience with other boys, preventing them from becoming familiarized with masculine play skills, such as throwing a ball or rough-and-tumble play. Psychological dysfunction of the mother, resulting from multiple traumatic experiences, is supposed to predispose the child to chronic separation anxiety and depression. In an attempt to overcome the feared loss of mother, boys will develop cross-gender symptoms because they confuse "having Mommy" by "being Mommy".

Zucker and Bradley (1995) conceive cross-gender identification as a response (i.e., coping mechanism) to anxiety, in which identification with the opposite sex is more secure, safe or valued. They suggest this will occur, only when two conditions are met.

First, children must seek a solution to survive because they are in profound emotional distress. General factors, inherent to the constitution of the child, the parents, or both, may cause the distress. Second, a variety of specific factors are supposed to create a situation, during a sensitive developmental period (i.e., when the child is developing a coherent sense of self), in which the resulting anxiety induces cross-gender behavior. Since various general factors can cause the distress in the first place, and different specific factors can subsequently induce cross-gender behavior as a solution to cope with the distress, a cross-gender identity may be reached through different pathways.

Some support has been found for the impact of factors considered crucial by Zucker and Bradley for the development of GID (Marantz and Coates, 1991; Rekers et al., 1983; Zucker and Bradley, 1995; Zucker et al., 1996).

Biological theories

Two biological theories have been generated to explain the origin of transsexualism. One involves organizational effects of sex hormones on the central nervous system; the other pertains to explanations for the often-found birth order and sibling sex ratio differences.

Organizational effects of sex hormones. In humans, a number of hypothalamic nuclei have been reported to be sexually dimorphic with respect to size and/or shape, for instance the central subdivision of bed nucleus of the stria terminalis (BSTc) (Gorski, 1999; Zhou et al., 1995). These sex differences in the hypothalamus are thought to underlie sex differences in gender identity, reproduction, and sexual orientation. A discrepancy between this brain sexual differentiation and genital differentiation has been invoked as an explanation for the most extreme form of GID, transsexualism. Studies that found the BSTc in six MFs to not only be significantly smaller than in males, but also completely in the size range of females, support this theory. The opposite was found for a FM transsexual (Kruijver et al., 2000; Zhou et al., 1995). As non-transsexual males, who were administered estrogens for medical reasons, did not show the smaller BSTc, it is unlikely that the size differences found in the transsexuals had been caused by their hormone treatment. In addition, no convincing evidence exists, that altered (peripheral) hormone levels play a role in developing GID, although they can trigger behavioral changes (see Meyer-Bahlburg, 1984).

Organizational effects of prenatal and perinatal androgens alone do not explain

the development of transsexualism. If that were true, we would expect genetic females who are prenatally exposed to abnormal high levels of testosterone (e.g., girls with congenital adrenal hyperplasia, CAH) to develop a male gender identity even if they had been raised as girls. In general, this is not the case, although a few of such reports have been made (Meyer-Bahlburg et al., 1995).

Birth order and sibling sex ratio. Statistical evidence suggests that birth order and sibling sex ratio (ratio of brothers to sisters) could be related to the development of transsexualism. Different mechanisms have been proposed to explain these findings (Blanchard, 1997, 2001). However, no conclusive evidence exists.

Blanchard (1998) found that homosexual men have a higher mean birth order than heterosexual men, primarily because they have a greater number of older brothers. Blanchard (1998) argues that mother's antibodies to Y-linked minor histocompatibility antigens (H-Y antigens) can prevent fetal brains from differentiating in the male-typical direction. He explains a high birth order of homosexual men to result from a progressive immunization of mothers to H-Y antigen. Since *non*homosexual cross-gendered individuals do not show this birth order effect, it might be more indicative of sexual orientation than of cross-gender identity.

In a meta-analysis of 13 studies, Blanchard (1997) found a significantly higher sibling sex ratio than normal only in a combined feminine/transsexual homosexual sample (N = 896). Since the sibling sex ratio in homosexual (N = 2.365) and heterosexual (N = 5.308) samples was not significantly different from normal, the sibling sex ratio findings might be associated with cross-gender identification.

Conclusions of theories on cross-gender development

Though mainly indirect, increasing evidence has been found for the idea that the brains of certain types of cross-gendered individuals (MFs that are sexually attracted to men in particular) were exposed to atypical levels of sex hormones during prenatal development. However, it is very unlikely that a cross-gender identity comes into existence by such exposure alone.

It is likely that biological factors, other than organizational hormonal effects, also contribute to cross-gender development. For men, the progressive immunization of mothers to H-Y antigens has been proposed, although direct evidence for this mechanism has not yet been found.

Some support was found for environmental factors, in particular parental influences, contributing to evolvement of GID in children. Although they might explain mild forms of gender disturbance, environmental factors are not likely to be sufficient or even necessary for the development of other conditions.

Diagnosis

Gender identity disorders in children and adolescents are different from those seen in adults. Phenomenologically, there is a qualitative difference between the way children and adolescents present their sex and gender predicaments. Additionally, in children a rapid and dramatic developmental process (physical, psychological and sexual) is involved. Gender identity disorders in childhood are not equivalent to those in adulthood and the former do not inevitably lead to the latter (Meyer et al., 2001). Considering the fact that this thesis pertains to SR applications in adolescence and adulthood, we will restrict to describing diagnosis and treatment criteria for adolescents and adults. More information about assessment and treatment of children with GID can be found in the Standards of Care of the HBIGDA (Meyer et al., 2001).

Presently, it is impossible to diagnose transsexualism on the basis of objective criteria. One is dependent on the - subjective - information provided by the applicants to arrive at the diagnosis. Some applicants will, unconsciously or purposely, present their histories or gender development in a distorted manner, to reach their goals of SR. Because of the subjective character of the available information and the importance of the decision to be made, the diagnostic procedure is extensive (Cohen-Kettenis and Gooren, 1999). The decision to refer someone for SR surgery is approached by the recommended procedure in the HBIGDA's Standards of Care in two phases (Meyer et al., 2001).

The first (diagnostic) phase

During the first phase, aside from differentiating between transsexualism and less extreme forms of GID, several other areas of functioning, such as psychological problems and social support, as well as potential risk factors for serious problems during or after treatment, are assessed. Naturally, differential diagnoses are also addressed in this phase, the most occurring ones being: SR applicants who are simply confused regarding aspects of their

gender (e.g., young male homosexuals who mistake their homosexuality for a GID); transvestic fetishists (heterosexual men who are sexually aroused while cross-dressing); ego-dystonic homosexuals; persons with transient stress-related cross-dressing; patients suffering from severe psychiatric conditions (e.g., schizophrenia), accompanied by delusions of belonging to the opposite sex; or persons who prefer to be sexless, but have no cross-gender identity, such as in Scoptic Syndrome patients (Coleman and Cesnik, 1990).

When DSM-IV GID criteria are not completely met, the classification Gender Identity Disorder Not Otherwise Specified is used. Some individuals with a GID, in the media often referred to as transgenderists, do not seek complete SR. Instead, they consider themselves to be male and female. They desire to incorporate and express this identity with their bodily characteristics by means of partial medical treatment, either hormones or some form of surgery. Requests for such treatment are still to be treated with great caution by professionals. No formal diagnostic or treatment protocols comparable to the HBIGDA's Standards of Care exist for these applicants, but they are needed (Cohen-Kettenis and Gooren, 1999).

Adolescents applying for SR follow through an essentially similar first diagnostic procedure as adults. In view of the rapidly changing developmental process of adolescence however, additional criteria need to be met in order to be eligible for treatment (see chapter two and three of this volume; see Meyer et al., 2001).

The second phase

The act of fully adopting a new or evolving gender role or gender presentation in everyday life is known as the Real-life Experience (RLE). The goal of the RLE is to allow the applicant to test his or her own capacity to function in the preferred gender and the strength of the wish for complete SR (including surgery), in the face of unexpected consequences while living in the opposite gender role. The RLE is largely supported with hormonal interventions (see below).

In the second phase the applicant is required to live permanently in the role of the desired sex. Significant persons need to be informed about the impending changes and a new first name has to be chosen. The Standards of Care (Meyer et al., 2001) describe six parameters to assess the quality of a person's RLE: "1) To maintain full or part-time employment; 2) To function as a student; 3) To function in community-based volunteer activity; 4) To undertake some combination of items 1-3; 5) To acquire a (legal) gender-identity-appropriate first name; 6) To provide documentation that persons other than the therapist know that the patient functions in the desired gender role". Treatment centers vary though, in their policy on eligibility for hormone treatment. Some require a period of successful cross-gender living without hormone treatment, in addition to a diagnosis of transsexualism, whereas others prescribe hormones as soon as cross-gender living has started. Some clinicians also require a minimum amount of psychotherapy sessions, but the value of obligatory psychotherapy is questionable. In most SR applicants the motivation for engaging in psychotherapy is very low. For some because they expect that all their problems will disappear after obtaining SR. Others do not confide in the therapist because they, sometimes correctly, expect to be denied SR, when they are open about their problems.

The rationale for additional requirements (i.e., RLE) for hormone treatment is that the decision to change one's gender role is accompanied with such profound personal and social consequences, that applicants should have had ample opportunity to become aware of what the familial, vocational, interpersonal, educational, economic, and legal consequences are likely to be. Professionals have a responsibility to discuss these predictable consequences with their patients (Meyer et al., 2001). Further, patients should take time to explore any doubts regarding SR or unresolved personal issues before embarking on irreversible treatment interventions.

During the RLE, regular contact with a knowledgeable psychologist or psychiatrist is required. Change of gender role can be a factor in employment discrimination, divorce, marital problems, and the restriction or loss of visitation rights with children. These issues and other impacts of the social transformation are the primary focus of these sessions. After all, this transformation stage invariably is a turbulent one (Cohen-Kettenis and Gooren, 1999; Meyer et al., 2001).

Treatment

Psychological interventions

Psychotherapy can provide education about a range of options that were not seriously considered by the patient before help was found. Particularly patients with non-transsexual gender problems or who are merely confused about their gender identity might benefit

from several forms of psychological interventions. Such interventions may help persons to better understand and cope with gender issues, and to try out alternative solutions to their problem. Examples of such solutions are part-time cross-gender living (in the desired role, yet, exclusively in supportive surroundings) or identifying stressors that urge persons to cross-dress and learn to deal with them in more effective ways. Group therapy has been recommended for individuals who want to explore their options for coping with gender dysphoria (Althof and Keller, 1980; Stermac, 1990). Marital or family therapy can help to solve conflicts between partners or family members that resulted from one individual's gender issues. Pharmacotherapy combined with psychotherapy can sometimes be successful, when the medication makes patients more amenable to psychotherapy (Coleman and Cesnik, 1990). Persons suffering from severe psychiatric conditions may require inpatient treatment in psychiatric hospitals. Unfortunately, the efficacy of all these interventions has not been investigated in formal studies (Cohen-Kettenis and Gooren, 1999).

The Standards of Care (Meyer et al., 2001) do not consider psychotherapy to be an absolute requirement for all patients before they proceed with hormone therapy. On the other hand, it may be an option for SR candidates, when they perceive the need for it themselves. They may, for instance, want to overcome anxieties concerning the future or need support when "coming-out", when dealing with personal loss, or when trying to adjust to their changing life situation (Cohen-Kettenis and Gooren, 1999).

Hormonal interventions

The social role change during the RLE usually is largely supported with hormonal therapy to enhance successful living in the new gender. Hormones improve the quality of life and limit psychiatric co-morbidity, which often accompanies lack of treatment (Leavitt et al., 1980). Before the initial administration of hormones, medical examination is performed to exclude physical conditions, like chromosomal or hormonal anomalies, and to prevent complications as a consequence of hormone treatment.

In MFs, suppression of the original sex characteristics can be partially obtained by the administration of progesterone or testosterone-blocking agents. As a result of this part of the hormone treatment bodily hair growth diminishes drastically, as do penile erections and sexual desire. Because facial hair growth is very resistant to anti-androgen therapy, additional electric hair removal techniques are necessary for successful demasculinization.

In general, speech therapy is needed, since the vocal cords will not shorten by anti-androgenic treatment, to coach the MF to learn to use his voice in a female fashion. Surgical techniques to shorten the vocal cords must still be considered experimental.

To induce female sex characteristics, estrogens are used. From this part of hormone treatment, MFs can realistically expect breast growth, some redistribution of body fat that will bring about a more female appearing body shape, and softening of skin (for additional desired and medical side effects, see Meyer et al., 2001).

In FMs androgens are used for the (irreversible) induction of masculine characteristics, such as a deepening of the voice, increased facial and body hear, clitoral enlargement, and a more masculine body shape. Reversible changes include increased upper body strength, weight gain, increased sexual interest and arousal, and decreased hip fat.

In the Netherlands, when adolescent transsexuals of 16-18 years meet the additional criteria for treatment eligibility as described in chapter two and three (this volume), hormonal treatment in a limited form is an option. For boys, anti-androgens are used to block the development of the biological sex characteristics without yet the induction of cross-sex characteristics (such as breasts in boys). This treatment for girls involves the administration of lynestrenol, inhibiting menstruation. Only after these adolescents evidently benefit from this treatment, cross-sex hormones are considered. These include hormones to feminize or masculinize the body, such as estrogens for MFs and androgens for FMs. Parents are always to be involved in the treatment of their children and are required to give their formal informed approval before commencement of any of the SR treatment phases (Cohen-Kettenis and Gooren, 1999; Meyer et al., 2001). Transsexuals, treated early at the Amsterdam gender clinic, were found to pass very easily as members of the opposite gender (Cohen-Kettenis and van Goozen, 1997).

Surgical interventions

When the RLE has resulted in a satisfactory social role change the applicant is eligible for surgery. After removal of the gonads (testicles or ovaries) reproduction becomes impossible, which is required for a legal change of the birth certificate. In MFs vaginoplasty and, in cases of unresponsiveness of breast tissue to estrogen therapy, breast enlargement are performed. Facial bone reduction to feminize the jaw line is also an option. In FMs breast removal is usually the first surgery performed for success in the

social role as a man. For some patients it is the only surgery undertaken. Others prefer removal of the uterus and ovaries as well. As phalloplasty is still in an experimental phase, some FMs rather have a neoscrotum with a testical prosthesis with or without a metaidoioplasty, transforming the hypertrophic clitoris into a microphallus (Hage and Mulder, 1995).

Aims of the thesis regarding transsexualism and sex reassignment

The research described in this dissertation pertains to SR performed in adolescent and adult transsexuals. In 1991 (Kuiper), results of a retrospective follow-up study clearly indicated the therapeutic effect of SR for the most extreme end of the spectrum of GID, known as transsexualism. Still, much less was known about which assessment criteria could predict the course and outcomes of treatment, despite implicit indications of potential risk factors in the literature. Prospective studies were needed to provide more explicit and conclusive findings regarding these issues. Furthermore, in view of the invasiveness and irreversibility of SR, prospective research was also required to demonstrate whether postoperative functioning of transsexuals indeed improves as a consequence of treatment.

In the present prospective follow-up study we investigated the outcomes of SR in different subgroups of treated transsexuals, on the one hand, and predictors of the course and outcomes of treatment, on the other. The effectiveness of SR was studied in adolescent and adult samples, and in a sample distinguishing between subtypes of transsexuals. Differences in outcomes between MFs and FMs were examined in the adult samples. Early hormone treatment with adolescent transsexuals must still be considered to be in an experimental stage. Therefore, we also examined whether the often-assumed psychological deterioration resulting from SR could be found in adolescents, when assessed in an unstructured situation. Research on predictors of the course of treatment focused on three decisive phases of the SR procedure. The first involved predictors of eligibility for starting hormone treatment, the second concerned identification of predictors of potential drop-outs of hormone treatment, and the third was directed at predictors of the duration of hormone treatment before surgery. Finally, we examined which factors could predict postoperative functioning and treatment satisfaction.

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CHAPTER 2

Adolescents with gender identity disorder who were accepted or rejected for sex reassignment surgery:

A prospective follow-up study

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Abstract

Objective: To conduct a prospective follow-up study with 20 treated adolescent transsexuals to evaluate early sex reassignment, and with 21 nontreated and 6 delayed-treatment adolescents to evaluate the decisions not to allow them to start sex reassignment at all or at an early age. **Method:** Subjects were tested on their psychological, social and sexual functioning. Follow-up interviews were conducted from March 1995 until July 1999. Treated patients had undergone surgery 1 to 4 years before follow-up; nontreated patients were tested 1 to 7 years after application. Within the treated and the nontreated group, pre- and posttreatment data were compared. Results between the groups were also compared. **Results:** Postoperatively the treated group was no longer gender-dysphoric and was psychologically and socially functioning quite well. Nobody expressed regrets concerning the decision to undergo sex reassignment. Without sex reassignment, the nontreated group showed some improvement, but they also showed a more dysfunctional psychological profile. **Conclusions:** Careful diagnosis and strict criteria are necessary and sufficient to justify hormone treatment in adolescent transsexuals. Even though some of the nontreated patients may actually have gender identity disorder, the high levels of psychopathology found in this group justify the decision to not start hormone treatment too soon or too easily.

Introduction

Despite the early onset of gender identity disorder (GID) in many transsexuals, and in spite of the fact that transsexuals apply for sex reassignment surgery (SRS) at increasingly younger ages, it is common practice not to start the actual sex reassignment (SR) procedure before the age of 18 or 21 years. One of the main objections of professionals against a start of the SR procedure before 18 years is the risk of postoperative regrets. One fears that, as a consequence of the developmental phase itself, adolescents will not be capable of making a sensible decision about something as drastic as SR. Moreover, medical interventions in adolescence are expected to lead to unfavorable results concerning the physical, psychological, and social functioning of the adolescent. Despite these hesitations, transsexual adolescents have been diagnosed and referred for hormone treatment and SRS at the gender clinic of the Department of Child and Adolescent Psychiatry of University Medical Center Utrecht (UMCU). In those carefully selected patients who are referred for hormone treatment, the often-assumed association between transsexualism and psychopathology has not been found (Cohen et al., 1997; Cohen-Kettenis and Van Goozen, 1997). This significantly contributed to the decision to start hormone therapy between the ages of 16 and 18 in two phases: first, hormones with reversible effects (for male-to-females [MFs], antiandrogens to block further masculinization of the body; for female-to-males [FMs], progestins to suppress menstruation); second, estrogens to feminize the MFs and androgens to masculinize the FMs. Although postoperative regret or any other unfavorable result is a matter of serious concern for our clinicians, it is also considered important to avoid lifelong suffering due to postponement of treatment. With early SR two major negative consequences of late treatment may be prevented: (1) irreversible physical changes (especially a low voice and beard growth in MFs), which may create lifelong traces of the biological sex; and (2) delay or arrest in areas that are particularly important during adolescence (e.g., peer relationships, romantic involvements, or academic achievement), which may lead to additional, yet avoidable problems. Thus, early treatment may be particularly suitable to prevent unnecessary psychological and emotional problems.

Furthermore, on the basis of numerous follow-up studies it can be concluded that in adults, unfavorable postoperative outcome is related to a late start of the SR procedure rather than an early one (for a review, see Cohen-Kettenis and Gooren, 1999). Age at

assessment also emerged as a factor differentiating two small groups of adult MF transsexuals with and without postoperative regrets (Lindemalm et al., 1987).

Naturally, if a resolution to extreme and lifelong cross-gender identity problems is attainable with less invasive treatment methods, clinicians should refrain from SRS, in adolescents as well as in older patients. However, as more extensively discussed by Cohen-Kettenis and Van Goozen (1997), the literature does not provide convincing evidence that psychotherapy can alter a fixed cross-gender identity (Cohen-Kettenis and Kuiper, 1984).

Cohen-Kettenis and Van Goozen (1997) conducted a retrospective study on postoperative functioning of the first 22 consecutive adolescent transsexual patients who had attended our gender clinic and who had undergone SRS. They concluded that starting the SR procedure before adulthood results in positive postoperative functioning, provided that careful diagnosis takes place in a specialized gender team and that the criteria for starting the procedure early are strict (see Cohen-Kettenis and Van Goozen, 1997, for details concerning the clinical approach).

To confirm these initial results, a prospective follow-up study was conducted with the next 20 consecutive adolescents who had undergone SRS. This time, we also investigated what had become of the adolescents whose application for SR had been rejected or who had refrained from SR in the first diagnostic phase. Inasmuch as we expected applicants to be heterogeneous with respect to gender dysphoria, comorbidity, and perhaps other factors, this study should be seen as an evaluation of two related but separate clinical decisions. The first and most important one was whether it had been a correct decision to allow well-functioning adolescent transsexuals to proceed with the SR procedure after careful screening, given that they were between 16 and 18 years of age. The second one was to find out whether the decision not to allow other adolescent applicants to proceed with the SR procedure before 18 had been a justified one.

This study focuses primarily on postoperative gender dysphoria, feelings of regret, gender role behavior, and an evaluation of the treatment, but other areas such as psychological, social, and sexual functioning were also addressed. The same domains were investigated in the treated and nontreated groups.

Method

Subjects

The 20 patients (13 FMs, and 7 MFs), who consecutively underwent SRS after the 22 patients of the first study, were invited to participate at least one year after their last surgical treatment. All treated (T) patients responded positively and were included. While applying for SR in their first diagnostic phase, 21 other applicants withdrew their request for SR, were rejected, or did not show up for appointments. The primary reason for rejection or withdrawal was that they were not diagnosed transsexuals despite the fact that some did have gender identity problems. In many of these cases the psychological or environmental problems were too serious to make an accurate diagnosis. In other cases, when patients did not show up for appointments, a diagnosis had not yet been made before we lost contact. Hence, the rejected/withdrawn cases did not start hormone treatment and the real-life experience phase (this group we call hereafter the NT group). Another six eventually started hormone treatment. Two started after an initial delay when still in contact with our gender clinic; four were expected to belong to the NT group when contacted but appeared to have reapplied at another gender clinic where adults are treated.

Four individuals of the NT group were not traceable and could therefore not be included in the analyses. Some of their data, gathered at the time of their application, were used descriptively. Three others could not be interviewed, but some follow-up data were collected through their parents. Finally, our clinic was contacted by psychiatric institutions requesting information about two of our (nontraceable) patients, which provided us with information about their current status. This resulted in a T group of 7 MFs and 13 FMs, a NT group of 13 males and 8 females, and a delayed-treatment (DT) group of 4 MFs and 2 FMs. Statistical analyses of the NT group were based on 9 males and 5 females, who were seen both at the time of application and at follow-up. All applicants were between 13 and 18 years old at the time of first assessment. Data concerning the DT group were not included in the statistical analyses. (See Table 1 for additional information about the DT and NT groups).

Table 1: Additional descriptive information about the Nontreated group and the Delayed-treatment group

No	Status end diagnostic phase	TS Diagnosis	Delayed treatment	Source follow-up info	Comorbidity Pretest	Comorbidity posttest [a]	Additional info
1.	extended 1st diagnostic phase	deferred TS diagnosis	yes	interview		_	
2.	extended 1st diagnostic phase	TS	yes	only pretest data[b]	ODD	_	orphan; many foster homes at application
3.	referred for psychotherapy	no TS	yes	interview		_	recent sexual abuse at application
4.	withdrawn	deferred diagnosis	yes	interview	dysthymia	psychotic episodes	father with psychiatric disorder (depression)
5.	withdrawn by others	TS	yes	interview	ODD	_	IQ: 65; institution for mentally disabled at follow-up
6.	referred for psychotherapy	deferred TS diagnosis	yes	interview	stuttering	_	severe family problems
7.	withdrawn	TS	no	interview	depression; anorexia; suicidal automutilation	_	very religious
8.	no show	no TS	no	parent[c]	schizophrenia	schizophrenia	suicide
9.	withdrawn	no TS	no	parent[c]		_	deaf; homosexual
10.	withdrawn	no TS	no	interview		_	mentally retarded
11.	withdrawn	no TS	no	parent[c]		schizophrenia	psychiatric clinic at follow-up
12.	2nd opinion	no TS	no	only pretest data[b]	depression	_	very religious; ego-dystonic homosexual
13.	no show	deferred TS diagnosis	no	interview	?[e]	_	neglected and sexually abused; orphan; homeless
14.	rejected	no TS	no	interview	pathological gambling	_	school drop-out
15.	no show	no TS	no	interview		_	school problems
16.	no show	unclear	no	psychiatric institutions[d]	ODD	ODD	psychiatric and forensic institutions
17.	withdrawn	no TS	no	interview	gender identity disorder	_	congenital heart defect; mother died early
18.	no show	no TS	no	interview	schizophrenia?[e]	_	schizophrenic mother
19.	withdrawn	no TS	no	interview		_	homosexual
20.	withdrawn	no TS	no	only pretest data[b]		_	lesbian; alcoholic father
21.	no show	no TS	no	psychiatric institutions[d]	borderline personality disorder	_	alcoholic parents; mother died of alcohol related problems; special institutions
22.	referred to autism team	no TS	no	interview	PDD	PDD	
23.	2nd opinion	no TS	no	interview	Asperger's syndrome	_	homosexual
24.	withdrawn	no TS	no	interview		_	
25.	withdrawn	no TS	no	interview	?[e]	_	lesbian; sadomasochistic preference
26.	withdrawn	no TS	no	interview		_	
27.	withdrawn	no TS	no	interview	PDD NOS	_	

Note: TS = transsexual; ODD = oppositional defiant disorder; PDD = pervasive developmental disorder; NOS = not otherwise specified
a Confirmed diagnosis by psychiatrist at posttest. Dash means subject was not psychiatrically evaluated at posttest, at least not to our knowledge; this does not automatically imply an absence of psychiatric problems.
b Source follow-up data gathered through first diagnostic procedure.
c Source follow-up data gathered through telephone interview with parent of subject.
d Source follow-up data gathered through psychiatric institutions that requested information about subject.
e Probably a *DSM-IV* diagnosis, but not enough time to confirm a diagnosis.

