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Do Children With Gender Dysphoria Have Intense/Obsessional Interests?

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This study examined whether children clinically referred for gender dysphoria (GD) show increased symptoms of autism spectrum disorder (ASD). Circumscribed preoccupations or intense interests were considered as overlapping symptoms expressed in GD and ASD. In gender-referred children (n = 534; 82.2% male) and their siblings (n = 419; 57.5% male), we examined Items 9 and 66 on the Child Behavior Checklist, which measure obsessions and compulsions, respectively. Non-GD clinic-referred (n = 1,201; 48.5% male) and nonreferred (n = 1,201; 48.5% male) children were also examined. Gender-referred children were elevated compared to all other groups for Item 9, and compared to siblings and nonreferred children for Item 66. A gender-related theme was significantly more common for gender-referred boys than male siblings on Item 9 only. A gender-related theme was not significantly more common for gender-referred girls compared to their female siblings on either item. The findings for Item 9 support the idea that children with GD show an elevation in obsessional interests. For gender-referred boys in particular, gender-related themes constituted more than half of the examples provided by their mothers. Intense/obsessional interests in children with GD may be one of the factors underlying the purported link between GD and ASD.

In children, gender dysphoria (GD) (formerly gender identity disorder) is characterized by strong and persistent cross-sex behavior and identification (American Psychiatric Association [APA], 2013). In the clinical literature on boys with GD, it has been observed that they often appear to show an intense, obsessional interest in gender-related themes, spending hours repeating and enacting the particular intense interest or obsession (Coates, 1985). It is unclear, however, whether their behavior is simply an instance of the intense interest in a particular category of objects or activities that is seen in typically developing children (DeLoache, Simcock, & Macari, 2007; Halim, Ruble, & Amodio, 2011; Halim et al., 2013) or represents something that is qualitatively distinct or, at least, is at the extreme end of a quantitative spectrum.

In recent years, a new line of clinical observation (mainly conveyed through case reports) has suggested that some children with GD meet *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) criteria for autism spectrum disorder (ASD) (de Vries, Noens, Cohen-Kettenis, van Berckelaer-Onnes, & Doreleifers, 2010; Landén & Rasmussen, 1997; Mukkades, 2002; Parkinson, 2013; Perera, Gadambanathan, & Weerasiri, 2003; Tateno, Tateno, & Saito, 2008; Williams, Allard, & Sears, 1996). A potential explanation for a link between GD and ASD, two relatively rare disorders, is an intense focus on or an obsessional interest in specific activities (Baron-Cohen & Wheelwright, 1999; Klin, Danovitch, Merz, & Volkmar, 2007). Such interests relate to the *DSM*-5 ASD criterion pertaining to highly restricted and fixated interests.

One possible developmental scenario is that children with ASD who form intense interests toward and become obsessive about cross-sex objects or activities may then begin to express characteristics of GD. Conversely, GD may give rise to such interests and obsessions, leading to a clinical presentation consistent with ASD. Alternatively, some additional variable or set of variables that affects both GD and ASD could be responsible for the link. For example, small size at birth is associated with an elevated risk of ASD (Abel et al., 2013), and a large subset of GD males are known to have comparatively low birth weight (Blanchard et al., 2002), suggesting a possible prenatal mechanism that links GD and ASD in males. In females, a link between GD and ASD may simply reflect a general

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pattern of neurodevelopmental masculinization. ASD is more prevalent in males (for review, see Werling & Geschwind, 2013) and elevated prenatal exposure to testosterone is associated with increased traits of ASD, in both sexes, at 18 to 24 months of age (Auyeung et al., 2013) as well as during adolescence and adulthood in females (Knickmeyer et al., 2006).

