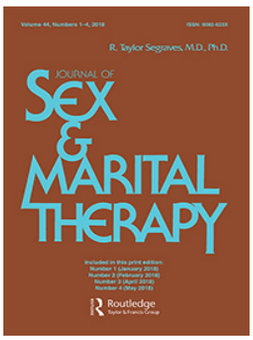

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Sexual Experiences in Transgender People: The Role of Desire for Gender-Confirming Interventions, Psychological Well-Being, and Body Satisfaction

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ABSTRACT

We examined the role of gender-confirming treatment (GCT; i.e., hormonal treatment and genital surgery), psychological well-being, and body satisfaction in the sexual feelings and behaviors of transgender adults. A survey was conducted among a nonclinical sample of 325 male-to-female (MtF) and 251 female-to-male (FtM) Dutch adults (17–76 years, $M_{age} = 41.87$), divided into those with no GCT desire, those who desired (more) GCT, and those who completed GCT. Findings indicated that whereas GCT may positively affect sexual feelings, particularly in MtF persons, body satisfaction may play an even bigger role. Those without a GCT desire may experience particular difficulties in their sexual experiences.

Being able to enjoy sex is, to many people, an important aspect of their general well-being. Transgender people[1] (i.e., people who do not identify with their birth-assigned sex) may face considerable challenges to their sexual experiences, such as their sexual behavior (i.e., type and frequency of sexual activities) and sexual feelings (e.g., their sexual pleasure). After all, the experience of being transgender is closely related to (sexual) identity and body image. Further, some transgender persons choose to undergo hormonal therapy and/or surgery, which alter the endocrine system and sex characteristics. These aspects are likely to influence the sexual experiences of transgender persons, which in turn may affect their quality of life (Rolle, Ceruti, Timpano, Falcone, & Frea, 2015).

Research on the sexual experiences of transgender persons has thus far focused predominantly on the impact of gender-confirming treatment (i.e., hormonal treatment or genital surgery to change one's sex characteristics; hereafter referred to as "GCT") on several aspects of sexuality. This is not surprising given that sexual experiences, such as masturbation frequency and the ability to reach an orgasm, are seen as indicators of treatment success (De Cuypere et al., 2005). There has been great variability in studies on sexual experiences in transgender people following GCT, both in terms of the outcomes under study and the study findings, which hinder comparisons across studies (for reviews, see Klein & Gorzalka, 2009; Murad et al., 2010). Nevertheless, some general observations can be made. Concerning sexual *behavior*, empirical research has typically focused on frequency of sex and masturbation. For trans women (male-assigned at birth), studies have generally shown increased frequency of sex after GCT, but

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[1] We are using the term *transgender people* to refer to all individuals who do not (fully) identify with their birth-assigned sex. These individuals do not necessarily meet criteria for a formal *DSM-5* diagnosis of gender dysphoria. Thus, we are referring to a broader spectrum of individuals.

either decreased, increased, or unchanged frequency of masturbation (Klein & Gorzalka, 2009). Studies among trans men (female-assigned at birth) have shown either unchanged or increased frequency of sex and masturbation (Costantino et al., 2013; Klein & Gorzalka, 2009; Wierckx et al., 2011). Studies on sexual *feelings* after GCT have mainly focused on general measures of sexual satisfaction, as opposed to more specific measures like sexual pleasure and esteem. In general, studies have indicated increased sexual satisfaction in the majority of both trans women and trans men following GCT (Murad et al., 2010; Weigert, Frison, Sessiecq, Mutairi, & Casoli, 2013).

Most of the existing studies on the impact of GCT have been retrospective in nature (Klein & Gorzalka, 2009; Murad et al., 2010) and may therefore suffer from recall bias. Further, these studies may suffer from a cognitive dissonance effect, whereby respondents may evaluate the effect of the treatments as more positive. A pre- and post-measure of a behavior (e.g., masturbation frequency) may have given a more realistic representation. Few studies have assessed the sexual experiences of transgender persons who wish to, but did not yet receive treatment (for some exceptions, see Cerwenka, Nieder, Briken, et al., 2014; Cerwenka, Nieder, Cohen-Kettenis, et al., 2014). This group of transgender persons may have particular negative sexual experiences due to their yet unfulfilled desire for treatment (Cerwenka, Nieder, Briken et al., 2014). Similarly, little research has focused on transgender persons who do not wish to undergo GCT (for a similar observation, see Bauer & Hammond, 2015), thereby ignoring a substantial subgroup of transgender people. For example, a recent study in Canada showed that 3% of male-to-female (MtF) transgender adults and 6% of female-to-male (FtM) transgender adults did not plan to undergo medical treatment, 13% of MtF and 6% of FtM transgender persons were not sure, and 11% of MtF and 9% of FtM transgender persons felt that the concept of "medical transition" did not apply to them (Scheim & Bauer, 2015). Although these transgender people do not have the intention to undergo GCT, they may still experience problems with identity development and body image, which may negatively influence their sexual behavior and feelings. The difficulties they face, however, may be particularly different from those of transgender people who have a yet unfulfilled treatment desire and those who have already had treatment. Our first aim was therefore to examine the sexual behaviors and sexual feelings of these three subgroups of transgender persons.

