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# Perceptions on the function of puberty suppression of transgender adolescents who continued or discontinued treatment, their parents, and clinicians

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## ABSTRACT

**Purpose:** Treatment of transgender adolescents with puberty suppression (PS) was developed to provide time for exploration before pursuing gender affirming medical treatment (GAMT) with irreversible effects. It may also result in a more satisfactory physical outcome for those who continue with GAMT. Despite being the current first choice treatment, little research has examined the function of PS from the perspectives of transgender adolescents, their parents, and clinicians. Insight into the perceived functions of PS will help to adequately support adolescents in their decision-making process and give them the care they need.

**Methods:** Qualitative study using interviews with eight transgender adolescents who proceeded with GAMT after PS ("continuers"), six adolescents who discontinued PS ("discontinuers") and 12 parents, and focus groups with ten clinicians.

**Results:** All informants considered inhibition of development of secondary sex characteristics an important function of PS. Most continuers saw PS as the first step of GAMT. Nevertheless, some were glad that the effects were reversible even if they didn't expect to change their minds. Some discontinuers did experience PS as an expanded diagnostic phase. One continuer used the time on PS to get used to living in the affirmed gender role, and several parents found the time helpful to adapt to their child's new gender role. PS provided clinicians more time for diagnostic assessment.

**Conclusions:** Adolescents, parents and clinicians do not all report the same functions of PS. Although international guidelines emphasize providing time for exploration of gender identity as an important reason for PS, many adolescents nowadays seem to have clear ideas about their gender identity and treatment wishes, and experience PS as the first step of GAMT. For some discontinuers however, PS offered a valued period of exploration. Guidelines could be modified to provide more customized care, taking adolescents' and parents' ideas about the functions of PS into account.



## KEYWORDS

Adolescents;  
gender dysphoria;  
gender incongruence;  
puberty suppression;  
transgender;  
qualitative study

## Introduction

International guidelines recommend treatment with puberty suppression (PS) (using gonadotropin-releasing hormone (GnRH) agonists) for transgender adolescents if certain criteria are fulfilled (Coleman et al., 2012; Hembree et al., 2017). It is recommended to start treatment after adolescents first exhibit physical changes of puberty (at least

Tanner stage 2), in order to suppress further development of secondary sex characteristics in a reversible manner. According to these guidelines, one of the main reasons to start PS is to "pause" puberty to expand the diagnostic phase so that adolescents have "extra" time to explore their options and think about pursuing subsequent medical gender affirming treatment (GAMT) with irreversible effects. A second reason to start PS in

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early puberty is that the physical outcome may be more satisfactory compared to PS in later stages of puberty and some surgeries such as mastectomy may not be necessary or less invasive because development of secondary sex characteristics is prevented (van de Grift et al., 2020). This may be a lifelong advantage for adolescents (Cohen-Kettenis, & van Goozen, 1997). In addition, PS can be used in adolescents in later stages of puberty to prevent facial hair growth in transgirls (assigned male at birth, with a female gender identity) and to stop menses in transboys (assigned female at birth, with a male gender identity) (Hembree et al., 2017). Treatment with PS has been shown to improve psychological functioning of adolescents in various domains (de Vries et al., 2011; van der Miesen et al., 2020). Experiencing full endogenous puberty might impair well-being and healthy psychological functioning (Hembree et al., 2017). However, the positive effects of PS need to be weighed against possible drawbacks. Some of the long-term effects of PS are still unknown (Biggs, 2021; Giordano, & Holm, 2020; Harris et al., 2019). A potential negative impact on cognitive, physical and psychosocial development has been mentioned, for example the risk of impaired fertility (Chen et al., 2020; Harris, Kolaitis & Frader, 2020; Laidlaw et al., 2019). Furthermore, concerns have been raised that preventing exposure to sex hormones and disrupting pubertal and sexual development may alter the course of gender identity development and may prevent spontaneous resolution of gender dysphoria or the recognition of oneself as homosexual rather than transgender (Korte et al., 2008; Vrouenraets et al., 2015). Furthermore, in a qualitative interview study, clinicians stated that they have concerns about the lack of long-term data on some possible side effects of treatment with PS (Vrouenraets et al., 2015). Additionally, certain options for genital surgery may not be available to those who started PS early in puberty necessitating the use of more invasive alternatives (van de Grift et al., 2020). Besides, there are worries about the risk of regret, since gender identity might fluctuate during adolescence (Vrouenraets et al., 2015). The results of a qualitative interview study with transgender adolescents showed that some adolescents themselves also had some hesitations regarding early medical treatment. They

reported doubts, for example, about the ability of adolescents to make informed decisions with regard to medical treatment at the age of 12 or younger (Vrouenraets et al., 2016).