Instruments

Intelligence

The most recently adapted 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.

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).

Body Dissatisfaction/Physical Appearance

A Body Image Scale (BIS) (Lindgren and Pauly, 1975), which had been adapted for a Dutch sample, was used. A higher score indicates more dissatisfaction (Kuiper, 1991).

On the 14-item Appraisal of Appearance Inventory (AAI) three independent observers (the diagnostician, a nurse from the gender team, and the researcher) rated their subjective appraisal of the appearance of the subject on a 5-point scale of femininity/masculinity. Higher scores indicate more incompatibility of the appearance with the new gender.

Psychological Functioning

Psychological functioning was assessed with the Dutch Short MMPI (NVM) (Luteyn et al., 1980) and the Dutch version of the Symptom CheckList (SCL-90) (Derogatis et al., 1973; Dutch version: Arrindell and Ettema, 1986).

Treatment Evaluation and Posttreatment Functioning

Treatment Satisfaction. T patients completed a semistructured interview about treatment outcomes, experiences during and after SR, treatment evaluation, and feelings of regret. NT patients were asked questions regarding their way of living and level of functioning after refraining from or delaying SR. When applicable, questions from the T patients' interview were adapted.

Social and Sexual Functioning. In a semistructured interview, questions were asked about the subjects' current life situation (Doorn et al., 1996). Specific questions about

sexual contact after surgery were omitted for the NT group. Results were analyzed per item.

Satisfaction With Surgery. T patients completed a self-developed questionnaire concerning functionality of the vagina or penis and satisfaction with surgical results (Cohen-Kettenis and Van Goozen, 1997). Results were analyzed per item.

Public Confrontation Questionnaire. A questionnaire assessed reactions of the social environment and was used to evaluate the subject's experiences of being able to "pass" in the new social role (Doorn et al., 1996). Results were analyzed per item.

Quality of Life. The Affect Balance Scale (Bradburn, 1969) was used in the T and NT groups to measure overall psychological well-being. The scale consists of five positive and five negative items. Only the negative affect scores were analyzed because in a randomly selected sample the Cronbach alpha for the positive affect scale was found to be too low (positive affect scale, .59; negative affect scale, .73) (Kempen and Ormel, 1992). The adapted Dutch version of the scale by the Central Bureau of Statistics (1987) was used.

Various questions were analyzed per item because they did not form a scale. Whenever this was the case we have indicated in the "Results" section how many response categories they contained.

Procedure

IQ was assessed before treatment. The UGS, the BIS, the AAI, and the Personality Questionnaires were administered before and after treatment because within-subject changes were expected. The remaining instruments concerned the postoperative situation and were only administered after treatment. Instruments pertaining to posttreatment functioning were not administered to the NT group.

T patients came to UMCU or combined a hormone checkup at Free University Hospital in Amsterdam (FUHA) with the interview and testing. Each session took two to three hours. To avoid socially desirable responses the subjects were seen by the first author, who had not been involved in their diagnosis or treatment. The Ethics Committees of UMCU and FUHA approved the study.

Statistical analyses

Changes over time within the T and the NT group were analyzed with univariate paired *t* tests. Differences between groups were analyzed with univariate independent *t* tests.

Subjects with a score more than 2.5 standard deviations above the mean score of their subgroup were considered to be outliers. Their values were replaced by the mean value of their subgroup.

Results

Demographics

The mean age of the T group was 16.6 years (range 15-19) at pretest and 21.0 (range 19-23) at follow-up. Ten T patients had started hormone treatment between 16 and 18 years of age. The average time elapsed between the last operation and the time of the follow-up interview was 1.3 years (range 1-4). The group's pretreatment mean IQ score was 107 (SD = 16; range 85-140). At follow-up nine subjects (48%) were students (at a school for business administration or university), five had jobs, and five were unemployed. Ten subjects lived independently or in student dormitories, one lived with her partner, and eight were living with one or both of their parents.

The mean age of the NT group was 17.3 years (range 13.7-20.2) at pretest and 21.6 (range 15.7-26.2) at follow-up. The average time elapsed between SR application and the time of the follow-up interview was 4.2 years (range 1-7). The group's mean IQ score was 104 (SD = 15; range 89-130) at pretest. At follow-up six were students, five had jobs, and four were unemployed. Six subjects of the NT group lived independently, one lived with a partner, and seven lived with one or both of their parents. Another subject lived in a psychiatric institution.

Gender Dysphoria

The T group reported less gender dysphoria ($p < .001$) at follow-up than at pretest (Table 2). The mean pretest and posttest scores of this group were completely in the range of those from the previous study (pretest mean = 51.7, SD = 6.3; posttest mean = 14.8, SD = 3.2). None of the subjects expressed feelings of regret about their SR (3-point scale).

The NT group was also less gender-dysphoric ($p = .002$) at follow-up than at the time of application. However, the decrease in gender dysphoria was much greater within the T than within the NT group ($p = .002$).

Eleven subjects of the NT group did not feel any regrets about having refrained from SR or being rejected (3 response categories). One woman slightly regretted having

refrained from SR because she still had doubts about her gender identity. Two men also slightly regretted the decision not to start treatment, but in both, the wish for SR was not clearly differentiated from unrealistic expectations that SR would resolve important nongender problems. Finally, one man who strongly regretted not having started SR wanted only a breast enlargement and no vaginoplasty.

Body Dissatisfaction

With respect to their overall appearance, the majority of the T group reported satisfaction: 16 subjects were satisfied or very satisfied, one was very dissatisfied, and two were neutral. Satisfaction with primary and secondary sex characteristics significantly increased after treatment (Table 2). Also, the group's mean score on the AAI was lower ($p < .001$) at posttest, indicating that, according to observers, their appearance had become more compatible with the new gender.

Of the NT group, six subjects were (very) dissatisfied with their overall appearance. Five subjects reported being (very) satisfied, while three subjects expressed a neutral view. Over time the NT group had become more satisfied with their primary sex characteristics, although there was no change in satisfaction with the secondary sex characteristics.

Psychological Functioning

Analysis of the NVM of the T group showed no significant changes after treatment (Table 2). When pre- and posttest group means were compared with Dutch normative data, all scores were within the average range, indicating normal functioning. The mean T group's total score on the SCL-90 (Psychoneuroticism) was not significantly lower at posttest than at pretest, although compared with Dutch normative data this score fell in the high range at pretest and in the above-average range at posttest. The mean scores on the subscales Anxiety, Depression, and Hostility were lower at posttest.

The NVM results of the NT group showed a more dysfunctional profile. When compared with a Dutch normative group, the subscale Psychopathology was in the high range at pre- and posttest. The results on the SCL-90 were also unfavorable. The total score was and remained in the high range, compared with normative groups. Here it is important to keep in mind that probably the patients who functioned worst had not completed the tests at follow-up because they were psychiatrically hospitalized.

Table 2: Pretest and posttest scores of the Treated (T) group ($n = 20$) and the Nontreated (NT) group ($n = 14$)

		Pretest		Posttest		Paired	Two-tailed
		Mean	SD	Mean	SD	*t*	*p*
Gender Dysphoria: UGS							
	T	56.3	4.6	13.8	2.3	-38.48	< .001
	NT	46.7	13.9	31.1[a]	14.9	-5.13	.002
Body Dissatisfaction: BIS							
Primary sex characteristics	T	17.9	3.0	10.2	5.7	-5.84	< .001
	NT	16.1	5.1	13.4	4.9	-2.55	.04
Secondary sex characteristics	T	32.0	6.0	24.9	6.9	-4.03	.001
	NT	29.6	5.3	27.6	5.9	-1.53	.18
Other body characteristics	T	40.1	6.9	35.2	8.6	-3.06	.007
	NT	41.6	4.2	36.4	8.1	-2.15	.08
Psychological Functioning: NVM							
Negativism	T	21.8[2]	6.9	20.5[2]	7.9	-0.61	.55
	NT	22.9[2]	5.7	26.4[4]	6.9	1.09	.31
Somatization	T	8.2[2]	6.2	7.7[2]	8.3	-0.20	.84
	NT	7.8[2]	6.9	10.1[4]	9.0	0.60	.56
Shyness	T	13.1[2]	6.8	11.8[2]	8.0	-0.69	.50
	NT	12.1[2]	8.5	12.3[2]	6.5	0.15	.89
Psychopathology	T	2.9[2]	2.6	2.8[2]	2.0	-0.15	.88
	NT	6.3[4b]	4.7	6.1[4]	4.0	-0.15	.88
Extraversion	T	16.7[2]	6.7	16.8[2]	6.7	0.04	.97
	NT	15.9[1]	3.6	15.2[1]	5.1	-0.34	.74
Psychological Functioning: SCL-90							
Psychoneuroticism	T	145.0[4]	35.6	129.0[3]	45.4	-1.20	.24
	NT	159.0[4]	78.0	163.0[4b]	50.9	0.18	.86
Anxiety	T	15.8[4]	5.4	12.8[3]	3.8	-2.07	.05
	NT	19.5[4]	11.4	18.2[4b]	6.4	-0.38	.71
Agoraphobia	T	9.1[4]	2.2	8.1[4]	1.3	-1.88	.08
	NT	9.0[4]	1.9	9.4[4]	3.4	0.33	.75
Depression	T	28.3[4]	9.8	21.6[3]	3.7	-2.77	.01
	NT	31.8[4]	15.6	35.2[5b]	14.7	0.50	.63
Somatization	T	16.1[3]	3.6	14.8[2]	3.9	-1.22	.24
	NT	19.9[4]	10.3	17.6[3]	5.1	-0.64	.54
Inadequacy	T	15.2[3]	4.9	13.9[3]	5.4	-1.0	.33
	NT	15.1[3]	4.2	18.9[4]	6.9	1.64	.14
Sensitivity	T	28.3[4]	8.8	24.7[3]	6.9	-1.44	.17
	NT	25.6[3]	10.2	27.8[4]	7.5	0.55	.59
Hostility	T	9.7[4]	3.1	7.9[4]	2.2	-2.34	.03
	NT	10.0[4]	4.9	8.5[4]	2.6	-1.06	.32
Sleeping problems	T	6.2[4]	3.8	5.3[3]	3.3	-0.98	.34
	NT	5.7[4]	2.6	5.9[4]	3.0	0.23	.83

Note: Dutch norm scores for mean scores on subscales of NVM and SCL-90 are represented with superscript numbers: 1 = below average; 2 = average; 3 = above average; 4 = high; 5 = very high. Independent *t* test: a $p = .001$; b $p < .05$. UGS = Utrecht Gender Dysphoria Scale; BIS = Body Image Scale; NVM = Dutch Short MMPI; SCL-90 = Symptom Checklist 90.

Treatment Evaluation and Posttreatment Functioning of the Treated Group

Satisfaction With Surgery. Breast removal is emotionally the most important type of surgery for adolescent FMs because they are advised to postpone metaidoioplasty (transformation of the hypertrophic clitoris into a micropenis) or phalloplasty because the surgical techniques are steadily improving. Only one FM had undergone phalloplasty and two FMs had a neoscrotum. For the MFs vaginoplasty (including amputation of the penis) is the most important surgical intervention.

Eight FMs were satisfied with their breast removal, whereas five were dissatisfied with the result because of the visibility of the scars. Nevertheless, nine did not have any problems baring their chest when swimming.

Three MFs expressed satisfaction with their vaginoplasty: they felt their vaginas looked natural. Another three individuals were not completely satisfied, mostly because they considered their vagina not deep or feminine enough. Two were disappointed that they could not achieve orgasms. Five MFs had experienced sexual intercourse without problems. One MF had attempted intercourse but had a vaginistic response.

Relationships and Sexuality. Ten subjects had a stable relationship with one partner at the time of the interview and nine had no partner at follow-up or had never had one. Of the 10 subjects who had a steady sexual partner, seven expressed satisfaction with their sex life, two expressed a neutral view, and one FM was dissatisfied (5 response categories). This FM was unhappy about the fact that he could not have intercourse with a "normal" penis with his girlfriend, but said he was very happy with the relationship itself. He also reported achieving orgasm every time they had intercourse after his metaidoioplasty.

Several FMs reported that they found it difficult to live without a penis, especially at moments when they did not know their potential sexual partner well. Masturbation was not very frequent (5 response categories). MFs reported a decrease in masturbation frequency after treatment (3 response categories), and FMs reported an increase or no change. Of the 16 individuals who were sexually active, with or without partner, 11 achieved orgasms regularly (5 response categories).

Eighteen subjects had a compatible sexual orientation (that is, MFs feeling attracted to heterosexual men or homosexual women, and FMs to heterosexual women or homosexual men), whereas one person was not (yet) sure about her sexual orientation.

Social Life and Social Contacts. The majority of the T group (16 subjects) felt accepted and supported in their new gender role by everyone they knew, whereas three felt accepted and supported by most people (4 response categories). Sixteen participants had not lost any family member or friend or had lost contact with one person only. Two subjects had lost more than one friend as a consequence of the SR. Twelve persons indicated that they were (very) satisfied with their social contacts with the opposite gender and 13 individuals were (very) satisfied with their same-gender social contacts; two subjects were dissatisfied about their contacts with the opposite gender (5 response categories). Most people (15 subjects) did not feel lonely, two felt lonely sometimes, and another two felt quite lonely sometimes (5 response categories).

Superficial contacts, such as those with neighbors or shopkeepers, were either nonexistent/neutral (6 persons) or positive (13 persons). None of the subjects had experiences of actually being harassed. One MF subject had a few times been approached by strangers as a man since the start of her treatment, but none of the others had been approached as someone of their biological sex since the start of treatment. This corresponds with the increase in AAI ($p < .001$) at follow-up, indicating a more compatible appearance.

Quality of Life. The group reported a reasonable sense of well-being. Although not quite comparable, it is worth noting that the negative affect score of this adolescent group (mean = 4.4, SD = 3.2; range 0-10) was lower than that of the randomly selected elderly sample (mean = 6.1, SD = 1.4; range 5-10). Unfortunately no data of a younger comparison group are available.

Self-Reported Functioning of the Nontreated Group at Follow-up

Relationships and Sexuality. Six persons had a stable relationship with a partner at the time of the interview, as opposed to nine who had no partner at follow-up or had never had one. Five subjects reported not knowing what their sexual orientation was, while another five had an incompatible sexual orientation (meaning that the males felt attracted to homosexual women and/or heterosexual men, and the females to homosexual men and/or heterosexual women). Four subjects had a compatible sexual orientation.

Social Life and Social Contacts. Twelve persons reported feeling (very) satisfied about their social contacts with the opposite gender, whereas one person reported being very dissatisfied (5 response categories). Where same-gender social contacts were concerned,

nine felt (very) satisfied and three felt neutral. Six (40%) individuals did not feel lonely, another six (40%) felt lonely sometimes, and three (20%) felt lonely quite often (5 response categories).

Quality of Life. The NT group's mean negative affect score (mean = 6.2, SD = 2.6; range 0-10) was not different from the mean score of the T group (mean = 4.4, SD = 3.2; range 0-10) at follow-up. They had, however, almost exactly the same score as the elderly group (6.1 and 6.2).

Functioning of the Delayed-Treatment Group

The small number of DT individuals (n = 6) and the difference in size compared with the T group (n = 20) made adequate statistical analyses not possible. Nevertheless, most mean DT group scores on the tests measuring psychological functioning were higher than the mean T group scores. At pretest the DT group scored higher than the T group on four of the five NVM scales (Negativism: mean = 29.8, SD = 6.0; Somatization: mean = 14.3, SD = 10.3; Shyness: mean = 23.3, SD = 3.2; Psychopathology: mean = 9.3, SD = 4.0), and on six (Anxiety, Agoraphobia, Depression, Inadequacy, Sensitivity, Hostility) of the eight SCL-90 subscales, creating a higher total mean score on Psychoneuroticism (mean = 212, SD = 75.5). At posttest the mean DT scores on the UGS (mean = 39.8, SD = 6.0), the primary BIS (mean = 19.6, SD = 0.6), the NVM Shyness (mean = 17.4, SD = 10.2) and NVM Psychopathology scale (mean = 9.0, SD = 8.0), and the same six SCL-90 subscales and its total score (mean = 182, SD = 88.6), were higher than the mean T group scores. In sum, the DT group was psychologically functioning more poorly than was the T group at pre- and posttest. At posttest the DT group also showed more gender dysphoria and more body dissatisfaction. However, it is worth remembering that four of the six persons were approached before they had completed the SRS because they were expected to belong to the NT group.

Discussion

As for the T sample, our results were very similar to the results of the earlier retrospective study (Cohen-Kettenis and Van Goozen, 1997). The groups were comparable with respect to various background variables and in both groups gender dysphoria had disappeared after treatment. This, of course, is the main goal of SR. Postoperatively the adolescents were also more satisfied with their primary and secondary sex characteristics than at pretest and they functioned socially and psychologically quite well. Just as in the first study, the adolescents scored in the normal range with respect to psychological functioning. Above all, no one expressed feelings of regret concerning the decision to undergo SRS. Thus, one to five years after surgery, SR does seem to have been therapeutic and beneficial. Compared with 141 adult Dutch transsexuals, the adolescents seemed to fare better (Kuiper and Cohen-Kettenis, 1988). The findings of the adult transsexuals are most likely to be caused by their late treatment because they belonged to the first treated group in The Netherlands, and many of them had to wait until they were in their 50s, or even longer, before SRS became available. As a consequence, they had more social and psychological problems and they received much less support from their environment than the adolescents did (Cohen-Kettenis and Kuiper, 1988). Another reason for their less favorable outcome is that criteria for (overall functioning of) adolescent applicants are stricter than they are for adults (see below).

Because in many adolescent transsexuals hormone treatment had started before they reached the last pubertal phases, they rather easily passed in their new role. This may also partly explain why they function better than the adults did. The fact that three observers independently evaluated the adolescents' appearance in accordance with their new gender role supports the impression of the first study and corroborates the adolescents' satisfaction with their appearance. Another aspect of this positive outcome may be attributable to the strict criteria for treatment eligibility. Compared with adults, adolescents who start treatment before age 18 have additional criteria for treatment eligibility. As a consequence, those patients selected for early treatment are among the best-functioning transsexuals. Finally, most of the transsexuals in our study were FMs and we know from other studies that postoperatively, FMs fare in many respects better than MFs (Pfäfflin and Junge, 1992). Thus we can conclude that careful diagnosis and strict criteria are necessary and sufficient to justify hormone treatment (and thereby a start of SR) in well-functioning adolescents,

even if they are younger than 18.

A second aim of the study was to examine whether the decision not to proceed with the SR procedure for some applicants had been a sensible one. For the large majority of the NT patients SRS was contraindicated. Most of the NT subjects who were still in contact with the team when this decision came about agreed. The data clearly support the decision not to allow the NT group to start SR. Our questionnaire data, which may be biased to the positive side (see above), showed that the NT subjects functioned worse than the T subjects. More than half of the NT group had been given a psychiatric diagnosis at application and/or follow-up. One subject had such a difficult time coping with his psychiatric problems that he had been hospitalized a number of times and had committed suicide around the time of the follow-up interview. Not to allow these patients to start medical treatment seems to have been good decision. It is of interest that the majority of the NT group had found other ways for dealing with their gender problem to the point that they actually reported having less gender dysphoria. We can think of two reasons for this decrease. One is that these applicants had received treatment for major nongender problems. It could well be that they had overestimated their gender dysphoria at the time of their application and that they were able to appraise the intensity of their gender problems in a more realistic way at the time of follow-up. Another reason is that the intensity and perhaps also the quality of the gender dysphoria had been different in the NT group. Indeed, at the time of application the variation in scores on the UGS (as reflected by the standard deviations) was much larger in the NT group than in the T group, and some clinical reports suggest that there was far more gender confusion and uncertainty about SRS in the NT group. Some very gender-dysphoric but unstable applicants pursued SRS again when they were older (the DT group). Their general level of functioning was still worse than that of the T group despite the fact that some had received additional treatment.

Limitations

The study also had some limitations, which have to be addressed. One is that despite our replication of the results of our first study, the total number of subjects involved remains small. Moreover, our minimum follow-up period was one year. It goes without saying that longer periods of follow-up are needed to assess the ultimate outcome.

A second limitation concerns the possible selection bias of our sample.

Adolescents who apply at a young age probably are in relatively favorable circumstances, because their parents, though not happy that their children are transsexual, are usually supportive of treatment. It is also likely that adolescents with less extreme or more fluctuating cross-gender identities do not pursue SR so early in life. Because we do not know how many adolescent transsexuals do not apply for SR, we do not claim that our patients are representative for all Dutch adolescent transsexuals. Our conclusions are therefore limited to the group that does apply for SR before adulthood.

Third, of those adolescents who apply, only the best-functioning are selected for early medical treatment, the majority being FMs. In contrast to data on sex ratios of our prepubertal GID children (boys to girls 5:1; n = 120) and of adult populations (MFs to FMs 3:1; Bakker et al., 1993), the sex ratio of adolescent applicants for SRS in our clinic approaches 1:1 (n = 125). As mentioned before, after the first diagnostic phase more FMs than MFs were allowed to start treatment, because they better fulfilled the additional diagnostic criteria for adolescents, namely being psychologically stable and having a supportive background.

Fourth, although the posttreatment interviews were not conducted by the clinicians who had been involved in the treatment, the patients may still have emphasized the positive effects because of their belief that the examiner had a stake in the outcome by virtue of being associated with the same clinic.

Fifth, a different research design in which, on a random basis, half of the applicants who are eligible for treatment would be treated and the other half not, would have been better in methodological respect. Clearly, however, for ethical reasons such a study is impossible to conduct.

Finally, subject retention was better in the T group than in the NT group. The relatively well-functioning NT patients came to be interviewed and tested, but many of the nonparticipants lived in psychiatric or other institutions. So the data as presented here probably present an optimistic picture and are most likely not representative of the entire group of NT applicants.

Clinical implications

On the basis of the findings of the previous and current study, it seems reasonable to conclude that early hormone treatment does not necessarily lead to worse postoperative

functioning than later hormone treatment. It appears to be possible to prevent false positives when following careful diagnostic procedures. However, careful diagnosis and decision-making in adolescence does not preclude that rejected or withdrawing applicants will seek SRS later in life.

It is important to keep in mind that many applicants are not good candidates for SR and probably never will be good candidates. Applicants vary greatly in family background, education, psychopathology, motivation to explore gender issues, and outcome. Although psychopathology may be the result rather than the underlying problem of the GID, SR may also be sought as a solution to nongender problems. Starting hormone treatment before adulthood should not be considered when too many adverse factors operate simultaneously, despite the possibility that applicants may actually be transsexual. This is because it is more complicated to make an accurate diagnosis in problematic adolescents than in well-functioning adolescents, even for experienced multidisciplinary teams.

The results of our studies point to the desirability of early rather than late medical interventions. Thus far, the patients in our studies were not younger than 16 when hormone treatment was started. This raises the question of the lower limits of such interventions. While a lowering of the age of cross-sex hormone treatment is not yet indicated, other medical interventions offer new possibilities. Recently we described a case of an FM who had attended the gender clinic at age 16 and had SRS at age 18 (Cohen-Kettenis and Van Goozen, 1998). At application and since the age of 13, she had already been in treatment by a pediatric endocrinologist with a luteinizing hormone-releasing hormone (LHRH) agonist, depot triptorelin. This substance binds so strongly to the pituitary that endogenous LHRH can no longer exert its effects. Consequently, the pituitary secretion of LH and follicle-stimulating hormone, and therefore the gonadal production of sex steroids, stops. As a result, when these hormones are administered before puberty, puberty will not occur. Given after the start of puberty, pubertal development will not proceed. An advantage of pubertal delay over cross-sex hormone treatment is that no irreversible steps are taken. Moreover, the therapist and the transsexual have time to explore any problems underlying the cross-gender identity or to clarify gender confusion. Thus far we have successfully used puberty-delaying hormones in a few additional cases. This “diagnostic aid” could become the next phase in the management of adolescent transsexualism.

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CHAPTER 3

Postoperative psychological functioning of adolescent transsexuals:

A Rorschach study

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Abstract

The Rorschach Comprehensive System was used to assess postoperative psychological functioning in transsexuals who applied for sex reassignment in adolescence. We investigated a group of 22 consecutive adolescent transsexuals, who were otherwise psychologically well adapted. Nineteen subjects provided valid Rorschach protocols before and after sex reassignment. The most notable change found was an increase in X+%, reflecting a decrease in *both* distorted perception and idiosyncratic perception. Little support was found for the idea of major psychological deterioration for the patients as a group. Rather, the results suggest stability in psychological functioning over time. The Rorschach findings are consistent with questionnaire data from earlier studies, with the exception that the Rorschach data may point to some improvement in reality testing.