Aside from differences in treatment desire, two factors that are likely to be associated with sexual experiences of transgender people are their psychological well-being and body satisfaction. There are several indications that dissatisfaction with one's appearance or feelings of gender dysphoria can make it more difficult to enjoy or to be satisfied with sexual experiences (Doorduin & Van Berlo, 2014). Further, although in general transgender people reported improved sexual satisfaction after GCT (De Cuypere et al., 2005; Klein, & Gorzalka, 2009), findings also indicate that satisfaction with one's genitals plays an important role in sexual satisfaction following GCT (De Cuypere et al., 2005). Because psychological well-being and body satisfaction can vary considerably between as well as within groups of transgender persons with different treatment desires, it is essential to explore the role of these factors in their sexual experiences, which was our second aim.

In sum, this study was aimed at gaining more insight into the sexual behavior and sexual feelings of different groups of transgender persons in the Netherlands. Further, it examined the role of psychological well-being and body satisfaction in the sexual behaviors and feelings of transgender people. The study was conducted among a nonclinical convenience sample of transgender adults who were divided into three groups: those who never received any GCT and had no desire to do so, those who had a yet unfulfilled desire to undergo GCT, and those who had received (partial) GCT and have no desire (at the moment) to undergo more GCT.

Method

Sample and procedure

Our study included 576 Dutch trans people, with a mean age of 41.87 ($SD = 14.41$, range = 17–76 years). Of the total sample, 325 (56.4%) were in the male-to-female (MtF) spectrum, and 251 were in the female-to-male (FtM) spectrum. Respondents were recruited between July and August 2013 by two means. Most respondents ($N = 445$) were recruited through transgender organizations and other transgender-specific

Table 1. Descriptive statistics.

	Male-to-Female			Female-to-Male		
	NTD ($N = 125$)	UTD ($N = 133$)	FTD ($N = 67$)	NTD ($N = 98$)	UTD ($N = 108$)	FTD ($N = 45$)
Age—*M* (*SD*)	47.85[c] (13.08)	43.14[d] (13.44)	48.30[c] (12.70)	41.28[c] (14.64)	31.68[d] (12.82)	37.84[c] (11.57)
Gender identity (%)						
Binary	14[a]	83[b]	84[b]	15[a]	92[b]	76[b]
Nonbinary	86[b]	17[a]	16[a]	85[b]	8[a]	24[a]
Registered at gender clinic (% yes)	15[a]	79[b]	91[b]	3[a]	92[b]	91[b]
Undergone treatment (% yes)						
Hormones (ever)	n/a	56	99	n/a	57	86
Chest surgery	n/a	11	49	n/a	32	91
Hysterectomy/oophorectomy	n/a	n/a	n/a	n/a	28	78
Vagino-/phallo-/metoidioplasty	n/a	11	73	n/a	9	20
Treatment desire (% yes)						
Hormones	n/a	38	n/a	n/a	40	n/a
Chest surgery	n/a	50	n/a	n/a	64	n/a
Hysterectomy/oophorectomy	n/a	n/a	n/a	n/a	67	n/a
Vagino-/phallo-/metoidioplasty	n/a	74	n/a	n/a	37	n/a
In a relationship (% yes)	54	45[a]	49	47	39	42
Psychological well-being[f] —*M* (*SD*)	3.87[c,d] (0.82)	3.68[d] (0.84)	4.08[c] (0.70)	3.57 (0.89)	3.59 (1.05)	3.99 (0.96)
Body satisfaction[f] —*M* (*SD*)	3.13[c] (0.91)	2.57[d] (0.80)	4.01[e] (0.64)	2.94[c] (0.77)	2.59[d] (0.87)	3.80[e] (0.96)

Note. NTD = no treatment desire; UTD = unfulfilled treatment desire; FTD = fulfilled treatment desire. [a]Significantly lower than among the entire sample, $p < .05$ and Cramér's $V > .10$. [b]Significantly higher than among the entire sample, $p < .05$ and Cramér's $V > .10$. [c,d,e]Means with different superscripts are significantly different at $p < .05$. [f]Scores ranged from 1–5, with higher scores indicating higher psychological well-being/body satisfaction.

channels, who distributed a call for participation in our survey via their websites, mailing lists, leaflets, social media, and activities. The remainder of the sample ($N = 131$) was recruited through a commercial online panel of a large research institute (Intomart GfK). As part of a monthly screening, all panel members (around 100,000) were asked whether they knew any transgender persons personally. Assuming that respondents who answered yes may have had themselves in mind, those respondents subsequently received a screening survey asking about their own birth-assigned sex and current gender identity (male, female, partly male and partly female, neither male nor female, not sure, or other). If birth-assigned sex and current gender identity did not match, people received an invitation to fill out our survey.

