



# **Psychiatric Comorbidity in Gender Dysphoric Adolescents**

**Annelou L.C. de Vries<sup>1</sup>, Theo A.H. Doreleijers<sup>1</sup>,  
Thomas D. Steensma<sup>2</sup>, Peggy T. Cohen-Kettenis<sup>2</sup>**

Accepted for publication, pending revision, J Child Psychol Psychiatry

<sup>1</sup> Department of Child and Adolescent Psychiatry, VU University Medical Center, Amsterdam, The Netherlands

<sup>2</sup> Department of Medical Psychology, VU University Medical Center, Amsterdam, The Netherlands

## Abstract

**Background:** This study examined psychiatric comorbidity in adolescents with a gender identity disorder (GID).

**Methods:** To ascertain DSM-IV diagnoses, the Diagnostic Interview Schedule for Children (DISC) was administered to parents of 105 gender dysphoric adolescents (mean age at assessment 14.6 years (SD=2.2)).

**Results:** Of the 105 adolescents, 32.4% had at least one concurrent psychiatric disorder. Anxiety disorders occurred in 21%, mood disorders in 12.4% and disruptive disorders in 11.4% of the adolescents. Compared with natal females (n=52), natal males (n=53) suffered more often from two or more comorbid diagnoses (22.2% versus 7.7%,  $p=.03$ ), mood disorders (20.8% versus 3.8%,  $p=.009$ ), dysthymic disorder (7.5% versus 0%,  $p=.04$ ) and social anxiety disorder (15.1% versus 3.8%,  $p=.05$ ). Adolescents with GID considered to be delayed eligible for medical interventions had higher prevalence rates for oppositional defiant disorder (15.4% versus 3.2%,  $p=.039$ ) and for three or more comorbid diagnoses (7.4% versus 0%,  $p=.03$ ) compared to immediately eligible adolescents. They were also older (15.6 years (SD=1.6) versus 14.1 years (SD=2.2),  $p=.001$ ) and their intelligence was lower (91.6 (SD=12.4) versus 99.1 (SD=12.8),  $p=.011$ ).

**Conclusions:** Despite the suffering resulting from the incongruence between experienced and assigned gender at the start of puberty, the majority of gender dysphoric adolescents do not have co-occurring psychiatric problems. Psychiatric comorbidity is associated with eligibility for medical interventions although other factors are of importance as well.

**Keywords:** gender identity disorder, gender dysphoria, adolescents, psychiatric comorbidity, puberty suppression.

## Introduction

Adolescents diagnosed with gender identity disorder (GID), an extreme form of gender dysphoria, exhibit a deeply felt discomfort with their assigned gender and a strong identification with the opposite gender.<sup>2</sup> Adolescents with GID are of current interest, as increasing numbers of adolescents with GID are reported to be attending specialized gender identity clinics around the world,<sup>162</sup> and the age of applying for gender reassignment has dropped considerably.<sup>50</sup> Compared to studies on children and adults with GID, research on gender dysphoric adolescents is lagging behind and little is known on psychological functioning of adolescents with GID. However, assessing psychiatric comorbidity of gender dysphoric adolescents is considered essential, especially when making a decision on clinical management that may include medical interventions.<sup>50</sup>

Whereas gender dysphoria will remit in the majority of prepubertal children,<sup>33,34</sup> in most gender dysphoric adolescents it will not.<sup>26</sup> In recent years, after careful psychological evaluation, cross-sex hormone treatment may be prescribed to a selected group of gender dysphoric adolescents between the ages of 16 and 18 years, and suppression of puberty by means of gonadotropin-releasing hormone analogs can start in 12–16 year olds. Puberty suppression, which is fully reversible, enables gender dysphoric adolescents to explore their gender dysphoria and is meant to prevent emotional problems that may stem from puberty development.<sup>50</sup>