Introduction

Although cross-gender identity has been reported as beginning at two years of age, medical treatment for it is never considered before puberty, as most children with a cross-gender identity will not become transsexuals later in life. In a few, however, the cross-gender feelings will remain or grow stronger after puberty (Smith et al., 2001; Zucker and Bradley, 1995). In increasing numbers, these adolescents attend gender identity clinics in order to obtain sex reassignment (SR) by means of hormonal and surgical treatment. Despite the early onset of the disorder, there is great reluctance among clinicians to start the actual SR procedure (i.e., hormone treatment) before the age of 18. Because adolescence is a phase of identity development, clinicians fear that already confused adolescents, due to experimenting with certain aspects of gender, such as gender role behavior, might erroneously conclude that they are transsexual. The risks of making the wrong diagnosis and postoperative regret are often considered to be too high. A more practical reason for unwillingness to start SR before 18 is that in many countries adolescents are still legally dependent on the consent of their parents when deciding upon medical treatment. Resistance from nonconsenting parents thus forms an additional complicating factor in the treatment process, while at the same time the clinician runs an increased risk of litigation.

Naturally, if treatment modes other than SR could alter extreme and lifelong cross-gender identities, clinicians should refrain from SR. But, as we have pointed out elsewhere, the literature does not permit us to draw such conclusions (Cohen-Kettenis and Kuiper, 1984). Understandable as the dilemma of conscientious professionals who want to prevent postoperative regret may be, refusing or delaying medical treatment is not always in the best interest of the patient. Adolescents who have been extremely cross-gendered from their earliest years may, especially around puberty, develop other problems such as depression or social anxiety as a consequence of their gender identity disorder (GID). In these cases, late treatment could have a negative impact in a variety of areas that are particularly important during adolescence (e.g., peer relationships, romantic involvements, or academic achievement, or all of these). This developmental arrest may in itself lead to additional, yet avoidable problems. Second, the physical changes of puberty (e.g., a low voice and beard growth in male-to-female transsexuals [MFs]) create lifelong traces of the biological sex when treatment is unduly postponed. Indeed, Ross and Need (1989) found that postoperative psychopathology was primarily associated with factors that made it difficult

for postoperative transsexuals to pass in their new gender or that continued to remind them of their transsexualism. Thus, early treatment may be able to prevent unnecessary negative emotional and psychological consequences. Third, on the basis of numerous follow-up studies, it can be concluded that, in adults, unfavorable postoperative outcome is related to a late start of the SR procedure rather than an early one (for a review, see Cohen-Kettenis and Gooren, 1999). Age at assessment also emerged as a factor differentiating two small groups of adult MFs with and without postoperative regrets (Lindemalm et al., 1987).

Since 1987, adolescents with GID have been diagnosed and treated at the gender clinic of the Department of Child and Adolescent Psychiatry, University Medical Center Utrecht (UMCU), in collaboration with the Gender Team of the Free University Medical Center (FUMC) in Amsterdam. The clinical procedure is based on the Standards of Care of the Harry Benjamin International Gender Dysphoria Association (Levine et al., 1998), a professional organization in the field of GIDs, and is described in detail in Cohen-Kettenis and van Goozen (1997).

In a carefully selected group of applicants, the often-assumed association between transsexualism and psychopathology has not been found (Cohen et al., 1997; Cohen-Kettenis and van Goozen, 1997; Smith et al., 2001). This significantly contributed to the decision to start hormone therapy between the ages of 16 and 18 in these adolescents. This happens in two phases: first, hormones with reversible effects (for MFs, antiandrogens to block further masculinization of the body; for female-to-male transsexuals [FMs], progestins to suppress menstruation); second, estrogens to feminize the MFs and androgens to masculinize the FMs. If applicants do not fulfill the rather strict treatment eligibility criteria, treatment is denied or postponed until adulthood.

Two studies were carried out to examine the effectiveness of SR for adolescent transsexuals. Cohen-Kettenis and van Goozen (1997) conducted an ex post facto study on postoperative functioning of the first 22 consecutive adolescent transsexual patients who had attended the gender clinic at the UMCU and who had undergone SR. They concluded that starting the SR procedure before adulthood resulted in favorable postoperative functioning, provided that careful diagnosis had taken place in a specialized gender team and that the criteria for starting the procedure early had been strict. To check the reliability of the findings, a prospective study was performed involving the next 20 consecutive

adolescents who had undergone SR and 27 adolescents whose application for SR had been rejected (Smith et al., 2001). Again, the results did not confirm the concern that psychological functioning would deteriorate after SR.

In both studies, psychological functioning was measured by means of well-known reliable and valid self-report personality questionnaires. As a group, the treated adolescent transsexuals did not show signs of severe psychopathology, neither before nor after treatment. Compared with Dutch normative groups, the mean follow-up scores of the patients in both studies were all within the average range. However, some clinicians, such as Lothstein (1984), criticize the use of self-report questionnaires with transsexuals. Lothstein argued that transsexuals suffer from borderline personality pathology and stated that the intact reality testing of individuals with such a pathology is only expected to become impaired in unstructured situations. So self-report questionnaires may be too structured to uncover this phenomenon. In addition, the possibility was mentioned that transsexuals intentionally try to "fake good" on self-report measures in order to be referred for SR (before treatment) or downplay negative outcomes as a psychological defense (after treatment).

Therefore, information was gathered on the psychological functioning of adolescent transsexual applicants for SR, making use of the Rorschach test. This instrument is thought to be less subject to influences of conscious steering in responding. Part of the collected data was used in a study to determine the extent to which psychopathology is necessarily associated with adolescent transsexualism (Cohen et al., 1997). Areas of psychological functioning associated with fundamental psychological disturbances were assessed by means of the Rorschach Comprehensive System (Exner, 1995). As a group, the adolescent transsexuals did not show the marked degree of psychopathology encountered in psychiatric groups on the variables investigated. The results supported the findings among adult transsexuals that major psychopathology is not associated with the development of transsexualism (Cole et al., 1997; Fleming et al., 1982; Mate-Kole et al., 1988; Pauly, 1981).

The aim of the present follow-up study is to examine the level of psychological functioning of adolescent transsexuals before and after SR treatment. Specifically, we aim to detect potential differences in psychological functioning, which might not become apparent with structured questionnaires. Therefore, a less structured instrument is employed: the Rorschach, following the procedure of the Comprehensive System (Exner, 1995). A design

involving random assignment to early versus late treatment or SR treatment versus non-SR treatment would be methodologically preferable over a design without a control group. However, as is repeatedly pointed out in follow-up studies among transsexuals, it is for ethical reasons not possible to create a late or nontreated control group. Moreover, chances are low that patients, after being informed about its purpose, would agree to participate in such a study.

Method

Subjects

Twenty-two patients who had participated in the Cohen et al. (1997) study and had received SR surgery were requested to participate in a follow-up study making use of the Rorschach test (about half of these patients had participated in the first questionnaire follow-up study and the remaining patients had participated in the second). Two patients refused participation. As one patient did not provide a protocol with 14 or more responses, valid re-test protocols were available for 19 patients.

The mean age of the 19 patients was 22.5 years (SD = 2.1, range, 18-27) at follow-up. Six patients were MFs and 13 were FMs. MFs and FMs did not differ significantly in terms of age.

Procedure

The Rorschach was administered to patients in accordance with the procedures for the Comprehensive System (Exner, 1995). Psychologists trained in the Comprehensive System administered the Rorschach protocols. These psychologists were not the clinicians who referred patients for hormone treatment.

Testing prior to SR was carried out as part of the standard procedure at the Department of Child and Adolescent Psychiatry at UMCU. Testing following SR was performed at FUMC in Amsterdam, where hormone treatment and surgery takes place.

The mean period of length between the pre-SR and post-SR testing sessions was 58.5 months (SD = 14.5, range, 40.5-87.2). Length of time between the two testing sessions was not significantly associated with gender, with age at time of first testing, nor with age at time of second testing.

The Ethics Committees of both the UMCU and the FUMC approved the study.

Statistical analyses

Univariate two-tailed paired *t* tests were used to determine if there were changes between pre- and posttreatment psychological functioning of the adolescent transsexuals. An independent second psychologist coded the post-SR protocols.

Results

Summary statistics for 69 Rorschach Comprehensive System variables were studied for differences between pre-SR and post-SR measurements. This was done for the full group of patients and for MFs and FMs separately (see Table 1).

Table 1: Pre-SR (*n* = 19) and post-SR (*n* = 19) means and *t* values for Rorschach variables

		Means			Paired	Two-tailed
Cluster	**Variable**	**Pre**	**Post**	**Difference**	***t* (18)**	***p***
Reliability						
	R	24.2	21.9	-2.3	0.97	
Control						
	EB					
	M	4.5	4.0	-0.5	0.92	
	WsumC	2.2	1.2	-1.0	2.60	.02
	EA	6.7	5.2	-1.5	2.45	.02
	eb					
	FM+m	3.9	3.6	-0.4	0.75	
	SumSh	3.5	3.0	-0.5	0.92	
	es	7.5	6.6	0.9	1.03	
	D-Score	-0.4	-0.4	0.0	0.00	
	Adj es	6.1	5.8	-0.5	0.72	
	Adj D	0.0	-0.2	-0.2	0.83	
	FM	2.6	2.8	0.2	0.51	
	m	1.3	0.7	-0.6	2.58	.02
	C′	1.4	0.6	-0.8	2.54	.02
	V	0.5	1.0	0.5	2.38	.03
	T	0.3	0.4	0.1	0.52	
	Y	1.4	1.1	-0.4	1.28	
Ideation						
	a:p					
	a	4.3	3.8	-0.5	0.80	
	p	4.3	3.7	-0.6	1.55	
	Ma:Mp					
	Ma	2.5	1.8	-0.7	1.41	
	Mp	2.2	2.2	0.1	0.12	
	Int.Ind.	1.3	1.7	0.4	1.00	
	M-	1.0	0.5	-0.5	1.69	
	Sum6	4.3	2.8	-1.5	1.37	
	Level-2	0.3	0.2	-0.1	0.37	
	WSum6	8.8	4.5	-4.4	1.75	.10
	Mnone	0.1	0.0	-0.1	1.00	

Cluster	Variable	Means			Paired	Two-tailed
		Pre	Post	Difference	*t* (18)	*p*
Mediation						
	P	6.0	5.7	-0.4	0.88	
	X+%	0.50	0.62	0.12	3.24	.005
	F+%	0.55	0.59	0.04	0.63	
	X-%	0.23	0.18	-0.06	1.77	.09
	S-%	0.25	0.22	-0.03	0.47	
	Xu%	0.25	0.19	-0.07	2.06	.05
Processing						
	Lambda	1.43	1.39	-0.04	0.18	
	Zf	12.8	10.9	-1.9	2.77	.01
	Zd	-0.1	-1.2	-1.1	1.09	
	DQ+	6.1	4.9	-1.2	1.54	
	Dqv	0.7	0.8	0.1	0.44	
	W	9.5	7.9	-1.5	2.38	.03
	D	11.3	10.4	-0.8	0.42	
	Dd	3.5	3.5	0.1	0.07	
Affect						
	FC:CF+C					
	FC	1.3	0.5	-0.8	3.17	.005
	CF+C	1.3	0.8	-0.4	1.29	
	Pure C	0.4	0.2	-0.2	1.17	
	Afr	0.56	0.59	0.0	0.43	
	S	3.4	3.0	-0.4	0.61	
	Blends	3.6	2.2	-1.4	2.52	.02
	CP	0.1	0.1	0.0	0.00	
Interpersonal						
	COP	1.5	1.1	-0.4	1.38	
	AG	0.7	0.4	-0.3	1.68	
	Food	0.3	0.2	-0.1	0.37	
	Isolate	0.21	0.17	-0.04	1.73	.10
	Pure H	3.4	2.3	-1.2	2.36	.03
	Other H	3.7	3.6	-0.1	0.23	
	(H)+(Hd)	2.0	2.3	-0.3	0.66	
	(A)+(Ad)	0.6	0.9	0.3	1.55	
Self-perception						
	Ego	0.44	0.41	0.03	0.57	
	Fr+rF	0.7	0.5	-0.2	0.83	
	FD	1.6	0.7	-0.9	2.69	.02
	An+Xy	0.4	0.8	0.4	1.91	.07
	MOR	1.3	0.7	-0.6	1.68	
Indices						
	L > 0.99	11	13	+2	0.81	
	X-% > 0.15	15	10	-5	1.76	.10
	Ego < 0.33	3	8	+5	2.04	.06
	Ego > 0.44	9	7	-2	0.70	
	SCZI > 3	3	0	-3	1.84	.08
	DEPI > 4	4	6	+2	0.81	
	CDI > 3	5	10	+5	2.04	.06
	S-Con > 7	0	0	0		
	HVI+	6	5	-1	0.33	

Note: Only two-tailed p values ≤ .10 have been listed. Mean values have been rounded off.
Intercoder agreement Kappas: 0.63 for Color Codes, 0.74 for FM, 0.48 for m, 0.81 for V, 0.78 for Conventional Form Quality (X+%), and 0.85 for Organizational Activity (Zf).

Differences between pre- and post-SR measurements with an associated univariate two-tailed at $p \leq .05$ were found for 13 variables. The univariate p of two of these variables was less than .01: form quality (X+%) was greater after SR than before and the frequency of form dominated color responses (FC) was less after SR than before.

For a description and interpretation of the significant variables, and of X-% (one of the main variables indicating distorted perception), following Exner's guidelines (Exner, 1995) for interpretation, see Appendix. For a more comprehensive description of all the variables and of the blots, see Exner (1995).

Discussion

We observed that there were significant differences for a little less than one fifth of the Rorschach variables between the pre-SR and post-SR measurements. The differences were not systematic in the sense that they were all in one direction or even within one domain of functioning. We found, for example, a decrease in frequency for a number of determinants (m, C', FC and FD) but a significant increase in another (V). The changes were within normal ranges for a number of variables. Thus, it is difficult to find a coherent interpretation for these differences.

There was a sharp increase in X+%. This can be seen as reflecting a greater amount of conventionality in processing. The increased X+% is attributable to a decrease in *both* distorted perception (X-%) and idiosyncratic perception (Xu%). In our earlier study of pre-SR adolescent transsexuals (Cohen et al., 1997), we found the adolescent transsexuals to have an X-% intermediate between a psychiatric adolescent and a student control group. In that study, it was the only finding consistent with the idea that adolescent transsexuals exhibit an underlying psychopathological disturbance. Therefore, it is interesting to note that as a group the patients in this study showed improvements and obtained X-% values nearly equal to those of the student controls in the earlier study. It may be that after SR there is a diminution in psychological conflict, resulting in less impingement on conventionality. Prior to SR, transsexuals experience a serious psychological discrepancy between their physical self and their feeling of a *real* self. Sex reassignment is sought as a means of resolving this discrepancy. If SR is successful, the discrepancy can be eliminated or reduced, lowering the possible strain and debilitating effect of the discrepancy on reality testing.

We found little or no support for the idea that there was major psychological deterioration for the patients as a group. By and large, the results suggest stability in psychological functioning over time and that there were some areas in which improvement was evident.

A number of limitations of the study need to be addressed. One limitation is formed by the size of the sample. For statistical purposes, the total number of subjects was small. However, the sample is based on a sizeable proportion of the total population of adolescent transsexuals requesting SR in the Netherlands and, until larger samples are available, we must make best use of the modest data available to us.

A second limitation concerns the possibility of selection bias in our sample. Firstly, adolescents who apply for SR have parents who are generally supportive of treatment (though they may be unhappy about their child's transsexualism). The adolescents in our sample may enjoy more favorable circumstances than adolescent transsexuals whose parents are not supportive of treatment. Secondly, adolescents with less extreme or more fluctuating cross-gender identities are more likely not to pursue SR this early in life. In any event, we do not have data on the number of adolescent transsexuals not applying for SR. We can therefore not claim that our patients are representative of all Dutch adolescent transsexuals. Our conclusions pertain to the population of psychologically well-functioning adolescent transsexuals that applies for SR before adulthood and completes SR in adulthood. (One of the selection criteria for early SR is psychological stability.)

A third limitation concerns experimenter bias due to the possibility that the psychologists administering and scoring the Rorschach were not blind to the potential problems of the individuals tested or perhaps even the study hypotheses. Care was taken to avoid additional bias in the coding process by having independent psychologists, who were not familiar with the patients or their condition, carry out a second coding procedure of the post-SR protocols.

A fourth limitation is the absence of a treatment control group. Ideally, a different research design in which eligible SR applicants would be randomly assigned to either a treatment group or a nontreatment control group would have been methodologically more desirable. As we pointed out earlier, such a study is for ethical and practical reasons impossible to conduct.

In their questionnaire study, Cohen-Kettenis and van Goozen (1997) found a few differences between pre- and post-SR adolescent transsexuals. On the short version of the MMPI (NVM) (Luteyn et al., 1980) and the Dutch Personality Inventory (NPV) (Luteyn et al., 1985), an increase was observed in the Extroversion, Dominance, and Self-esteem subscales and a decrease in the Inadequacy subscale. Pre- and post-SR mean scores were all within average ranges of Dutch norms. This result was confirmed in the second questionnaire study (Smith et al., 2001). Our Rorschach findings are therefore consistent with the questionnaire investigations with regard to the stability of psychological functioning throughout the SR treatment period, with the exception that the Rorschach data may point to some improvement in perceptual accuracy, indicating enhanced reality testing. The fear that the adolescents' psychological functioning will deteriorate as a consequence of an early start of the SR procedure is not substantiated by the Rorschach findings. If anything, their functioning changes in a more healthy direction.

Many applicants for SR are not good candidates for SR and probably will never be. In some, SR is sought as a solution for nongender problems. Careful diagnostic procedures are used to keep "questionable" SR applicants from receiving SR. When adverse factors are present in the psychological profile of an adolescent applicant, it is probably prudent to maintain a conservative policy of delaying the start of hormone treatment until adulthood.

Appendix

Description and interpretation of the significant variables

WsumC: the weighted sum of all color responses (each FC [Form Color] = 0.5; each CF [Color Form] = 1.0; each C [Color] = 1.5). This index variable is seen as an indication of the amount of emotional energy that is used when the subject responds to the environment.

EA: experienced actual (the sum of M and WsumC) is regarded as an indication of the resources available to the individual in guiding behavior. (M: human movement responses are coded for responses involving the kinesthetic activity of a human, or of an animal or fictitional character in human-like activity.)

m: inanimate movement responses refer to the amount of the currently experienced anxiety as expressed in thoughts that are not in the subject's center of attention.

C': achromatic color responses are responses in which the percept is referred to as being either black, white or gray. The amount of C' in the protocol is seen as an indication of the amount of suppression of emotion.

V: vista responses are coded for responses in which there is a perception of three dimensionality based on shading characteristics of the blot. The presence of vista responses is considered to suggest the presence of painful experience in the perception of self.

X+%: the percentage of responses that are conventional (and adequate). A response is considered conventional when it is offered to a particular area of the blot by at least 2% of the population.

X-%: the percentage of responses showing poor correspondence between the verbalized percept and the contours of the blot. The presence of more than a few of such responses is considered as distorted perception.

Xu%: the percentage of unusual responses (form adequate but not conventional). These are responses, which are immediately recognized as adequate, but relatively rarely offered in the population.

Zf: the frequency of responses exhibiting organizational activity. This frequency provides important information concerning the extent to which the subject has organized the stimulus field and whether that effort has been efficient. This frequency is regarded as an indication of the amount of cognitive effort exercised to organize the environment.

W: whole responses are a specific form of organizational activity and are regarded as the number of responses involving the entire blot.

FC: form color responses are form-dominated responses in which color is integrated.

Blends responses are those having more than one determinant (e.g.,: color *and* movement). The number of Blends responses in a protocol is seen as an indication of emotional complexity.

Pure H is coded for responses involving full human percepts (seeing a total person as opposed to for example only a head or a hand). Presence of Pure H responses is regarded as, among other things, interpersonal maturity.

FD: form dimension is coded for responses involving three-dimensionality *not* based on shading in the blot. The presence of FD responses is considered as the use of introspection.

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CHAPTER 4

Pre- and postoperative functioning of transsexual subtypes

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Under reference process

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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CHAPTER 5

Predictors of the course and outcomes of sex reassignment:

A prospective study

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Abstract

Objective: The present prospective study was conducted for three purposes. First, to investigate which of the factors, that are frequently put forward as risk factors for treatment, actually determine whether clinicians consider applicants to be eligible for sex reassignment. Second, to identify which factors predict the course of treatment (duration of the second phase and dropping out of hormone treatment). Finally, to examine which factors predict postoperative functioning. **Method:** Participants were 345 consecutive applicants (233 biological men, 112 biological women) for sex reassignment at the Free University Medical Center in Amsterdam, the largest treatment center for transsexuals in the Netherlands, or at University Medical Center Utrecht. Of these applicants, 232 started hormone treatment, 113 did not. From the group that had started hormone treatment, 36 transsexuals had dropped out of treatment at the time the data collection ended. The group who completed the entire sex reassignment procedure consisted of 196 transsexuals. Of this group 110 went trough the second phase (real-life experience plus hormone treatment) "on time", that is, timely according to the protocol. Another 86 took longer before they underwent surgery. At follow-up 158 transsexuals were interviewed. The pretreatment questionnaires were completed shortly after the subjects had applied for sex reassignment. Age, biological sex, sexual orientation, age at onset of gender dysphoria, GID symptoms in childhood, intensity of gender dysphoria, social support, (dis)satisfaction with sex characteristics, physical appearance, and psychological functioning, all measured at application, were chosen as potential predictors of treatment eligibility, course of treatment and outcomes of sex reassignment. The first two purposes of the study were investigated by means of logistic regression analyses, the third by means of multiple linear regression analyses. **Results:** We found that eligibility for sex reassignment was largely based upon the factors gender dysphoria, psychological stability, and physical appearance. A combination of the factors male biological sex, more psychopathology and more cross-gender symptoms in childhood, yet less reported gender dysphoria at application, increased the probability to drop out of treatment before surgery had taken place. Transsexuals who had started hormone treatment were more likely to complete the second phase "on time", if they were biological males with relatively low negativism scores. Finally, applicants with a *non*homosexual orientation, combined with the presence of psychopathology and dissatisfaction with secondary sex characteristics at assessment, were more likely to function poorer postoperatively, and express more dissatisfaction about the results or consequences of sex reassignment in their lives. **Conclusions:** Some of the potential risk factors for poor outcomes of sex reassignment from the literature or from retrospective studies indeed appeared to be important for predicting the course and outcomes of treatment. Psychological functioning, inconsistencies in reported gender dysphoria, physical appearance, and a *non*homosexual preference deserve particular attention when eligibility for treatment is assessed. However, the data, though unprecedented and valuable because of their prospective nature, do not allow us to draw conclusions about absolute contraindications.

Introduction

Sex reassignment (SR) has been found to be an effective method to treat the most extreme end of the spectrum of gender identity disorders, often referred to as transsexualism. Early reviews report satisfactory postoperative results in 71.4% of male-to-female transsexuals (MFs) and 89.5% of female-to-male transsexuals (FMs) (Lundström et al., 1984; Money and Ehrhardt, 1970; Pauly, 1968, 1981). In a more recent review, the numbers are 87% and 97%, respectively (Green and Fleming, 1990). In this light, it is important to consider the cases in which SR has not been particularly successful. Given the invasiveness and the irreversibility of SR, it is imperative to try to prevent postoperative regret in every single patient. In spite of strict prior selection and counseling during treatment, an estimated one to two percent of those treated express regrets about SR. An estimation is needed her, since few systematic studies specifically addressing negative outcomes of SR have been conducted (Kuiper and Cohen-Kettenis, 1998; Pfäfflin, 1992). Even less is known about the factors predicting postoperative functioning in transsexuals that do not express regrets after treatment. The present study, with a prospective design, was conducted to investigate which factors predict applicants to be eligible for SR, on the one hand, and which factors predict the course of treatment and postoperative functioning, on the other hand. Some elaboration of these issues is in place.

The decision to refer an applicant to enter the SR procedure (including hormone treatment, surgery, and legal changes) requires professionals to take several matters into account. First, a diagnosis should be made. Before 1994, the diagnosis of transsexualism was needed (but not sufficient), according to the criteria of the then applied Diagnostic and Statistical Manual of Mental Disorders, Third Edition - Revised (DSM-III-R, American Psychiatric Association, APA, 1987). In order to be eligible for SR treatment, potential risk factors were also taken into account. In 1994, in the most recent version of this widely used psychiatric classification system, the DSM-IV (APA, 1995), the term transsexualism has been abandoned. Instead, the DSM-IV (APA, 1995) employs the term Gender Identity Disorder (GID), encompassing transsexualism as well as other severe GIDs. The diagnosis GID is consequently more extensive than the diagnosis of transsexualism. In addition to the already mentioned estimation of risk factors, clinicians now need to decide that the applicant suffers from a sufficiently extreme form of GID to consider a person eligible for treatment. This implies determining the position an applicant may take on several dimensions, such as past and present cross-gender behavior, past and current gender identification, intensity and duration of gender dysphoria, or preoccupation with (various aspects of) surgery. Only when they consider applicants sufficiently cross-gendered and/or gender dysphoric on all relevant dimensions, will clinicians probably make the diagnosis of an extreme GID. However, applicants vary considerably with respect to their position on these dimensions and their gender dysphoria may be more or less interwoven with other problems (Diamond, 1996). In weighing and combining all relevant information, clinicians cannot make use of formal algorithms, but have to rely on their experience and knowledge of the literature. The less certain clinicians are about the decisions they have to make, the more likely they will be influenced by additional risk factors when recommending hormone treatment. (The decision to recommend surgery will be made only after patients have fulfilled a lengthy period of cross-gender living, supported by hormone treatment, and is not addressed here). For example, when clinicians are not completely convinced about the intensity of a male applicant's gender dysphoria, they will probably be more inclined to recommend hormone treatment when the applicant is a young, stable functioning and feminine looking man, with a long history of cross-gender feelings, than when he is old, emotionally disturbed, masculine appearing, and has developed cross-gender feelings only since adulthood. After all, an incorrect estimation of possible risk factors could lead to disastrous results, such as postoperative regret to the point of a second SR request. It would be preferable if far-reaching decisions, such as referring someone to start the SR procedure, could be based on solid prospective studies, as they could provide the much-needed information on the kind and importance of selection criteria. However, as mentioned before, such studies hardly exist.