To determine whether any of these possibilities can be considered tenable, the presence of elevated intense interests and obsessions among GD children must first be demonstrated in a systematic empirical manner. The Child Behavior Checklist (CBCL), a well-validated parent-report questionnaire of behavior problems, includes an item that makes it possible to examine intense/obsessional interests in a relatively direct fashion. Item 9 refers to "Can't get his/her mind over certain thoughts; obsessions." In our previous research that utilized the CBCL in the study of children with GD, Item 9 was scored as a "0" if the parent gave as an example something to do with gender-related behavior to avoid any artificial inflation in general behavior problems (Cohen-Kettenis, Owen, Kaijser, Bradley, & Zucker, 2003; Zucker & Bradley, 1995). In the present study, however, we reexamined our data from Item 9 on the CBCL and performed a more precise evaluation of focused and obsessional interests, including those related to gender. For comparison purposes, we considered Item 66, which refers to "Repeats certain acts over and over; compulsions." This item is relevant to an additional *DSM*-5 B criterion for ASD that pertains to repetitive behaviors and routines. On the CBCL, both of these items load on the narrow-band factor "Thought Problems" (Achenbach, 1991). Yet, by considering these two items separately, we were able to consider separate aspects of ASD in relation to GD and address whether intense interests and obsessions in particular, rather than other ASD features, are indeed likely to underlie the possible overlap between ASD and GD.

Method

Participants

CBCLs were available for 534 gender-referred children (439 boys; 95 girls) and 419 of their siblings (241 boys; 178 girls), who ranged in age from 3 to 12 years, and where at least one parent had completed the version of the CBCL designed for children 4 to 18 years of age. Maternal data were available for 98% of gender-referred and sibling boys and girls, whereas the availability of paternal data ranged from 63 to 79% across these four groups. Both the maternal and paternal data were available for 72% of gender-referred boys, 77% of the male siblings, 61% of gender-referred girls, and 72% of the female siblings. Data were collected from 1976 to 2010. All of the gender-referred children were evaluated in a specialized service housed within a child psychiatry program at an academic health science center. Data from two CBCL standardization samples were also considered. These samples included clinic-referred and nonreferred children, respectively. The standardization samples were based on maternal report data from Achenbach (1991), and the numbers of maternal reports were 582 for referred as well as nonreferred boys and 619 for referred as well as nonreferred girls. As reported by Achenbach (1991), referred children were recruited at 52 U.S. sites, including guidance clinics, private psychiatric and psychological practices, community mental health centers, and university child psychiatry and psychological services. The referred children were heterogeneous with regard to *DSM* diagnoses. Nonreferred children were drawn from a U.S. national sample that had not received mental health services or special remedial school classes within the past 12 months (Achenbach, 1991).

Measures

For this study, we examined CBCL Items 9 and 66 as the parents originally rated them. For both items, we recorded the comments provided by the parents if the items were scored either as a 1 (*Somewhat or sometimes true*) or 2 (*Very true or often true*). We then created a two-category qualitative coding scheme by classifying the parental descriptions as either gender related or non–gender related. Examples of gender-related themes for Item 9 include "Cinderella," "Thinks she's a boy," "Barbie dolls," "Weddings," and "Wanting a penis," whereas examples of non-gender-related themes include "My leaving and having a sitter come," "Business ideas," "Narcissistic," "Death of pet dog," and "Killing." Corresponding examples for Item 66 include "Singing and performing motions like Olivia Newton-John," "Dressing as a punk girl," and "Plays with sister's hair"; and "Making a total mess of the house when I'm not there," "Washing hands," and "Taking things out of garbage," respectively. The second author coded all of the parental ratings, which were then reviewed by the last author. These two coders then resolved any disagreements in coding. The fourth author then independently coded 20% of the maternal ratings for which an item was scored as a 1 or a 2, masked to group status, for Items 9 ($N = 68$) and 66 ($N = 25$), respectively. For Item 9, intercoder agreement was 94% (kappa = .88, $p < .001$). There was perfect agreement in ratings between the two coders for Item 66. For both Items 9 and 66, parental responses were dichotomized (0 = 0; 1 or 2 = 1). For the gender-referred and sibling samples, when both parents rated the same child using the continuous 0 to 2 coding system, the mother–father correlation was .50 for Item 9 ($n = 694$, $p < .001$) and .39 for Item 66 ($n = 699$, $p < .001$). Data provided by mothers and fathers were analyzed separately.