A study from the Netherlands showed that of all adolescents seen at the Amsterdam gender identity clinic, around 75% started with PS and the other 25% did not (Arnoldussen et al., 2020 a,b). The vast majority of the adolescents who start PS subsequently start GAMT (e.g., Brik et al., 2020; de Vries et al., 2011; Wiepjes et al., 2019). The follow-up studies that are available show that psychological functioning has significantly improved after PS, gender affirming hormones (GAH) and surgeries (de Vries et al., 2011; de Vries et al., 2014). Longer-term follow-up data on treatment satisfaction, psychological functioning and possible discontinuation of affirming treatment are currently being collected (no results yet).

Previous research has shown that many transgender adolescents seem to experience PS as the first necessary step of a seemingly clear trajectory toward further gender affirming treatments, rather than as an opportunity to consider further treatment wishes (Brik et al., 2020). This implies that PS may serve functions that are not mentioned in the guidelines. Little research has examined the motivation to apply for PS from the point of view of adolescents and their parents. Insight into the function of PS according to the adolescents, their parents, and their clinicians will help to adequately support the adolescents in their decision-making process and give them the care and information they need. In addition, functions of PS may vary among adolescents; for those who subsequently start with GAH the function of PS may be different than for those who discontinue PS. To gain more insight into this topic, we have performed a qualitative interview study focusing on the following questions: (1) what function did treatment with PS have for transgender adolescents, their parents, and their clinicians?; and (2) do transgender adolescents who continued to GAMT, adolescents who discontinued PS treatment, their parents, and clinicians have different ideas about the function of PS, and if so, in what sense?

## Methods

### Participants

The study was approved by the institutional review board of the Amsterdam University Medical Centers, location VUmc, and the Leiden University Medical Center (LUMC). Interviews and focus groups were conducted in the context of a larger study on transgender adolescents' competence to consent to PS and the function of this treatment. Transgender adolescents who proceeded to GAH after PS as well as adolescents who discontinued treatment with PS, and their parents were recruited from the gender identity clinics in Amsterdam and Leiden between January and September 2019. They were interviewed in order to explore their considerations and experiences regarding the function of PS. The same topics were discussed in focus groups with clinicians of the two treatment teams. The Amsterdam and Leiden gender identity clinics were the only two academic gender identity clinics in the Netherlands that offered diagnostic assessment and treatment for adolescents at the time of the study. Both centers have multidisciplinary teams in which specialists in child and adolescent psychiatry and psychology, and pediatric endocrinology participate. The teams follow the same diagnostic procedures and treatment protocols.

Semi-structured individual interviews were held with 14 adolescents and 12 parents. The informants consisted of:

1. Six adolescents who had been treated with PS and had discontinued this treatment;
2. Eight transgender adolescents who were treated with PS and GAH;
3. Four parents of adolescents who had discontinued treatment with PS;
4. Eight parents of adolescents who were treated with PS and GAH.

Inclusion criteria for the adolescents who had discontinued treatment (group 1) were: a) diagnosis of gender dysphoria according to DSM-IV or DSM-5, depending on which version of the DSM was used at the time of diagnosis (American Psychiatric Association, 2013), b) had started PS at age 10–17 years, and c) had discontinued PS treatment. Out of 1015 adolescents diagnosed with

gender dysphoria between 2000 and 2018 at the Amsterdam or Leiden gender identity clinic twenty adolescents in total were eligible. Eight adolescents could not be reached, mostly because their contact details were no longer up to date. One was not contacted because the adolescent had previously indicated that he did not want to be approached for research purposes. Two adolescents were not contacted because the involved clinician thought this was inappropriate due to, among others, comorbid mental health difficulties. Nine adolescents were asked to participate; initially the formerly involved clinician contacted the adolescent by telephone to explain what participation in the study implied and to ask if the researcher could contact the adolescent. If the adolescent agreed, the researcher contacted the adolescent to further explain the study and invite them to participate. Two adolescents declined without giving a reason, one parent did not want her child to participate because she did not think that was in the child's best interest, and six adolescents agreed to participate. All were interviewed face-to-face at a clinic visit or at their homes if preferred, between January 2019 and September 2019.