The above led us to particularly investigate which factors, that are known or assessed by diagnosticians before treatment is started, contribute to the clinician's decision whether or not to refer applicants for the SR procedure (beginning with hormone treatment). In the Standards of Care (SOC) of the Harry Benjamin International Gender Dysphoria Association (Meyer et al., 2001), an international professional organization in the field of transsexualism, requirements for allowing applicants to start the SR procedure are formulated. Gender teams in many countries follow these standards (Petersen and Dickey, 1995). However, the SOC do not describe potential risk factors of poor postoperative functioning, while insight in these factors is precisely what is needed for proper

assessment of the eligibility criteria. It is likely that most clinicians follow their clinical experience and -hopefully- their knowledge of the scarce studies on potential risk factors. We summarize the main findings of these studies.

In an extensive review of more than 70 follow-up studies published between 1961 and 1991, Pfäfflin and Junge (1998) found 18 cases of MFs and five FMs who, after undergoing SR, returned to their original gender role. This review comprised approximately 2000 transsexuals. An exact total number of transsexuals, and therefore percentages of regretful persons, cannot be given because some researchers referred to partially overlapping groups of patients. Only a few follow-up studies included sufficient individuals with postoperative regret to allow for comparisons between "successful" and truly "unsuccessful" cases. Also, many researchers gathered their pretreatment data on a post hoc basis. From some follow-up studies, factors that are potentially predictive of postoperative regrets emerged. Wålinder et al. (1978) compared a group of five MFs having postoperative regrets with a group of nine MFs who expressed no regrets. They found that the regretful group differed from the nonregretful group on the following characteristics: a more masculine appearing physical status, more criminal activities, more sexual contact with women, and less social support. Blanchard et al. (1989c) compared percentages of regretful patients in a homo- and heterosexual transsexual group. The terms homo- or hetero-sexuality referred to the patients' pre-operative sexual situation. None of the 97 homosexual FMs and MFs showed any regrets, whereas four of the 14 (28.6%) heterosexual MFs consciously regretted the decision to undergo SR. The regretful and nonregretful heterosexual transsexuals did not differ significantly in any other respect. According to the authors, this might have been the result of the low power of the between-groups comparisons with such small sample sizes. Lindemalm et al. (1987) compared, postoperatively, four MFs with regrets with nine MFs without regrets. A large number of different factors were investigated. They concluded that four out of 35 (!) factors seemed to be associated with postoperative regret. These unfavorable factors were a high age at first request of SR (after age 30), traumatic separation from parents before age six, completed military service, and having done heavy physical labor. However, since both groups were very small, the number of tests high, and some of the *p* values of the unfavorable factors were > .05 (but < .10), it is not clear how much of the results should be attributed to chance. In three different studies late onset gender dysphoria was assumed

to be a risk factor (Blanchard, 1985; Lothstein, 1982; Pfäfflin, 1992), certainly if there are plausible psychological explanations for the emerging gender dysphoria. Pfäfflin (1992) examined two samples in one study to identify and compare factors that had contributed to postoperative regrets. One sample included all the studies from the review published in 1992 in German (Pfäfflin and Junge). They had inferred that poor differential diagnosis, failure to accomplish the real-life experience, and poor surgical results, were the main reasons for regrets reported in the literature. The other sample consisted of Pfäfflin's (1992) own clinical data on 295 subjects who had completed SR, of which three cases reported postoperative regrets. He concluded that for them, personality traits and lack of professional guidance during treatment were the most decisive factors that had contributed to regret. Kuiper and Cohen-Kettenis (1998) reported on 10 transsexuals (9 MFs and 1 FM) in the Netherlands who regretted their SR. They concluded that caution in the treatment of gender dysphoric individuals is needed when a combination of the following risk factors is presented: late onset of the gender conflict, fetishistic cross-dressing, psychological instability and/or social isolation. Since the sample was small and perhaps selective, conclusions from this study should be drawn carefully also. Landén et al. (1998) investigated factors predictive of regret in SR. A retrospective cohort study design was used, in which they compared a nonregretful (n = 205) with a regretful group (9 MFs and 4 FMs). They found that two factors predicted regret of SR, namely lack of support from the patient's family, and the patient belonging to the non-core group of transsexuals. Again, the group of regretful cases was small, and consequently the results need to be interpreted with caution.

In a number of studies, factors were identified within a group of postoperative transsexuals that were associated with relatively good or poor postoperative functioning. In these studies, good or poor functioning was defined in diverse ways and no patients with postoperative regret were included. Ross and Need (1989) investigated surgical factors influencing postoperative adjustment in 14 postoperative MFs. They found that the extent of breast scarring and remaining erectile tissue were strongly negatively related to postoperative psychological adjustment. Lundström et al. (1984) drew a similar conclusion in their review of 29 follow-up studies. Moreover, they also considered a relatively high age at assessment and "secondary transsexualism" (i.e., transvestites and effeminate homosexuals) to be a risk factor for poor outcome. Spengler (1980) concluded from a follow-up study among 19 transsexuals that inadequate social functioning, loss of work and family,

a noncooperative attitude toward the clinicians, enduring resistance against transsexual feelings, auto mutilation, and suicidal attempts were unfavorable factors.

To summarize, many possible factors that influence the result of SR negatively (in terms of regret or poor postoperative functioning) are mentioned throughout the literature. They tend to lie in the area of psychological functioning, sexual orientation, age at assessment, social support, family background and family support, professional support during the treatment process, and surgical outcomes. These factors are repeatedly put forward as relevant for treatment success. However, there is little supporting evidence and the quality of the few existing studies thus far is rather poor. Furthermore, only some of the mentioned factors are known before the decision to start SR is made. Others (for example loss of work) are not.

Therefore, the first aim of the present prospective study was to determine on which factors clinicians actually based their decision to refer applicants for the SR procedure. The factors investigated in this study, all measured at application, were age, biological sex, sexual orientation, age at onset of gender dysphoria, GID symptoms in childhood, intensity of gender dysphoria, social support, (dis)satisfaction with sex characteristics, physical appearance, and psychological functioning. We were primarily interested in factors that could have been known to clinicians before the decision to refer for SR was taken. We therefore did not focus on influencing factors that operate during or after treatment (such as loss of family, or poor surgical outcomes).

The second aim of this study was to investigate which factors could predict the course of the SR procedure. With respect to course, we first studied which factors predicted transsexuals, who had started hormone treatment, to drop out of treatment. Then, we examined which factors predicted patients to complete the entire procedure slowly or timely, according to the timetable of the protocol.

The third aim of the study was to explore which of the factors, measured at assessment, could predict the level of postoperative functioning and treatment satisfaction.

Method

Subjects

A group of 345 consecutive patients applied for SR at the Department of Internal Medicine at the Free University Medical Center in Amsterdam (FUMC) or at University Medical Center Utrecht (UMCU). The FUMC has the largest treatment center for transsexuals in the Netherlands. More than 95% of the Dutch transsexuals who undergo SR are treated here. These applicants may be considered fairly representative of all Dutch applicants. Clinicians with a vast experience in the field of transsexualism diagnosed all of the participants. Due to missing (incomplete) or unreliable data, pretest data were gathered from 325 patients. For an overview of the various sample sizes, including number of applicants, missing values, and patients included in the study, see Table 1.

Of these applicants, 232 started (cross) hormone treatment: they will be called the "starter" group. Pretest data were obtained from 146 MFs and 76 FMs. Not all of these patients who had started hormone treatment, completed SR within the period that the data of this study were collected. A group of 30 MFs and 6 FMs either stopped hormone treatment, or discontinued showing up at appointments: the "drop-out" group. The group who completed SR consisted of 196 patients: the "completer" group. Pretest data of this group were gathered from 117 MFs and 71 FMs. Members of the "completer" group consisted of transsexuals who had completed the SR procedure either timely: the "on time" group (n = 110), or rather slowly: the "slow" group (n = 86). The MFs of the "on time" group completed the second phase (i.e., cross-sex hormone treatment [estrogens for MFs, androgens for FMs], combined with the RLE, until surgery) in 21 months or less; the FMs in 15 months or less. MFs of the "slow" group completed this procedure in more than 21 months, and the FMs more than 15 months. According to the FUMC protocol in the period that the data for this study were gathered, the minimum required duration of hormone treatment before surgery was 18 months for MFs and 12 months for FMs. In the event that hormone treatment passed the required duration beyond the subject's control (e.g., because of waiting lists or practical scheduling possibilities for appointments), we chose to be precautious in assigning subjects to one or the other group. Therefore, an additional three months were added to each of these periods, defining 21 months or less for MFs as a completion of this phase as timely, and more than 21 months as slowly. For FMs the cut off for a timely or slowly completion was at 15 months or less, and more than 15 months, respectively.

The group of applicants who did not start hormone treatment in the first place consisted of 113 patients: the "no-starter" group. Pretest data of this group were obtained from 74 MFs and 29 FMs and varied from 89 to 103.

At follow-up, some of the participants had moved abroad, while others were not traceable, which resulted in a sample of 158 (94 MFs and 64 FMs) subjects, who could be interviewed. Data available at follow-up varied from 136 to 158, due to the fact that not all participants were willing to spend their time on both an interview and filling out questionnaires.

Table 1: Sample Sizes

	All applicants	No-starters	Starters	Drop-outs	Completers	On time completers	Slow completers	Follow-up interview
MFs	220	74	146	29	117	84	33	94
FMs	105	29	76	5	71	24	47	64
Included	325	103	222	34	188	108	80	158
Missing	20	10	10	2	8	2	6	30
Applied	345	113	232	36	196	110	86	188

Procedure

In the diagnostic interviews attention was given to the patients' general and gender development, gender dysphoric feelings, cross-dressing, psychiatric history and current psychological and social functioning. In addition, expectations with regard to the outcomes of SR were explored, and applicants were confronted with possible adversities during and after treatment (e.g., disappointing surgical results or social intolerance). The sessions were not only used to gather and provide information, but also to gain an impression of the applicants' problem-solving abilities, interpersonal functioning, reality testing, as well as potential fluctuations in their gender role behavior.

The patients usually filled out the research questionnaires after the first interview and handed them over to a research coordinator. Clinicians filled out a form when an applicant no longer pursued SR or was rejected for SR. This form was also passed on to the research coordinator.

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. Each session took two to three hours. In order to avoid socially desirable responses the subjects were seen by 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 the time of assessment. The BVT contains 211 items on background variables, such as age, education, occupation, questions on gender development, on past and present cross-gender feelings and behavior, on sexuality and partnership, social relationships, family background etc. For purposes of this study, the following items were used: biological sex (1 item), age at application (1 item), age of first signs of cross-gender feelings (1 item), GID symptoms in childhood (11 items, see GIDICS below), and sexual orientation (1 item). Concerning this last item, subjects who exclusively reported a homosexual preference (MFs feeling sexually attracted to biological males; FMs to females) were included in the homosexual group, whereas subjects who reported an asexual, heterosexual, and/or bisexual preference, were included in the *non*homosexual group.

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. Each response to the 11 items 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. Scores range from 12 to 60, with higher scores indicating more gender dysphoria (for psychometric data: see Cohen-Kettenis and van Goozen, 1997).

Social Support

The Social Support Scale (SSS) is a 10-item scale with questions on eight persons, who are closest to the participant (Van Tilburg, 1988). The scalability of this instrument was calculated by means of a Mokken analysis (Molenaar, 1982). The scalability coefficient H, calculated for all close relationships together, was .38. Sum scores range from 0 to 160, with higher scores meaning more experienced social support from significant others.

Body Dissatisfaction

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

Physical Appearance

The 14-item Appraisal of Appearance Inventory (AAI) reflects the judgement of observers as opposed to being a self-report scale. The AAI concerns the observed masculinity/femininity of several bodily characteristics (e.g., facial hair or chin) of the subject. To assess the applicant's physical possibilities to pass as a male or female, we combined the appraisal of three observers: the diagnostician, a nurse of the gender team, and the researcher. The three independent observers rated their subjective appraisal of the appearance of 14 bodily characteristics of the subject on a 5-point scale of masculinity/femininity. Scores range from 14 to 70, with higher scores representing an appearance that is more incompatible with the new gender (for MFs a more masculine appearance, for FMs a more feminine appearance). Intraclass correlation coefficients between the three observers for each of the 14 items ranged from .68 to .79.

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 scales and less psychological dysfunction on the scale 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. As we had no specific hypotheses about concepts as measured by the eight subscales of this test, only the sum score, Psychoneuroticism, was used. This score measures the concept of Psychoneuroticism as-a-state or psychological instability. The scores range from 90 to 450, with higher scores indicating more psychological instability.

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

Postoperative Functioning Scale

The following three instruments were used to construct a scale measuring postoperative functioning and (dis)satisfaction with the treatment at follow-up.

Treatment Satisfaction. Treated transsexuals completed a 21-item semistructured interview about treatment outcomes, experiences during and after SR, treatment evaluation, and feelings of regret (Doorn et al., 1996).

Social and Sexual Functioning. In a 46-item semistructured interview, questions were asked about the transsexuals' current social and sexual life (Doorn et al., 1996).

Public Confrontation Questionnaire. A 20-item questionnaire assessed reactions of the social environment and was used to evaluate the transsexuals' experiences of being able to pass in the new social role (Doorn et al., 1996).

The Postoperative Functioning Scale (PFS) was developed from these three instruments. The scale consisted of 21 items (Cronbach's alpha .87) and was used to assess the transsexuals' level of postoperative functioning. The majority of the items were from the Treatment Satisfaction interview (12); four items were from the Social and Sexual Functioning questionnaire; and five items from the Public Confrontation Questionnaire. Items of the scale concerned satisfaction of the subject with his or her general and social functioning, gender role appearance and behavior, social support and acceptance from others, about having undergone SR, and feelings of regret (for items of the scale, see Appendix). Higher scores on the scale indicate a more poorly level of postoperative functioning and more dissatisfaction with the treatment.

Statistical Analyses

To determine which factors predict referral for SR and the course of the SR procedure, the following logistic regression analyses were performed. First, we identified which of the assessment factors could contribute in predicting applicants to be eligible for hormone treatment or not. In this logistic regression analysis the criterion variable (0-1) was group membership (the "no-starter" versus the "starter" group). Another logistic regression analysis was performed to investigate which of the assessment factors could predict whether transsexuals who had started hormone treatment, would drop out of treatment or not. Here, the criterion variable consisted of the "completer" group and the "drop-out" group. A final logistic regression analysis was performed to examine which factors could identify whether transsexuals who had completed SR would go through the SR procedure "slowly" or "timely" (criterion variable).

Thus, in all three logistic regression analyses the latter group was designated as the one to be predicted by the factors entered into the equation. Since we had no hypotheses about which of the risk factors would actually (better) predict group membership, we performed all three logistic regression analyses with a stepwise procedure first, including all 17 assessment factors: age, biological sex, sexual orientation, age at onset of gender dysphoria, GID symptoms in childhood, intensity of gender dysphoria, social support, (dis)satisfaction with sex characteristics (3 scales), physical appearance, and psychological functioning (2 tests: 1 and 5 scales). To predict as accurately as possible, as many patients as possible were utilized and a second (simultaneous) logistic regression analysis was executed after each of the three first (stepwise) logistic regression analyses, using only the selected factors from the first one that were found to be significant. When the sample sizes were not equally large, the cut value was reset (see Results) at a value that created the highest sensitivity (% correctly classified of the predicted group) as well as the highest specificity (% correctly classified of the other group).

Investigation of which assessment factors predicted relatively good or poor postoperative functioning was analyzed by means of a multiple linear regression analysis. Prediction of postoperative functioning was analyzed with the follow-up data from the sample of transsexuals who had completed SR. The level of postoperative functioning and treatment satisfaction was measured with the PFS. The follow-up data of the "completer" group were used in the analyses from which the PFS was developed. The PFS was

entered in the regression analysis as the dependent variable. Five of the 17 factors measured at pretest were relatively independent (correlations < .35) from the other factors, and were therefore included in the regression model as the predictor variables. Only Psychoneuroticism and the NVM scale Psychopathology correlated .50 with each other. Since we expected scores on both scales to be related to postoperative functioning, we executed a stepwise multiple regression analysis to find out which of the two would be selected into the regression equation. The other five predictor variables were: sex, sexual orientation, physical appearance, satisfaction with secondary sex characteristics, and the Extroversion scale of the NVM. All patients with missing values on any of the variables were deleted listwise. As with the logistic regression analyses, a second (simultaneous) multiple linear regression analysis was executed, using only the significant predictors that were selected in the first (stepwise) analysis, in order to predict as accurately as possible.

Results

Eligibility Criteria

First, we analyzed which factors determined whether applicants were allowed to start the SR procedure or not. We found that eligibility for SR was largely based upon the factors gender dysphoria, psychoneuroticism, and physical appearance (see Table 2). For the precise weight of each predictor variable and the constant in this equation model, see Table 2. A stronger sense of gender dysphoria (higher scores), more psychological stability (lower scores on Psychoneuroticism), and a feminine look for MFs and a masculine look for FMs (lower scores on physical appearance), increased the probability that the clinician referred the applicant to start hormone treatment.

With these three predictor variables in the equation 78% of all the applicants in this study could be correctly assigned to the "no-starter" (52%) or the "starter" (88%) group (cut value: .63).

Prediction of the Course of Treatment

Prediction of Drop-outs

With a second set of logistic regression analyses we found that the following assessment factors could be used to predict whether transsexuals who had started hormone treatment, would drop out of treatment or not. The probability that a transsexual will discontinue

hormone treatment, can be calculated from his or her biological sex, GID symptoms in childhood, psychopathology and gender dysphoria scores (see Table 2). A negative coefficient contributes negatively to the probability of being a drop-out. The relatively high value on biological sex reflects female biological sex. Thus, the combination of being a biological male, with higher scores on psychopathology and on GID symptoms in childhood, yet less symptoms of gender dysphoria at assessment, increases the likelihood that a transsexual will drop out of hormone treatment.

These four predictor variables in the equation correctly predicted 68% of all the transsexuals referred for hormone treatment to be members of the "completer" (68%) or the "drop-out" (69%) group (cut value: .15).

Table 2: B-coefficients and constants of the factors predicting group membership

Predictor variables		**Starter group**		**Drop-out group**		**On time group**	
		B	*p* value	B	*p* value	B	*p* value
BVT:	Biological sex Sexual orientation Age onset gender dysphoria Age at application			-1.82	.006	-1.61	< .001
GIDICS:	GID symptoms childhood			0.18	.026		
UGS:	Gender dysphoria	0.08	< .001	-0.05	.030		
SSS:	Social support						
BIS:	Primary sex characteristics Secondary sex characteristics Neutral sex characteristics						
AAI:	Physical appearance	- 0.05	.003				
SCL-90:	Psychoneuroticism	- 0.01	< .001				
NVM:	Negativism Somatization Shyness Psychopathology Extroversion			0.12	.024	-0.05	.018
Constant		1.00	.442	- 0.04	.972	2.13	< .001

Prediction of Duration of the Second Diagnostic Phase

With a final set of logistic regression analyses, we identified which assessment factors could distinguish between transsexuals who had completed SR slowly or timely. A prediction of an applicant who has started hormone treatment, to complete SR "on time", can be based upon the assessment factors biological sex and negativism (see Table 2). Being a MF, with less reported negativism (lower scores), will increase the likelihood that an applicant will complete SR timely rather than slowly.

With these two predictor variables in the equation, the model correctly classified 71% of the transsexuals that had completed treatment as members of the "slow" (60%) or "on time" (79%) group (cut value: .50).

Prediction of Postoperative Functioning

The third aim of the study was to investigate which assessment factors could predict relatively good or poor postoperative functioning. We found that the level of postoperative functioning could be predicted on the basis of the patient's sexual orientation, psychological stability, and the extent of his or her dissatisfaction with secondary sex characteristics.

The beta weights (in the column Beta in Table 3) show the relative importance of the independent variables contributing to the predictability of the level of postoperative functioning. The probability of the level of functioning of an applicant after SR can be predicted with this equation model (R^2 = .17). The level of postoperative functioning is measured with the applicants' score on the PFS. Since higher scores on this scale indicate poorer postoperative functioning and more dissatisfaction, the predicted score of an applicant on the PFS (at follow-up) will increase when this individual has a *non*homosexual orientation, high psychopathology scores and much dissatisfaction with secondary sex characteristics at assessment. In conclusion, the higher the predicted value, the poorer the level of postoperative functioning and the more dissatisfaction with SR will be likely.

Table 3: Factors predicting postoperative functioning

Model	**B**	**Beta**	***p* value**
Sexual orientation	-3.70	-0.24	.002
Psychopathology	0.43	0.17	.028
Dissatisfaction secondary sex characteristics	0.31	0.28	< .001
Constant	16.80		< .001

Discussion

The first aim of the study was to investigate which combination of factors would influence the clinician's decision to recommend hormone treatment. It was expected that some of these factors pertain to the diagnosis of an extreme form of GID and others to potential risk factors. As it appeared, eligibility for SR was largely based upon a combination of the factors gender dysphoria, psychoneuroticism, and physical appearance. Clinicians assessed applicants to be eligible for hormone treatment, mainly when applicants were found to be more intensely gender dysphoric, more psychologically stable, and when the physical appearance was considered to better match the applicant's new gender role. Because of its inherence to the phenomenon of transsexualism, it is not surprising that strong gender dysphoria appeared to be one of the main factors predicting applicants to be referred for SR. As an unfavorable physical appearance had been identified as a potential risk factor for postoperative regret (Wålinder et al., 1978), it is interesting to observe that the clinicians involved took, consciously or not, this factor into account when deciding upon recommendation for treatment. Psychological instability had also been found to be a risk factor for poor outcome (Kuiper and Cohen-Kettenis, 1998). Apparently, clinicians greatly value the level of psychological functioning of the applicant at the time of assessment. In addition to what professionals know from the literature, they probably have also experienced that the presence of psychological instability may complicate the treatment process. In sum, applicants are most likely to be referred for SR when clinicians assess a combination of strong gender dysphoria, psychological stability, and a favorable physical appearance.

We do not, however, completely dismiss the factors that were not found to predict referral for treatment as unimportant. The three factors combined predicted 88% of the "starter" group. So clinicians must have had other reasons to refer the remaining 12% for hormone treatment. Most likely, in some applicants the intensity and quality of their gender dysphoria, and consequently their diagnosis, was completely decisive for the clinician when eligibility for SR was assessed. In addition, it is conceivable that clinicians appraised risk factors as less harmful, in view of the presence of certain protective factors, such as a strong and reliable support system and/or adequate coping skills of the applicant. Finally, some clinicians might have appraised entirely different factors than the ones found in this study as significant for SR eligibility.

Prediction of the course of treatment was the second aim of the study. One aspect of this aim pertained to investigating which factors predicted whether transsexuals who had started hormone treatment, would drop out of treatment or not. We found that transsexuals who are referred for hormone treatment are more at risk to discontinue prematurely when they are biological men, show more psychopathology, more GID symptoms in childhood, yet less symptoms of gender dysphoria. The greater vulnerability of MFs to drop out of treatment, compared to FMs, is understandable in light of the studies that showed that postoperatively, FMs fare in many respects better than MFs (Kockott and Fahrner, 1988; Kuiper, 1991; Kuiper and Cohen-Kettenis, 1988; Pfäfflin and Junge, 1998; Verschoor and Poortinga, 1988). However, the combination of the four factors is needed to arrive at any kind of prediction. The inconsistency in reporting past and present cross-gender behavior or gender dysphoria deserves particular attention when eligibility is assessed.

Unfortunately, our data did not permit us to distinguish between the impact of psychopathology itself, on the one hand, and of interactive effects of psychopathology with additional external forces, on the other, on the course of treatment. The purpose of this study was not aimed at investigating factors affecting the applicant during treatment. Consequently, we cannot rule out the possibility that it is not psychopathology per se that increases the probability to drop out of treatment, but rather a combination of psychological vulnerability and personal circumstances. The probability to drop out of hormone treatment could be different for two persons with similar psychological anxiety. This difference could be generated by personal circumstances, such as unexpected adversities or lack of social support. Indeed, clinicians do come across individuals that are hesitant about their decision because of unexpected adversities from the environment (e.g., losing custody of their children). One should also bear in mind that the drop-outs of this study stopped hormone treatment during the data collection phase. It is quite possible that, later in their lives, they will reapply, but this remains to be investigated.

At first sight, our finding of an association between having more GID symptoms in childhood and dropping out of treatment is somewhat puzzling. It is in contrast with the literature on risk factors for treatment and counterintuitive in the eyes of experienced clinicians that more GID symptoms in childhood increase the probability of a transsexual to drop out of treatment. However, it appears to be that here, again, we have to review the

combination of findings. In particular, the combination of reporting more GID symptoms in childhood, but less gender dysphoria at assessment should alert the clinician. This inconsistency in reporting cross-gender symptoms may represent either a confusion of the applicant about their development, an (unconscious) exaggeration of the history because current feelings are not clear-cut, or a conscious effort to mislead the clinician. Although with these four factors only 69% of the "drop-out" group could be predicted, applicants presenting with this combination of factors require an adjusted diagnostic procedure.