All analyses were conducted using SPSS, Version 18. The present study constituted a reanalysis of data from

previous research projects for which there was ethics approval from the Centre for Addiction and Mental Health Research Ethics Board. This research was conducted in accordance with the Declaration of Helsinki.

Results

Table 1 shows the percentage of GD children and their siblings whose parents rated Items 9 and 66 as either a 0 or as a 1 or 2. For additional comparative purposes, data from the referred and nonreferred standardization samples are also shown (Achenbach, 1991). For Item 9, the parents were significantly more likely to endorse it for both gender-referred boys and gender-referred girls than for their male and female siblings, respectively. A similar pattern was observed for Item 66, except for the paternal ratings of the gender-referred girls versus female siblings. Relative to the standardization sample, for both boys and girls, the mothers of gender-referred children endorsed a 1 or 2 on Item 9 more frequently than the mothers of referred children and the mothers of nonreferred children. On Item 66, for both boys and girls, the mothers of gender-referred children endorsed a 1 or 2 more frequently compared to mothers of nonreferred children, but not when compared to the mothers of referred children.

Table 2 shows the results of the qualitative thematic analysis. For Item 9, the percentages of mothers who listed a theme after endorsing a 1 or 2 were as follows: 81.5% (216 of 265) for gender-referred boys, 70.8% (46 of 65) for male siblings, 41.9% (26 of 62) for gender-referred girls, and 51.8% (14 of 27) for female siblings. A gender-related theme was significantly more common for the gender-referred boys than for the male siblings, but the difference between the gender-referred girls and the female siblings was not significant. For Item 66, the percentages of mothers who listed a theme after endorsing a 1 or 2 were as follows: 73.7% (84 of 114) for gender-referred boys, 68% (17 of 25) for male siblings, 60% (12 of 20) for gender-referred girls, and 66.7% (6 of 9) for female siblings. A gender-related theme was not significantly more common for the gender-referred children versus siblings for either sex.

Discussion

As noted in the introduction, it has been proposed that there is a link between GD and ASD (de Vries et al., 2010; Landén & Rasmussen, 1997; Mukkades, 2002; Perera et al., 2003; Tateno et al., 2008; Williams et al., 1996). One hypothesis is that this link is at least partially due to an elevated presence of intense/obsessional interests, particularly with respect to gender-related interests. By focusing on particular CBCL items related to ASD diagnostic criteria, we were able to test this hypothesis in a large sample of GD children.

The CBCL item that pertains to the presence of intense/obsessional traits most directly is Item 9, "Can't get his/her mind over certain thoughts; obsessions." The findings for Item 9 indicated that both boys and girls with GD showed an apparent elevation in obsessional interests, at least as gauged by parental report. The parents of GD boys and girls endorsed a rating of a 1 or 2 on this item significantly more often for the gender-referred children than for the siblings of these children. When compared to the standardization sample, similar findings were obtained for boys and girls. Maternal ratings of a 1 or 2 were endorsed significantly more often for the gender-referred children in comparison to clinically referred children as well as nonreferred children. As such, these findings were consistent with the purported link between GD and ASD. Furthermore, they were consistent with the notion that a basis for this link is the tendency of gender-referred children to present clinically in a manner that is consistent with the ASD criterion pertaining to highly restricted and fixated interests.

At the same time, however, the results for Item 66, "Repeats certain acts over and over; compulsions," indicated that the ASD diagnostic criterion pertaining to repetitive behaviors and routines may also be relevant to GD in children. The parents of GD boys and girls endorsed a rating of a 1 or 2 on this item significantly more often for the gender-referred children than for the siblings of these children—with the exception of fathers' ratings regarding gender-referred girls. When compared to the standardization sample, maternal ratings of a 1 or 2 were endorsed significantly more for this item for gender-referred versus nonreferred children, but the gender-referred children did not differ significantly from the other clinic-referred children. These findings suggest that GD may also be associated with repetitive, compulsive behaviors characteristic of ASD. Yet the elevation in these behaviors is not necessarily a unique feature of GD in children, because there was no significant difference between gender- versus clinic-referred children in this regard. When contrasted with the results for Item 9, then, one may argue that intense/obsessional interests potentially provide a stronger basis for a link between GD and ASD, because gender-referred children were significantly elevated for this item relative to all other groups, including the clinic-referred standardization sample.