Inclusion criteria for the adolescents who had continued treatment (group 2) were: a) diagnosis of gender dysphoria according to DSM-IV or DSM-5, depending on which version of the DSM was used at the time of diagnosis (American Psychiatric Association, 2013), b) had started PS at age 10–15 years, c) had used PS for at least 12 months, d) had used GAH for at least six months, and e) age at the time of the interview between 15 and 20 years. The aim was to have at least as many adolescents in group 2 as in group 1. Therefore, thirteen consecutive adolescents were asked to participate when they attended their regular follow-up appointment in February and March 2019. These adolescents were not selected in any way, in order to have a random selection of participants. Eight adolescents agreed to participate. Four adolescents could not participate because they had other appointments to attend on the day they visited the clinic and one adolescent declined without giving a reason. All adolescents were interviewed face-to-face. Characteristics of the two groups of adolescents are presented in [Table 1](#).

Four parents (three biological mothers and one adoptive mother) of adolescents who had discontinued treatment were asked to participate in the study and all agreed. The other parents were not asked because of logistic reasons. One parent was interviewed face-to-face and three via telephone because of traveling distance. The parents of all interviewed adolescents who continued treatment were asked to participate. Eight parents (seven biological mothers and one biological father) agreed. They were all interviewed face-to-face when their child attended their regular follow-up appointment at the Amsterdam University Medical Centers, location VUmc. All interviews with parents took place between February 2019 and September 2019.

In addition, two focus groups with clinicians from the two treatment teams were held. The informants were purposefully selected based on their discipline (all different disciplines working within both teams participated to assure representativeness for the complete treatment team; i.e., three child and adolescent psychiatrists, four child and adolescent psychologists and three pediatric endocrinologists). They had different levels of experience (ranging from one to 12.5 years) with care for transgender youth. Therefore, the participants of the focus groups can be considered representative of the larger group of members across the two teams in terms of the range of disciplines and level of experience. These focus groups took place in June and August 2019.

### Procedure and measures

The interviews were conducted by two authors of this study, both had interview experience (MA

and LV). They had not been involved in the diagnostic assessments of the adolescents they interviewed. Initial interview questions were formulated after review of the relevant literature and discussion within the research team involving all authors. The interview guide contained no closed ended questions (see Appendix A).

Two focus groups were conducted. One of the authors (MV) facilitated both focus groups. During the focus groups the questions asked in the interviews were presented along with several anonymous quotes from the interviews to get the conversation started. The participants were asked whether they agreed and/or identified with the quotes. Furthermore, the participants were invited to express possible other views they held on these topics.

All interviews and focus groups were audio-taped and transcribed verbatim. Before each interview and each focus group informed consent for participation and tape recording was obtained. The interview duration varied between the groups (adolescents who had stopped PS 41–73 minutes, their parents 15–48 minutes, adolescents who continued PS and had started with GAH 12–22 minutes, and their parents 13–38 minutes, focus groups 79–88 minutes).

### Analysis

Data analysis was based on hermeneutic analysis (Miles, & Huberman, 1994; Stake, 2005). After an initial open reading of the data, two of the authors presented some preliminary (sub)themes. Besides, one of these authors analyzed the transcripts by selecting representative quotations for each of the defined themes, taking care to draw

**Table 1.** Characteristics of participating adolescents.

Variables	Adolescents who discontinued treatment	Adolescents who continued treatment
N	6	8
Birth assigned girls	5 <sup>a</sup>	4
Birth assigned boys	1 <sup>b</sup>	4
Age during interview (median; range) (years)	17.5; 14–27	17.9; 15–18
Age when visiting gender identity clinic for the first time (median; range) (years)	14.3; 11–15	11.3; 10–13
Age start PS (median; range) (years)	15.2; 12–17	12.3; 10–14
Duration of PS (median; range) (months)	10; 1–14	35; 21–48
Duration diagnostic trajectory before starting PS treatment (median; range) (months) <sup>c</sup>	10; 6–22	9; 6–12
Full-Scale IQ (median; range)	100; 98–124	104; 76–132

<sup>a</sup>Two adolescents identified as transboy, one as a-gender, one as genderfluid, and one as cis-gender girl at the time of the interview.

<sup>b</sup>Gender identity at the time of the interview: a-gender.

<sup>c</sup>Diagnostic trajectory before starting PS treatment; In the Netherlands, transgender adolescents undergo a diagnostic trajectory, consisting of psycho-diagnostic assessment and several sessions with a mental health provider over a longer period of time, when assessing eligibility for PS.



quotations from all data sources. Then, the same two authors conducted an additional round of analyses to assess whether the (sub)themes enabled them to accurately subdivide the outcome of the data. Besides, these two authors also re-analyzed the transcripts by selecting representative quotations. Then, through a deliberative process, the authors redefined the initial (sub) themes until they reached a consensus.