The other aspect of the second aim of the study was to identify which assessment factors could predict the duration of the second phase. Our data imply that MF applicants reporting less negativism, are more likely to complete the second phase "on time" than other applicants. The rationale for investigating duration of treatment was the assumption that unexpected additional problems, which would be difficult to cope with, would possibly be the main reason for a longer duration. From this perspective, completing the second phase timely would be considered favorable, while a slowly completion would be unfavorable. After many subjects of the "on time" and "slow" group were interviewed however, this assumption appeared not to be correct. Motives to postpone surgery were not only, or not at all, based on unfavorable conditions. Young transsexuals decided to wait for surgery until they had finished school exams, older ones first wanted to move to another city. On the other hand, some individuals that had had problems adjusting to their new life wanted to have surgery as soon as possible. So far, an "on time" or "slow" completion of SR does not appear to indicate a "favorable" or "unfavorable" quality of the duration of this phase. A study investigating whether there are differences in outcomes of SR between these two groups, in terms of their general and psychological functioning, would provide more insight in this matter. This was precisely one of the aims of another study we described in chapter six of this volume.

The final aim of the study was to investigate which assessment factors could predict postoperative functioning. It is important to bear in mind that we investigated relatively good or poor functioning on a continuous scale, as opposed to the dichotomous outcome of "regret" or "no-regret" after SR. In summary, postoperative functioning can be predicted on the basis of a *non*homosexual orientation, a high psychopathology score, and dissatisfaction with secondary sex characteristics.

The finding that psychological instability turned out to be a risk factor for postoperative functioning substantiates the outcome of some studies that were mentioned in the introduction. In accordance with what was found in smaller studies, was our finding that *non*homosexual applicants are more likely to function poorer postoperatively and express more dissatisfaction about the results of SR in his or her life. In one follow-up study, only heterosexual (i.e., *non*homosexual) MFs consciously regretted the decision to undergo SR, whereas none of the homosexual FMs and MFs showed any regrets (Blanchard et al., 1989c). In one of our own studies (this volume), in which we compared homosexual with *non*homosexual transsexuals, the two individuals who expressed any regrets about SR were *non*homosexual also. Belonging to the non-core group of transsexuals was identified as one of two factors predictive of regret (Landén et al., 1998). While the *non*homosexual and the non-core group are not completely alike, many similarities were found (Blanchard, 1985, 1988, 1989a, 1989b; Chivers and Bailey, 2000; Leavitt and Berger, 1990). The outcome that dissatisfaction with secondary sex characteristics predicted poor postoperative functioning can be explained in various ways. Either the appearance of the sex characteristics negatively affected the mood or psychological stability of the individuals, or it negatively affected the way persons were actually treated by the environment, or both of these explanations applied.

Taking all findings into account, this particular "sample" of clinicians who had diagnosed all of the subjects involved in this study, appropriately assessed some of the risk factors that predict the course and outcomes of treatment, yet seemed to have underestimated others. The clinicians particularly recognized the impact of the psychological functioning and the physical appearance of the applicant as significant factors for postoperative functioning. However, clinicians might want to take special notice of MFs who report inconsistencies in past and present gender dysphoria, in addition to the presence of psychopathology. Besides an adjusted diagnostic procedure, these individuals may require special professional care, *if* they are allowed to start hormone treatment. Further, *non*homosexual transsexuals, who show strong dissatisfaction with their secondary sex characteristics, again, combined with high psychopathology, deserve particular attention when treatment eligibility is assessed. These individuals may benefit from additional professional guidance after SR, while adjusting to their new lives and coping with unexpected or adverse consequences of SR or from the environment.

In conclusion, though these factors predict the probable level of postoperative functioning, as stated before, the findings do not allow for absolute contraindications for SR. Nevertheless, the results of this prospective study subscribe the significance of some of the risk factors described in the literature with more conclusive data. Furthermore, factors were found that could assist clinicians identifying individuals who might be at risk for poor outcomes during or after SR. Clearly, more prospective studies are needed to consolidate the predictability of postoperative functioning of transsexuals with SR. The results were an additional incentive for investigating the issues of our next study that were not addressed, yet require to be examined to further support the findings of this study: how does the group who completed treatment actually function postoperatively, and what are the effects of SR within this sample of treated transsexuals.

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Appendix

The Postoperative Functioning Scale

Questions of the male-to-female version

Are the people in your environment accepting you as a woman?
1. Yes, everyone
2. Yes, most people
3. Yes, some
4. No

Are the people in your environment supporting you in your new gender role?
1. Yes, everyone
2. Yes, most people
3. Yes, some
4. No

Do you know people you can rely on in hard times?
1. Yes, several
2. Yes, a few
3. No

Do you presently feel lonely?
1. No
2. Yes, somewhat
3. Yes, very much

I notice people are looking at me and sometimes ridicule or laugh at me.
1. No
2. Occasionally
3. Yes

People approach me as a woman, even if I think I look good.
1. Never
2. Yes, sometimes
3. Yes, often

I feel people take me seriously.
1. Most people do
2. Only a few close friends
3. No
4. Yes, completely

Sometimes I think: if people do not take me seriously as a woman, what has been the use of undergoing SR?
1. I never think that
2. I sometimes think that
3. I often think that

Because of difficulties with people around me I feel lonely.
1. I have no difficulties with people around me
2. There are some difficulties, but it does not bother me
3. This is sometimes true
4. Very often

Do you currently regret to have undergone SR?
1. No
2. Yes, somewhat
3. Yes, very much

Have you ever had feelings of regret since you started treatment about your decision to live as a woman?
1. No
2. Yes, somewhat
3. Yes, very much

If you were to decide about undergoing SR again, would you make the same decision?
1. Yes, I would do everything over again
2. Yes, but I would do things differently
3. No, I would make another decision

Does it ever occur that you live as a man again?
1. No, never
2. Yes, sometimes in public, but at home I always live as a woman
3. Yes, in public as well as at home

Did you ever think during treatment: “I wish I had never started all this“?
1. Never
2. Occasionally
3. Regularly
4. Often
5. Very often

Do you face the future with confidence, as a woman?
1. With a lot of confidence
2. With some confidence
3. With little confidence
4. Without any confidence

Are people around you always treating you as a woman?
1. Never
2. Almost never
3. Sometimes
4. Mostly
5. Almost always
6. Always

How satisfied are you about your own behavior as a woman in contact with other people?
1. Very satisfied
2. Satisfied
3. Somewhat satisfied
4. Dissatisfied
5. Very dissatisfied

Do you ever doubt that you are able to carry on as a woman socially?
1. Never
2. Sometimes
3. Regularly
4. Often
5. Very often

Do you ever doubt whether your appearance is feminine enough?
1. Never
2. Sometimes
3. Regularly
4. Often
5. Very often

How satisfied are you with your life?
1. Very satisfied
2. Satisfied
3. Somewhat satisfied
4. Dissatisfied
5. Very dissatisfied

How happy do you feel?
1. Very happy
2. Happy
3. Somewhat happy
4. Unhappy
5. Very unhappy

CHAPTER 6

Outcomes of sex reassignment:

A prospective follow-up study on adult male-to-female and female-to-male transsexuals

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Abstract

Objective: The present prospective follow-up study was performed for the following reasons. First, we investigated whether transsexuals actually improved in several important areas of functioning after sex reassignment. Second, we determined whether differences were found between male-to-females and female-to-males in postoperative functioning. Finally, we examined whether differences were found at follow-up between transsexuals who had completed the second phase timely or slowly. **Method:** Participants were 171 adult transsexuals who were considered eligible for sex reassignment. The psychological, social, and sexual functioning was assessed before and after treatment. Postoperatively, feelings of regret, an evaluation of the treatment, and satisfaction with surgical results, were also evaluated. The follow-up interviews were conducted 1 to 4 years after surgery. Pre- and posttreatment data were compared within the entire sample to examine improvement in the various areas of functioning. Male-to-females and female-to-males were compared to determine differences in postoperative functioning. Results between the "on time" and "slow" group were also compared at follow-up to serve the final purpose of the study. **Results:** After sex reassignment the group was no longer gender dysphoric and had improved in all areas of functioning that we measured. The vast majority of the group functioned quite well, psychologically, socially, and sexually, and expressed no regrets about treatment or living in the new gender role. Yet, a few individuals expressed reservations about the beneficial effects of treatment at follow-up. Two transsexuals experienced feelings of regret during and after SR, due to adverse social reactions. Most of the differences between male-to-females and female-to-males that were found in previous studies were also found in this study. In particular, female-to-males appeared to function better than male-to-females in most respects. No differences were found between the "on time" and "slow" group at follow-up. **Conclusions:** The outcomes of this study substantiate the conclusion from other retrospective follow-up studies that sex reassignment is indeed effective. Although the vast majority of transsexuals accomplished to realize the gender role transformation according to their needs, clinicians need to be alert for some applicants who are not good candidates for SR. For them, therapeutic guidance is more crucial to unravel whether surgery will enhance their well-being in the new gender role. In even others, professional care in coping with adverse consequences *after* treatment is indispensable.

Introduction

The phenomenon of transsexualism refers to individuals who are born with normal sexual characteristics of one biological sex, but have the irrefutable conviction to belong to the other biological sex. The notion comes to mind that transsexualism can be treated in two ways in order to eliminate the discrepancy between gender identity and body characteristics. Either the body characteristics are adapted to the cross-gender identity, by means of sex reassignment (SR), or, the cross-gender identity is changed in agreement with the biological sex, by means of psychotherapy. A choice for one or the other treatment option is based upon the consideration of whether a once established gender identity can be changed or not. Some assume that gender identity already becomes embedded in the individual in early childhood (Money and Ehrhardt, 1972; Stoller, 1968, 1975) and does not alter afterwards. Stoller (1968) argues that a "core-gender-identity" is crystallized around the age of three and defines the development of the course of life. This is also supposed to apply for the gender identity of transsexuals (Baker, 1969; Benjamin, 1971; Oles, 1977). This principle, combined with the fact that transsexualism hardly seemed treatable by means of psychotherapy (see below), gave rise to many professionals working with transsexuals to regard SR as the most viable treatment option for the most extreme gender identity disorders presented at their clinic. Before we elaborate on the treatment approach of SR, we will briefly address psychotherapy as a treatment option for transsexualism.

Studies investigating the effect of psychotherapy on gender identity problems have been conducted considerably less than outcome studies on the effects of SR. A likely explanation for this difference might be that only few psychotherapists treated enough transsexuals that were necessary to conduct outcome studies; and that there were not many transsexuals either who were prepared to try and resolve their gender dysphoria by means of psychotherapy. In addition, since the first sex change operations were performed in the 1930s (Abraham, 1931), professionals involved in this kind of treatment were more instigated to demonstrate the effectiveness of SR because of the irreversible and disputed nature of this type of intervention.

In a number of case studies successful effects of psychotherapy for the treatment of transsexualism were reported (Barlow et al., 1973, 1979; Davenport and Harrison, 1977; Dellaert and Kunke, 1969; Edelmann, 1986; Forrester and Swiller, 1972; Khanna et al., 1987; Kronberg et al., 1981; Kuchenhoff, 1988; McCauley and Ehrhardt, 1984; Springer, 1981).

In 1984, Cohen-Kettenis and Kuiper reviewed the existing case studies at that time. They concluded that the evidence for complete and long-term reversal of cross-gender identity by means of psychotherapy was not convincing for the following reasons. Firstly, in each report gender identity was operationalized differently. Consequently, treatment success was assessed on the basis of various, and sometimes unspecified, criteria. Secondly, some patients reported a disappearance of the wish for SR, when no psychotherapy was given. However, some applicants who refrain from SR may reapply many years later. So even the few claimed cures might have been postponements of SR. Thirdly, patients in these studies were highly motivated to "change" their gender identity, which is rarely encountered in most applicants for SR. The authors did confirm, that in some cases psychotherapy had brought the transsexual to renounce their wish to undergo SR (i.e., two of the three cases from the Barlow et al. studies, 1973, 1979). In view of the scarce data available on the long-term effects of psychotherapy however, the authors considered it to be quite uncertain to conclude whether the results were manifestations of a fundamental change in cross-gender identity, or of a temporary distancing from, or perhaps suppression of the gender identity conflict. In conclusion, psychotherapy might be helpful for individuals who are merely gender confused or who's wish for SR seems to originate from factors other than a genuine and complete cross-gender identity. Whether genuine transsexualism can be effectively resolved by means of psychotherapy still requires more conclusive evidence. Psychotherapy or counseling for purposes other than changing a cross-gender identity is also an option for SR candidates. They may, for instance, want to overcome anxieties concerning the future or need support when "coming-out", when dealing with personal loss, or when trying to adjust to their changing life situation (Cohen-Kettenis and Gooren, 1999; Meyer et al., 2001).

In a recent study five cases were described of adults who were diagnosed with gender identity disorder and who showed occasional remission in gender dysphoria (Marks et al., 2000). Remission had occurred with or without treatment and in response to various life events and co-morbid psychopathology. Some of the subjects had consciously tried to suppress or control their gender dysphoria because of pressure from their partner or because circumstances did not allow for addressing the gender issue (e.g., one subject felt only minimally gender dysphoric while taking care for his aged and ill parents). Remission was documented at up to ten years. The authors concluded that, if evaluated

over many years, a cross-gender identity could be less fixed than is often thought. Their implications for the clinician were that such applicants require a long trial period of cross-gender living prior to any surgical interventions. We suppose that these individuals with an apparently "less fixed" cross-gender identity might have gained from psychotherapy in coping with their gender and nongender problems. However, resolution of their gender identity conflict as a consequence of psychotherapeutic treatment seems highly unlikely, since remission of the gender dysphoria in these cases, apparently, was temporary. The fact of the matter is that the gender dysphoria in all of the five cases described in the study had returned to such an extent that the subjects had resumed cross-gender living, and all but one had started or resumed hormone treatment.

Nowadays, many individual professionals and teams are specialized in the treatment of transsexuals. Such teams consist of specialists from various disciplines, such as psychologists, psychiatrists, endocrinologists, and plastic surgeons. These clinicians currently regard the conviction of transsexuals to belong to someone of the opposite biological sex as authentic, and therefore not necessarily as a derivative of some underlying psychopathological disorder. Consequently, the wish for a sex change is considered justified. The recommended procedure of the Standards of Care (SOC) of the Harry Benjamin International Gender Dysphoria Association (Meyer et al., 2001), an international professional organization in the field of transsexualism, is to approach the decision of whether to refer someone for SR surgery in two phases. In the first phase, a diagnosis must be made on formal psychiatric classification criteria. In the most recent version of the widely used psychiatric classification system, the Diagnostic and Statistic Manual of Mental Disorders - Fourth Edition (DSM-IV; American Psychiatric Association, 1995), the term transsexualism has been abandoned. Instead, the term Gender Identity Disorder (GID) is used for individuals who show a strong and persistent cross-gender identification and a persistent discomfort with their anatomical sex or a sense of inappropriateness in the gender role of that sex, as manifested by a preoccupation with getting rid of one's sex characteristics or the belief to be born in the wrong sex. The International Classification of Diseases and Related Health Problems - Tenth Revision (ICD-10 of the World Health Organization, 1992), the other currently used classification system, still lists transsexualism as a diagnosis. Because diagnosis alone does not provide sufficient information for a decision to start the SR procedure, eligibility of the patient to move on to the second

phase, the so-called Real-life Experience (RLE) needs to be assessed. In this phase the applicant's ability to live in the desired role and the strength of his or her wish for SR are evaluated, in the face of consequences and disappointments while living in the opposite gender role. The social role change during the RLE usually is supported by hormonal therapy. When the RLE has resulted in a satisfactory social role change, the applicant may be referred for surgery. (For a more detailed description of (eligibility criteria for) the various SR treatment phases, see the SOC (Meyer et al., 2001).

As indicated above, the therapeutic effectiveness of SR has been investigated in many studies since the first sex change operations. Pfäfflin and Junge (1998) extensively reviewed 79 studies between 1961 and 1991. After 1991, several more follow-up studies appeared (Bodlund and Kullgren, 1996; Cohen-Kettenis and van Goozen, 1997; De Cuypere, 1995; Rakic et al., 1996; Smith et al., 2001, 2002). Cohen-Kettenis and Gooren (1999) reported in their more recent review that most studies had investigated relatively small samples: only seven studies, with nonoverlapping samples, involved more than 50 subjects (Benjamin, 1967; Blanchard et al., 1993; Eicher, 1984; Herms, 1989; Kuiper and Cohen-Kettenis, 1988; Laub and Fisk, 1974; Pfäfflin and Junge, 1990). Moreover, the studies varied considerably with respect to methodology, number of subjects, and outcome criteria. In many studies postoperative success was defined by a combination of factors, often including "objective criteria" such as employment or housing. In our view, improvement in such conditions should be considered secondary to the main treatment goal: diminution or resolution of gender dysphoria. In spite of these differences between studies the general conclusion was drawn that SR effectively resolves the gender dysphoria transsexuals are suffering from (see Cohen-Kettenis and Gooren, 1999). Depending on methodology, number of subjects, and criteria, success percentages between 87% among male-to-female transsexuals (MFs) and 97% among female-to-male transsexuals (FMs) are reported (Green and Fleming, 1990).

Specific improvement after SR was also found in other areas besides gender dysphoria, such as body dissatisfaction (Fleming et al., 1982; Kuiper and Cohen-Kettenis, 1992a; Lindgren and Pauly, 1975), sexual (Kuiper, 1991) and social functioning (Kuiper, 1991; Kuiper and Cohen-Kettenis, 1992b), and psychological functioning (Mate-Kole et al., 1990).

In most respects FMs fare better than their MF counterparts (e.g., Kockott and Fahrner, 1988; Kuiper, 1991; Kuiper and Cohen-Kettenis, 1988; Pfäfflin and Junge, 1998; Verschoor and Poortinga, 1988). This might be a reflection of their more convincing gender role behavior and looks, their less stigmatized childhood, their "type" of transsexualism, implying an earlier age at application, or a combination of the factors (Abramowitz, 1986; Lothstein, 1982; Pauly, 1981; Pfäfflin and Junge, 1990).

In addition to differences in outcomes of SR between the sexes, homosexual transsexuals (i.e., sexually oriented towards individuals of the same biological sex) have been found to show less postoperative regrets than heterosexual (i.e., *non*homosexual) transsexuals (Blanchard et al., 1989; Smith et al., this volume). The terms "early onset and late onset transsexuals" or "primary and secondary transsexuals" are also used to describe roughly the same groups (Doorn et al., 1994).

Negative results, like severe postoperative regrets, were also found (Kuiper and Cohen-Kettenis, 1998; see Pfäfflin, 1992). In spite of strict prior selection and counseling during treatment, an estimated one to two percent of those treated express regrets about SR. An estimation is needed her, since few systematic studies specifically addressing negative outcomes of SR have been conducted (Kuiper and Cohen-Kettenis, 1998; Pfäfflin, 1992). Factors that were found to be associated with relatively poor postoperative functioning in empirical studies not including regretful transsexuals were secondary transsexualism, SR application late in life, bad surgical results, suicidal tendencies, inadequate social functioning, loss of work and family, a noncooperative attitude towards clinicians, and enduring resistance against the transsexualism (Lundström et al., 1984; Ross and Need, 1989; Spengler, 1980). From some follow-up studies, factors that are potentially predictive of postoperative regrets emerged. These tend to lie in the area of unfavorable physical appearance, lack of social support (Wålinder et al., 1978), a high age at first request of SR (after age 32; Lindemalm et al., 1987), sexual orientation (Blanchard et al., 1989), poor surgical results (Pfäfflin, 1992), lack of support from the family, secondary transsexualism (Landén et al., 1998), late onset of the gender conflict, and psychological instability and/or social isolation (Kuiper and Cohen-Kettenis, 1998). Group sizes in most of these studies, however, were very small, making it impossible to calculate which risk factors or combination of factors are the most decisive ones.

In view of the irreversibility of SR, we conducted a prospective study to provide more insight in which (combination of) factors predicted good or poor postoperative functioning (this volume). Applicants for SR with a *non*homosexual orientation, combined

with the presence of psychopathology and dissatisfaction with secondary sex characteristics at assessment, were more likely to function poorer postoperatively and to express more dissatisfaction about the results or consequences of SR in their lives.

Although SR is presently regarded as effective to treat severe GID, often referred to as transsexualism (Meyer et al., 2001), prospective studies are needed to enhance knowledge about the benefits and limitations of SR. This was precisely the aim of the current prospective study to investigate which areas of functioning actually improved, and which areas did not, as a consequence of SR.

The present follow-up study, conducted with a prospective design and with a large sample of adult transsexuals who were eligible for SR, was performed for the following reasons. First and foremost, we investigated whether prospective research could demonstrate that transsexuals actually improve in several important areas of functioning after SR. In addition, we examined whether the results could support the beneficial effects of SR already found in retrospective follow-up studies. Second, we determined whether differences were found between MFs and FMs in postoperative functioning. And finally, we investigated whether differences were found between transsexuals who had completed the second phase timely or slowly in postoperative functioning. Naturally, improvement in gender dysphoria was a primary factor to be examined in the study. We further focused on improvement of body dissatisfaction, physical appearance, and psychological functioning. Postoperatively, feelings of regret, an evaluation of the treatment, and satisfaction with surgical results, social and sexual functioning were evaluated.

Method

Subjects

A group of 171 consecutive adult patients, who had applied and were considered eligible for SR at the Department of Internal Medicine at the Free University Medical Center in Amsterdam (FUMC), were invited and agreed to participate in the study. Pretest data were obtained from 168 patients (110 MFs and 58 FMs). Because IQ tests could not be administered together with the other tests on one occasion, for practical reasons, we only obtained 126 IQ scores.

At follow-up, some of the participants had moved abroad, while others were not traceable, which resulted in a sample of 133 subjects (79%; 83 MFs and 50 FMs), who

could be interviewed. Questionnaire data available for different measures fluctuated from 102 to 133 subjects, due to the fact that not all participants were willing to spend their time on both an interview and filling out questionnaires. Since breast augmentation, metaidoioplasty or phalloplasty are not necessarily performed in all patients undergoing SR, data were gathered from 52 MFs on breast augmentation, and from 10 FMs on metaidoioplasty or phalloplasty. Finally, we obtained Appraisal of Appearance Inventory scores from 62 patients at follow-up.

Participants were divided into the "on time" or "slow" group for the third purpose of the study. The MFs of the "on time" group completed the second phase of the SR procedure (i.e., start of the cross-sex hormone treatment [estrogens for MFs, androgens for FMs], combined with the RLE, until surgery) in 21 months or less; the FMs in 15 months or less. MFs of the "slow" group completed this procedure in more than 21 months, and the FMs in more than 15 months. According to the FUMC protocol in the period that the data for this study were gathered, the minimum required duration of hormone treatment before surgery was 18 months for MFs and 12 months for FMs. In the event that hormone treatment passed the required duration beyond the subject's control (e.g., because of waiting lists or practical scheduling possibilities for appointments), we chose to be precautious in assigning subjects to one or the other group. Therefore, an additional three months were added to each of these periods, defining 21 months or less for MFs as a completion of this phase as timely, and more than 21 months as slowly. For FMs the cut off for a timely or slowly completion was at 15 months or less, and more than 15 months, respectively.

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). The BVT contains 211 items on background variables, such as age, education, occupation, questions on gender development, on past and present cross-gender feelings and behavior, on sexuality and partnership, social relationships, family background etc. For purposes of this study, the following items were used as pretest data: biological sex (1 item), age at application (1 item), and sexual orientation (1 item). Concerning this last

item, subjects who exclusively reported a homosexual preference (MFs feeling sexually attracted to biological males; FMs to biological females) were included in the homosexual group, whereas subjects, who reported an asexual, heterosexual, and/or bisexual preference, were included in the *non*homosexual group. Age at the start of cross-sex hormone treatment and age at the time of surgery were obtained from the medical files. The following items were gathered from an adjusted and shortened BVT at follow-up: age, education, employment, and living circumstances.

Intelligence

The most recently adapted Dutch version of the Wechsler Adult Intelligence Scale (Stinissen et al., 1970) was used.

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. Scores ranged from 12 to 60. Higher scores indicated more gender dysphoria (for psychometric data: see Cohen-Kettenis and van Goozen, 1997).

Psychological femininity and masculinity were measured with a Visual Analogue Scale (VAS). Subjects were asked to mark a cross on two separate solid lines, 15 centimeters each, designating the extent of their psychological identification, one as feminine and one as masculine. Data were gathered and analyzed in millimeters (range 0-150), with higher scores representing more psychological identification with the biological sex, and lower scores indicating a stronger psychological identification with the new gender.

Body Dissatisfaction

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

Physical femininity and masculinity were measured with a Visual Analogue Scale (VAS). Subjects were asked to mark a cross on two separate solid lines, 15 centimeters each, designating the extent to which they physically felt feminine on one line, and masculine on the other. Data were gathered and analyzed in millimeters (range 0-150). Higher scores represent less, and lower scores, stronger feelings of physical femininity/masculinity in accordance with the new gender.