The notion that gender-related themes also contribute to the link between GD and ASD was partially supported. Thematic analysis showed that gender-referred boys were significantly more likely than the male siblings to express intense/obsessional gender-related interests. No significant difference was found between these groups of boys for thematic content of repetitive/compulsive behavior. No significant differences were found for the thematic content of gender-referred girls versus female siblings for either Item 9 or 66. This lack of significance might reflect Type II error due to a lack of

Table 1. *Parental Ratings of CBCL Items 9 and 66 in the Gender-Referred Group Versus Other Groups by Sex*

	Mothers							Fathers						
	0		1 or 2					0		1 or 2				
Groups	***n***	**%**	***n***	**%**	**$\chi^2(1)$**	***p***	**OR (95% CI)**	***n***	**%**	***n***	**%**	**$\chi^2(1)$**	***p***	**OR (95% CI)**
Obsessions (Item 9)														
Boys														
Gender referred [a] vs.	166	38.5	265	61.5				128	39.5	196	60.5			
Siblings [a]	173	72.7	65	27.3	71.64	< .001	4.25 (3.01–6.00)	151	79.9	38	20.1	78.49	< .001	6.08 (4.00–9.26)
Referred [b]	297	51	285	49	15.63	< .001	1.66 (1.29–2.14)							
Nonreferred [b]	442	76	140	24	144.57	< .001	5.04 (3.84–6.61)							
Girls														
Gender referred [a] vs.	31	33.3	62	66.7				29	48.3	31	51.7			
Siblings [a]	148	84.6	27	15.4	71.88	< .001	10.96 (6.05–19.87)	114	86.4	18	13.6	31.39	< .001	6.77 (3.33–13.76)
Referred [b]	328	53	291	47	12.50	< .001	2.25 (1.42–3.57)							
Nonreferred [b]	495	80	124	20	91.11	< .001	7.98 (4.97–12.82)							
Compulsions (Item 66)														
Boys														
Gender referred [a] vs.	321	73.8	114	26.2				253	77.6	73	22.4			
Siblings [a]	214	89.5	25	10.5	23.36	< .001	3.04 (1.91–4.85)	173	90.6	18	9.4	13.97	< .001	2.77 (1.60–4.81)
Referred [b]	431	74	151	26	<1	n.s.	1.01 (.76–1.35)							
Nonreferred [b]	553	95	29	5	92.80	< .001	6.77 (4.40–10.41)							
Girls														
Gender referred [a] vs.	73	78.5	20	21.5				52	86.7	8	13.3			
Siblings [a]	166	94.9	9	5.1	16.85	< .001	5.05 (2.20–11.62)	122	92.4	10	7.6	1.61	n.s.	1.88 (.70–5.02)
Referred [b]	470	76	149	24	<1	n.s.	.86 (.51–1.47)							
Nonreferred [b]	582	94	37	6	26.47	< .001	4.31 (2.37–7.82)							

[a] Data from a Gender Identity Service for Children and Adolescents.
[b] Data from Achenbach (1991, Appendix D; *N*s/group are given in Appendix B).

Table 2. *Thematic Content on CBCL Items 9 and 66 as a Function of Sex and Group (Maternal Data)*

	Gender Theme		Nongender Theme				
Groups	***n***	**%**	***n***	**%**	**χ^2 (1)**	***p***	**OR (95% CI)**
Obsessions (Item 9)							
Boys							
Gender referred	118	54.6	98	45.4			
Siblings	6	13.0	40	87.0	26.31	< .001	8.03 (3.27–19.72)
Girls							
Gender referred	18	40.9	26	59.1			
Siblings	5	26.3	14	73.7	1.22	n.s.	1.94 (.59–6.34)
Compulsions (Item 66)							
Boys							
Gender referred	14	16.7	70	83.3			
Siblings	5	28.6	12	70.6	1.50	n.s.	.48 (.15–1.58)
Girls							
Gender referred	2	16.7	10	83.3			
Siblings	0	0.0	6	100.0		n.s. [a]	—