## Results

From the interviews and the focus groups, four themes regarding the function of treatment with PS emerged. Representative quotations are presented to illustrate the themes identified.

### Theme 1: *Reduction of suffering through inhibition of the development of secondary sex characteristics*

All interviewed adolescents and all parents stated that inhibition of the development of secondary sex characteristics was one of the main reasons, and for several the most important reason, to start PS. Most stated that the fact that their bodies would not (continue to) develop in a way they did not want, was a great relief.

*It also gave me some peace of mind because I knew: "okay, my body is not going to continue to develop, I will not become more masculine"* (Interview with a transgirl who continued PS; age at start PS: 12.9; age at interview: 17.8)

*Knowing that the treatment with puberty suppression would spare him breast-removal surgery was of course really good* (Interview with a parent of a transboy who continued PS; age at start PS: 12.9; age at interview: 15.5)

The clinicians stated that almost all adolescents suffer from (the anticipation of) the development of secondary sex characteristics. For almost all clinicians, halting the development of the physical changes, and thereby reducing this suffering, were the main reasons to start PS. Clinicians hoped that the treatment would improve the adolescents' functioning now and later in life, and reduce the distress caused by the developing body to create time and rest for further exploration enabling a healthy psychological adolescent development.

*The main reasons [to start treatment with puberty suppression] are to reduce suffering and stress. An additional reason, to a variable degree [depending on the degree of development of secondary sex characteristics], is blocking the development of physical changes* (Focus group with clinicians)

*As far as I'm concerned, one of the reasons [to start treatment with puberty suppression] is to make the adolescent feel a little better at that moment, because you stop the puberty that the adolescent simply does not want* (Focus group with clinicians)

Besides, most clinicians and one adolescent stated that the adolescents might be better able to decide whether or not to proceed with GAH when, through PS, they no longer suffer from the development of secondary sex characteristics and other physical developments that come with puberty.

*Once the adolescent is less stressed [about the development of the secondary sex characteristics] the adolescent is sometimes better able to judge if proceeding with gender affirming hormones is really desired* (Focus group with clinicians)

*The treatment with puberty suppression gave me more peace of mind, [...] it opened up my tunnel vision and helped me see more possibilities in terms of gender identity and everything. So, yes, it has helped me with the search for who I am* (Interview with an assigned female at birth who had discontinued PS; age at start PS: 15.5; age at discontinuation PS: 16.6; age at interview: 17.0)

In addition, clinicians mentioned that the distress that adolescents and parents experience because of (the anticipation of) the development of secondary sex characteristics made them feel pressured to treat the adolescents.

*The treatment with puberty suppression gives [the adolescent] a kind of rest because the adolescent's agony [caused by the development of the secondary sex characteristics] is relieved. Additionally, the agony itself may put pressure on the decision making for both the adolescent and the clinician involved* (Focus group with clinicians)

*It sometimes happens that the parents are more stressed [than the adolescents themselves], [...] especially when it concerns younger adolescents [10/11 years old] [...] I sometimes find that difficult, when I feel the parents push very hard [to start treatment with puberty suppression]* (Focus group with clinicians)

## Theme 2: *Providing more time to expand the diagnostic phase*

Three out of the six adolescents who had discontinued PS (group 1), and all four of their parents, stated that they had primarily used PS to gain more time to think about whether or not to proceed with GAMT without having to worry about the physical changes of their body.

*It was a great relief; I didn't have to worry about all that fuss [e.g., having my period and breast growth] but could simply think about who I am. To clarify things. [...] I became a woman, my breasts started to grow but I just didn't want it. I simply needed a lot more time to think, because it was so unclear who I was and how I wanted to live my life* (Interview with an assigned female at birth who had discontinued PS; age at start PS: 12.1; age at discontinuation PS: 13.3; age at interview: 14.3)

*When he was referred to the Amsterdam gender identity clinic he sometimes lived his life as a girl and sometimes as a boy; he was still searching and in doubt. In order to have more time, he started treatment with puberty suppression* (Interview with a parent of an assigned male at birth who had discontinued PS; age at start PS: 15.9; age at discontinuation PS: 16.7; age at interview: 22.9)

One adolescent from group 1 stated that she initially did not think of PS as a way to gain extra time to think, but during PS she realized that she could use this time to explore her wishes regarding GAMT.