Respondents were classified into three groups, based on whether or not they had ever received treatment (hormonal or surgery) and whether or not they had a desire to undergo (more) treatment (see Table 1 for sample characteristics). In the sample of MtF transgender people, 125 respondents were in the *no treatment desire* (NTD) group (have never had any treatment and have no desire to do so), 133 were in the *unfulfilled treatment desire* (UTD) group (may or may not have had any treatment and have a desire to do so or do more), and 67 were in the *fulfilled treatment desire* (FTD) group (had received some form of treatment but at the moment have no desire for further treatment). In the sample of FtM transgender adults, these numbers were 98 (NTD), 108 (UTD), and 45 (FTD). In both samples, respondents in the NTD group were significantly more likely to identify themselves as neither male nor female or as male *and* female, whereas respondents in the UTD and FTD subgroups were significantly more likely to identify themselves as either female (in the sample of MtF transgender adults) or male (in the sample of FtM transgender adults). In the sample of MtF transgender adults, those in the UTD subgroup were less likely to be in a relationship. Age significantly differed in both samples, with respondents in the UTD subgroup being younger than both other subgroups.

Measures

Sexual behavior

To measure sexual behaviors, we asked three main questions and two follow-up questions. Respondents were first asked whether they ever had sex, whether they had been sexually active in the past six months, and whether they ever masturbated (all three questions coded as 0 = *yes*, 1 = *no*). Sex was defined as fondling (of breasts, penis, or vagina), oral sex, anal sex, or vaginal sex. If respondents answered yes to

either one of the latter two questions, we asked how often respondents had sex in the past six months and/or how often they currently masturbate (both questions coded as 0 = *never*, 1 = *once a month at most*, 2 = *once a week at most*, 3 = *more than once a week*).

Sexual feelings

We measured respondents' feeling of sexual agency (six items), sexual pleasure (four items), and sexual esteem (four items). In total, respondents filled out 19 statements about how they feel during sex, rated on a 5-point scale, with 1 = *completely agree* to 5 = *completely disagree*. Respondents could also indicate "not applicable" in which case the item was not included. An exploratory factor analysis revealed three factors, explaining 48.37% of the variance. Five items were removed because they either had factor loadings < .40 on all three factors or loaded on more than one factor. The first factor, sexual agency, accounted for 18.75% of total variance (e.g., "during sex I have little influence over what happens"). Items were averaged such that higher scores indicated higher sexual agency ($\alpha = .78$). The second factor, sexual pleasure (e.g., "I enjoy sex a lot"), accounted for 18.04% of total variance. Items were reverse-coded and averaged such that higher scores indicated higher sexual pleasure ($\alpha = .81$). The third and final factor, sexual esteem, accounted for 11.59% of total variance (e.g., "I focus more on my sex partner than on myself when having sex"). Items were averaged such that higher scores indicated higher sexual esteem ($\alpha = .66$). In addition to these statements about specific sexual feelings, we asked one question about people's general sexual satisfaction ("How satisfied are you with your sex life in general?"), with 1 = *very dissatisfied*, 2 = *dissatisfied*, 3 = *not dissatisfied/not satisfied*, 4 = *satisfied*, 5 = *very satisfied*. The first two and the last two categories were collapsed to create three groups: 1 = *(very) dissatisfied*, 2 = *not dissatisfied/not satisfied*, and 3 = *(very) satisfied*. Finally, we asked respondents how important sex was to them, with 1 = *very important*, 2 = *important*, 3 = *not important/not unimportant*, 4 = *unimportant*, 5 = *very unimportant*. The first two and the last two categories were collapsed to create three groups: 1 = *(very) important*, 2 = *not important/not unimportant*, and 3 = *(very) unimportant)*.

Psychological well-being

The 10-item Kessler Psychological Distress Scale (K10) was used to assess respondents' psychological well-being (Kessler et al., 2002). This scale asks respondents to indicate how often they experienced certain negative feelings during the previous four weeks (e.g., "Did you feel worthless?"), using a 5-point scale (1 = *all of the time* to 5 = *none of the time*). The 10 items were averaged such that higher scores indicated higher levels of psychological well-being ($\alpha = .93$). Means and standard deviations for the different subgroups are displayed in Table 1.

Body satisfaction

To measure body satisfaction, we constructed a scale consisting of 12 statements (e.g., "I dislike my face" and "My body fits me"). Items were answered on a 5-point scale (1 = *completely agree* to 5 = *completely disagree*). After reverse-coding positively worded items, items were averaged such that higher scores indicated higher body satisfaction. Cronbach's alpha was .92. Means and standard deviations for the different subgroups are displayed in Table 1.

Statistical analyses

All statistical analyses were conducted in SPSS V23.