Note. Missing data were the result of the mother not providing a description for their ratings of a 1 or a 2.
[a] Fisher's exact test; not possible to calculate odds ratio because no female siblings showed a gender theme for Item 66.

sufficient statistical power, especially considering that the odds ratio for the Item 9 comparison indicated an effect size similar to those found for other comparisons that did yield significance with larger sample sizes (see Tables 1 and 2). In addition, intense interests toward female-typical objects or activities among the female sibling sample may have somewhat compromised our comparisons. Mothers were twice as likely to report a gender-related theme for Item 9 for the female, compared to male, sibling sample. In any case, the Item 9 findings regarding boys lend support to the hypothesis that fixated interests in gender-related objects or activities underlie elevated obsessionality in children with GD. Meanwhile, the lack of group differences in gender-related themes for Item 66 was consistent with the idea that repetitive/compulsive behavior may not be as relevant to the link between GD and ASD compared to intense/obsessional interests.

Future research is needed to discern the developmental pathway(s) by which elevated, gender-related obsessionality contributes toward GD–ASD comorbidity. One possibility is that ASD sometimes leads to intense interests in cross-sex objects or activities, giving rise to a clinical presentation of GD. In such scenarios, the intensity of the obsessions should be comparable to those typically observed among children clinically referred for ASD. One would further predict that GD children with intense cross-sex interests would exhibit additional features of ASD as well. Also, if ASD precedes GD, then there should be an earlier age of onset for ASD, compared to GD, traits. Strong indications that GD is precipitated by an underlying ASD might have important treatment implications. For example, a recent case report cautioned against the use of irreversible biomedical treatments for GD (e.g., hormonal treatments) in ASD patients because of the possibility that the GD would dissipate following a decrease in cross-sex obsessional interests (Parkinson, 2013).

Another possibility is that intense cross-sex interests are simply a manifestation of GD. Such interests may lead to a clinical presentation that is ASD-like but only superficially so because the intensity of the interests is due to the GD and not an underlying ASD. If such were the case, then few, if any, additional ASD features should accompany intense cross-sex interests. If few additional ASD features are present, then other circumstances that might influence such interests to be elevated should be considered. For instance, GD children may obsess about cross-sex objects and activities as a way of communicating their strong desire to be the opposite gender. When confronted with resistance about this desire, the child may react by further intensifying these obsessions and, hence, his or her communication of this desire. Also, children with GD might engage in cross-sex behavior as a means of assuaging anxiety (Zucker & Bradley, 1995). Cross-sex interests that can be described as intense or obsessional might, therefore, be observed among children with GD because they are more likely to experience anxiety-inducing circumstances, such as poor peer relations (Cohen-Kettenis et al., 2003).

Such developmental pathways might account for apparent GD–ASD comorbidity when gender-referred children show intense gender-related interests. They are less plausible, however, when a gender-referred child shows an intense interest that is not gender related. Based on maternal report of the thematic content of intense/obsessional interests, 45% of boys and 59% of girls referred for GD did not show an intense/obsessional interest with a gender-related theme. As such, intense/obsessional interests may not simply be a manifestation of GD for a substantial proportion of gender-referred children.

A third possibility is that both GD and ASD are affected by some additional variable or set of variables, leading to their co-occurrence. For example, in a subset of boys, GD is associated with low birth weight (Blanchard et al., 2002). Small size at birth is associated with elevated ASD risk, as is large size at birth (Abel et al., 2013). Size at birth may, therefore, be a putative physical marker of prenatal exposure to factors that predispose individuals to GD, ASD, or both. A high sibling sex ratio of brothers to sisters may similarly reflect exposure to prenatal factors that give rise to GD and ASD. High sibling sex ratios have been hypothesized to reflect elevated intrauterine testosterone levels, which may be a risk factor for ASD (for more details, see Mouridsen, Rich, & Isager, 2010). In youth samples, a high sibling sex ratio is associated with ASD (Mouridsen et al., 2010) as well as GD in boys (Blanchard, Zucker, Bradley, & Hume, 1995; Schagen, Delemarre-van de Waal, Blanchard, & Cohen-Kettenis, 2012; Zucker et al., 1997) but not GD in girls (Schagen et al., 2012). Future research should consider whether ASD traits are similarly associated with size at birth and sibling sex ratios in gender-referred children. If such were the case, then it would strengthen the possibility that the ASD–GD link is predicated on prenatal factors. It would also suggest that ASD traits in gender-referred children are not simply manifestations of GD.