*When I started treatment with puberty suppression it really felt as the first step of the transition for me. After that, I would continue with testosterone treatment. [...] Only during the treatment with puberty suppression I realized, now I still have time to think [about whether I want to continue with the transition or not]* (Interview with an assigned female at birth who had discontinued PS; age at start PS: 16.7; age at discontinuation PS: 17.0; age at interview: 19.5)

On the other hand, none of the eight interviewed adolescents who had proceeded with GAH, and none of their parents, stated that more time to explore and decide whether or not to pursue GAMT was a function of PS for them. They mentioned that they were/their child was already certain that they wanted to proceed with GAMT when starting PS. However, several of them stated that they could understand the

rationale for other adolescents who might need this extra time to explore.

*For me, it wasn't a period of reflection. [...] I have never really had any doubts about wanting to be a man or not* (Interview with a transgirl who continued PS; age at start PS: 12.9; age at interview: 15.5)

*It wasn't as if she thought: good, now I have time to carefully think things over. She had already done that thinking before the puberty suppressing treatment* (Interview with a parent of a transgirl who continued PS; age at start PS: 12.9; age at interview: 17.8)

Additionally, one transgirl that continued PS and one parent stated that, even though extra time to explore and overthink whether or not to pursue GAMT was not a reason for them to start PS, they were both glad that if her (the child's) thoughts had changed, no irreversible changes would have taken place.

*I liked the idea that the effects [of treatment with puberty suppression] were still reversible, even though I didn't doubt her feelings, and didn't think that it [stopping puberty suppressing treatment] would ever be necessary* (Interview with a parent of a transgirl who continued PS; age at start PS: 12.0; age at interview: 18.1)

Several clinicians stated that, at least in some situations, one of the reasons for them to let the adolescents start PS was to give the adolescents more time before deciding on GAMT. This time would allow them to further develop and become more autonomous.

*You use it [puberty suppressing treatment] as a period for delay and respite so that you make the step to a more irreversible treatment with gender affirming hormones, surgery etc. at a later moment, when you believe the adolescent is able to oversee all consequences [of the treatment]* (Focus group with clinicians)

*The adolescents become a bit more autonomous in that period between the ages of 13 and 16. During this period they become able to think a little more autonomously and [they] are a little less influenced by the environment. This happens very gradually, but it does make a difference* (Focus group with clinicians)

Besides, the clinicians mentioned that in some cases, another reason to start PS was to allow themselves more time for the diagnostic assessment. While observing the adolescent's development over time, the indication for further

treatment might become more clear. The clinicians explained that additional diagnostic evaluation did not only concern the diagnosis gender dysphoria itself, but other aspects of the adolescents' life too.

*I think you also "buy" time for the clinician to conduct a proper diagnostic evaluation. In that period of time you [as the clinician] are able to follow the development of the adolescent. The information this provides may help create a better diagnostic image and arguments as to why you would or would not proceed to gender affirming medical treatment. This [clarifying the diagnosis or these arguments] is often quite difficult when a child or adolescent is younger (Focus group with clinicians)*

*Sometimes adolescents believe that starting [puberty suppressing] treatment fixes everything, which is not a realistic idea. The adolescents have to work on a number of other things [problems in their lives] too. We [the adolescent and clinician] have to actively make a plan how to deal with and solve these problems, because not all problems will just disappear into thin air (Focus group with clinicians)*

### Theme 3: Providing (more) time to get used to living in the affirmed gender role

Half of the adolescents who proceeded with GAH after PS stated that the period on PS provided their parents and others in their environment time to get used to them living in the affirmed gender role. Most parents confirmed this. Only one adolescent stated that she herself used this period to get used to living in the affirmed gender role too, but the other seven adolescents did not. None of the adolescents who had discontinued PS, stated that they considered having time to get used to living in the affirmed gender role a function of PS for them and/or people in their environment. However, some clinicians did mention giving the adolescents the opportunity to get used to living in their new gender role and evaluating this experience with the adolescents as a function of PS.

*The treatment with puberty suppression gave me and the people around me time to get used to me living as a girl. That was really essential, because if I had started with the female sex hormones straight away it might have been too much to get used to and my environment might not have understood [me living as a girl] (Interview with a transgirl who continued PS; age at start PS: 12.9; age at interview: 17.8)*

*In the beginning, I found it quite difficult that I gave birth to a son who wanted to become a woman. We processed that in that period [when she was given treatment with puberty suppression] (Interview with a parent of a transgirl who continued PS; age at start PS: 14.2; age at interview: 17.9)*

*They [the adolescents] have the opportunity to get used to living in the affirmed gender role and to find out for themselves what it's like (Focus group with clinicians)*

For the other half of the adolescents who proceeded with GAH, and their parents the period on PS was not a period to get used to living in the affirmed gender role. One parent even stated that the period on PS took too long for them.