Studies on psychological functioning of adolescents with GID who were accepted for gender reassignment between the ages of 16 and 18 show diverse results. Using the Dutch short MMPI, psychological functioning appeared to be within the normal range before medical treatment had started.<sup>44</sup> On the Dutch version of the Symptom Checklist 90, however, adolescents with GID showed above average scores on all clinical scales.<sup>45</sup> In a retrospective analysis at a specialized gender identity clinic of medical chart notes on 69 adolescents age 12 and over, various problem behaviors were observed.<sup>163</sup> For example, aggressive behavior was found in 32% and depression in 52% of the cases. When emotional and behavioral problems were measured by the parent-reported Child Behavior Check List (CBCL),<sup>164</sup> gender dysphoric adolescents showed, on average, problem levels comparable to referred adolescents and considerably higher level when compared to the non-referred adolescents.<sup>40</sup> In a study on psychological functioning of adolescents with GID before and after puberty suppression, mean baseline functioning scores were within the normal range on all measures used, although on the CBCL total *T* scores of 44% were in the clinical range.<sup>165</sup> This percentage was 84% in gender dysphoric adolescents who were recommended for puberty suppression in a Toronto gender identity clinic.<sup>166</sup> From these reports it can be deemed that a subgroup of adolescents who present at gender identity clinics have psychological problems other

than gender dysphoria. The percentage of applicants with psychological problems, however, seems to differ largely between clinics.

In prepubertal children with GID, studies using the CBCL showed more emotional and behavioural problems compared to sibling and non-referred children and more internalizing as opposed to externalizing problems.<sup>25,41</sup> Only one study used a categorical approach on psychiatric comorbidity.<sup>167</sup> Fifty-two percent of the children had one co-occurring psychiatric diagnosis, and 29% had multiple comorbid diagnoses. Emotional disorders (31% anxiety disorders, 7% mood disorders) were more prevalent than disruptive disorders (23% ADHD and oppositional defiant disorder).

In sum, despite the importance of insight into associated psychopathology of adolescents with GID for assessment and treatment planning, only few studies have addressed this age group and none have used a categorical approach. Therefore, we conducted a study focusing on gender dysphoric adolescents aged 12 to 17 years attending the Amsterdam Gender Identity Clinic. Assuming that a subgroup of adolescents have psychological problems other than gender dysphoria, we first investigated prevalence rates and types of co-occurring psychiatric disorders in all referred adolescents. Second, we compared adolescents who met the complete criteria of GID with gender dysphoric adolescents who were subthreshold for GID. We hypothesized that adolescents with subthreshold GID have specific types of comorbid psychopathology. For example, the incidence of an autism spectrum disorder was almost six-fold higher in adolescents with GID-NOS (not otherwise specified) than in adolescents with complete GID in another study by the Amsterdam Gender Identity Clinic.<sup>168</sup> Finally, within the group of adolescents diagnosed with GID, we compared psychiatric comorbidity of those who were considered immediately eligible for puberty suppression with that of adolescents whose diagnostic procedure took longer before they were considered eligible for puberty suppression. We expected more co-occurring psychiatric problems in adolescents with longer diagnostic procedures.

## **Methods**

### ***Participants and Procedure***

Between April 2002 and December 2009, 201 adolescents were consecutively referred to the Gender Identity Clinic of the VU university medical centre (VUmc) in Amsterdam. This is the only clinic in the Netherlands with a multidisciplinary team treating gender dysphoric adolescents. Seventeen adolescents dropped out of the diagnostic procedure, often after just one session and mostly because it had become evident that gender dysphoria was not the main problem. The remaining 184 adolescents underwent a

standardized clinical assessment (for a complete description of the procedure, see <sup>50</sup>). Eight-teen parents who had previously participated in the earlier study on psychiatric comorbidity when their then prepubertal children were assessed (see <sup>167</sup>) were not again invited to be interviewed. The parents of the remaining 166 adolescents were invited to have a standardized DISC interview (see below for a description of the instrument). Preferably, the appointment was combined with the psychological assessment of their son or daughter. When this was not possible a separate appointment was made. In most cases, the mother was the interviewed caregiver. Caregivers of 61 adolescents were not able to come to the clinic, even after repeated invitations, or declined to participate. The primary reason was that the regular visits necessary for the clinical assessment of the adolescent were already a great burden for the family, as some families had to travel long distances.

Participants were parents of the remaining 105 gender dysphoric adolescents, whose general demographic characteristics are presented in Table 1.