Bivariate analyses

For lifetime experience of sex, sexual activity in the past six months, whether or not one masturbates, sexual satisfaction, and importance of sex, between-group differences were tested using chi-square analysis. In case of significant chi-square results, we performed paired comparisons in which we compared the three subgroups with one another in 2 × 2 chi-square analyses. We used a Bonferroni-adjusted *p* value of

Table 2. Sexual behavior among transgender people.

	Male-to-Female			Female-to-Male		
	NTD ($N = 125$)	UTD ($N = 133$)	FTD ($N = 67$)	NTD ($N = 98$)	UTD ($N = 108$)	FTD ($N = 45$)
Lifetime experience of sex (% yes)	91	92	88	86	79	93
Sexually active in past 6 months (% yes)	58	44	45	43^{a}	46	67^{b}
Masturbates (% yes)	98^{a}	78^{b}	82^{b}	87	89	93
Frequency of sex[c] *M* (*SD*)	1.01 (1.05)	0.87 (1.11)	0.78 (0.98)	0.73^{a} (0.97)	$0.87^{a,b}$ (1.09)	1.24^{b} (1.07)
Frequency of masturbation[c] *M* (*SD*)	2.37^{a} (0.82)	1.64^{b} (1.13)	1.48^{b} (1.02)	1.71^{b} (0.99)	2.20^{b} (1.07)	2.59^{b} (0.87)

Note. NTD = no treatment desire; UTD = unfulfilled treatment desire; FTD = fulfilled treatment desire. [a,b]Means with different superscripts are significantly different. [c]Scores ranged from 0 (*never*) to 3 (*more than once a week*).

0.017 (0.05/3), correcting for the three separate subtests to evaluate the significance of the paired comparisons. For frequency of sex, frequency of masturbation, sexual agency, sexual pleasure, and sexual esteem, group mean differences between the NTD, UTD, and FTD groups were analyzed using one-way analysis of variance (ANOVA), including post hoc testing with Bonferroni correction.

Multivariate analyses

To analyze the relative contribution of psychological well-being, body satisfaction, and group membership on sexual behaviors and feelings, we used linear regression analysis for continuous dependent variables (sexual agency, sexual pleasure, and sexual esteem) and ordinal regression for ordinal dependent variables (frequency of sex, frequency of masturbation, sexual satisfaction, and importance of sex). Dummy variables were created to analyze subgroup differences, with the UTD group as the reference group. Age, relationship status (0 = no partner, 1 = partner), and gender identity (0 = binary [male or female], 1 = nonbinary [both male and female or neither male nor female]) were included as control variables. Previous studies have shown the importance of relationship status for sexual satisfaction, sexual activity, and sexual functioning (Bouman et al., 2016; Weyers et al., 2009).

Results

Group sizes and means for the different indicators of sexual behavior and sexual feelings are presented in Tables 2 and 3, separated by sample (MtF and FtM) and subgroup (NTD, UTD, or FTD). Regression results for factors correlating with sexual behavior and sexual feelings are presented in Table 4.

Table 3. Sexual feelings among transgender people.

	Male-to-Female			Female-to-Male		
	NTD ($N = 125$)	UTD ($N = 133$)	FTD ($N = 67$)	NTD ($N = 98$)	UTD ($N = 108$)	FTD ($N = 45$)
Sexual agency[d] *M* (*SD*)	3.23^{a} (0.74)	3.59^{b} (0.87)	3.98^{c} (0.71)	3.30^{a} (0.84)	3.84^{b} (0.82)	3.79^{b} (0.74)
Sexual pleasure[d] *M* (*SD*)	3.55^{a} (0.85)	3.22^{b} (1.00)	3.60^{a} (0.79)	3.13^{a} (0.92)	3.48^{b} (0.95)	3.66^{b} (0.75)
Sexual esteem[d] *M* (*SD*)	2.77^{a} (0.84)	2.42^{b} (0.89)	3.34^{c} (0.86)	2.88^{a} (0.79)	2.46^{b} (0.84)	2.95^{a} (0.80)
Sexual satisfaction (%)						
Satisfied	27	28	35	32	39	41
Not satisfied, not dissatisfied	36	33	33	29	22	32
Dissatisfied	38	39	33	39	39	27
Importance of sex (%)						
Important/very important	56	47	46	39	57	62
Not important, not unimportant	31	28	28	35	24	27
Unimportant/very unimportant	13	26	25	27	19	11

Note. NTD = no treatment desire; UTD = unfulfilled treatment desire; FTD = fulfilled treatment desire. [a,b,c]Means with different superscripts are significantly different. [d]Scores ranged from 1–5, with higher scores indicating higher agency/pleasure/esteem.

Table 4. Factors correlated with sexual behaviors and feelings.

