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Exactly the same but completely different: A thematic analysis of Clinical Psychologists' conceptions of Autism across genders

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ABSTRACT

Background: Existing diagnostic criteria for autism do not indicate gender differences in the expression of core domains of the condition. Yet, an increasing body of research suggests that pronounced gender differences do exist. It may be that current diagnostic criteria do not capture individuals with a gender-specific presentation of autism.
Method: Fourteen Clinical Psychologists who routinely conduct autism assessments were interviewed about their conceptions of autism in children, and any gender differences therein. Thematic analysis was used, with thematic networks developed from data.
Results: Autism itself was conceptualised by clinicians as gender-neutral, with social communication and interaction at its core. Girls and boys were thought equally affected by autism, but girls were viewed as likely to be more socially aware and socially motivated, better at emotional recognition, and more internalising in their stress coping response, altering their presentation. Further, culture affects how a person with autism acts, and observers' interpretations of these behaviours.
Conclusions: While existing diagnostic criteria provide appropriate coverage for the core features of autism, they may not capture everything about autism. Participants felt that restricted and repetitive behaviours and interests were less central to the concept of autism than social communication difficulties. Gender differences were identified in areas closely related to, but distinct from the diagnostic criteria. Consideration of these gender-specific presentations during assessment may aid diagnosticians. Participants' themes provide an experienced-based narrative for understanding the interaction between autism and gender.

1. Introduction

Current diagnostic criteria (American Psychiatric Association, 2013) attempt to describe diverse presentations of autism. While autism exhibits a strong genetic basis (De Rubeis & Bauxbaum, 2015), and is a common feature in several genetic disorders (Richards, Jones, Groves, Moss, & Oliver, 2015a; Richards, Jones, Groves, Moss, & Oliver, 2015b), no single genetic cause has been found. Similarly, while autism shows high comorbidity to other genetic (Richards et al., 2015a, 2015b), and psychiatric conditions (Simonoff

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et al., 2008), no single explanation is accepted as adequately explaining all aspects of autism, despite repeated attempts (Baron-Cohen, Leslie, & Frith, 1985; Frith & Happé, 1994; Baron-Cohen, 2002). Indeed, it has been argued that there is no single explanation for autism (Happé, Ronald, & Plomin, 2006), and that autism can be 'fractionated', with different (commonly co-occurring but independent) causes explaining different aspects of behaviour (Happé & Ronald, 2008)

As autism has no single clear cause, diagnostic criteria must rely on the observation and classification of the effects of the condition on behaviour. SIGN and NICE guidance recommend the use of structured assessment tools (SIGN 145; NICE 128), such as the Autism Diagnostic Observation Schedule (ADOS-G) (Lord et al., 2012), a semi-structured process to elicit and observe behaviours associated with autism. However, the high level of heterogeneity in the presentation of autism (Kirkovski, Enticott, & Fitzgerald, 2013) makes defining autism particularly difficult. Diagnostic criteria and tools therefore use subjective descriptors that rely on clinicians' judgements to classify behaviour as sufficient to meet diagnostic criteria, often requiring specific training and qualification programmes. Further, while SIGN 145 does not specify who is qualified to make a diagnosis, they suggest the assessment requires a multidisciplinary team with "the skills and experience to undertake the assessments" (p13) which indicates the complexities of the diagnostic process.

It has been suggested that males and females with autism may present differently (Attwood, 2007; Kopp & Gillberg, 2011; Kreiser & White, 2014). However, research on the core components of autism in the diagnostic criteria does not support this. Two meta-analyses of the core areas of difficulty in autism: social interaction, communication, and restricted and repetitive behaviours and interests (RRBIs) (Van Wijngaarden-Creamers et al., 2014; Hull, Mandy, & Petrides, 2017) found no clear gender differences, although some individual studies reported small differences in circumscribed areas, depending on the age of the individual. More recently, Jamison, Bishop, Marisela, and Halladay (2017) found that clinicians felt females with autism exhibited fewer RRBIs, but were broadly like males in their social difficulties. In contrast, Mussey, Ginn, and Klinger (2017) found females with autism had lower scores in the social domain of the ADOS-G in Modules 2 and 3, but still concluded that there are "either very small or no gender differences in […] ASD symptom severity" (p735). Finally, Sutherland, Hodge, Bruck, Costley, and Klieve (2017) found that parents of children with autism report very few differences in communication or social skills, and no differences in RRBIs. However, they did note that the content of special interests was different, following gender norms.