The study was approved by the Medical Ethics Committee of the VU University Medical Center in Amsterdam. All adolescents and their parents gave informed consent.

Table 1. General characteristics of 105 gender dysphoric adolescents

| Variable   | All<br>N=105 | Natal males<br>N=53 | Natal females<br>N=52 | <i>t</i> or $\chi^2$ | <i>p</i> |
|--|--------------|---------------------|-----------------------|----------------------|----------|
| Age in years ( <i>N</i> )                              | 105          | 53                  | 52                    |                      |          |
| <i>M</i> ( <i>SD</i> )                                 | 14.6 (2.2)   | 14.5 (2.2)          | 14.6 (2.2)            | -.22                 | .59      |
| Full-Scale IQ ( <i>N</i> )                             | 100          | 49                  | 51                    |                      |          |
| <i>M</i> ( <i>SD</i> )                                 | 97.4 (14.2)  | 95.4 (13.1)         | 99.5 (15.0)           | -1.4                 | .45      |
| Parent's marital status <sup>a</sup> , <i>N</i> (%)    | 103          | 52                  | 51                    |                      |          |
| Both parents   | 53 (51.5)    | 30 (56.6)           | 23 (43.3)             | 1.6                  | .20      |
| Other  | 50 (48.5)    | 22 (44.0)           | 28 (56.0)             |                      |          |
| Parents' educational level <sup>b</sup> , <i>N</i> (%) | 103          | 52                  | 51                    |                      |          |
| High   | 16 (15.5)    | 6 (11.5)            | 10 (19.6)             | 1.57                 | .53      |
| Middle   | 70 (68.0)    | 37 (71.2)           | 33 (64.7)             |                      |          |
| Low  | 17 (16.5)    | 9 (17.3)            | 8 (15.7)              |                      |          |

<sup>a</sup> For marital status, the category "Other" included living with one biological parent, adopted, living in a group home, etc.,

<sup>b</sup> Parents' educational level was measured by a 6-point scale where 1=Grade 6 or less and 6=university degree. Education level was divided in three groups; 1,2 & 3=low, 4&5=middle and 6=high.

## Measures

*Intelligence:* Full scale intelligence was measured by Dutch versions of the WISC or the WAIS, depending on the age of the assessed adolescent.<sup>152,153,169</sup>

*Behavior problems:* Overall problem behaviour was assessed by the mean total *T* score of the Child Behaviour Checklist (CBCL<sup>23,170</sup>), a widely used parent report questionnaire to assess behavioural problems in children and youths. A *T* score above 63 is considered to be in the clinical range.

*Marital status and educational level of the parents:* For marital status of the parents, adolescents were coded as living with either both biological parents, or as having other living conditions (e.g. one biological parent, foster care, adopted). Parents' educational level was measured on a 5-point scale, where 1=university degree and 5=completed or some elementary school. Educational level was divided into three groups; 1=high, 2 & 3=middle and 4 & 5=low. When data on both parents were available, a mean score was derived.

*GID diagnosis:* Either a GID or GID subthreshold diagnosis was made after an extensive diagnostic procedure over a prolonged period of time (usually 6–12 months) according to the criteria of the DSM-IV-TR.<sup>2</sup> Adolescents received a GID diagnosis when they fulfilled all GID criteria (n=89). Adolescents who reported gender problems but did not fulfil all GID criteria, were considered to be 'subthreshold' for GID (n=16).

*Eligibility:* All adolescents with GID were considered eligible for puberty suppression. For puberty suppression, eligible adolescents were divided into two groups: '*immediately eligible*' adolescents (n=62) when the diagnostic procedure took less than 1.5 years and '*delayed eligible*' adolescents (n=26), when their diagnostic procedure took 1.5 years or more (for a complete description of the eligibility criteria, see<sup>50</sup>). The mean time between their first attendance at the clinic and the start of puberty suppression in the '*immediately eligible*' group was 0.78 year (SD=.54). Of the 26 '*delayed eligible*' adolescents with GID, most often referral to and treatment at a mental health clinic were requested before they were eligible to start on medical interventions. Of the 26, 23 had started hormone treatment at the time of the analyses of this study. The mean time between their first attendance at the clinic and the start of any medical intervention was 1.86 years (SD=0.14). The three other adolescents with GID had not yet fulfilled the eligibility criteria at the time of the analyses of this study, 1.5 years after the last DISC data were collected.