*We never had to get used to anything because it had always been like this since his childhood; he looked like a boy since he was 5 years old, he played with other boys, and presented himself as a boy (Interview with a parent of a transboy who continued PS; age at start PS: 12.9; age at interview: 15.5)*

*Of course it was a period in which we as parents could get used to it [our child presenting herself as a girl], but I didn't need 4 years [to get used to it] [...] it could have been shorter because it was already clear to us and we had known for a long time [about the gender non-conforming feelings of our child] (Interview with a parent of a transboy who continued PS; age at start PS: 11.9; age at interview: 18.5)*

### Theme 4: The "first step" of the gender affirming medical treatment

All adolescents who proceeded with GAH stated that they viewed the start of PS as the first step in their trajectory of GAMT. Two adolescents who did not proceed with GAH stated this too. About half of the interviewed parents said they saw starting PS as the first step.

*For me it really was like the beginning of becoming a man because you need to have puberty suppression before you can start gender affirming hormone treatment (Interview with a transboy who continued PS; age at start PS: 12.9; age at interview: 15.5)*

*The most important reason to start with puberty suppressing treatment was to subsequently start with male sex hormones (Interview with an assigned female at birth who had discontinued PS; age at start PS: 17.0; age at discontinuation PS: 17.9; age at interview: 27.8)*

The clinicians acknowledged that most adolescents view the start with PS as the first step of the



GAMT. Most clinicians stated that they had the feeling that some adolescents who presented at the gender identity clinic only had one goal in mind: GAMT. The metaphor of a train was used; some children and adolescents seem to be on a moving train with GAMT as their final destination from the moment of the first visit to the gender identity clinic. Some clinicians had the feeling that they needed to slow down some of these trains to make sure that each step was carefully considered.

*It is not as if we [clinicians] put them on some kind of train. Those children and adolescents are already on a train when they first visit the clinic and that makes steering the train more difficult (Focus group with clinicians)*

## Discussion

Comparing the considerations of transgender adolescents who had continued with GAH after PS, adolescents who had discontinued treatment with PS, their parents, and clinicians reveals that they do not all have the same views on the functions of PS. Nevertheless, there was one reason to start PS which all informants agreed upon: inhibition of the development of secondary sex characteristics. In addition, some clinicians mentioned that PS reduced distress not only in adolescents but also in parents. This distress experienced by parents because of the physical changes their children undergo has been described in other studies as well (Butler et al., 2019; Field, & Mattson, 2016). Additionally, especially clinicians considered it important that adolescents mature a little further during the years they receive PS, and that, while they experience less distress due to the undesired development of their bodies, they may be better able to decide on whether or not to proceed with GAMT and carefully consider the consequences of their decision. This is in line with the reason for considering PS mentioned in other studies; namely, that clinicians try to find a balance between the distress in transgender adolescents and the potential long-term risks of the treatment (Butler et al., 2019). Most adolescents who continued with GAH, however, stated that they already knew they wanted to start GAMT after PS.

The idea of PS as a way to “buy” time to explore and decide whether or not to continue with GAMT was not endorsed by all informants. None of the adolescents who had started GAH after PS, nor their parents, saw this as a reason to start PS. Most stated that they did understand this rationale behind the treatment and that it might be relevant for other adolescents, but not for themselves, although several mentioned it was good that the effects of the treatment were reversible “just in case things would have changed”. By contrast, most adolescents who had discontinued PS, and their parents, stated that they did, either initially or eventually, see PS as a way to buy time to explore their options and consider the subsequent trajectory. For clinicians, this extra time for exploration was a function of and a reason to start PS too, although this depended on the case. The finding that most adolescents did not use PS for further exploration of their gender identity is of note, but not an unexpected finding. For example, follow-up studies have already shown that the vast majority of adolescents who start PS subsequently start GAMT (e.g., Brik et al., 2020; de Vries et al., 2011; Wiepjes et al., 2019). In the Netherlands, adolescents follow a careful assessment consisting of several appointments over a longer period of time to find out if they meet the criteria of the diagnosis gender dysphoria, if they understand the consequences of medical intervention, and to explore if starting PS, and later on GAMT, is indicated (Cohen-Kettenis et al., 2011). It is therefore important to keep in mind that adolescents never “just” start PS. Hence it might not be surprising that most adolescents did not use PS to further explore their gender identity since they had already done so before the decision to start PS was made. The diagnostic trajectory that transgender adolescents followed in Amsterdam and Leiden might have selected those adolescents that were very likely to continue with GAMT. Nevertheless, clinicians and, to a lesser extent, parents of adolescents who had discontinued treatment, considered the possibility of further exploration important. So most adolescents who had continued PS and started GAH did not, in retrospect, see PS as a way to extend the