Overall, existing research into gender differences in autism is nuanced. While the core deficits of autism equally affect both males and females, there are subtle, inconsistent differences within these. Most research in this area, however, is based on people who already have a diagnosis of autism who, by definition, have met existing diagnostic criteria. This reduces the opportunity to identify gender differences that exist within the wider population, some of whom may not have received a diagnosis. This may explain why findings in the core domains (used in diagnostic criteria) have been minimal.

Research on people with autism outwith these core domains suggests gender differences do exist. In a review, Hull et al. (2017) found gender differences in people with autism in executive functioning, autobiographical memory, hyperactivity, play behaviours, and internalising/externalising problems. Similarly, Ormond, Brownlow, Garnett, Rynkiewicz, and Attwood (2018) found that on the Autism Spectrum Condition Questionnaire (ASC-Q), females diagnosed with autism show greater levels of gender inconsistent behaviour, sensory sensitivities, social masking, imaginative behaviour, imitation, and talents and interests than males with autism. While Ormond et al. (2018) found no differences in compliant behaviour or 'friendships and play behaviour', the latter of these is arguably closest to the diagnostic criteria, potentially restricting variability in the data. Finally, females with autism report camouflaging their autism by either suppressing autistic behaviours or mimicking neurotypical behaviours (Bargiela, Steward, & Mandy, 2016; Kanfiszer, Davies, & Collins, 2017). The presence of masking, and its female bias, also has empirical support (Dean, Harwood, & Kasari, 2017; Lai et al., 2017). This suggests that females with autism do present differently to males in areas that are not measured in existing diagnostic criteria.

If females with autism present differently to males in areas not considered by existing diagnostic criteria, this could preclude the inclusion of females within research studies. Supporting this, Loomes, Hull, and Mandy (2017) identified that in studies which sought out people with autism, regardless of whether they already had a diagnosis, females made up, on average, 24% of the people with autism. However, this fell to 18% when studies only looked to include females that had already been diagnosed by services. This, the authors suggest, may indicate the presence of females with autism who are overlooked and therefore not assessed. Further, teachers report lower levels in both autistic behaviours, and emotional and behavioural difficulties in females, compared to males (Duvekot et al., 2017; Mandy et al., 2012). Likewise, when presented with a male and female with the same level of autistic traits, professionals are less likely to give a diagnosis to females (Duvekot et al., 2017; Dworzynski, Ronald, Bolton, & Happé, 2012; Russell, Steer, & Golding, 2010). Collectively, this suggests that females with autism may be harder to identify, either because of a subtlety of behavioural presentation, or because existing diagnostic criteria do not guide the assessor toward traits more indicative of autism in females.

If females with autism do present differently to what the diagnostic criteria or process allows, this would lead many with autism to go undiagnosed and unsupported. Supporting this, females are diagnosed with autism significantly later than males (Begeer et al., 2012; Giarelli et al., 2010). Given the value of early diagnosis and intervention (Koegel, Koegel, Ashbaugh, & Bradshaw, 2014), assessment that is not equally valid for both genders risks discrimination and inequity of support for females with autism. Further, should some females with autism be excluded from the diagnosis, research on autism may risk being only representative of part of the population, limiting our understanding of the condition.