*Psychiatric comorbidity:* Psychopathology was assessed by using the Dutch translation of the DISC-IV.<sup>171,172</sup> The DISC is a highly structured, respondent-based psychiatric interview assessing all common DSM-IV Axis I mental disorders in children and adolescents. The DISC is designed for use by non-clinicians. The child version of the DISC has been designed for administration to children between the ages of 9 and 17; the parent version of the DISC can be administered to parents of children aged 6 to 17

years.<sup>172</sup> We chose to use the parent version for this study, as the adolescents already had taken a large battery of tests for their clinical assessment and the DISC interview takes around 2 hours. Trained lay interviewers administered the DISC to the parents or caregivers of the adolescents.

The DISC-IV interview covers more than 30 DSM-IV diagnoses and is organized into six diagnostic sections: anxiety disorders (social phobia, separation anxiety, specific phobias, agoraphobia, panic disorder, generalized anxiety disorder, post-traumatic stress disorder, obsessive compulsive disorder), mood disorders (major depression, dysthymic disorder, mania, hypomania), disruptive disorders (conduct disorder, oppositional defiant disorder, attention deficit hyperactivity disorders), substance use disorders, schizophrenia, and miscellaneous disorders (anorexia nervosa, bulimia nervosa, enuresis, encopresis, tic disorders, pica, trichotillomania). Our measure of the presence of any DSM diagnosis concerned the previous 12 months.

### ***Analyses***

In order to determine whether the 105 participating adolescents were representative of all 184 adolescents assessed between 2002 and 2009, between group analyses were performed with regard to age at assessment, gender distribution, mean full scale intelligence score, problem behaviour, marital status and educational level of the parents, GID diagnosis (GID or subthreshold GID) and eligibility (eligible, not eligible or delayed eligible) for a medical intervention, using t-tests or Chi-square tests when applicable.

Gender differences, differences between adolescents with GID and subthreshold GID, and differences between eligible and delayed eligible adolescents with GID with regard to age, full scale IQ, parental marital status and educational level of the parents were analyzed using t-tests or Chi-square tests when applicable.

First, prevalence rates of all *DSM* diagnoses were estimated for all the DISC IV diagnoses separately and for the combined clusters of anxiety disorders, mood disorders, disruptive disorders (ADHD, oppositional defiant disorder and conduct disorder), one or more, two or more and three or more DISC-IV diagnoses. Chi-square tests were used to ascertain differences in prevalence rates between genders, between adolescents with a GID diagnosis and adolescents who were subthreshold for GID, and between adolescents immediately eligible and delayed eligible for medical intervention.

## **Results**

There were no significant differences between the 105 participating adolescents and the 79 non-participating adolescents with regard to gender distribution, mean full scale intel-

70 ligence, marital status and educational level of the parents, mean total problem *T*-score on the Child Behavior Checklist (CBCL), GID diagnosis (GID or subthreshold GID) or eligibility (eligible, not eligible or delayed eligible) for a medical intervention. Only age at assessment was significantly older in the participating adolescents (14.4 years,  $SD=2.2$ ) compared to the non-participating group (13.9 years,  $SD=2.2$ ),  $p<.05$ ). Our study sample was thus, in many relevant ways, representative of our whole patient group.

### ***All gender dysphoric adolescents***

General characteristics of the adolescents are presented in Table 1. No gender differences were observed with regard to age at assessment, full scale IQ, parental marital status or educational level of the parents.

Table 2 shows that 32.4% of the 105 assessed adolescents referred to the gender identity clinic had at least one concurrent psychiatric disorder, and 15.2% had two or more comorbid diagnoses. The most common disorders were social anxiety disorder (9.5%), major depression (8.6%), oppositional defiant disorder (8.6%) and specific phobia (7.6%). With a prevalence of 21%, anxiety disorders were most common. A mood disorder occurred in 12.4% and a disruptive disorder in 11.4% of the adolescents. Panic disorder (with and without agoraphobia), selective mutism, obsessive compulsive disorder, PTSD, anorexia nervosa, bulimia nervosa, enuresis, encopresis, tic disorders, pica, trichotillomania, manic episode, hypomanic episode, schizophrenia and conduct disorder were not observed. Substance use disorders had a prevalence of 1% with one marijuana dependent adolescent.