	Ordinal Logistic Regression—*OR*				Linear Regression—*b**		
	Frequency of sex[b]	Frequency of masturbation[b]	Sexual satisfaction	Importance of sex	Sexual agency[a]	Sexual pleasure[a]	Sexual esteem[a]
Male-to-female							
Age	0.97**	0.97**	0.99	1.00	−.06	−.01	.09
Relationship	10.94***	0.95	2.98***	2.05**	.02	.12*	.07
Gender identity	1.37	4.12***	1.34	1.32	−.04	.09	.02
NTD (vs. UTD)	0.84	1.71	0.46*	0.98	−.30***	−.05	−.02
FTD (vs. UTD)	0.42*	0.84	0.38*	0.41*	−.05	−.16*	.05
Psych. well-being[a]	1.03	0.97	1.19	1.03	.11	.07	.03
Body satisfaction[a]	1.69**	1.04	2.13***	1.72***	.39***	.54***	.57***
R^2/Pseudo R^2 [c]	.15	.09	.09	.05	.25	.29	.39
F/χ^2 [c]	118.24***	76.30***	57.98***	35.84***	13.65***	16.33***	25.36***
Female-to-male							
Age	0.97**	0.97**	0.98*	0.99	.01	−.09	.21**
Relationship	16.61***	0.45**	1.75*	1.69*	.03	−.01	.06
Gender identity	1.69	0.90	1.50	0.95	−.15	−.03	.07
NTD (vs. UTD)	0.34*	0.43*	0.55	0.48	−.21*	−.20	.04
FTD (vs. UTD)	1.15	1.68	0.49	0.92	−.15	−.16*	−.05
Psych. well-being[a]	1.07	1.12	1.37*	1.08	.35***	.17	.17**
Body satisfaction[a]	1.79**	1.93***	2.13***	1.37	.20**	.46***	.46***
R^2/Pseudo R^2 [c]	.21	.10	.07	.04	.31	.27	.40
F/χ^2 [c]	123.46***	61.50***	34.07***	20.56**	12.64***	10.44***	18.58***

Note. *OR* = odds ratio; NTD = no treatment desire; UTD = unfulfilled treatment desire; FTD = fulfilled treatment desire. [a]Scores ranged from 1–5, with higher scores indicating higher psychological well-being/body satisfaction/agency/pleasure/esteem. [b]Scores ranged from 0 (*never*) to 3 (*more than once a week*). [c]R^2 and *F* are reported for linear regression; McFadden Pseudo R^2 and χ^2 are reported for ordinal logistic regression.
***$p < .001$; **$p < .01$; *$p < .05$.

Sexual behavior of MtF transgender people

In the sample of MtF transgender individuals, there were no significant differences between the three groups in whether they ever had sexual intercourse, $\chi 2$ (2, $N = 325$) = 0.76, $p = .683$, or whether they had been sexually active in the previous six months, $\chi 2$ (2, $N = 325$) = 5.72, $p = .057$. There was a significant difference between groups in whether they masturbate, $\chi 2$ (2, $N = 313$) = 21.73, $p < .001$, Cramér's V = .26. Pairwise comparisons showed that respondents in the NTD subgroup were more likely to masturbate (98%) than respondents in the UTD subgroup (78%), $\chi 2$ (1, $N = 248$) = 21.94, $p < .001$, and respondents in the FTD subgroup (82%), $\chi 2$ (1, $N = 184$) = 14.27, $p < .001$. The UTD and FTD subgroups did not significantly differ from each other. Frequency of sex did not significantly differ between the three groups, $F(2, 319) = 1.15$, $p = .318$. Finally, frequency of masturbation, $F(2, 310) = 23.16$, $p < .001$), was significantly higher in the NTD subgroup than in the UTD subgroup ($p < .001$) and in the FTD subgroup ($p < .001$). The UTD and FTD subgroups did not significantly differ from each other.

Sexual feelings of MtF transgender people

Sexual agency, $F(2, 287) = 17.82$, $p < .001$, was lowest among the NTD subgroup MtF transgender people, and was significantly lower than among the UTD ($p = .002$) and FTD subgroups ($p < .001$). The UTD subgroup also scored significantly lower than the FTD subgroup ($p = .008$). Sexual pleasure differed significantly between the groups, $F(2, 283) = 5.17$, $p = .006$. Sexual pleasure was higher in the NTD subgroup than in the UTD subgroup ($p = .017$), but the NTD subgroup did not significantly differ from the FTD subgroup. The UTD subgroup had significantly lower sexual pleasure compared to the FTD subgroup ($p = .030$). Sexual esteem differed significantly between the groups as well, $F(2, 280) = 15.46$,

$p < .001$: It was higher in the NTD subgroup than in the UTD subgroup ($p = .008$), but significantly lower than in the FTD subgroup ($p < .001$). Sexual esteem was significantly lower in the UTD subgroup than in the FTD subgroup ($p < .001$). There were no significant differences in sexual satisfaction between the different subgroups, $\chi 2\ (4, N = 298) = 1.51$, $p = .826$, nor in the importance ascribed to sex, $\chi 2\ (4, N = 325) = 7.68$, $p = .104$.