diagnostic phase, in contrast to the fact that it is an important reason noted in the international guidelines (Coleman et al., 2012; Hembree et al., 2017). However, this does not mean that PS is not a valuable medical intervention. In our study, for those who discontinued PS, it was a valuable intervention proving the importance of having “thinking time”. Furthermore, those who had continued PS and started GAH, acknowledged it had given their families time to adjust. Their clinicians reported the importance of having time to support further self-exploration and to prepare for treatment with irreversible effects. Additionally, the study of Brik et al. (2020) showed that several Dutch adolescents received mental health support from a local mental health professional or a psychologist of the treatment team of the gender identity clinic more frequently than minimally necessary by protocol during treatment with PS. This might support the idea that adolescents do use the period of PS as an extended diagnostic phase in which they further explore their gender identity and whether they want to continue with GAMT or not (Brik et al., 2020). If this results in a decision to pursue GAMT, adolescents might in hindsight not recognize that the period of PS was important in making this decision, even if in fact it was. The experiences of adolescents who had discontinued PS support this notion. Therefore, PS may expand the time of self-exploration even in those who feel certain about their gender trajectory and who will apply for further treatments later on.

About half of the adolescents who proceeded with GAMT used the time they received PS to get used to living in the affirmed gender role, as described in the international guidelines (Coleman et al., 2012; Hembree et al., 2017). Worth mentioning is that most adolescents stated that particularly their parents and other relatives had to get used to them living in the affirmed gender role, which was confirmed by most parents. This aspect is mentioned in other studies too (Alegría, 2018), but not in the international guidelines (Hembree et al., 2017).

All adolescents who proceeded with GAH, some of the adolescents who stopped PS, and about half of the parents stated that they saw the

start with PS as the first step of the GAMT. Most clinicians recognize that many adolescents experience it as such. Sometimes clinicians have the feeling they need to “slow down” the adolescents who seem to have set GAMT as their final “goal”, in order to make sure that each step is carefully considered. Even though research shows mostly positive effects of PS, some of the long-term effects of the treatment are still unknown (Biggs, 2021; Giordano, & Holm, 2020; Harris et al., 2019; Klaver et al., 2018; 2020; Klink et al., 2015; Schagen et al., 2020). Concerns have been raised about adolescents regretting the treatment later in life, and about the effects of GnRHa on cognitive, physical and psychosocial development (Ashley, 2019; Chen, & Simons, 2018; de Vries, 2020; Kaltiala-Heino et al., 2018; Laidlaw et al., 2019; Vrouenraets et al., 2015; Wren, 2019). If PS is regarded as the first step of GAMT, children from the age of 10 make decisions with life-long consequences. One of the most pressing concerns is the possible loss of fertility due to adolescents “automatically” proceeding to GAH and possibly gonadectomy and the fact that these adolescents will never undergo the puberty of their birth assigned sex (Hudson et al., 2018). Loss of fertility, as well as concerns about (future) fertility may have a significant negative impact on quality of life and psychosocial well-being (Brik et al., 2019; Carter et al., 2010; Gorman et al., 2015; Trent et al., 2003; Wenzel et al., 2005). On the other hand, one should keep in mind that even if treatment with PS might have harmful effects, refraining from intervention might have harmful effects as well (de Vries et al., 2021).

In conclusion, the reasons to start PS and the functions of this treatment in transgender adolescents described in the international guidelines are only partly in line with those reported by the adolescents themselves. They overlap to a larger extent with reasons and functions as mentioned by parents, and are largely in line with those reported by clinicians. The purpose with which children, adolescents and parents entered a gender identity clinic in the late 1990s and early 2000s, when the protocol for diagnostic assessment and treatment was drawn up, may be different from the purpose with which they enter a clinic