There were significant gender differences. Compared with natal females, natal males suffered more often from two or more comorbid diagnoses (22.2% versus 7.7%,  $p=.03$ ,  $OR=0.29$ , 95% confidence interval (C.I.) 0.09–0.95), mood disorders (20.8% versus 3.8%,  $p=.009$ ,  $OR=0.15$ , 95% C.I. 0.03–0.73), dysthymic disorder (7.5% versus 0%,  $p=.04$ ,  $OR=0.96$ , 95% C.I. 0.86–1.00) and social anxiety disorder (15.1% versus 3.8%,  $p=.05$ ,  $OR=0.24$ , 95% C.I. 0.05–1.19).

Table 2. Prevalence estimates and gender differences of DSM-IV diagnoses in gender dysphoric adolescents

| <i>Diagnosis*<br/>(past year)</i>     | All<br>N=105<br>% (n) | Natal males<br>N=53<br>% (n) | Natal females<br>N=52<br>% (n) | $\chi^2$ ; <i>p</i> | <i>OR</i>  |
|---------------------------------------|-----------------------|------------------------------|--------------------------------|---------------------|------------|
| <i>Any Anxiety</i>                    | 21 (22)               | 24.5 (13)                    | 17.3 (9)                       | .83; .36            | .64        |
| Specific Phobia                       | 7.6 (8)               | 4.5 (4)                      | 4.5 (4)                        | .001; .98           | 1.0        |
| Social Phobia                         | 9.5 (10)              | 15.1 (8)                     | 3.8 (2)                        | 3.9; <b>.05</b>     | <b>.26</b> |
| Agoraphobia                           | 1.0 (1)               | 1.1 (1)                      | 0                              | .99; .32            |            |
| Separation Anxiety                    | 3.8 (4)               | 1.9 (1)                      | 5.8 (3)                        | 1.1; .30            | 3.2        |
| Generalized Anxiety                   | 1.0 (1)               | 0                            | 1.9 (1)                        | 1.0; .31            |            |
| <i>Any Mood</i>                       | 12.4 (13)             | 20.8 (11)                    | 3.8 (2)                        | 6.9; <b>.009</b>    | <b>.15</b> |
| Major Depression                      | 8.6 (9)               | 13.2 (7)                     | 3.8 (2)                        | 2.9; .09            | .26        |
| Dysthymia                             | 3.8 (4)               | 7.5 (4)                      | 0                              | 4.0; <b>.04</b>     |            |
| <i>Any disruptive</i>                 | 11.4 (12)             | 15.1(8)                      | 7.7 (4)                        | 1.4; .23            | .47        |
| ADHD combined                         | 2.9 (3)               | 1.9 (1)                      | 3.8 (2)                        | .36; .55            | 2.1        |
| ADHD inattentive                      | 1.9 (2)               | 1.9 (1)                      | 1.9 (1)                        | .00; .99            | 1.0        |
| ADHD hyperactive                      | 1.0 (1)               | 1.9 (1)                      | 0                              | .99; .32            |            |
| Oppositional Defiant                  | 8.6 (9)               | 11.3 (6)                     | 5.8 (3)                        | 1.0; .31            | .48        |
| Any substance use**                   | 1.0 (1)               | 1.9 (1)                      | 0                              | .99; .32            |            |
| <i>One or more DSM IV diagnoses</i>   | 32.4 (34)             | 39.6 (21)                    | 25 (13)                        | 2.6; .11            | .51        |
| <i>Two or more DSM IV diagnoses</i>   | 15.2 (16)             | 22.6 (12)                    | 7.7 (4)                        | 4.5; <b>.03</b>     | <b>.29</b> |
| <i>Three or more DSM IV diagnoses</i> | 2.9 (3)               | 3.8 (2)                      | 1.9 (1)                        | .32; .57            | .50        |

\* Prevalence rates of panic disorder (with and without agoraphobia), selective mutism, obsessive compulsive disorder, PTSD, anorexia nervosa, bulimia nervosa, enuresis, encopresis, any tic disorder, pica, trichotillomania, manic episode, hypomanic episode, schizophrenia and conduct disorder were 0%.