1.1. Next steps

Research on if and how females with autism present differently may help identify whether they are being excluded from the

diagnosis and research. Lai, Lombardo, Auyeung, Chakrabarti, and Baron-Cohen (2015) suggest a framework for systematically investigating possible gender differences in autism. They propose a broad construct of autism free from gender differences, such as the DSM-5's "persistent deficits in social communication and social interaction". Below this, narrow constructs of more "fine-grained subdomains, such as the DSM-5 symptom subdomains (e.g. social-emotional reciprocity)", where gender differences could exist, with behavioural exemplars demonstrating the difficulties associated with autism, and the gender differences therein.

Gender differences in areas such as camouflaging, executive functioning, sensory sensitivities, for example, would appear to fall under the narrow constructs category. Areas that make up part of the diagnostic criteria (social interaction, social communication, RRBIs, etc) would likely form the higher level broad constructs category. However, if these areas (or their application in assessment) result in a subset of females with autism being incorrectly excluded, they would no longer be broad constructs in their current form. One way to address this is to take a 'bottom-up' approach, and revisit what autism looks like qualitatively and how it compares to diagnostic criteria, as opposed to existing 'top-down' research comparing how males and females differ on different parts of the criteria. Such an approach would rely on clinicians' conception of autism which, while based on the diagnostic criteria, may be tempered by experience, and allow for an ecological validation of the diagnostic criteria. This would also permit any areas of difference outwith the diagnostic criteria to be explored and identified for future research. To our knowledge, there is no research that examines the qualitative presentation of autism presenting to clinicians, and any gender differences therein.

1.2. The current study

This study aims to investigate experienced clinicians' concept of autism, and whether males and females present differently. By taking a 'bottom up' approach, it will provide a hitherto absent ecologically valid comparison of any gender differences in the presentation of autism, without being limited to the diagnostic criteria.

To allow for new behaviours and constructs to be identified, a qualitative approach was used. To create a homogeneous description, only one professional group was interviewed. Clinical psychologists were chosen for their expertise in child development, and their theoretical focus on formulation rather than diagnosis. Autism is a condition present from birth, with diagnosis possible from early childhood onwards, although some cases may only come to light during or after adolescence when social complexities increase. Given the value of early intervention, the weighting of diagnostic services towards children (< 18), only clinical psychologists with experience working primarily with children with autism were included in the study.

The participants all reported having specific training to diagnose autism, using standardised measures and diagnostic criteria. Should a systematic exclusion of some females with autism exist, such training, measures, and diagnostic criteria could bias their evidence. However, by focusing on participants with significant experience, participants may have also observed key characteristics and behaviours in their patient samples, uncovered details other less experienced clinicians may have missed, and been able to apply the assessment process in a more flexible way.

2. Methods

2.1. Participants and recruitment

Participants were contacted via a circulated e-mail seeking to recruit Clinical Psychologists highly experienced in autism assessment. Sixteen Clinical Psychologists volunteered, in addition to several other health professionals. All authors reviewed experience summaries and recruited 12 Clinical Psychologists into the study. As Guest, Bunce, and Johnson (2006) found data saturation for a large-scale thematic analysis was reached after 12 participants, two additional participants were recruited through existing participants to allow for drop out and piloting. Participants were chosen by all three authors with the aim of creating an experienced, homogeneous sample (see Table 1). Defining experience in an area can be challenging, with the duration of experience, potentially, a poor proxy for quality of experience and depth of knowledge. Similarly, recruiting from only a very limited number of highly specialist teams would risk creating a sample where opinions and reflections of clinicians have been homogenised within a small team. Hence a decision was made to select participants to produce a sample that would give a broad range of geographical area, a mixture of both clinical and academic expertise, and participants who self-identified as experienced and with a strong conception of what autism is.

Table 1
Participant information.

Males:females		3:11
Scottish/English Health Board		9/5
Setting:	General child and adolescent mental health services (CAMHS)	8[a]
	Specialist assessment teams within CAMHS	3[a]
	Local highly specialist assessment services for autism	3[a]
	Regional highly specialist assessment services for autism and other conditions	6[a]
Actively engaged in research		6
Retired/semi-retired		1

[a] Non-exclusive field.