Psychological well-being and body satisfaction in MtF transgender people

After controlling for age, relationship status, gender identity, and subgroup status, psychological well-being was not related to any of the indicators of sexual behavior or feelings in the sample of MtF transgender adults. In contrast, body satisfaction was positively related to all indicators of sexual behavior and feelings (all ps $< .01$), except frequency of masturbation. Further, the results showed that the relationship between subgroup membership (i.e., NTD, UTD, or FTD) and sexual feelings and behaviors in some cases disappeared (compare Tables 2 and 3 with Table 4). In one case, there was a change in the direction of the relationship when adjusted for body dissatisfaction: The FTD subgroup scored higher on sexual pleasure compared to the UTD subgroup before adjusting for body satisfaction, but lower after adjusting for body satisfaction.

Sexual behavior of FtM transgender people

In the sample of FtM transgender adults, there were no significant differences between the three groups in whether they ever had sexual intercourse, $\chi 2\ (2, N = 251) = 5.40$, $p = .067$, nor whether they masturbate, $\chi 2\ (2, N = 245) = 1.05$, $p = .590$. There was a significant difference between subgroups in whether they had been sexually active in the past six months, $\chi 2\ (2, N = 251) = 7.40$, $p = .025$. Pairwise comparisons showed no significant differences between the NTD and UTD subgroups, but respondents in the NTD subgroup were less likely to have been sexually active in the past six months (43%) than respondents in the FTD subgroup (67%), $\chi 2\ (1, N = 143) = 6.99$, $p = .008$. There were no significant differences between the UTD and FTD subgroups. Frequency of sex, $F(2, 246) = 3.79$, $p = .024$, did not significantly differ between the NTD and UTD subgroups, but was significantly lower in the NTD subgroup compared to the FTD subgroup ($p = .019$). There were no significant differences between the UTD and FTD subgroups. Frequency of masturbation, $F(2, 242) = 12.98$, $p < .001$, was significantly lower in the NTD subgroup compared to both the UTD subgroup ($p = .002$) and the FTD subgroup ($p < .001$). The UTD and FTD subgroups did not differ significantly from each other.

Sexual feelings of FtM transgender people

Sexual agency, $F(2, 202) = 10.34$, $p < .001$, was lowest among the NTD subgroup of FtM transgender adults and was significantly lower than in the UTD ($p < .001$) and FTD ($p = .005$) subgroups, which did not significantly differ from each other. Sexual pleasure differed significantly between the groups, $F(2, 201) = 5.84$, $p = .003$: It was significantly lower in the NTD group than in the UTD ($p = .037$) and FTD subgroups ($p = .006$), which did not significantly differ from each other. Sexual esteem differed significantly between the groups as well, $F(2, 198) = 7.33$, $p = .001$: It was significantly higher in the NTD subgroup than in the UTD subgroup ($p = .004$). The NTD subgroup did not significantly differ from the FTD subgroup, but the UTD subgroup scored significantly lower than the FTD subgroup ($p = .006$). Sexual satisfaction did not significantly differ between subgroups, $\chi 2\ (4, N = 219) = 3.51$, $p = .476$. The chi-square analysis for importance of sex was significant, $\chi 2\ (4, N = 251) = 10.86$, $p = .028$, Cramér's V = .15, but pairwise comparisons did not show significant differences between subgroups.

Psychological well-being and body satisfaction in FtM transgender people

In the sample of FtM transgender adults, after controlling for age, relationship status, gender identity, and subgroup status, psychological well-being was positively associated with sexual satisfaction, sexual

agency, and sexual esteem. Body satisfaction was positively related to all indicators of sexual behavior and feelings (all *p*s < .01), except importance of sex. As was the case in MtF transgender adults, the relationship between subgroup membership (i.e., NTD, UTD, or FTD) and sexual feelings and behaviors disappeared in some cases (compare Tables 2 and 3 with Table 4). In one instance, there was a change in the direction of the relationship when adjusted for body dissatisfaction: The FTD subgroup scored higher on sexual pleasure compared to the UTD subgroup before adjusting for body satisfaction, but lower after adjusting for body satisfaction.

Discussion

This study aimed to acquire insight into the sexual behavior and sexual feelings of different groups of transgender persons in the Netherlands, distinguished by whether or not they have received some form of GCT and whether or not they have a yet unfulfilled desire for GCT. Further, we examined the role of psychological well-being and body satisfaction in these feelings and behaviors. Overall, this study shows differences in sexual behaviors and feelings between transgender persons based on whether or not they have had GCT and whether or not they have a yet unfulfilled desire to undergo GCT. Further, our study indicates that in addition to GCT status and desire, body satisfaction and, to a lesser degree, psychological well-being play a vital role in the sexual behaviors and feelings of transgender people.