\*\* one adolescent had a marijuana dependency, no other substance use disorders were reported.

### **Adolescents with GID versus adolescents subthreshold for GID**

No differences between adolescents with a complete GID and adolescents with subthreshold GID were observed with regard to age at assessment, full scale IQ, parental marital status or educational level of the parents. With respect to the prevalence of

72 comorbid psychiatric diagnoses, adolescents with a complete and subthreshold GID only differed with respect to the prevalence of specific phobia (4.5% ( $n=4$ ) with a complete GID versus 25% ( $n=4$ ) with subthreshold GID,  $p=.004$ ,  $OR=0.80$ , 95% C.I. 0.08–8.01).

### **Adolescents with GID**

In adolescents with a GID diagnosis, differences in general characteristics were observed between adolescents considered immediately eligible compared to adolescents considered delayed eligible for medical interventions (see Table 3). The delayed eligible group was, when attending the clinic, significantly older (15.6 years ( $SD=1.6$ ) versus 14.1 years ( $SD=2.2$ ),  $t(64.3)=-3.4$ ,  $p=.001$ ) than the immediately eligible group, and their IQs were significantly lower (91.6 ( $SD=12.4$ ) versus 99.1 ( $SD=12.8$ ),  $t(84)=2.5$ ,  $p=.011$ ). Also, significantly fewer delayed eligible adolescents were living with both biological parents compared with immediately eligible adolescents (23.1% ( $n=6$ ) versus 63.9% ( $n=39$ ),  $\chi^2(1)=11.8$ ,  $p<.001$ ), but no difference in educational level of the parents was observed between both groups.

Table 3. General characteristics of 89 adolescents with GID, immediate and delayed eligible

| Variable  | All GID<br>N=89 | Immediate<br>eligible<br>N=63 | Delayed<br>eligible<br>N=26 | $t$ or $\chi^2$ | $p$             |
|---|-----------------|-------------------------------|-----------------------------|-----------------|-----------------|
| Age in years ( $N$ )                              | 89              | 63                            | 26                          |                 |                 |
| $M$ ( $SD$ )                                      | 14.5 (2.2)      | 14.1 (2.2)                    | 15.6 (1.8)                  | -3.43           | <b>.001</b>     |
| Full-Scale IQ ( $N$ )                             | 86              | 61                            | 25                          |                 |                 |
| $M$ ( $SD$ )                                      | 96.9 (13.1)     | 99.1 (12.8)                   | 91.6 (12.4)                 | 2.50            | <b>.011</b>     |
| Parent's marital status, $N$ (%)                  | 87              | 61                            | 26                          |                 |                 |
| Both parents                                      | 45 (51.7)       | 39 (63.9)                     | 6 (23.1)                    | 12.2            | <b>&lt;.001</b> |
| Other <sup>d</sup>                                | 42 (48.3)       | 22 (36.1)                     | 20(76.9)                    |                 |                 |
| Parents' educational level <sup>e</sup> , $N$ (%) | 87              | 63                            | 24                          |                 |                 |
| High  | 11 (12.6)       | 12 (19.0)                     | 4 (16.7)                    | .07             | .96             |
| Middle  | 60 (69.0)       | 43 (68.3)                     | 17 (70.8)                   |                 |                 |
| Low   | 16 (18.4)       | 8 (12.7)                      | 3 (12.5)                    |                 |                 |

Differences in rates of psychiatric comorbidity between immediately eligible adolescents and delayed eligible adolescents are presented in Table 4. The rate of oppositional defiant disorder was 3.2% in immediately eligible adolescents versus 15.4% in delayed eligible adolescents ( $\chi^2(1)=4.36$ ,  $p=.04$ ,  $OR=5.5$ , 95% C.I. 0.94–32.43), and the rate of three or more comorbid diagnoses was 0% in immediately eligible adolescents versus 7.4% in delayed eligible adolescents ( $\chi^2(1)=4.96$ ,  $p=.03$ ,  $OR=1.08$ , 95% C.I. .97–1.21).