2.2. Procedure

Participants were contacted with further information about the study and gave informed consent. Participants each attended one 60–90 minute interview, conducted by JM, using a semi-structured interview schedule focusing on what autism is, gender differences (or lack of) in autism presentation, and differences in diagnostic procedures. The interview schedule was created by all three authors, based on the anecdotal differences noted by Lai et al. (2015) and the researchers' own understanding of autism (influenced by the Triad of Impairments as presented in the ICD-10 (World Health Organization, 1992), and ADOS training). No changes to the interview schedule were deemed necessary after the first two (pilot) participants, who were included in the analysis. Interviews were recorded and transcribed verbatim by JM. A high degree of cohesion was noted between accounts during interviews. On discussion and review of transcripts, all authors agreed that data saturation had likely been reached. The study received ethical approval from the University of Edinburgh and was carried out in accordance with the Declaration of Helsinki as revised in 2000.

2.3. Analytic procedure

Thematic analysis was conducted based on Braun and Clarke (2006). This allowed for a constructionist approach, focusing on identifying and describing patterns across a dataset, rather than on individual experiences or generating concepts. Due to the richness of the data, it was not possible to generate an easily manageable number of codes. Therefore, a variation was adopted, using elements from thematic networks (Attridge-Stirling, 2001):

1) JM read each transcript while listening to the recording, making preliminary notes on context/tone. A line-by-line reading by JM generated a brief descriptor for every point made. Both KM and KJ each analysed six sample pages of text with JM to ensure validity. In total, 2606 unique descriptors were generated.
2) Descriptors were iteratively hand sorted into progressively smaller semantic groups, reconfirming with the original text where needed. Three-hundred-and-eighty-six codes emerged, with KM and KJ reviewing samples of descriptors in their codes to ensure validity.
3) All authors reviewed all codes and their initial themes (created by JM) renaming themes, combining and deleting codes, and reviewing descriptors within codes where there was ambiguity. Seventy-one starter themes were generated which all authors agreed on.
4) One-hundred-and-forty-two hitherto miscellaneous descriptors were reviewed and placed within codes, generating 15 new codes in the process. The remaining 51 descriptors were reviewed by all three authors and agreed made negligible contribution and were discarded.
5) JM arranged starter themes and their codes into groups, creating a hierarchical thematic structure, with additional links between different themes/codes to create a series of increasingly refined models that accurately described the content of the codes, reviewed by KM and KJ.
6) The number of descriptors in each code was checked, and a sample of original text contributing to each code was reviewed. Codes with less than six descriptors or with contributions from less than three people were marked as having limited evidence.
7) An interpretive (full) model was created. Because of the depth of information, a condensed model (Supplementary material 1) was created for use in this paper. Both models were agreed by all authors.

3. Analysis

Due to the volume and complexity of data, a full report of the model is not possible within this paper. The current paper will provide an overview of the model, but focus on gender differences in narrow constructs and behavioural exemplars. All quotes use pseudonyms. Themes are referenced by their number (in brackets), and refer to their place within the thematic network in the supplementary material.

3.1. Overview

Participants' accounts oscillated between two key themes. The first considered the presentation of boys and girls with autism (1), and illustrated how both genders share the same underlying impairments but the presentation of these impairments, and the difficulties boys and girls face, can be very different. The second discussed gender differences in the diagnosis of autism (2). While the diagnostic process was very similar for boys and girls, the presentation of girls, and therefore how the assessment is carried out, may be slightly different, and more challenging.

Three smaller themes link both larger themes. Theme 3 outlines participants' conceptions of autism as based loosely on the triad of impairments. Theme 4 discusses the different diagnostic pathways for boys and girls with autism. Finally, theme 5 discusses the effects of culture on how autism is thought about, and on people with autism themselves (Fig. 1).