Sexual behaviors

Concerning sexual behaviors, we explored sexual intercourse as well as masturbation behaviors. Regarding the indicators of sexual intercourse, our study showed no significant differences between subgroups of MtF transgender persons in whether or not they ever had sexual intercourse, whether they had sexual intercourse in the past six months, and frequency of sex. In contrast, among FtM transgender persons, those with a fulfilled treatment desire were more likely to have been sexually active in the past six months and had a higher frequency of sex than FtM transgender persons who did not have any treatment and had no desire for treatment. Concerning masturbation behavior, MtF transgender persons who had no desire for any treatment were more likely to masturbate and masturbated more often than the other two subgroups. In contrast, among FtM transgender persons, those who did not want any treatment masturbated less often than the other two subgroups. In sum, there were little differences in the sex and masturbation behaviors between trans people with an unfulfilled and those with a fulfilled treatment desire. There were, however, some differences in the sexual behaviors between transgender persons with no treatment desire and the other two subgroups, which are likely due to differences in testosterone levels. In cisgender people, males have higher testosterone levels, which relates to higher sexual desire and arousal, than females (Meston & Frohlich, 2000). Hormone treatment affects testosterone levels, with decreasing testosterone level in trans women who receive cross-sex hormone treatment and increasing testosterone levels in trans men receiving cross-sex hormone treatment. In our sample of MtF transgender persons without treatment desire, who are not treated with hormones and thus still exposed to endogenous testosterone levels, the frequency of masturbation was higher than in the other two groups. For FtM transgender persons, the majority received hormone treatment (i.e., testosterone) in the UTD and FTD groups, and their frequency of masturbation was higher than in the group without treatment desire not receiving any testosterone. A similar pattern can be seen for frequency of sex, especially in the sample of FtM transgender persons.

These findings are in line with previous studies showing that after gender-confirming interventions, trans women reported low levels of sexual desire and trans men high levels of sexual desire (Elaut et al., 2008; Wierckx et al., 2011; Wierckx et al., 2014). Higher levels of sexual desire will result in more motivation to engage in sexual activities like masturbation and partner sex. In our sample of FtM transgender persons with a fulfilled treatment desire, the percentage that had been sexually active in the past six months was significantly higher than the other two groups. Further, the frequency of sex was higher than the other two groups, although this difference was not statistically significant. Thus, when FtM transgender persons with a fulfilled treatment desire have no treatment wishes anymore (regardless of

whether they had genital surgery or not), they may feel "ready" to engage in sexual activities with a partner, whereas frequency of masturbation is also higher in the group that still desires treatment probably as a result of testosterone treatment.

Sexual feelings

In both samples, there were no significant differences between subgroups on general sexual satisfaction. However, when comparing our groups to general population percentages, it seems that in general in our groups, the percentage of those satisfied with their sex life is lower (27%–41% compared to 46.8% in the general population) and the percentage of those dissatisfied is higher (27%–39% compared to 20.8% in the general population) (Skevington, Lotfy, & O'Connell, 2004). We did find differences between our groups when examining three separate aspects of sexual satisfaction, namely agency (the extent to which one has influence over what happens during sex), pleasure (whether sex is enjoyable), and esteem (whether one feels confident during sex). MtF transgender persons with a fulfilled treatment desire responded most positively: They scored higher on all of these three aspects of sexual satisfaction than those with an unfulfilled treatment desire. Further, they scored higher on sexual agency and esteem than those with no treatment desire. These positive effects may be a result of the alleviation of gender dysphoria by getting rid of the unwanted sex organs and/or having a body congruent with gender identity. This indicates that for those MtF transgender adults, GCT may have a positive influence on these different aspects of sexual satisfaction.

In the sample of FtM transgender persons, individuals with a fulfilled treatment desire scored higher than those with an unfulfilled treatment desire on sexual esteem, but not on sexual agency or pleasure. FtM transgender persons with a fulfilled treatment desire seem to be more confident in their sex life than those with an unfulfilled treatment desire, although only 20% of the FTD group had genital surgery (phalloplasty or metoidioplasty). Chest surgery may be crucial here: In the FTD group, 91% had undergone this surgery as opposed to only 32% in the UTD group, and in the UTD group 64% indicated a desire for chest surgery. Mastectomy has been reported to improve body satisfaction beyond satisfaction with chest appearance only and body satisfaction was associated with higher self-esteem in trans men (van de Grift, Kreukels et al., 2016). For agency and pleasure, however, there was no significant difference between FtM transgender persons with an unfilled and fulfilled treatment desire. These two aspects of sexual feelings may be—like sexual behavior—very much related to the hormonal environment, with also the majority in the UTD group receiving testosterone treatment.