Table 4. Prevalence estimates of DSM-IV diagnoses in GID adolescent, immediate and delayed eligible

| <i>Diagnosis (past year)</i>          | GID<br>N=89<br>% (n) | Eligible<br>N=63<br>% (n) | Delayed eligible<br>N=26<br>% (n) | $\chi^2; p$      | <i>OR</i> |
|---------------------------------------|----------------------|---------------------------|-----------------------------------|------------------|-----------|
| <i>Any Anxiety</i>                    | 20.2 (18)            | 17.5 (11)                 | 26.9 (7)                          | 1.0; .31         | 1.7       |
| Specific Phobia                       | 4.5 (4)              | 4.8 (3)                   | 3.8 (1)                           | .04; .85         | .80       |
| Social Phobia                         | 11.2 (10)            | 7.9 (5)                   | 19.2 (5)                          | 2.4; .13         | 2.8       |
| Agoraphobia                           | 1.1 (1)              | 1.6 (1)                   | 0                                 | .42; .52         |           |
| Separation Anxiety                    | 3.4 (3)              | 3.2 (2)                   | 3.8 (1)                           | .02; .87         | 1.2       |
| Generalized Anxiety                   | 1.1 (1)              | 1.6 (1)                   | 0                                 | .42; .52         |           |
| <i>Any Mood</i>                       | 12.4 (11)            | 11.1 (7)                  | 15.4 (4)                          | .31; .58         | 1.5       |
| Major Depression                      | 9.0 (8)              | 7.9 (5)                   | 11.5 (3)                          | .29; .59         | 1.5       |
| Dysthymia                             | 3.4 (3)              | 3.2 (2)                   | 3.8 (1)                           | .03; .87         | 1.2       |
| <i>Any disruptive</i>                 | 10.1 (9)             | 6.3 (4)                   | 19.2 (5)                          | 3.36; .07        | 3.5       |
| ADHD combined                         | 3.4 (3)              | 3.2 (2)                   | 3.8 (1)                           | .03; .87         | 1.2       |
| ADHD inattentive                      | 2.2 (2)              | 1.6 (1)                   | 3.8 (1)                           | .43; .51         | 2.5       |
| ADHD hyperactive                      | 1.1 (1)              | 0                         | 3.8 (1)                           | 2.45; .12        |           |
| Oppositional Defiant                  | 6.7 (6)              | 3.2 (2)                   | 15.4 (4)                          | 4.36; <b>.04</b> | 5.5       |
| <i>One or more DSM IV diagnoses</i>   | 31.5 (28)            | 28.6 (18)                 | 38.5 (10)                         | .84; .36         | 1.6       |
| <i>Two or more DSM IV diagnoses</i>   | 13.5 (12)            | 9.5 (6)                   | 23.1 (6)                          | 2.90; .09        | 2.9       |
| <i>Three or more DSM IV diagnoses</i> | 2.2 (2)              | 0                         | 7.7 (2)                           | 4.96; <b>.03</b> | 1.08      |

## Discussion

Thirty-two percent of the gender dysphoric adolescents in the current study met DSM-IV criteria for one or more co-occurring psychiatric disorders, which is, on average, more than in the general population but less than in clinic referred youth. For example, the prevalence of a DSM-III-R diagnosis was 21% in a national sample of Dutch adolescents<sup>173</sup> and the rate of DSM-IV psychiatric disorders among adolescents in a large North American metropolitan area was 17%<sup>174</sup> whereas in youth attending various public sectors of care (e.g. juvenile justice, special education and mental health services) a 54% estimate was found.<sup>175</sup>

Most prevalent in our study were emotional disorders, with a nearly 10% prevalence of social phobia; studies in the general adolescent population reveal a prevalence of 1.65%–6.5%.<sup>173,174</sup> Disruptive disorders were also observed. Clearly, many gender dysphoric youth are in despair, as reflected by their depression, anxiety and oppositional behaviour. Other studies in adolescents with GID however, show higher rates of associated problems, including aggression, depression, suicidal thoughts and attempted suicide.<sup>56,163</sup> The 10% prevalence of social phobia may indicate that the development of gender variant adolescents' peer relations is at stake in a non-negligible subgroup. Indeed, in a study comparing gender dysphoric children with adolescents, the latter showed poorer peer relations, which were in turn the strongest predictor of CBCL psychopathology.<sup>40</sup>