Physical Appearance

The 14-item Appraisal of Appearance Inventory (AAI) reflects the judgement of observers as opposed to being a self-report scale. The AAI concerns the observed masculinity/femininity of several bodily characteristics (e.g., facial hair or chin) of the subject. To assess the applicant's physical possibilities to pass as a male or female, we combined the appraisal of three observers: the diagnostician, a nurse of the gender team, and the researcher. The three independent observers rated their subjective appraisal of the appearance of 14 bodily characteristics of the subject on a 5-point scale of masculinity/femininity. Scores ranged from 14 to 70, with higher scores representing an appearance that is more incompatible with the new gender (for MFs a more masculine appearance, for FMs a more feminine appearance). Intraclass correlation coefficients between the three observers for each of the 14 items ranged from .68 to .79.

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 scales and less psychological dysfunction on the scale 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, and Sleeping problems. Psychoneuroticism is the total score of all the subscales. This score measures the concept Psychoneuroticism-as-a-state or psychological instability. Scores on this scale range from 90 to 450, with higher scores indicating more psychological instability.

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

Treatment Evaluation and Posttreatment Functioning

Treatment Satisfaction. Patients completed a 21-item semistructured interview about treatment outcomes, experiences during and after SR, treatment evaluation, and feelings of regret (Doorn et al., 1996).

Social and Sexual Functioning. In a 46-item semistructured interview questions were asked about the transsexuals' current social and sexual life (Doorn et al., 1996).

Public Confrontation Questionnaire. A 20-item questionnaire assessed reactions of the social environment and was used to evaluate the transsexuals' experiences of being able to pass in the new social role (Doorn et al., 1996).

A selection of 27 items of the three questionnaires above was used to evaluate postoperative functioning in these areas: see the Results section. Items were selected on the basis of their face value, revealing more immediately than other items the level of functioning in the new gender role and (dis)satisfaction with treatment as a consequence of SR.

Satisfaction with Surgery. Patients completed a self-developed questionnaire concerning functionality of the vagina or penis and breasts (augmentation or removal), and satisfaction with surgical results (Cohen-Kettenis and Van Goozen, 1997).

Quality of Life. The Affect Balance Scale (Bradburn, 1969) was used to measure overall psychological well-being. The scale consists of five positive and five negative items. Only the negative affect scores were analyzed because in a randomly selected sample the Cronbach alpha for the positive affect scale was found to be too low (positive affect scale, .59; negative affect scale, .73; Kempen and Ormel, 1992). The adapted Dutch version of the scale by the Central Bureau of Statistics (1987) was used.

Procedure

Intelligence was assessed only before treatment. The UGS, the BIS, the AAI, the two VASs, and the Personality Questionnaires were administered before and after treatment because within-subject changes were expected. The remaining instruments concerned the postoperative situation and were only administered after treatment.

Pretest data were gathered during the first diagnostic procedure. The patients were tested and filled out the research questionnaires after the first interview and handed them over to a research coordinator. Follow-up 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 the FUMC. Each session took two to three hours. In order to avoid socially desirable responses the subjects were seen by researchers who had not been involved in their diagnosis or treatment. The Ethics Committee of FUMC approved the study.

Statistical analyses

Changes over time within the group of transsexuals who had undergone SR were analyzed with univariate Paired Samples *t* Tests. Differences in the outcomes of SR between the sexes, on the one hand, and between the groups that completed the second phase timely or slowly, on the other, were analyzed with univariate Independent Samples *t* Tests or with multivariate analysis of variance (MANOVA) for ratio or interval data. Nominal or ordinal data were analyzed per item by means of Chi-Square Test or Mann-Whitney U Test, respectively. Results that are not reported in the text are presented in Table 1 through 17.

Results

Background data

The mean age of the transsexuals who completed SR was 31.1 years (range 17.7- 68.1) at application and 35.7 (range 21.3-71.9) at follow-up. They had started hormone treatment at the mean age of 31.8 years (range 18.0-68.3). The average time elapsed between starting cross-sex hormone treatment and SR surgery was 20 months (range 12-73). The average time elapsed between SR surgery and the time of the follow-up interview was 22 months (range 12-47). The group's pretreatment mean IQ score was 117 (SD = 18; range 76-150).

FMs were younger than MFs at each of the phases of treatment we measured: at application, at the start of hormone treatment, at surgery, and at follow-up (all four *p* values < .001). No differences were found between the sexes however, in the duration of the second phase, in the postoperative period before follow-up, or in the intelligence score.

At follow-up five subjects (4.5%) were students, 40 (36.4%) had jobs, three (2.7%) were retired, and the remaining 62 (56.4%) were unemployed. The majority (64) lived independently (57.1%), 29 subjects (25.9%) each lived together with another adult with or without children, nine (8%) were living with (one of) their parents, two (1.8%) were head of an incomplete family, and the remaining eight (7.2%) lived in guest or boarding houses.

Gender Dysphoria

The entire group reported less gender dysphoria ($p < .001$) at follow-up than at pretest. The low scores on the UGS represented an absence of gender dysphoria after SR.

There was no significant change in the degree to which the transsexuals identified with the new gender. However, the group's low mean pretest scores indicated that they already strongly identified with the new gender before treatment had begun.

Though both MFs ($p < .001$) and FMs ($p < .001$) felt significantly less gender dysphoric after SR, the FMs (mean = 13.9, SD = 2.8) had improved more than the MFs (mean = 15.3, SD = 3.0) as represented by their lower posttest score ($p = .015$).

No differences were found between the "on time" and "slow" group in gender dysphoria or identification with the biological or new gender.

Body Dissatisfaction

With respect to their overall appearance, the majority of the group reported satisfaction: 105 subjects (92.1%) were satisfied or very satisfied, nine (7.9%) subjects were neutral, yet not a single individual expressed dissatisfaction about their overall appearance in the new gender. Satisfaction with primary and secondary sex characteristics had significantly increased after treatment, as had their satisfaction with neutral body parts (all three p values < .001). After SR, subjects were satisfied to very satisfied with all these physical characteristics, as represented in the average mean scores of the group on each of the three BIS scales. In comparison with the time at application, the transsexuals revealed much stronger feelings of physical femininity or masculinity in accordance with their new gender after SR ($p < .001$). Also, the group's mean score on the AAI was lower ($p < .001$) at posttest, indicating that, according to observers, their appearance had become more compatible with the new gender.

The overall MANOVA ($p = .020$) on the BIS showed that FMs (mean = 7.6, SD = 4.2) were more dissatisfied than MFs (mean = 5.9, SD = 2.2) ($p = .006$) with their primary sex characteristics at follow-up. The physical appearance of FMs (mean = 26.4, SD = 7.0) was appraised as even more compatible than that of the MFs (mean = 38.6, SD = 9.3) ($p < .001$).

No differences were found between the "on time" and "slow" group in body dissatisfaction, feelings of physical femininity/masculinity, or physical appearance.

Table 1: Pretest and posttest scores of the follow-up sample

	Pretest Mean	SD	Posttest Mean	SD	Paired *t*	Two-tailed *p*
Gender Dysphoria: UGS	54.3	7.0	14.8	3.0	52.2	< .001
Body Dissatisfaction: BIS						
Primary sex characteristics	18.1	2.6	6.5	3.2	27.2	< .001
Secondary sex characteristics	34.4	7.2	24.9	6.9	14.1	< .001
Other body characteristics	46.2	10.1	36.0	8.2	11.8	< .001
Psychological Functioning: NVM						
Negativism	22.1	7.8	16.9	7.7	6.7	< .001
Somatization	9.0	7.7	6.7	5.4	2.9	.005
Shyness	14.3	9.2	9.7	7.2	5.9	< .001
Psychopathology	3.2	3.2	2.3	2.6	3.1	.003
Extraversion	14.0	6.4	15.7	5.6	-3.0	.003
Psychological Functioning: SCL-90						
Psychoneuroticism	141.5	40.3	119.7	30.9	5.5	< .001
Anxiety	15.0	5.2	12.9	4.4	3.9	< .001
Agoraphobia	9.3	3.5	8.5	3.2	2.0	.050
Depression	28.8	11.1	22.3	8.2	5.4	< .001
Somatization	18.1	7.0	16.7	4.5	2.2	.031
Inadequacy	15.5	5.7	13.4	4.4	4.0	< .001
Sensitivity	28.0	9.0	24.2	6.5	4.6	< .001
Hostility	7.7	2.4	7.4	2.0	1.4	.169
Sleeping problems	5.3	2.8	4.6	2.2	2.3	.025
Physical Appearance: AAI	44.4	9.5	34.1	10.0	10.1	< .001
Physical Masculinity/Femininity: VAS	52.5	45.5	17.8	23.9	7.4	< .001
Psychological Masculinity/Femininity: VAS	16.7	19.0	15.6	23.0	0.5	.614

Psychological Functioning

At follow-up, the group appeared to psychologically function better than at application. Scores on all five scales of the NVM had improved after SR (all five p values < .01), representing fewer psychological problems. When pre- and posttest group means were

compared with Dutch normative data, most scores turned out to remain within the average range at follow-up. The Extroversion scale fell in the below average range, at pretest as well as at follow-up. At pretest, the Somatization scale was in the high range.

The group's mean total score on the SCL-90 (Psychoneuroticism) was lower at posttest than at pretest ($p < .001$). See Table 1 for the significantly lower scores on six of the eight subscales (p values < .05). These scores can only be compared with Dutch normative data for males and females separately. As a group the MFs ($p = .001$) and the FMs ($p < .001$) both showed improvement on their mean total score. The mean total score of the MFs went from above average at pretest (mean = 141, SD = 37.6) to average at follow-up (mean = 123, SD = 34.9). The one from the FMs went from high at pretest (mean = 142, SD = 44.8) to average at follow-up (mean = 115, SD = 22.8). In sum, although the group appeared to be psychologically functioning reasonably well at application, their psychological stability had improved after treatment.

Overall MANOVA ($p = .021$) analysis of the postoperative NVM results showed that FMs (mean = 18.1, SD = 5.0) were more extrovert than MFs (mean = 14.3, SD = 5.5) ($p < .001$). With MANOVA ($p = .002$) analysis of the SCL-90 subscales, MFs (mean = 24.2, SD = 9.5) were found to be more depressed than FMs (mean = 19.6, SD = 4.7) ($p = .005$).

No differences were found between the "on time" and "slow" group in psychological functioning.

Treatment Evaluation and Posttreatment Functioning of the Treated Group

Treatment Evaluation. At follow-up, the vast majority of the group (98.5%) expressed no feelings of regret about their SR. One MF transsexual had experienced strong regrets during treatment about the decision to live as a woman. She was the single individual who expressed strong regrets about having undergone SR at follow-up to such an extent that she would not chose for SR again, if she were given a second opportunity. In contrast, a second MF transsexual who expressed some regrets about having undergone SR at follow-up, also experienced these feelings during treatment, but she would chose to undergo SR a second time. Five more transsexuals had experienced some feelings of regret about their decision to live in the opposite gender role during treatment only. They related these feelings not so much to the treatment as to the lack of support and acceptance they had experienced from their environment.

Table 2	Feelings of regret during SR		Feelings of regret after SR	
	N	%	N	%
No	126	94.7	131	98.4
Some	6	4.5	1	0.8
Strong	1	0.8	1	0.8
Total	133	100	133	100

No differences were found between the sexes in feelings of regret, neither between the "slow" and "on time" group.

Quality of Life. The group reported a reasonable sense of well-being at follow-up. Although not quite comparable, it is worth noting that the negative affect score of this treated adult transsexual group (mean = 3.7, SD = 2.7; range 0-10) was lower than that of a randomly selected elderly sample (mean = 6.1, SD = 1.4; range 5-10), and also lower than what we had found in the treated adolescent transsexual group (mean = 4.4, SD = 3.2; range 0-10) (Smith et al., 2001). Unfortunately no other comparison groups are available.

No differences were found between the sexes or between the "slow" and "on time" group on this score.

Social Life and Social Contacts. The majority (97) of the follow-up sample felt accepted by most people, eight by some, and three by no one in their environment. Almost as many individuals (87) felt supported in their new gender role by (almost) everyone they knew, whereas 12 felt supported by some people. Despite the fact that six subjects did not feel supported at all by people in their environment, they reported to be able to rely on one or more individuals in hard times. Four subjects however, had no one to turn to when times got rough. Nevertheless, the vast majority (106, 96.4%) could rely on more or at least some other persons in hard times.

A large proportion of the subjects (80, 72.7%) had not lost any family member or

Table 3	Feeling accepted		Feeling supported	
	N	%	N	%
By all or most	97	89.8	87	82.9
By some	8	7.4	12	11.4
By no one	3	2.8	6	5.7
Total	108	100	105	100

friend or had lost contact with one person only. Twenty-seven subjects (24.5%) had lost more than one friend as a consequence of the SR. Three individuals (2.7%) said they had never had any close friends. Then again, 92 subjects had made one or more new friends during or after treatment, whereas 18 had not.

Table 4	Had close friends/family		Made new friends	
	N	%	N	%
Yes, 1 or more	107	97.3	92	83.6
No	3	2.7	18	16.4
Total	110	100	110	100

The majority of participants indicated to be (very) satisfied with the social contacts they had with the opposite gender and with the same gender as well. Six participants reported dissatisfaction about social contacts with the opposite gender, and three with the same gender. Twenty-one subjects felt neutral about their social contacts with the opposite gender and 17 with the same gender. Most people did not feel lonely, 19 felt lonely sometimes, and another two felt lonely often.

Table 5	Satified with contacts with opposite gender		Satified with contacts with same gender	
	N	%	N	%
Yes	82	75.2	89	81.7
Neutral	21	19.3	17	15.6
No	6	5.5	3	2.7
Total	109	100	109	100

Table 6	Feeling lonely		Rely on others		
	N	%		N	%
No	90	81.1	On many	77	70.0
Sometimes	19	17.1	On some	29	26.4
Often	2	1.8	No one	4	3.6
Total	111	100		110	100

Superficial contacts, such as those with neighbors or shopkeepers, were mostly positive (87), while they were nonexistent for 23 persons. One person felt inconvenienced by the people from his neighborhood. Although the majority of subjects (91.9%) had never been actually harassed, six had been harassed once, and three subjects had experiences of being harassed on more than one occasion.

Twenty individuals had a few times been approached by strangers as someone of the biological sex, and at times, most of them (19) also felt being laughed at. Two individuals experienced actually being ridiculed by strangers, while one MF had often been approached as a man. However, 90 had never experienced any of such adverse reactions. After all, more than 97% of the transsexuals felt taken seriously completely or by most people. Three only felt taken seriously by a few close friends. (No one reported to not be taken seriously by anyone.)

Table 7	Inconvenienced by neighbors		Being harassed		
	N	%		N	%
Positive contacts	87	78.4	Never	102	91.9
No, but no contacts	23	20.7	Once	6	5.4
Yes	1	0.9	Yes	3	2.7
Total	111	100		111	100

Table 8	Being ridiculed or laughed at		Being approached as if biological gender	
	N	%	N	%
Yes	2	1.8	1	0.9
Occasionally	19	17.1	20	18.0
No	90	81.1	90	81.1
Total	111	100	111	100

Table 9	People take me seriously	
	N	%
All or most	108	97.3
Only close friends	3	2.7
No	0	0.0
Total	111	100

When MFs were compared with FMs, no differences were found in feeling accepted by their environment. FMs were more supported in the new gender role however, than MFs ($p = .011$). Furthermore, FMs were also more able to rely on significant others in hard times than MFs were ($p = .038$). Fewer FMs had lost contact with family members or friends in comparison with MFs ($p < .001$), yet both sexes had made new friends equally.

A greater percentage of the FMs were (very) satisfied about the social contacts they had with women than the MFs were with men ($p = .015$). However, no differences were found between MFs and FMs in loneliness. Finally, though MFs were more often laughed at or ridiculed by strangers than FMs ($p < .001$), they felt equally taken seriously by (almost) all people as FMs did.

No differences were found between the "slow" and "on time" group on any of the items measuring aspects of social life and social contacts.

Table 10 Differences in social life and social contacts

	FMs as compared with MFs	*p* value
Accepted	no difference	
Supported	more	.011
Rely on others	more	.038
Lost friends/family	less	< .001
Made new friends	no difference	
Satisfied with contacts opposite sex	more	.015
Satisfied with contacts same sex	no difference	
Loneliness	no difference	
Laughed at or ridiculed	less	< .001
Being taken seriously	no difference	

Relationships and Sexuality. Half of the follow-up sample had a stable relationship with one partner at the time of the interview; the other half had no partner at follow-up or had never had one. Fifty-one of the group who had a stable partner, and three additional persons (49.5% of the entire follow-up sample) had a steady sexual partner. The vast majority of these persons (48) were (very) satisfied with their sex life, three expressed a neutral view, and three were dissatisfied. Masturbation never or hardly ever occurred in a proportion almost equally sized as the one for whom masturbation was more frequent. An equal number of individuals (39) reported a decrease as the one who reported an increase in masturbation frequency after treatment. For the remaining 25 individuals there was no change in frequency. Of the 91 subjects (89.2% of the follow-up sample) who were sexually active, with or without partner, the majority (57) achieved orgasm regularly, 19 sometimes, and 15 never.

Table 11

	Stable relationship			Steady sexual partner	
	N	%		N	%
Yes	55	50.9		54	49.5
			Satisfied	48	89
			Neutral	3	5.5
			Dissatisfied	3	5.5
No	53	49.1		55	50.5
Total	108	100		109	100

Table 12

	Masturbation after treatment			Masturbation after treatment	
	N	%		N	%
Frequently	51	47.2	Increase	39	37.9
Seldom	57	52.8	No change	25	24.2
			Decrease	39	37.9
Total	108	100		103	100

Table 13 Orgasm within sexually active group

	N	%
Regularly	57	62.6
Sometimes	19	20.9
Never	15	16.5
Total	91	100

When differences between MFs and FMs were examined, it appeared that a greater proportion of the FMs (63.4%) than of the MFs (37.3%) masturbated (very) frequently. Thus, for fewer FMs (36.6%) than MFs (62.7%) masturbation never or hardly ever occurred ($p = .002$). In addition, more MFs (53.8%) reported a decrease in masturbation frequency after treatment, in contrast with the majority of the FMs (63.2%) who reported an increase ($p < .001$). Finally, compared with MFs (48.1%), more of the FMs (83.8%) who were sexually active achieved orgasm regularly ($p = .015$).

A greater percentage ($p = .04$) of the sample had a homosexual (94, 58.0%) than a *non*homosexual orientation (68, 42.0%). Within the FM group a greater proportion ($p = .015$) reported to have a homosexual orientation (70.7%) than the MF group (51.0%) did.

No differences were found between the "slow" and "on time" group on any of the items on relationships and sexuality.

Table 14	Differences in sexuality between MFs and FMs				
	MFs		FMs		
	N	%	N	%	*p* value
Masturbation					
Frequent	25	37.3	26	63.4	.002
Seldom	42	62.7	15	36.6	
Masturbation					
Decrease	35	53.8	4	10.5	< .001
Increase	15	23.1	24	63.2	
Orgasm					
Regularly	26	48.1	31	83.8	.015
Orientation					
Homosexual	53	51.0	41	70.7	.015

Satisfaction with Surgery. For FMs, emotionally, breast removal is the most important type of surgery. They are advised to postpone metaidoioplasty (transformation of the hypertrophic clitoris into a micropenis) or phalloplasty in view of the fact that surgical techniques are steadily improving. Below we report data from nine FMs who had undergone phalloplasty and who had a neoscrotum as well, and from one FM who only had a neoscrotum. For the MFs vaginoplasty (including amputation of the penis) is the most important surgical intervention.

Eleven FMs were satisfied with their breast removal, whereas five were dissatisfied with the result due to the visibility of the scars. Twenty-two were not completely satisfied. Four FMs were satisfied with their metaidoioplasty or phalloplasty. One FM was dissatisfied with the result of the surgery, because he had urinary problems. Four were not completely satisfied, yet did not experience any functional problems while urinating or having sexual contact. They considered the penis to be too small or were disappointed that they were not able to urinate in a standing position while keeping their pants up. Eight FMs used

Table 15	Satisfaction Breast Removal	
	N	%
Satisfied	11	28.9
Not completely satisfied	22	57.9
Dissatisfied	5	13.2
Total	38	100

their penis when having sexual contact, one FM only sometimes. Of the seven FMs who had a steady partner, five reported that their partner considered it not important for the subject to have a penis, whereas two partners did consider that to be important. Eight FMs reported some sensation in the penis with sexual activity, while one did not. The scar left from surgery hindered this latter FM when his penis was touched. Seven FMs were satisfied with the result of the surgery of the scrotum. One was dissatisfied, because he considered the scrotum to be too small, and two were dissatisfied, because they thought the scrotum looked odd. For eight of the nine FMs who had regular sexual contact, the scrotum was part of sexual contact and provided pleasure. For one FM the scrotum was not part of his regular sexual contact.

The majority of the MFs (70.1%) expressed satisfaction with their vaginoplasty, they felt their vaginas looked natural. Fifteen were not completely satisfied, mostly because they considered their vagina not deep or feminine enough. Three of the five MFs who were dissatisfied with the vaginoplasty were disappointed that they were not able to be sexually aroused or achieve orgasm. In addition, they had needed corrective surgery because of postoperative urinary problems. One MF was dissatisfied since she had had three corrective surgeries, while the other MF was dissatisfied because she felt her vagina did not look feminine enough. The majority of the MFs (65.4%) who had undergone breast augmentation was satisfied with the result of the surgery. Fifteen were not completely satisfied, mostly because of the visibility of the scars, while three of them felt uneasy about the breasts being too far apart. Three MFs were dissatisfied because they felt the breasts were too far apart or too small in proportion to their body.

Table 16	Satisfied with vaginoplasty		Satisfied with breast augmentation	
	N	%	N	%
Yes	47	70.1	34	65.4
Partially	15	22.4	15	28.8
No	5	7.5	3	5.8
Total	67 MFs	100	52 MFs	100

Of the 67 MFs who had a vaginoplasty, 27 reported to have had sexual intercourse regularly, while five MFs had had sexual intercourse occasionally. The majority (22) of the first group and all five of the latter considered their vaginas to be deep enough and were

capable of sexual arousal and achieving orgasm. One other of the first group was not capable of sexual arousal or achieving orgasm. The remaining four MFs who had had sexual intercourse regularly did not think their vaginas were deep enough, yet were able to be sexually aroused and achieve orgasm. Four MFs had attempted but not reached sexual intercourse. Two of them had found other avenues to achieve sexual arousal and orgasm, in contrast with the other two MFs of this group who did not. Twenty-five of the remaining 31 MFs, who had never had sexual intercourse with a man, were capable of achieving sexual arousal and/or orgasm, whereas six of them were not.

Table 17	Intercourse after vaginoplasty MFs		Capable of sexual arousal and orgasm	
	N	%	Yes	No
Regularly	27	40.3	26	1
Occasionally	5	7.5	5	0
Attempted	4	6.0	2	2
Never	31	46.2	25	6
Total	67 MFs	100	58 MFs	9 MFs

Discussion

The primary aim of the present prospective follow-up study was to investigate which areas of functioning actually improved, and which did not, as a consequence of SR. The main symptom for which the patients had requested treatment, gender dysphoria, had improved to such an extent that it had disappeared after treatment. Resolution of the gender dysphoria is the main goal of SR. Satisfaction of the patients with their sex characteristics had also improved to the point that they were content with these features. This confirms the findings of other studies that found comparable results (Fleming et al., 1982; Kuiper and Cohen-Kettenis, 1992a; Lindgren and Pauly, 1975). In addition, the decrease of the group's mean score on the AAI indicated that, according to observers, their appearance had become more compatible with the new gender. Psychological functioning of the group, as measured with the NVM and the SCL-90, had also improved after SR, substantiating earlier findings on improvement in this important area of postoperative functioning (Mate-Kole et al., 1990). It is interesting to note that, compared with the data from the retrospective follow-up study of Dutch transsexuals (Kuiper, 1991), the current sample of transsexuals, treated at the same gender clinic, was found to psychologically

function better at follow-up. The fact that the previous sample primarily consisted of transsexuals who were among the very first to benefit from SR in this country, is the most likely explanation for this difference. After all, SR was not a treatment option for transsexuals until the 1970s. Consequently, many transsexuals who participated in the first follow-up study, had had to involuntary live according to their biological gender role and, conceivably, had accumulated other psychological problems in addition to the psychological suffering resulting from their gender identity conflict. This might also account for our finding that, compared with Dutch normative data, the present sample of transsexuals already appeared to psychologically function reasonably well at application.

The lack of change in the transsexuals' identification with the new gender is not surprising in view of the group's low mean pretest scores, indicating that, psychologically, they already strongly identified with the new gender before treatment had begun. In contrast, with respect to feelings of physical masculinity and femininity, a significant improvement was found. These findings can be regarded as one specific indication that adjusting the sex characteristics to the cross-gender identity, versus changing the gender identity in agreement with the biological gender, is more likely to be the appropriate treatment for the gender conflict. However, such a conclusion cannot be drawn solely on the basis of these two findings. Taking all of our prospective data into account, as a group, the transsexuals had improved in all the measured areas of functioning at follow-up. So far, one to four years after surgery, SR appeared to be therapeutic and beneficial. Furthermore, the vast majority of the group expressed no feelings of regret about their SR. However, SR did not prove to be successful for all of our participants. One MF transsexual expressed strong and another some feelings of regret, during and after treatment.