3.2. Participants' conceptions of autism

> [Autism is] a social communication disorder affecting social interaction, communication and repetitive restricted stereotyped behaviours and restricted interests. […] I think it misses some things. […] for example, cognitive rigidity and emotional

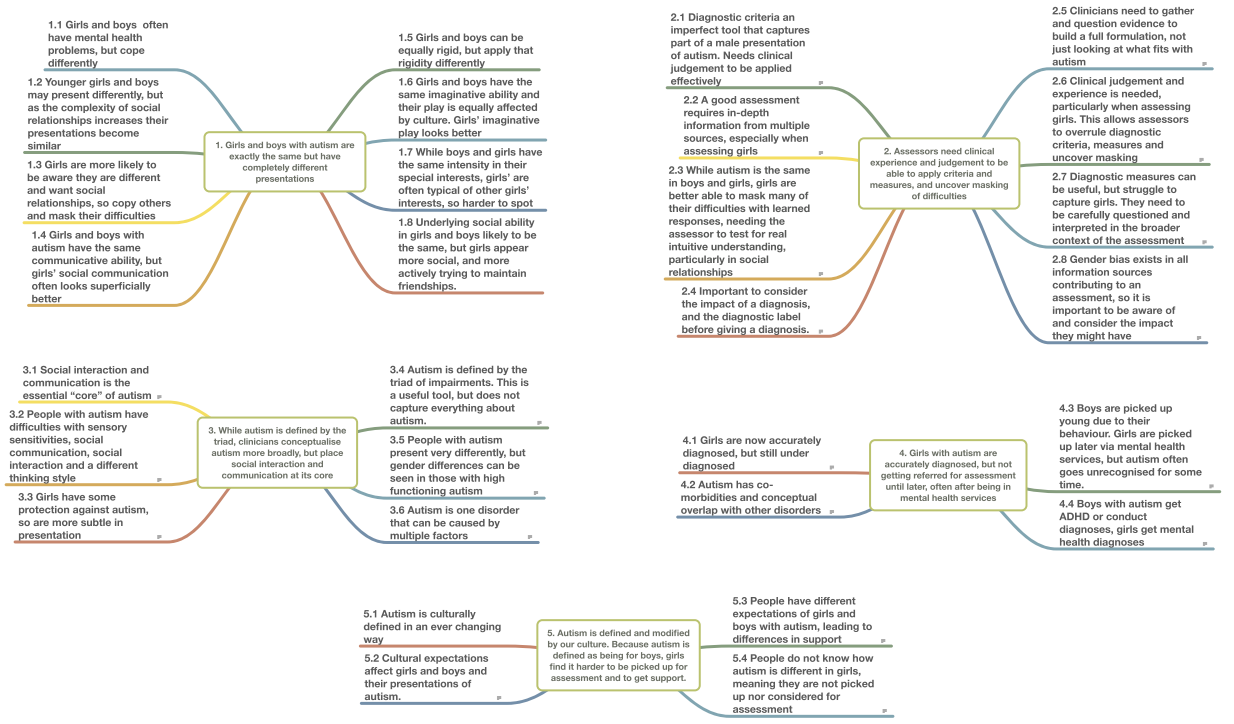

Fig. 1. Simplified thematic network, based on the condensed model contained in the supplementary material.

dysregulation and things like that, which don't quite feature in the criteria. […] I think it matches what we see, but I don't think it necessarily captures the whole picture.[Isabella;1–20]

As Isabella illustrates, even if not explicitly named, the triad of impairments as the basis for participants' thinking about autism (3.4), was felt to be useful (3.4.2), and underpinned the diagnostic criteria (3.4.1). However, participants felt the triad did not capture "the whole picture". Thus, their triadic conception was expanded and adapted to include other aspects of autism (3.2) and its development (3.6), such as motor clumsiness, emotional dysregulation, and executive functioning.