It will also be important for future research to consider whether parental factors contribute to reports of elevated intense/obsessional interests and other ASD traits among gender-referred children. To begin with, parents act as gatekeepers by deciding whether to have their children clinically assessed for GD. Thus, those parents who are more sensitive to the cross-gender behavior of their children may be more likely to have their children clinically assessed for GD and may also be more likely to exaggerate the intensity of their children's cross-sex interests. Parental depression might be one relevant factor to consider in this regard given a recent study indicating that mothers who scored higher on self-report measures of depression tended to overreport the presence of ASD symptoms in their children (Bennett et al., 2012). Considering the potential for bias in parental reports, objective assessments of ASD symptoms that do not rely on parental report as well as attempts to control for parental bias will be important for establishing the purported link between GD and ASD in children.

Limitations

ASD is a complex disorder with a substantial range in symptom severity (APA, 2013). The present study was not designed to address issues of such severity. To quantify symptom severity, one would need to employ psychometric instruments that are capable of providing accurate assessments of severity by minimizing measurement error. The single-item measures relied upon here would provide little utility for evaluating the severity of obsessions and compulsions; however, these items were useful for indicating the presence versus absence of these traits. As such, the conclusions one may derive from the current study are more of a categorical, as opposed to dimensional, nature. That is, the data provided here indicated how frequently ASD traits were present among gender-referred children, but future research will be necessary to determine whether symptoms of ASD are more severe among gender-referred versus other groups of children.

Future research will also be needed to address the full range of ASD symptoms among gender-referred children. The present study pertained to only two, rather than the complete set, of ASD diagnostic criteria. This limited focus was based on practical as well as theoretical grounds. From a practical standpoint, referral rates for GD in children are low (Wood et al., 2013), which makes participant recruitment for studies requiring large sample sizes a genuine challenge. By relying on the available clinical data found in the two CBCL items used here, however, it was possible to evaluate the potential link between GD and ASD in a large sample and determine whether it would be worthwhile to pursue a more comprehensive examination of this link. From a theoretical standpoint, given the hypothesis that GD and ASD are linked due to intense/obsessional interests in gender-related objects or activities, it was appropriate to focus specifically on such interests; compulsive/repetitive behaviors represent a particularly valuable comparison item when evaluating this hypothesis because, like intense interests, they fall under the *DSM*-5 diagnostic criteria B for ASD. The present study, therefore, provided a test of the focal hypothesis by distinguishing patterns of intense/obsessional interests in gender-referred children from those for related ASD symptoms. One limitation of our method, however, was that asking parents to nominate themes for Items 9 and 66, as opposed to identifying relevant themes from a checklist, might have relied on the availability heuristic and produced biased sets of nominations—although whether such was the case is equivocal. Thus, in addition to considering the full range of ASD symptoms, more comprehensive tests of this hypothesis should aim to utilize objective measures as well as parent-report measures that are less susceptible to response bias.

Conclusions

The present study adds to a growing literature regarding a link between GD and ASD. At the very least, it appears that children with GD may well fall at the extreme end of the spectrum of focused, intense interests that has been reported in typically developing children (DeLoache et al., 2007; Halim et al., 2011, 2013). There was also support for the notion that intense/obsessional interests in gender-referred children may often be focused toward gender-related objects or activities. These data suggest, therefore, that it would be worthwhile for future research

to further investigate intense/obsessional interests in children with GD, especially their development among children who are comorbid for GD and ASD.

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