Concerning transgender persons with no treatment desire, we found that this subgroup did not score particularly high on the separate aspects of sexual satisfaction. In the sample of MtF transgender persons, those with no treatment desire scored in between the other two subgroups on pleasure and esteem, but scored lowest on sexual agency. In FtM transgender persons, those with no treatment desire scored lowest on both sexual agency and pleasure. These findings suggest that besides whether or not one undergoes or wants to undergo GCT, the difficulties that come with the experience of being transgender itself can influence aspects of sexual satisfaction. Further, the findings indicate that not having a treatment desire does not necessarily indicate that an individual is satisfied with one's body. One explanation may be that some transgender people without desire for GCT may abstain from treatment because they see a lot of disadvantages to it or may even fear it. Also, they may feel dissatisfied with their body, but may not expect to get something better in return by undergoing GCT. Transgender persons with no treatment desire are often overlooked in research on sexual experiences and therefore deserve specific attention.

Factors correlated with sexual behaviors and feelings

Body incongruence, a key element of gender identity problems, hinders sex and enjoyment of sex (Doorduin & Van Berlo, 2014). Also, gender incongruence is often accompanied by body dissatisfaction that is not confined only to the genitals (van de Grift, Cohen-Kettenis et al., 2016). In both samples, body satisfaction was positively related to almost all of our indicators of sexual behaviors and feelings, underlining the importance that body satisfaction plays in sexual experiences in transgender people. This is

in line with a previous study that showed that MtF transgender persons who indicated a higher degree of satisfaction with their appearance also reported a better sexual functioning (Weyers et al., 2009). Psychological well-being played a role in the sexual feelings of FtM transgender persons only, with higher psychological well-being being related to higher sexual satisfaction, agency, and esteem. Secondary analyses (not shown here) showed that psychological well-being was positively related to these indicators of sexual feelings in MtF transgender persons as well, but this relationship disappeared after including body satisfaction in the analyses. This suggests that psychological well-being and body dissatisfaction in MtF transgender persons are highly related and that sexual feelings are mainly affected by body dissatisfaction. Further, we found that the relationship between subgroup membership (i.e., NTD, UTD, or FTD) and sexual feelings and behaviors in some cases disappeared or showed a change in the direction of the relationship, when adjusted for psychological well-being and body dissatisfaction. This indicates that subgroup differences are partly explained by psychological well-being and body dissatisfaction and that these factors may thus play an even more important role in transgender people's sexual behaviors and feelings than whether or not one has had treatment and desires (further) treatment.

An important strength of this study is that most research thus far has only included transgender people with a diagnosis who are clinically referred or have already been treated (Klein & Gorzalka, 2009; Stephenson et al., 2017). In this way these studies focus on transgender people who seek gender-affirmation therapy. However, these studies do not shed light on the sexual experiences of transgender persons who have no desire for treatment or do not apply at gender identity clinics for other reasons (such as costs or anxiety). The current study did include transgender persons without a treatment desire. In addition, by including this group, our study also better represents experiences of nonbinary identifying transgender persons in comparison to other studies. Around 85% of the respondents in the no treatment desire groups were nonbinary identifying. Another strength is that this was not a clinical study, but a study initiated by an organization that is unrelated to treatment. The respondents may have been more open because they were not questioned by the institute or clinician that provides or has provided their treatment. Further, whereas studies in sexual health of transgender adults have generally focused on sexual functioning (sexual problems, sexual desire, arousal, and the ability to achieve orgasm), our study approached sexual health from a different angle and reports on sexual experiences via sexual behavior and sexual feelings.

Two limitations of this study also deserve attention. For sexual experiences in transgender persons, time since medical interventions may be important. People may have to get used to the new situation. For example, MtF transgender persons may have to get used to a sexual response system in a less androgenic milieu (Wierckx et al., 2014) and trans people after genital surgery have to become familiar with their new genitals (Lawrence, 2006). In the current study, we did not collect information on time since treatment (cross-sex hormones and genital surgery) and therefore could not control for this factor. A second limitation of this study is that sexual orientation of the respondents could not be included in our analyses, due to the manner in which we measured sexual orientation. Because sexual orientation is likely to be relevant for transgender people's sexual feelings and behaviors, we recommend including it in future studies.

Conclusion

By using a survey among a large nonclinical sample of transgender people, this study enabled us to compare the sexual feelings and behaviors of different groups of transgender persons, based on whether or not they received some form of GCT and whether or not they have a yet unfulfilled desire to undergo GCT. We found some differences in the sexual behaviors and feelings of these groups indicating that GCT may have a positive influence on the sexual feelings of MtF transgender persons, which may not necessarily be true for FtM transgender persons, as there were little differences in the sexual feelings of FtM transgender persons with a fulfilled treatment desire compared to those with an unfulfilled treatment desire. Further, transgender persons who do not wish to undergo any treatment still may experience certain difficulties when it comes to their sexual behaviors and feelings. Finally, our study underlines the important role of body satisfaction in the sexual behaviors and feelings of trans people, which may even

be more important than whether or not one has an unfulfilled treatment desire. Efforts to increase body satisfaction in transgender people are therefore warranted, as it can contribute to more positive sexual experiences.

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