nowadays and may also be different in other countries and contexts. Previously, families may have been “confused” by the situation and the gender non-conforming feelings of the child. They may have wanted support in their search for a way to help the child. At that time, an extended diagnostic period through PS was an ideal option. At the present time, families who enter a clinic are much better informed through the internet, media and peers, and many will have a clear idea of the diagnosis and their treatment wishes. An extended diagnostic period to explore the possibility of pursuing GAMT might therefore not be appropriate for all those who currently enter a gender identity clinic. In that respect, the protocol could be modified to provide help that is more personalized and customized, taking into account someone’s purpose and thoughts. For example, one might consider following the treatment protocol for transgender adults, i.e., skipping PS and starting GAMT immediately after the diagnostic trajectory, in some cases such as older transgender adolescents who have experienced gender non-conforming feelings from an early age, if this is in line with the adolescent’s and parents’ wishes. On the other hand, one adolescent who discontinued PS recounted that before she started PS she did not think of PS as a way to gain extra time to think. However, during PS she realized that she could use this time to explore her wishes regarding GAMT and she ultimately decided not to continue with PS and GAMT. This may be true for other adolescents as well and should be kept in mind. So even for adolescents who grow up in a supportive and affirming environment, a period of pause can turn out to be beneficial and give them time to become better informed and more realistic about the future. Additionally, the results of this study show that PS serves functions not only for the transgender adolescents themselves, but also for their parents and other relatives, and for clinicians. Family support plays an important role in shaping the transgender adolescents’ health (Bouris et al., 2010). A review on this topic in sexual minorities found that, over time, parents generally become more accepting of their child (Rosario, & Schrimshaw, 2013). Even though it is unknown whether these results may be generalized

to transgender youth, giving parents and other relatives time to get used to their child’s new gender role might increase their acceptance (Katz-Wise et al., 2016). PS might play a role in this regard by providing “extra” time before GAMT is started. Nevertheless, one may wonder how much priority this function should be given, for example, if the adolescent could be harmed by staying on PS for a longer time, but the parents on the other hand need more time to get used to their child living in the affirmed gender role. From an ethical point of view, clinicians should balance the interests not only of the adolescents but also of the parents, and guidelines should recognize that PS might enable others to get used to the identity and gender role of the adolescent.

There are strengths and weaknesses to the present study. The qualitative nature of this study made it possible to find out, in depth, the ways in which transgender adolescents, their parents and clinicians think or feel about the function of PS. Another strength of this study is that adolescents who did continue with GAMT as well as adolescents who did not proceed with GAMT were interviewed. This allowed us to compare their considerations. Nevertheless, the retrospective nature of this study raises the possibility of recall bias and hindsight bias of the informants, and the first interview-question might appear to introduce bias, instead of being fully open-ended. In addition, it should be noted that the informants are recruited from two Dutch treatment teams which work according to the same treatment protocol where PS was required for all adolescents before any further affirming treatment was provided. Adolescents recruited from other treatment clinics in other contexts might report a different function of PS. Therefore, we encourage prospective gathering of more qualitative data from adolescents who haven’t started PS yet or receive PS but have not started treatment with GAH yet, especially from other settings in other contexts, e.g., in clinics with a shorter history of providing care and in countries where less general knowledge on gender dysphoria/gender incongruence is available (e.g., Fortunato et al., 2020; Jokić-Begić et al., 2017; Shirdel-Havar et al., 2019). In addition, the ages

when the adolescents visited the gender identity clinic for the first time, and the ages when they started PS differ between the group of adolescents who discontinued treatment and the group of adolescents who continued treatment. This possibly means that the adolescents in these two groups are different. Even though this is not a subject of this study, this is interesting to examine further in future research. Additionally, even though all adolescents who had discontinued treatment and agreed to participate were interviewed, and a slightly larger number of adolescents who continued treatment was interviewed, the sample size is small. Due to the small sample size, the nonparticipation rate and the skewed sex ratio, it is not completely certain if genuine saturation was reached. For nonparticipating adolescents who had discontinued treatment, PS might have fulfilled different functions compared to the adolescents that have been interviewed. We therefore encourage gathering more qualitative data of a larger sample with a more balanced sex ratio. In conclusion, this study shows that PS has various functions and is started for various reasons. This should be reflected by guidelines, leaving room for more customized care, taking the different functions and thoughts of the adolescents and parents regarding PS into account.

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### Conflict of interest

The authors declare that they have no conflict of interest.

### Clinical trials registry site and number

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## Appendix A. Initial interview questions

1. For you, was the treatment to suppress puberty time to consider and decide on irreversible treatment or was the treatment important to you for other reasons?
2. How thoughtful was the decision to start PS at the time?
3. Have there been any consequences, or has there been any impact of the treatment

with PS that you hadn't foreseen, that you were not aware of, that were better or worse than you had expected?

4. To what extent did you make your decision to start PS in a different way from your decision to start with treatment with gender affirming hormones?
5. Is there anything that hasn't been discussed in this interview but that you think is relevant in relation to the topic, anything that you would like to add?