Participants' expanded triadic conceptualisation of autism contained a core difficulty in social interaction and communication (3.1):

I probably to some degree hold onto the idea that there needs to be difficulties in both those areas, or all those areas, but that there needs to be a core difficulty in social communication for me to consider autism. So we see quite a lot of kids in this clinic who will be quite rigid or may have very specific interests, but that is obviously insufficient for autism. What I would be more willing to consider children that have quite big difficulties in social reciprocity, reciprocal interaction, even if they don't have the rigidity so much.[Jason;12–20]

As Jason makes clear, this is not to disregard other aspects of autism, but that while other aspects may be common contributors to autism, they are ultimately optional, whereas a core difficulty in social interaction and communication is essential.

This tendency to relate autism back to this core difficulty is evident throughout participants' descriptions. For example, seeing if a child understands and can relate socially is key in assessment, (*2.3.1*):

In that one to one situation, it exposed some of the real communication social interaction style difficulties[…] that is the core of this young person, that it is not about the trauma, if that makes sense. Other things in terms of their behaviour, their awkwardness, their interaction with peers.[…] But it is again just thinking' what is at the core of this young person?', and what can't be explained.[…] some things just felt 'this is who you are, you just don't, you just don't get this.[Emma;974–985].

Here, Emma explains her feeling that the young person in front of her 'just didn't get' social communication and interaction was central to their difficulties, and was key for her when assessing a young person. This is not to ignore the effects of RRBIs, but that there is something fundamental about this person's lack of understanding that she is looking for to confirm or disprove autism.

3.3. Gender differences in autism

Participants felt that the underlying difficulties of autism were the same for boys and girls, as Katie illustrates:

I'd say I'm looking for the bones [of autism]. So I am comparing them to the bones, and my understanding of the bones. So

whether or not that is boys with autism or girls with autism.[Katie;669–674]
If the bones are there, I'd say, sort of typically, most girls and boys feel a bit different, but I'd say their bones are pretty much the same.[Katie;99–100]

As such, although there was not universal agreement in all areas, most participants felt that boys and girls with autism had the same underlying level of ability (or impairment), including communicative ability (1.4.1), rigidity (1.5), imaginative ability (1.6.1), special interests (1.7.2), and social ability (1.8). However, while not part of participants' conceptions of autism, on related abilities, such as social awareness (1.3.1), social drive (1.8.1), and emotional recognition and empathy (1.8.4), girls were thought more able.

3.4. Effects of social awareness and insight

While the underlying level of impairment due to autism may be the same, participants found girls with autism appear more socially motivated, and more socially aware, as Grace and Emma illustrate:

I think girls are also often appear to be more socially motivated[…] than boys, and kind of keen to have friends, and for whatever reason just can't, don't necessarily have the social skills to actually… maintain those friendships.[Grace;81–85]
I think [girls with autism] are a bit better at [social awareness]. So, I think they can learn what they are supposed to do quite well. They know about saying "hi, how are you", that kind of social etiquette, the cues. […] They know about eye contact, and they can model what they are supposed to be like. I think they pick up quite easily, they learn how they are supposed to be. Whereas I don't think boys have got that same awareness.[Emma;408–416]

Given their increased social awareness, participants felt that girls were more likely to recognise they were different (1.3.2). As Emma suggests, due to their desire to have a social identity as part of a group of friends (1.3.3) girls wish to remedy that difference. Girls therefore watch their peers, learn how they behave and interact, and then copy this behaviour, thereby masking their difficulties (1.3.2).

Participants explained how the process of observing, copying and learning from others' behaviour, to compensate for a lack of understanding, means girls' behaviour may not initially seem unusual, making them harder to identify. For example, girls' imaginative play looks superficially better (1.6.1), and they may hide their special interest (1.7.1). Indeed, across areas that are investigated when assessing for autism, participants suggested that girls can mask their difficulties with superficial responses which, to a casual or inexperienced observer, may appear adequate but lack real understanding (2.3.1, 2.6.3), as Deborah explains

So I would do a standard assessment. I think you would have a bit of awareness that girls do, or can present differently […] So when you are doing an [autism assessment], and you are asking questions around emotions and social understanding, I wouldn't just take the first answer, I would dig a bit below the surface to see if they have not just learned it, if they actually have the real understanding of what they are saying. So I would try and tease it out a bit more.[Deborah; 255–266]