Postoperatively, we also evaluated the level of social functioning and the ability to pass in the new gender role. The majority of the group appeared to socially function quite well and was able to rely on a fairly strong social support system. Most transsexuals felt accepted and supported in the new gender role, and could rely on others in hard times. Although quite some people had lost more than one friend as a consequence of SR, the vast majority had made new friends. In addition, a major part of the participants was satisfied with their social contacts, with the opposite as well as with the same gender contacts. This might explain why a large proportion of participants did not, or only sometimes, feel lonely. However, a few individuals were unmistakably lacking support

and acceptance in their gender role. They did not feel accepted by anyone and had no one to turn to in rough times. Understandably, two of them felt lonely often.

Despite the fact that most transsexuals had never experienced being ridiculed, quite some individuals felt occasionally being laughed at. Two were actually ridiculed by strangers. Furthermore, six transsexuals had been harassed once, and three more than once, in their own neighborhood. Surprisingly, more than 97% of the group felt taken seriously completely or by most people, and no one reported to not be taken seriously by anyone. There are three explanations for this somewhat rose-colored picture. First, subjects may not have been greatly affected by adverse reactions from strangers because most superficial contacts were considered positive. Second, disappointing experiences may have been denied or downplayed to reduce cognitive dissonance after having undergone such invasive and irreversible interventions. Third, the positive social support received and the positive self-esteem may have put adverse reactions into perspective.

Where relationships and sexuality from the entire follow-up sample are concerned, half of the group had a steady sexual partner. A vast majority of this group also reported to be content with their sexual life. Furthermore, the majority of the 89% of the group who was sexually active, with or without partner, was capable of achieving orgasm.

In addition to improvement in all of the areas we measured, the follow-up findings support the conclusion that the vast majority of transsexuals functioned quite well after SR, not only socially, but also sexually. Two individuals however, require our special attention, as at least one of them needs to be recognized as having deep regrets about SR. In retrospect, this MF felt so profoundly restricted in her daily life as a woman, due to the intolerance of society, but also of family members and her own children, that, had she known the adversities she would be up against, she would not have chosen to undergo SR. She did reveal that living in her female body felt like coming home. At follow-up she was living in her desired female gender role and had no intentions of SR reversal surgeries. At that time, she explicitly indicated that special professional guidance *after* SR with the negative social and psychological consequences in her life would have made the transition more endurable. One year after follow-up, this particular MF had started living in her biological gender role as a man again. Eighteen months after that she had her breasts removed to reinforce her gender role reversal as a man. This stresses the need for good aftercare.

Even though the other MF would choose to undergo SR again, despite her disappointments, she would probably have gained from more professional care during and after treatment as well. Therapeutic guidance might have supported her in coping with the extremely difficult task of living as a woman, while daily parenting children who continued to approach her as their father.

The second aim of the study was to determine whether differences were found between MFs and FMs in postoperative functioning. This aim was also studied, in some areas of functioning, in our research on transsexual subtypes. Since adolescent transsexuals are not included in the current study, we summarize the findings of the present data regarding differences between the sexes. Compared with MFs, the FMs had improved even more in terms of their gender dysphoria, their compatible physical appearance, and they were found to psychologically function better. FMs were found to be more extrovert, and less depressed, than MFs. These findings are in agreement with earlier studies that concluded FMs to fare better than MFs in most respects (Kockott and Fahrner, 1988; Kuiper, 1991; Kuiper and Cohen-Kettenis, 1988; Pfäfflin and Junge, 1998; Verschoor and Poortinga, 1988). In contrast, FMs were more dissatisfied with their primary sex characteristics than MFs, which is most conceivable in light of the fact that most FMs did not have a penis (yet), while they still had their biological genitals. This finding also corresponds with previous findings on body dissatisfaction (Fleming et al., 1982; Kuiper and Cohen-Kettenis, 1992a; Lindgren and Pauly, 1975). This difference however, needs to be put into perspective, since that is what it really is. FMs might have expressed more dissatisfaction than MFs, but the low mean scores on all three BIS scales indicated that both sexes were satisfied to very satisfied with these characteristics.

With respect to social functioning, FMs felt more supported in the new gender role, and were also more able to rely on significant others in hard times, than MFs were. Both sexes had made new friends during or after treatment equally, yet, fewer FMs had lost contact with family or friends. Far more FMs expressed satisfaction about social contacts with women than MFs with men. In spite of the obvious better social functioning of the FMs, no differences were found between the two groups in loneliness. Finally, MFs were more often laughed at or ridiculed by strangers than FMs were. One might infer that observers participating in the study are not the only ones who noticed the less compatible physical appearance of MFs. On the other hand, this finding might primarily expose that

masculinity is more easily accepted or valued in females than femininity in males.

Differences in sexual functioning were also found. For a greater proportion of the FMs than of the MFs masturbation was frequent, and for fewer FMs than MFs masturbation hardly ever occurred. More FMs reported an increase in masturbation after SR, in contrast with most of the MFs, who reported a decrease. Finally, a much larger proportion of FMs than of MFs who were sexually active, achieved orgasm regularly. These differences might reflect hormonal effects (see Cohen-Kettenis and Gooren, 1992). Then again, they also may portray different meanings of sexuality in males and females. No difference was found however, between the sexes who had a steady sexual partner, in the reported satisfaction about their sexual life.

Satisfaction with surgical results was the final aspect we evaluated postoperatively. The majority of the MFs expressed satisfaction with their vaginoplasty as well as with their breast augmentation. Most of the FMs felt comfortable in the new gender role after their breast removal. Not all FMs were equally content however, with the results of surgery, mostly because of the visibility of the scars. Some felt (somewhat) obliged to cover their chest when swimming in public. In view of the scarce data on penile surgery for the FMs, a comparison with the MFs' degree of satisfaction with vaginoplasty seems unattainable. In general though, the majority of both the FMs and MFs appear to be content to have undergone surgery. However, more MFs than FMs appear to be satisfied with the results. In addition, FMs were more satisfied with surgery of the scrotum than of the penis. Dissatisfaction is clearly expressed by some individuals, in FMs usually due to problems with the functionality of the new organ, and in MFs mostly because of disappointment over not being able to achieve sexual arousal or orgasm, or because of necessary corrective surgery. On the other hand, more satisfaction was reported in terms of the sexual functionality of the new organ. For eight of the nine FMs who had regular sexual contact, both the penis and the scrotum provided pleasure in their sexual contact. In general, the MFs appeared to enjoy a well-functioning sexual life, as 87% of the MFs who had undergone vaginoplasty reported to be able to achieve sexual arousal and/or orgasm, with or without (ever having had) sexual intercourse.

In summary, with respect to gender dysphoria, physical appearance, and psychological functioning, the FMs had improved in these areas even more than MFs had, as a consequence of SR. Postoperatively, FMs further turned out to socially function better,

and expressed an even more fulfilling sexual life than MFs, despite obvious limitations. In contrast with these more favorable findings of the FMs, is the greater reported satisfaction of the MFs with the surgical results. As described above, discontent of FMs with surgical results was primarily due to scars resulting from breast removal or to functional problems of the penis. Advancement of surgical techniques regarding a well-functioning penile construction for FMs might enhance the ability to live in the new gender role with well-adjusted sexual characteristics indeed.

Finally, we investigated whether differences were found between transsexuals who had completed the second phase timely or slowly in postoperative functioning. In our study on prognostic factors (this volume) it already appeared that a "timely" or "slowly" completion of this phase not necessarily seemed to indicate a "favorable" or "unfavorable" quality of the SR procedure. Results of the current study show that no differences were found between the two groups at all at follow-up. We therefore conclude that the duration of the second phase does not reflect a positive or negative quality of this phase. Evidently, the various motives for postponement, and their potential impacts on the outcomes of SR, remain to be elucidated in future, preferably qualitative, studies.

In conclusion, the data of the current study substantiate the findings from other retrospective follow-up studies (see introduction), indicating that SR is indeed effective. However, alleviation of the gender problem is not equivalent with an easy life. Moreover, one MF experienced such extreme distress from the social consequences of SR that she underwent breast surgery, to resume life as a man. Apparently, clinicians need to continue to be alert for some applicants who are not good candidates for SR. These individuals probably require an even more thorough diagnostic procedure and more therapeutic support than is currently the case. For some, professional care in coping with adverse consequences *after* treatment is indispensable. It should be noted though that, during hormone treatment and the real-life experience, all transsexuals are faced with many new physical, psychological, and social experiences. In addition, they are expected to thoroughly explore and unravel whether irreversible surgical interventions will effectively meet their needs and resolve their gender identity conflict. Apparently, the majority of the transsexuals of this study accomplished to make this profound decision. For most, the strict eligibility criteria and professional guidance as currently provided appears to be sufficient, as reflected by the overall favorable outcomes of SR.

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CHAPTER 7

Summary and general discussion

Summary and general discussion

Transsexualism appears to be an old phenomenon and sex reassignment as a treatment for individuals with this diagnosis has gone through major development since it has been identified. Over the past three decades, advancement in medical techniques has enabled professionals to meet transsexuals with the realization of their wish for sex reassignment (SR). Access to treatment, cost of treatment, legal matters, and the social attitudes towards gender variant people have all been evolved. By now, SR has been investigated in many, largely retrospective, follow-up studies, and has been found to be effective in patients with severe gender identity disorder (GID). However, SR is no guarantee to a trouble-free live. To clarify the benefits and limitations of SR with further detail requires follow-up studies with a prospective design. This particular type of research is necessary to distinguish between specific areas of functioning that improve, and which decline or need special care, as a consequence of SR. In addition, differences in outcomes of SR between various subgroups of transsexuals and between male-to-female transsexuals (MFs) and female-to-male transsexuals (FMs) have not yet been substantiated with prospective data in large samples. In view of the irreversibility of SR, more conclusive evidence on how to prevent postoperative regrets is imperative. Particularly, identification of distinctive risk factors of poor postoperative functioning necessitates prospective research. By far the least explored and most controversial domain with respect to SR is early (hormone) treatment with adolescent transsexuals. Clearly, thorough evaluation of early treatment is compelling, not only to arrive at evidence-based practice, but also at evidence-based criteria for contraindications of early treatment. The prospective studies that generated from these matters are described in this dissertation and aimed to contribute to the advancement of scientific knowledge and evidence regarding these issues. Below we summarize and discuss our main findings of the studies.

Sex reassignment in adolescent transsexuals

Chapter two describes the results of our study on evaluation of early treatment with adolescent transsexuals. The clinically relevant but separate decision not to proceed with SR in other adolescents with gender identity problems was also evaluated. As far as the treated adolescents are concerned, similar results were obtained as in a previous, retrospective, study (Cohen-Kettenis and van Goozen, 1997). First and foremost, the current

data indicated that the gender dysphoria had decreased to such an extent that this primary symptom of the gender conflict was absent after treatment. This is the main goal of SR. The fact that three observers independently evaluated the adolescents' appearance to match their new gender role, corresponds with the adolescents' greater satisfaction with their overall appearance and their body characteristics after SR. Furthermore, these findings support the impression of the first study that adolescents could more easily pass in the new gender role. Just as in the first study, postoperatively the adolescents functioned quite well socially, and scored in the normal range with respect to psychological functioning. Above all, no one expressed feelings of regret concerning the decision to undergo SR. Compared with 141 adult Dutch transsexuals the adolescents fared better socially and psychologically (Kuiper and Cohen-Kettenis, 1988). Findings from the present study substantiate a few follow-up studies with adults, concluding that unfavorable postoperative outcomes are more related to a late start rather than an early one (for a review, see Cohen-Kettenis and Gooren, 1999). However, the unequivocal positive outcomes may be partially attributable to the strict criteria for treatment eligibility for adolescent SR applicants, since those patients selected for early treatment belong to the best functioning transsexuals. In addition, most of the transsexuals in our study were FMs. We know from other studies that postoperatively, FMs fare in many respects better than MFs (Kockott and Fahrner, 1988; Kuiper, 1991; Kuiper and Cohen-Kettenis, 1988, 1992; Pfäfflin and Junge, 1998; Verschoor and Poortinga, 1988). Still, it seems reasonable to conclude that careful diagnosis and strict criteria are necessary and sufficient to justify hormone treatment (and thereby a start of SR) in well-functioning adolescents, even if they are between 16 and 18 years.

The second aim of the study was to examine whether the decision not to proceed with the SR procedure for some applicants had been a sensible one. Without SR, the nontreated group showed some improvement too, but they also showed a more dysfunctional psychological profile, at pretest as well as at follow-up. In general, the nontreated subjects functioned worse than the treated subjects at follow-up. More than half of the nontreated group had been given a psychiatric diagnosis at application and/or follow-up. The most likely explanation of the intricate finding that the nontreated group reported less gender dysphoria at follow-up without SR is the probability that the intensity and quality of the gender dysphoria at pretest had been different from the treated group. Indeed, at the time of application the variation in scores on the gender dysphoria scale (as

reflected by the standard deviations) was much larger in the nontreated group. Moreover, some clinical reports suggest that there was far more gender confusion and uncertainty about SR in the nontreated group. Not to allow these patients to start medical treatment seems to have been good decision, in spite of the fact that some of the nontreated patients may actually have had GID.

In chapter three we focused on the effects of SR on the level of psychological functioning of adolescent transsexuals, as measured with the Rorschach Comprehensive System. The rationale for this study was prompted by an alternative explanation for the fact that the often-assumed association between psychopathology and transsexualism has hardly ever been found. Some clinicians, such as Lothstein (1984), argued that transsexuals suffer from borderline personality pathology. The otherwise intact reality testing of these patients supposedly becomes impaired only in unstructured situations. Subsequently, psychological deterioration resulting from SR might not become apparent with structured questionnaires. Both in the retrospective and prospective study, psychological functioning of the adolescents was measured by means of well-known reliable and valid self-report personality questionnaires. To check the validity of our previous findings and conclusions regarding the psychological stability, we investigated their level of psychological functioning making use of the Rorschach test. This instrument is thought to be less subject to influences of conscious steering in responding. The results suggested psychological stability over time. Therefore, the fear that the adolescents' psychological functioning would deteriorate as a consequence of an early start of the SR procedure is not substantiated by the Rorschach findings. Rather, aside from our findings being consistent with questionnaire data from earlier studies, the Rorschach data may point to some improvement in reality testing.

Transsexual subtypes

Whether transsexuals can be validly subdivided into subtypes on the basis of sexual orientation and whether this distinction revealed differences in postoperative functioning was explored in chapter four. Adolescent as well as adult transsexuals participated in this study. Differences between the two subtypes of transsexuals were also examined between MFs and FMs, as this latter group has hardly been studied. Our data support some earlier

assessment findings that homosexual transsexuals have a stronger cross-gender identity in childhood, apply for SR at a younger age, report less sexual arousal while cross-dressing, and are or have been less often married. At application, we further found that the appearance of the homosexuals was already considered to be more compatible with the new, desired gender. In addition, they psychologically functioned better than the *non*homosexual transsexuals. Despite their more cross-gendered childhood however, the homosexual transsexuals did not differ in the intensity of their gender dysphoria and body dissatisfaction from the *non*homosexual transsexuals. These findings suggest that the two subtypes arrive at the request for SR along different developmental routes. These pathways apparently do not imply less severe gender dysphoria for the *non*homosexuals, but they do come to this decision much later. On the basis of the characteristics on which the subtypes did differ, the road along which the *non*homosexual subtype evolves the gender identity conflict is most likely to be accompanied with more obstacles. This might explain the presence of more psychological problems compared with the homosexual group at the time they applied for SR, and, the contrasting disappearance of many differences in psychological functioning at follow-up. Nevertheless, the two individuals who expressed regrets during and after SR were *non*homosexual transsexuals.

Our findings led us to conclude that the distinction between subtypes of transsexuals on the basis of sexual orientation is theoretically and clinically meaningful. Considering the fact that both groups indicated an absence of gender dysphoria and functioned well in several areas of life after treatment, a *non*homosexual preference is not necessarily a contraindication for SR. However, taking into account that the *non*homosexuals are psychologically more vulnerable than the homosexuals, especially before treatment, they may require additional guidance during treatment.

The findings further indicated that the distinction between subtypes is not manifested entirely similar in MFs and FMs. For example, the MF *non*homosexual subtype primarily generated two interaction effects that were found in the study: the first by their relatively high age, the other by their unfavorable appearance. No differences were found between *non*homosexual and homosexual FMs on these two characteristics. Whereas differences were found between the MF subtypes in being (or having been) married, and in sexual arousal while cross-dressing, no such differences were revealed between the FM subtypes.

These effects may very well be manifestations of more similar routes to SR between homo- and *non*homosexual FM's than between homo- and *non*homosexual MFs. This intricate finding however, remains to be elucidated in future research.

Predictors of the course and outcomes of sex reassignment

In chapter five we described a study on predictors of the course and outcomes of SR. First, we investigated which factors at assessment determined whether applicants were allowed to start the SR procedure. We found that eligibility for SR was largely based upon the factors gender dysphoria, psychological stability, and physical appearance.

Second, we aimed to identify predictors of potential drop-outs of hormone treatment. Our data showed that transsexuals are more at risk to discontinue hormone treatment when they are biological men, show more psychopathology, more GID symptoms in childhood, yet less symptoms of gender dysphoria at application. As many studies have found FMs to fare better than MFs in most respects (Kockott and Fahrner, 1988; Kuiper, 1991; Kuiper and Cohen-Kettenis, 1988, 1992; Pfäfflin and Junge, 1998; Verschoor and Poortinga, 1988), the greater vulnerability of MFs to drop out of treatment, is comprehensible. At first sight, a somewhat more puzzling finding is the association between having more GID symptoms in childhood and dropping out of treatment. It must be noted though, that it is the combination of factors that increases the probability to drop out of treatment before surgery has taken place. In particular, inconsistencies in reporting more GID symptoms in childhood, but less gender dysphoria at assessment should alert the clinician.

The third area of prediction was directed at clarifying which factors determine the timely or slowly duration of the second phase of the SR procedure. Our findings implied that MF applicants reporting less negativism, are more likely to complete the second phase "on time" than other applicants. The assumption that unexpected problems would possibly be the main reason for a longer duration appeared to be incorrect. So far, an "on time" or "slow" completion of the SR does not necessarily seem to indicate a "favorable" or "unfavorable" quality of the duration of the SR procedure. Research examining the outcomes of SR between these two groups, in terms of their general and psychological functioning, would provide more insight in this matter. This was one of the aims of the final study described in this thesis (see the next section below).

Finally, we investigated which factors could predict postoperative functioning and

treatment satisfaction. The data show that postoperative functioning can be predicted on the basis of sexual orientation, psychological functioning, and body image. Individuals with a *non*homosexual orientation, high psychopathology scores, and strong dissatisfaction with secondary sex characteristics at assessment, are more likely to function poorly and report more dissatisfaction with SR after treatment. It is of interest that psychological functioning turned out to be a predictor of eligibility for SR as well as of postoperative functioning and treatment satisfaction. This signifies that clinicians participating in this study recognized the impact of psychological dysfunction of the applicant for outcomes of SR, when deciding upon referral for hormone treatment. This finding substantiates the results of one study that also identified psychological instability as a risk factor for postoperative functioning (Kuiper and Cohen-Kettenis, 1998).

Apart from psychological instability and dissatisfaction with secondary sex characteristics, *non*homosexual applicants were found to be more at risk for relatively poor postoperative functioning. This finding supports the outcome of a few studies that revealed more regrets after SR in individuals with this sexual preference (Blanchard et al., 1989; Landén et al., 1998; Smith et al., this volume).

Dissatisfaction with secondary sex characteristics at assessment was another factor that predicted an unfavorable outcome. This finding can be explained in various ways. Either the appearance of the sex characteristics negatively affected the mood or psychological stability of the individuals throughout treatment, or it negatively affected the way persons were actually treated by the environment, or both of these explanations applied. At assessment, clinicians rightly took the physical appearance of the applicant into account as a significant factor for postoperative functioning.

In conclusion, some of the potential risk factors from the literature or from retrospective studies indeed appeared to be important for predicting the course and outcomes of SR. Furthermore, factors were found that could assist clinicians identifying individuals who might be at risk for poor outcomes during or after treatment (see the section on clinical implications below).

Sex reassignment in adult transsexuals

The first aim of our study on outcomes of SR in adult transsexuals was to investigate whether they actually improved in several important areas of functioning, as a

consequence of SR. The main symptom for which the patients had requested treatment, gender dysphoria, had improved to such an extent that it had disappeared after treatment, which is the primary goal of SR. Improvement was also found in satisfaction of the patients with their sex characteristics to the degree that they were content with these features. In addition, according to observers, the appearance of the transsexuals had become more compatible with the new gender. Psychological functioning of the group had also improved after SR. Compared with the data on psychological functioning from the retrospective follow-up study of Dutch transsexuals (Kuiper, 1991), this sample of transsexuals treated at the same gender clinic was found to psychologically function better at follow-up. It is interesting to note that, compared with Dutch normative data, the current sample of transsexuals already appeared to psychologically function reasonably well at application. The transsexuals already strongly identified with the new gender psychologically before treatment had begun. Conversely, with respect to feelings of physical masculinity or femininity, a significant improvement was found at follow-up.

In summary then, as a group the transsexuals had improved in all the measured areas of functioning at follow-up. Postoperatively, most of the subjects also functioned quite well, socially, sexually, and in the new gender role. Above all, the vast majority of the group expressed no feelings of regret about their SR. So far, one to four years after surgery, SR appeared to be therapeutic and beneficial. However, SR did not prove to be successful for all of our participants. In particular, one MF transsexual expressed strong regret and another some feelings of regret, during and after treatment. (Both were *non*homosexual MFs, see the section on transsexual subtypes above). It is important to be aware of the fact that even the person who experienced regret to the extent that she had resumed life in the biological gender role as a man, assigned these feelings to the adverse reactions from society.

The second purpose of the study was to determine whether differences could be recognized between MFs and FMs in postoperative functioning. Although we compared these two groups in the study of transsexual subtypes as well, in the current investigation other important areas of functioning were more extensively examined.

Most of the differences we found between the sexes are in agreement with previous studies that concluded FMs to fare better than MFs in most respects. With regard to gender dysphoria, physical appearance, and psychological functioning, the FMs had

improved in these areas even more than MFs had. Postoperatively, FMs further turned out to socially function better, feel more supported and less confronted with adverse reactions from others, and also reported a better ability to pass and function in the new gender role. They even expressed a more fulfilling sexual life than MFs, despite obvious limitations. FMs did seem to feel uneasy about the fact that many of them did not have a penis (yet), as they showed less increase in satisfaction than MFs with their primary sex characteristics. In contrast with these conclusively favorable findings in FMs, is the greater reported satisfaction of the MFs than of the FMs with surgical results. Discontent of FMs with these results was primarily due to scars resulting from breast removal or to functional problems of the penis.

The final focus of the study was to examine whether there are differences in outcomes of SR between transsexuals who had completed the second phase timely or slowly. The results revealed no differences at all between the two groups at follow-up. We therefore concluded that the duration of this phase is no indication of a positive or negative quality of this part of the SR procedure, at least not as measured in this sample.

To summarize, the outcomes of this study substantiate the conclusion from retrospective follow-up studies that SR in adults is indeed effective. Most transsexuals accomplish to realize the gender role transformation successfully. However, clinicians need to be alert for some applicants who are not good candidates for SR. These individuals may require additional therapeutic support to unravel whether surgery will enhance their well-being in the new gender role. For some, professional care in coping with adverse consequences *after* treatment is indispensable.

Clinical implications

The results of our studies regarding the outcomes of SR in adolescent transsexuals, point to the desirability of early rather than late medical interventions. From the data it seems that prevention of false positives when following careful diagnostic procedures is feasible. However, strict diagnostic criteria and conscientious decision-making in adolescence does not preclude that rejected or withdrawing applicants will seek SR later in life. Despite evident therapeutic and beneficial outcomes of SR, referral for hormone treatment in adolescent transsexuals always needs to be accompanied with the awareness that some applicants are not good candidates for SR and probably never will be good candidates. Starting

hormone treatment before adulthood should not be considered when too many adverse factors operate simultaneously, despite the possibility that applicants may actually be transsexual. Even for experienced multidisciplinary teams, disentangling (nongender) problems, that might necessitate different or acute care, from other problems, is more complicated in problematic than in well-functioning adolescents.

From our research on predictors of the course and outcomes of SR, the "sample" of clinicians, who had diagnosed all of the subjects involved in this study, appropriately assessed the impact of some of the risk factors, yet seemed to have underestimated others. They apparently recognized the impact of the psychological functioning and the physical appearance of the applicant at application as significant factors for postoperative functioning. On the other hand, the combination of reporting more GID symptoms in childhood, but less gender dysphoria at assessment, coming from MFs in the presence of psychopathology, should alert the clinician. These inconsistencies may represent either a confusion of the applicant about their development, an (unconscious) exaggeration of the history because current feelings are not clear-cut, or a conscious effort to mislead the clinician. Besides an adjusted diagnostic procedure, these individuals may require special professional care *if* they are allowed to start hormone treatment, as they may be at risk for dropping out prematurely.