The prevalence rate of 32% of adolescents in the current study was low compared to prepubertal gender dysphoric children in the same clinic, with an observed 52% prevalence rate of one or more psychiatric disorders.<sup>167</sup> Our findings are thus in contrast to other studies showing more problem behavior in adolescents compared to children.<sup>40,163</sup> However, in these studies, puberty suppression was not an option at the time that the studies were conducted. In our study, the trust adolescents felt that puberty suppression would be available by the time they would need it, may have relieved the acute distress accompanying their gender dysphoria and contributed to the fact that we found lower rates of comorbidity.

In our sample, gender dysphoric natal males had higher odds than natal females of having a mood disorder or social phobia whereas gender dysphoric natal females had a lower odds than natal males of disruptive disorders. It is interesting that in the general population the rates of anxiety and depression are generally higher in female than male adolescents and the prevalence rate of disruptive disorders is lower in females compared with males.<sup>173-175</sup> Apparently, adolescents with GID show types of psychopathology that are usually associated with the desired gender.

Contrary to our expectations, co-occurring psychopathology was not associated with the type of GID diagnosis (GID or subthreshold GID) an adolescent had. Likewise,

prepubertal children with subthreshold GID did not have significantly more or different comorbid psychiatric problems than children with complete GID.<sup>167</sup> Therefore, in another study by the Amsterdam Gender Identity Clinic, the six-fold higher odds of a co-occurring autistic spectrum disorder in adolescents with GID-NOS compared with youth fulfilling the complete criteria of GID is probably an exception in this regard.<sup>168</sup>

Delayed eligible adolescents differed from immediately eligible adolescents with GID by having higher odds of an oppositional defiant disorder, or more than three DSM diagnoses. These conditions can easily disturb the necessary long term therapeutic relationship with the pediatric endocrinologist and the psychologist or psychiatrist of the gender identity clinic when adolescents' puberty is suppressed. Furthermore, delayed eligible adolescents differed on important general demographic characteristics from immediately eligible adolescents with GID; they were older when attending the gender identity clinic, had a lower intelligence, and they were less often living with both biological parents. This may indicate that a constellation of these factors was deemed clinically important when making a decision to delay puberty suppression, and not psychiatric comorbidity only.

Several limitations in this study warrant comment. First, the size of the overall sample is moderate and the high rate of caregivers who were not able or declined to participate is problematic. However, to assess a potential selection bias in this subsample, we found that in many relevant ways, including total problem scores on the CBCL,<sup>24</sup> the study group was representative of the complete patient group. Second, the small number of adolescents with subthreshold GID limits the power to examine differences with adolescents meeting all criteria for GID. Third, we used only parent informants. It is possible that this underestimated the number of some diagnoses, such as substance use, which parents are not always informed about. In a Dutch prevalence study on DSM diagnoses, only a modest overlap was reported between DISC-C and DISC-P diagnoses.<sup>173</sup>

Finally, this study was limited by the use of the DISC IV, which does not include autism spectrum disorders. If that would have been the case, the rate of co-occurring psychiatric problems in gender dysphoric adolescents would have been higher, since the previously mentioned study at the same Gender Identity Clinic revealed that 9.4% of the referred adolescents suffered from an autistic spectrum disorder.<sup>168</sup>

In conclusion, this study showed that the majority of gender dysphoric adolescents do not have any comorbid psychiatric disorder, despite their increased suffering from the incongruence between experienced and assigned gender at the start of puberty. However, a significant minority of gender dysphoric adolescents is in need of specific care for mood, anxiety and oppositional disorders. Gender dysphoric natal males appear to need more attention than gender dysphoric females. Although psychological functioning is of importance when making clinical decisions regarding gender dysphoric adolescents, in this study eligibility for any medical intervention was only partly associated with comorbid psychopathology.