3.5. Effects of culture

Participants felt culture (societal expectations of boys, girls, and autism) affected the presentation of girls with autism. Cultural expectations, such as 'boys are boisterous, girls are empathetic' were thought to impact on children themselves (as seen by their gender-stereotypical play; 1.6.2), and on their presentation of autism (5.2). For example, as typically developing (TD) girls' play is more based on conversation, this was thought to provide girls with greater social skills training, as Emma explains:

For a lot of the kids that we see, and I feel like I'm completely playing into the gender stereotype society has set up, but I feel that's the way it is, the boys talk to me about playing tig or hide and seek and playing on the trampoline, whereas the girls, you know, it's about the chat if that makes sense? Which is why I wonder if they are able to learn the social skills a bit better, you know, "hi, how are you?", and the eye contact, they can do that, but the boys can't so much. So their difficulties are kind of masked a little bit.[Emma;449–455]

Culture also influences our *perceptions* of autism. Participants felt that people saw autism as culturally acceptable for boys, but not for girls (5.3.1). This means that girls can have a diagnosis that is not accepted by those around them, leading to a relatively lower level of support, as Hannah explains:

I think because so many girls are missed, people are interacting with girls with autism as if they are not girls with autism, and I'm really conscious that sometimes we diagnose it but schools don't accept the diagnosis. People's friends don't necessarily accept it. Whereas with boys often it is just that bit more obvious, so it's more, once you've given that label, people respond to that child as if they are a child with autism. I think sometimes we give the label to girls and I think people think 'oh they are just shy'.[…] and therefore doesn't treat them in a particularly different way.[Hannah;241–249]

Further, even when diagnosis is accepted, participants felt people find the idea of a girl having autism incongruent, so either the diagnosis fades from consciousness, or the strategies they ably apply for boys with autism are not applied to girls, again potentially leading to a reduction in support (5.3).

Participants indicated that a side effect of this 'autism is for boys' stance is that people do not know how autism presents in girls (5.4). As such, participants found that autism is not considered for girls who are struggling (5.4.1), and when it is, some professionals

can be reluctant to assess them (5.4.2), as Becky highlights with an example:

> She was getting all these other labels, she wasn't attending school, and, oh she had all these physical diagnoses and I think people were… yeah. I don't know why they were so desperate to find another reason. I think maybe it just doesn't quite fit with people's model of a girl, and that they can't be on the spectrum, or maybe they are really impaired kind of, learning disabled kids. That is ok. But for [those without a learning disability], it just doesn't quite fit for people.[Becky; 649–657]

3.6. Effects of coping styles

Participants identified that girls and boys also differ in coping styles. Girls with autism tend to be more internalising than boys with autism, who tend to be more confrontational and externalising (1.1.5):

> […] one of the ideas would be that the kind of tendencies that are already there are may be slightly exaggerated to some degree. […] So in terms of mental health and other conditions, often you see boys or men externalizing more, while girls tend to internalize more. So one of the key things in terms of the differences between the male and female [autism] presentation is the trajectory. Boys maybe you see get diagnosed pretty early, even in the more subtle cases normally at the age of five, six when kids start school. There are behaviour problems brought to attention. While for girls, they may be more passive, and slipping into the background and they don't come to our attention until social demands increase by the time they are 14, 15 for example. [Jason;51–61]

As Jason highlights, internalising/externalising coping style was thought of as an extension of a gender difference within the general population (1.1.5). When these different coping styles are applied to cope with demands, behavioural differences emerge. Boys with autism tend to be identified for assessment due to their behaviour (4.3), a function of the difficulties they faced managed through an externalising coping strategy. Girls, however, are more likely to use an internalising coping strategy, leading them to cope by masking, not be identified, and not access support(1.1.3). However, demands for both boys and girls follow a developmental course, with the demands in girls in particular increase during a social-developmental jump (1.2.2), which often surpasses their ability to cope. Consequently, many girls are referred for diagnosis after contact with mental health services in their teenage years (4.3.1, 4.3.3).