In conclusion, clinicians should take the subtype of transsexualism into account when they decide to proceed with any of the treatment phases, as a *non*homosexual preference is associated with a worse outcome of SR. Since *non*homosexual (late onset) transsexuals are more often ambivalent about SR, they might gain from adapted hormone interventions. They may, for instance, be given only antiandrogens for several months. Other options are a prolongation of the real-life experience or the requirement to live in the opposite role without hormones for some time. Moreover, when *non*homosexual transsexuals report strong dissatisfaction with their secondary sex characteristics in the presence of high psychopathology, they deserve particular attention when treatment eligibility is assessed. In spite of the fact that these factors together could not completely predict the outcomes of SR, their combination must be of primary concern in the diagnostic procedure. After all, analysis of the problems generated by these factors is what needs to be addressed before treatment, in order to assess the probability that they will result in poor postoperative functioning for the individual. These individuals may benefit from additional professional guidance, especially after SR, while adjusting to their new lives and coping with unexpected adversities. Psychotherapy may need to focus on problems resulting from the psychological instability and unfavorable physical appearance of these particular *non*homosexual transsexuals.

Research implications

In spite of the favorable outcomes of SR in our studies with adolescent transsexuals, the total number of young subjects involved remains small. Prospective studies including larger samples may reveal whether our findings are representative for all adolescents undergoing early hormone treatment. Moreover, our minimum follow-up period was one year. It goes without saying that longer periods of follow-up are needed to assess the ultimate outcomes and the stability of the beneficial effects of early SR for adolescent transsexuals.

Although the origins of transsexualism are still largely unclear, the different manifestations of homosexual and *non*homosexual subtypes of transsexualism found in this study support the suggestion that they reflect different etiologies. This clearly is a topic for future research. Studies focusing on how the cross-gender identity evolves in childhood and the development of the gender dysphoria into adulthood might bring us one step closer to the source of potential etiological differences.

The finding that the *non*homosexual transsexuals functioned reasonably well psychologically and reported an absence of gender dysphoria after SR, calls for additional prospective research. Longer periods of follow-up are needed, comparing both subtypes, to confirm the relatively positive outcomes for *non*homosexual transsexuals, since this preference turned out to be a risk factor for poor postoperative functioning. In addition, more detailed accounts of psychotherapies with these patients might elucidate specific mechanisms that contribute to psychological problems at application, on the one hand, and, to their alleviation after psychotherapy at follow-up, on the other.

From our study on transsexual subtypes, differences between homo- and *non*homosexual transsexuals were not entirely similar for MFs and FMs. These effects may be manifestations of more similar routes to SR between homo- and *non*homosexual FMs than between homo- and *non*homosexual MFs. This intricate finding however, remains to be clarified in future research.

In our investigation on predictors of the course and outcomes of SR, we were

primarily interested in factors that could have been known to clinicians before the decision to refer for SR was made. We therefore did not focus on influencing factors that operate during or after treatment, such as loss of work and family, poor surgical results, and lack of social support and professional guidance (Lundström et al., 1984; Pfäfflin, 1992; Ross and Need, 1989; Spengler, 1980). Although these factors can hardly be predicted to occur after treatment, the potential impact they may have on postoperative functioning necessitates research on these issues with more detail.

On the basis of our findings on postoperative functioning of transsexuals who completed SR timely or slowly, we conclude that the duration of the second phase is no indication of a positive or negative quality of this phase. Evidently, more research is needed, preferably a qualitative investigation, of the various motives for postponement, and perhaps for urgency of the surgical transition, to reveal potential impacts of one or the other duration on the outcomes of SR in ways that did not surface in the current study.

Despite the general favorable effects of SR on adult transsexuals, some FMs expressed discontent with surgical results. The number of FMs from whom we had obtained surgical data was small. In light of the findings that poor surgical outcomes largely accounted for postoperative psychopathology in 14 MFs (Ross and Need, 1989), surgical results of larger samples with FMs need to be studied more extensively to assess the ultimate outcome.

To conclude, the prospective research described in this thesis included 345 applicants for SR. More than half of this group (232) was considered eligible for treatment. Still more than half of the initial group had completed SR (196). From 84% of the subjects who were included as completers of treatment (188), follow-up data were gathered. Two transsexuals expressed feelings of regret during and after SR. Both of them attributed these feelings to their suffering from a critical environment, as opposed to the treatment itself. However, the vast majority of the treated transsexuals functioned well and expressed satisfaction about living in the new gender role at follow-up. Considering the large samples and the prospective design of the studies, the findings indicate that SR is medically effective for adult and adolescent transsexuals indeed, provided that careful diagnosis and professional guidance are secure. Future studies are needed to reveal whether the drop-outs of this study will report similar favorable outcomes without completion of SR.

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Nederlandse samenvatting

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Het verschijnsel transseksualiteit kan worden gedefinieerd als de meest extreme vorm van een genderidentiteitsstoornis (GID). Zij gaat gepaard met de wens verlost te worden van de aangeboren geslachtskenmerken en de behoefte om volledig en permanent te leven als iemand van het andere geslacht. Indien deze wens na een intensieve diagnostische selectieprocedure blijft bestaan, kunnen personen met een GID in aanmerking komen voor een geslachtsaanpassende behandeling (GAB). De GAB heeft tot doel de discrepantie tussen de subjectief ervaren genderidentiteit en de tegenovergestelde lichamelijke geslachtskenmerken te overbruggen, door het individu zo volledig mogelijk te laten leven als iemand van het gewenste geslacht.

Dit proefschrift heeft betrekking op de GAB bij adolescenten en volwassenen. Het proefschrift bevestigt op prospectieve wijze het therapeutische effect van de GAB. Deze was in een aantal, grotendeels retrospectieve, follow-up onderzoeken, reeds aangetoond. Niet eerder is onderzocht, in hoeverre de gegevens die bij aanmelding bekend zijn daadwerkelijk voorspellen welke patiënten de behandeling met succes zullen afronden en welke risico lopen de behandeling voortijdig af te breken. Gezien de ingrijpendheid en vooral vanwege de onomkeerbaarheid van de GAB, is in de huidige prospectieve studies ook onderzocht welke gebieden van het postoperatieve functioneren van transseksuelen verbeteren tengevolge van de GAB, en welke verslechteren of nazorg behoeven. Tenslotte is in de studies aandacht besteed aan het verschil in resultaat tussen subgroepen. De effecten van de GAB zijn onderzocht bij adolescenten en volwassenen. Tevens zijn verschillen in effecten tussen de subtypen homoseksuele en niet-homoseksuele transseksuelen bestudeerd. In de studies met volwassenen zijn verschillen tussen man-naar-vrouwen (MVn) en vrouw-naar-mannen (VMn) onderzocht.

Het minst ontgonnen en tegelijkertijd het meest controversiële terrein ten aanzien van de GAB is de *vroege* hormoonbehandeling van transseksuele adolescenten. De noodzaak van een grondige evaluatie van de effecten van zo een vroege start van de GAB is evident. De prospectieve studies die zijn beschreven in dit proefschrift dienen ter bevordering van de wetenschappelijke kennis ten aanzien van de vraagstukken, die clinici bezig houden bij de selectie en behandeling van personen met een GID. De belangrijkste bevindingen van dit proefschrift worden nu per hoofdstuk samengevat.

Hoofdstuk 1 geeft een inleiding op termen en definities die betrekking hebben op de transseksuele problematiek. Voorts wordt de ontwikkeling van een GID, de prevalentie en haar continuering in de volwassenheid beschouwd, tezamen met etiologische theorieën omtrent het ontstaan van transseksualiteit.

Het is opvallend dat een cross-gender identiteit en cross-gender gedrag al sinds eeuwen zijn gesignaleerd bij mannen en vrouwen in westerse en oosterse culturen. Transseksualiteit wordt als diagnostische term echter pas gehanteerd sinds de eerste geslachtsaanpassingen tegen het einde van de jaren '40 van deze eeuw. Sindsdien heeft de GAB voor transseksuele patiënten enorme ontwikkelingen doorgemaakt. Toegankelijkheid, vergoedingen en juridische mogelijkheden van deze behandeling zijn allen verbeterd. Bovendien is de maatschappelijke tolerantie ten aanzien van gender afwijkende individuen en de GAB toegenomen.

Het gevoel tot de andere sekse te behoren kan reeds aanwezig zijn tijdens de peuterleeftijd. De meeste kinderen met een GID zullen zich als volwassenen echter niet ontwikkelen tot transseksuelen. Tot op heden geeft geen van de etiologische theorieën een sluitende en op empirische gegevens gefundeerde verklaring voor het ontstaan van transseksualiteit.

Tenslotte komen in hoofdstuk 1 de verschillende fasen en aspecten van de klinische praktijk van de GAB aan de orde. De procedure van de geslachtsaanpassing vindt plaats in drie verschillende fasen. De eerste is de uitgebreide diagnostische fase. De focus ligt hierbij op het diagnosticeren, dan wel uitsluiten, van transseksualiteit of minder extreme GIDs en op het identificeren van individuele risico's voor een GAB. Gedurende de tweede fase vindt de zogeheten "Real-life Experience" plaats. In de regel wordt deze fase ondersteund met hormoonbehandeling. Het doel van deze fase is om de transseksueel te doen ervaren wat het betekent om daadwerkelijk zo volledig mogelijk in de nieuwe genderrol te leven, alvorens men in de derde fase, met behulp van chirurgische aanpassingen, besluit om permanent en onomkeerbaar als de andere sekse te leven.

In **hoofdstuk 2** wordt geëvalueerd of de beslissing om transseksuele adolescenten te indiceren voor een *vroege* hormoonbehandeling (tussen 16 en 18 jaar) wordt gesteund door positieve effecten op het postoperatieve functioneren van deze groep.

Het hoofddoel van de GAB is vermindering van genderdysforie, hetgeen het

primaire symptoom van een genderidentiteitsconflict is. Genderdysforie verwijst naar het psychisch lijden tengevolge van de onoverbrugbare discrepantie tussen het lichaam en de subjectief ervaren genderidentiteit.

Uit de evaluatie van 20 transseksuelen die als adolescent voor hormoonbehandeling zijn geïndiceerd, blijkt dat de genderdysforie na de GAB is verdwenen. In overeenstemming hiermee is de gerapporteerde tevredenheid door de patiënten zelf over hun verschijning in het algemeen en over hun lichaamskenmerken. Ook drie onafhankelijke observatoren beoordeelden het uiterlijk van de adolescenten, na de behandeling, als beter passend bij het gewenste geslacht. Verder bleken de adolescenten na de GAB psychisch en sociaal goed te functioneren. Bovendien gaf geen enkele adolescent aan enig gevoel van spijt te ervaren ten aanzien van de beslissing om deze behandeling te ondergaan.

De eenduidige positieve resultaten zouden verklaard kunnen worden door de strenge selectiecriteria, waardoor alleen de sociaal en psychisch goed functionerende adolescenten zijn toegelaten tot een *vroege* behandeling. Tevens moet worden opgemerkt dat deze behandelde groep voornamelijk uit VMn bestond. Van deze groep is bekend dat zij postoperatief meestal beter functioneren dan MVn. Desondanks kan geconcludeerd worden dat een weloverwogen diagnostische procedure en strenge selectiecriteria noodzakelijk en voldoende zijn om een *vroege* hormoonbehandeling te starten in goed functionerende adolescenten.

Een tweede doel van deze studie betrof het evalueren van 21 adolescenten die werden afgewezen voor de GAB. Zonder GAB liet ook deze groep enkele verbeteringen zien in verschillende gebieden, zij het in mindere mate dan de behandelde groep. Daarenboven werd bij hen meer ernstige psychopathologie gevonden, zowel bij aanmelding als bij de nameting. Ondanks het gegeven dat een aantal van de niet behandelde adolescenten een GID hadden, lijkt het een juiste besluitvorming te zijn geweest om hen (nog) niet aan een GAB te laten beginnen.

In **hoofdstuk 3** worden de effecten besproken van een *vroege* GAB op het psychisch functioneren van 22 transseksuele adolescenten, zoals gemeten met de Rorschach inktvlekken test.

In de voorgaande evaluatiestudies van een *vroege* hormoonbehandeling bij adolescenten is psychische stabiliteit, zowel voor als na de GAB, aangetoond met behulp

van gestructureerde vragenlijsten. Ter validering van deze eerdere bevindingen en conclusies hebben we het psychisch functioneren in dit onderzoek gemeten met de Rorschach Comprehensive System. Deze test is minder gestructureerd en eventuele misleidende antwoorden of antwoorden waarbij, al dan niet bewust, getracht wordt een positievere indruk te geven, zouden moeilijker te verbergen zijn. De resultaten van deze test suggereerden echter eveneens psychische stabiliteit bij de adolescenten die een *vroege* GAB hebben ondergaan. Bovendien werd een verbetering in de realiteitstoetsing na de behandeling gevonden.

In **hoofdstuk 4** komt het vraagstuk aan de orde of het zinvol is om transseksuelen in subtypen onder te verdelen op basis van hun seksuele voorkeur en specifiek of dit onderscheid leidt tot verschillen in postoperatief functioneren. In een groep van 187 adolescenten en volwassenen die in aanmerking kwamen voor de GAB, zijn homoseksuele (met een voorkeur voor een partner met hetzelfde biologische geslacht: MVn voor mannen en VMn voor vrouwen) en niet-homoseksuele transseksuelen met elkaar vergeleken.

De groep homoseksuele transseksuelen was, bij aanmelding voor de GAB, jonger, had een sterkere cross-gender identiteit als kind, had een uiterlijk dat beter paste bij het gewenste geslacht, en functioneerde psychisch beter dan de niet-homoseksuele groep. Een kleiner percentage homoseksuelen dan niet-homoseksuelen was (ooit) getrouwd (geweest) en ervaarde seksuele opwinding tijdens omkleding. Er werden echter geen verschillen gevonden tussen de twee groepen in de mate van genderdysforie, ontevredenheid over hun lichaamskenmerken, en lengte, gewicht en body mass index, bij aanmelding.

Bij de nameting waren de meeste verschillen in het psychisch functioneren verdwenen en bij beide groepen was genderdysforie nagenoeg afwezig. Desalniettemin waren de twee transseksuelen die gevoelens van spijt hadden ervaren tijdens en na de GAB beiden niet-homoseksuele transseksuelen.

De verschillen die zijn gevonden tussen homoseksuele en niet-homoseksuele transseksuelen suggereren een verschillend ontwikkelingspad voor elk van deze subtypen. Het verloop van het genderidentiteitsconflict bij de niet-homoseksuele transseksuelen gaat waarschijnlijk gepaard gaat met meerdere problemen. Dit zou het sterkere psychische disfunctioneren bij aanmelding, in combinatie met de verbeterde psychische stabiliteit na

de behandeling, kunnen verklaren. De resultaten wijzen op het theoretische en klinische belang van het onderscheid tussen homoseksueel en niet-homoseksueel georiënteerde transseksuelen. Gezien het feit dat beide groepen postoperatief beter functioneren dan bij aanmelding en het genderidentiteitsconflict na behandeling bij beide groepen afneemt, is er geen aanleiding om een transseksueel met een niet-homoseksuele voorkeur als minder geschikt te beschouwen voor de GAB, dan een transseksueel met een homoseksuele voorkeur. In het licht van hun psychische kwetsbaarheid zullen niet-homoseksuele transseksuelen echter wellicht kunnen profiteren van extra begeleiding tijdens de behandeling.

Een tweede doel van deze studie was om te onderzoeken of de verschillen tussen homoseksuele en niet-homoseksuele transseksuelen op dezelfde manier tot uiting komen voor MVn en voor VMn. De resultaten tonen meer verschillen tussen homo- en niet-homoseksuele MVn, terwijl er veel minder verschillen waren gevonden tussen homo- en niet-homoseksuele VMn. Dit impliceert dat het ontwikkelingspad voor subtypen binnen de VMn niet zo verschillend is als tussen homo- en niet-homoseksuele MVn. Deze veronderstelling dient echter nader onderzocht te worden.

Hoofdstuk 5 beschrijft het onderzoek naar voorspellende factoren voor het verloop en de resultaten van de GAB. Hiervoor zijn de gegevens van 345 adolescente en volwassen aanvragers voor een GAB bestudeerd.

Ten eerste is onderzocht op basis van welke factoren patiënten zijn verwezen om te starten met de hormoonbehandeling. Om deze onderzoeksvraag te beantwoorden zijn 113 niet-beginners vergeleken met 232 wel-beginners van de hormoonbehandeling. Uit de resultaten blijkt dat toegang tot de GAB voornamelijk werd bepaald door de mate van genderdysforie, psychische stabiliteit en de lichamelijke verschijning.

Ten tweede zijn factoren geïdentificeerd die voorspellen welke patiënten afhaken tijdens de hormoonbehandeling. Voor deze vraag zijn gegevens bestudeerd van 36 transseksuelen die de behandeling hebben gestaakt. De data geven weer dat transseksuelen een verhoogd risico hebben om af te haken, als zij biologische mannen zijn, meer psychopathologie vertonen, meer cross-gender symptomen als kind hebben, maar in mindere mate genderdysforie rapporteren bij aanmelding. Gezien de studies die aantonen dat VMn op veel gebieden beter functioneren dan MVn na de GAB, is de grotere kwetsbaarheid van MVn om af te haken, niet zo onverwacht. De bevinding dat

meer cross-gender symptomen als kind de kans vergroten op afhaken tijdens de tweede fase roept meer vragen op. Het is derhalve van belang om de combinatie van factoren in ogenschouw te nemen, om enige vorm van predictie te kunnen doen. Met name de inconsistentie tussen veel GID symptomen als kind, maar weinig genderdysforie bij aanmelding dienen de clinicus te alarmeren.

Ten derde zijn factoren belicht die een tijdige voltooiing van de tweede fase (start hormonen tot operatieve ingrepen) van de behandeling bepalen. Hiervoor zijn 110 tijdige en 86 trage voltooiiers van de GAB met elkaar vergeleken. Gebleken is dat MVn die minder negativisme rapporteren eerder geneigd zijn om de tweede fase tijdig te voltooien dan MVn die meer negativisme rapporteren. De veronderstelling dat het traag doorlopen van de tweede fase gerelateerd zou zijn aan problemen en negatieve omstandigheden, bleek onjuist.

Tenslotte is onderzocht welke factoren het postoperatieve functioneren en de mate van tevredenheid met de behandeling voorspellen. Hiervoor zijn alle 196 behandelde transseksuelen bestudeerd. De resultaten geven aan dat het postoperatieve functioneren voorspeld kan worden aan de hand van de seksuele oriëntatie, het psychisch functioneren, en het lichaamsbeeld. Transseksuelen met een niet-homoseksuele voorkeur, hoge psychopathologie scores, en sterke ontevredenheid met hun secundaire geslachtskenmerken bij aanmelding, lopen een groter risico op slechter functioneren en meer ontevredenheid na de behandeling.

In hoofdstuk 6 wordt besproken op welke gebieden een verbetering wordt waargenomen na de GAB bij 171 transseksuele volwassenen ten opzichte van metingen voorafgaand aan de behandeling.

De resultaten tonen een verbetering na de GAB op allerlei gebieden. Na de GAB blijkt genderdysforie afwezig te zijn, hetgeen het belangrijkste doel is van deze behandeling. Verder is de tevredenheid met hun lichaamskenmerken toegenomen en wordt hun uiterlijke verschijning als beter passend bij het gewenste geslacht beoordeeld. Ook het psychisch functioneren blijkt te zijn verbeterd. Tenslotte blijkt de overgrote meerderheid van de transseksuelen ook op sociaal en seksueel gebied goed te functioneren en geen spijt te hebben van de GAB of van het leven in de nieuwe genderrol. Toch rapporteerde een aantal patiënten bedenkingen over de positieve effecten van de GAB.

Twee MVn hebben gevoelens van spijt ervaren, zowel tijdens als na de behandeling. Beiden schreven deze gevoelens toe aan de sociale en maatschappelijke intolerantie die zij ontmoetten. Allebei rapporteerden zij bij de follow-up blij te zijn met de geslachtsaanpassing. Een van hen zou, terugblikkend, toch weer voor dezelfde behandeling kiezen. Zij is als vrouw blijven leven. Daarentegen leeft de ander inmiddels weer in zijn oorspronkelijke rol als man.

In vergelijking met de eerste retrospectieve evaluatie van de GAB bij Nederlandse transseksuelen, blijken de patiënten uit het huidige onderzoek een grotere postoperatieve psychische stabiliteit te vertonen. Pas in de jaren '70 is in Nederland de GAB een reële behandeloptie voor transseksuelen geworden. De eerste behandelde groep bestond dan ook grotendeels uit transseksuelen die voor langere tijd ongewild in hun biologische rol hadden geleefd, wat tot additionele psychische problemen had geleid, naast het psychisch lijden tengevolge van hun genderidentiteitsconflict. Dit zou kunnen verklaren dat de huidige patiëntengroep zowel voor als na de behandeling psychisch beter functioneerde dan de eerder behandelde groep.

In dit onderzoek is ook gekeken naar eventuele verschillen in effecten van de GAB voor MVn en VMn. Op basis van de huidige prospectieve data is bij VMn op veel gebieden een grotere verbetering te zien dan bij MVn, hetgeen in overeenstemming is met eerdere, voornamelijk retrospectieve, studies. Daarentegen waren MVn meer tevreden over de operatieve resultaten. Dit gegeven kan mogelijk verklaard worden door het feit dat het merendeel van de VMn (nog) geen penisconstructie had ten tijde van de nameting. Bovendien vermeldden diegenen met een penisconstructie vaker functionele problemen met het nieuwe orgaan.

Een laatste doel van dit onderzoek was te bestuderen of er bij transseksuelen die de tweede fase tijdig hadden voltooid, andere effecten van de GAB waren te constateren dan bij diegenen die deze fase relatief traag doorliepen. Op geen enkele nameting waren verschillen gevonden tussen deze twee groepen van behandelde transseksuelen. Derhalve kan geconcludeerd worden, dat de duur van deze fase van de behandeling geen indicatie is van de kwaliteit van deze fase.

Samengevat ondersteunen de resultaten van dit onderzoek de klinische ervaring dat de GAB effectief is voor de behandeling van het genderidentiteitsconflict van transseksuelen. Het verhelpen van het genderidentiteitsconflict staat echter niet gelijk aan een zorgeloos leven, zoals mag blijken uit uitingen van een aantal individuen over vervelende sociale reacties of onverwachte gevolgen van de behandeling. Temeer daar twee transseksuelen spijt ervaarden tijdens en na de GAB. Kennelijk dienen clinici alert te blijven op transseksuelen die kwetsbaar zijn voor negatieve effecten of gevolgen van de behandeling. Als deze individuen in aanmerking komen voor de GAB, zullen zij wellicht gebaat zijn bij meer professionele begeleiding dan het standaard aanbod. Voor het leren omgaan met tegenslagen die voortkomen uit het leven in de nieuwe genderrol, is therapeutische begeleiding *na* de GAB onmisbaar.

Transseksuelen worden gedurende de hormoonbehandeling en de Real-life Experience geconfronteerd met verscheidene nieuwe lichamelijke, psychische en sociale ervaringen. Bovendien wordt van hen verwacht dat zij in deze periode grondig de voor- en nadelen van een geslachtsaanpassing afwegen en tot een beslissing komen of onomkeerbare operaties hun genderidentiteitsconflict zal doen opheffen. Blijkbaar slaagt het merendeel van de transseksuele patiënten erin om deze beslissing voor het leven te nemen. Voor de meeste transseksuelen die hebben deelgenomen aan dit onderzoek, lijken de gehanteerde strenge toelatingscriteria en de aangeboden therapeutische begeleiding dan ook voldoende te zijn, om het genderidentiteitsconflict via deze weg te behandelen.

Dankwoord

Dankwoord

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Curriculum Vitae

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Yolanda Smith is geboren op 23 november 1962 te 's Gravenhage. Haar HAVO-diploma behaalde zij op het Christelijk Atheneum te Arnhem in 1981. Van 1982 tot 1986 volgde en voltooide zij de opleiding tot docente Klassieke Dans aan het Conservatorium te Tilburg. Hierna verhuisde zij naar San Diego, Californië, om zich een jaar te specialiseren op het gebied van de dans aan The School of Performing and Visual Arts van The United States International University. Aansluitend ontving zij een scholarship award aan deze universiteit, waarmee zij haar Masters Degree of Fine Arts behaalde in juni 1988. Tijdens haar verblijf in San Diego is zij als danseres en dansdocente werkzaam geweest tot zij in januari 1991 terugkeerde naar Nederland.

In september 1991 is zij begonnen met de studie psychologie aan de Universiteit Utrecht, die zij in augustus 1995 cum laude voltooide. Daarna heeft zij anderhalf jaar met verscheidene werkzaamheden deelgenomen aan de arbeidsmarkt. In februari 1997 werd zij bij Prof. Dr. P.T. Cohen-Kettenis voor twee dagen per week aangesteld op de afdeling Kinder- en Jeugdpsychiatrie van het Universitair Medisch Centrum Utrecht voor het uitvoeren van een deelstudie naar behandelresultaten van transseksuele patiënten. Vanaf september 1998 werd de aanstelling als onderzoeksassistent omgezet tot promovendus om de verzamelde data in de voorafgaande periode te verwerken tot het huidige proefschrift.

Daarnaast verkreeg zij in september 1997 een plaats op de postdoctorale opleiding tot psychotherapeut aan de RINO Noord-Holland te Amsterdam. Het cursorische deel van deze opleiding heeft zij in maart 2001 afgerond. De afronding van de praktijkopleiding is gepland in de loop van het jaar 2002, via haar aanstelling op de afdeling Kinder- en Jeugdpsychiatrie van het Universitair Medisch Centrum Utrecht.

Op 18 juni 1996 is zij getrouwd met Aldert Nooitgedagt. Samen kregen zij een dochter, Micky Yael, op 7 mei 2000.