3.7. Effects of biology

> So, it has been my impression, that […], being female moderates against some of the social communication deficits. But it is just an open question as to why.[…] I think, where you've got a family group who, several siblings have got autism, or Asperger's or some variant of social communication disorder, and they have had similar environments, and I've not been able to see parenting being differently to boys and girls, it feels like there is something that is to do with being female biologically that is mitigating against the expression of a social communication disorder.[Michael; 214–228]

While culture was seen as having a significant effect on gender differences in presentations of autism, participants acknowledged the effect of biology. As Michael explains, girls were thought to have some biological protection against autism, contributing to a subtler presentation (3.3). It is therefore not clear how much of the mechanism behind the differences in girls' presentation discussed here (social awareness, social drive, and coping) are due to biology or culture.

4. Discussion

This study aimed to explore clinicians' concept of autism, and whether males and females may present differently. Participants felt that males and females were equally affected in areas seen as core to autism. However, in areas less central to autism, differences were observed, which created differences in behaviour and how they coped with their difficulties.

Participants' conception of autism was free from gender differences, and based on the triad of impairments seen in older diagnostic criteria (social interaction, social communication, and RRBIs; World Health Organization, 1992; American Psychiatric Association, 1994), distinct from the original Wing and Gould (1979) triad of social interaction, repetitive activities in the place of imaginative symbolic interest, and impairment of language development. However, at the core of participants' conceptions were deficits in social interaction and communication. The presence of these two constructs was seen to be both necessary and sufficient for a diagnosis. While they were regularly accompanied by RRBIs, and other narrow constructs such as emotion regulation difficulties, these were considered neither sufficient in themselves nor necessary for diagnosis.

In all narrow constructs explored that contributed directly to the conceptualisation of autism, girls and boys with autism were thought be equally impaired. Where they differed were constructs related (but secondary) to the conceptualisation of autism: girls were thought to have greater social awareness, social motivation, and emotional recognition. Further, girls were viewed as tending to cope by internalising, while boys tended toward externalising.

Behaviourally, girls and boys with autism were seen as presenting very differently. Participants thought girls tended to mask and hide their difficulties through copying others, and avoided any outward displays of anger or disruptive behaviour, unlike boys. Therefore, girls' autism-related behaviours can be subtler than males, despite the underlying impairment being equal.

4.1. Reasons for gender difference in behavioural exemplars

While gender differences in the behavioural exemplars of autism may be in part due to differences in narrow constructs, broader effects of culture and biology that produce the same (diffuse) gender differences seen in the general population may also influence people with autism, but potentially in unique ways, for example, gender-based toy selection.

Vervet monkeys exhibit the same gender bias in toy selection as humans (Alexander & Hines, 2002), implying biological causation. Yet, Langlois and Downs (1980) found that children received differential rewards from parents and peers for playing with same-sex vs cross-sex toys, implicating cultural effects. Finally, Knickmeyer, Wheelwright, and Baron-Cohen (2008) found that while children with autism showed culturally accepted sex differences for imaginative play, girls with autism did not show female-typical play preferences for more concrete play, such as skipping rope, playing with hair or dancing. Therefore, while biological or cultural differences may create some gendered play in autism in some areas, it does not do so in others. Therefore, autism may moderate the effects of both biology and culture's influence on gendered behaviour.

Biology and culture may also contribute to the creation of gender differences seen in narrow constructs. For example, parents' play with daughters tends to be more verbal and conversational than with their sons (Clearfield & Nelson, 2006). In this way, parents' behaviour (culture) could impact on a child's social ability (a narrow construct). Further research may identify how biology and culture interact with autism to create the gender differences in narrow constructs and behavioural exemplars seen here.

In this study, culture had a direct impact on how girls with autism were perceived, and therefore treated. However, it should be noted that this effect was seen in a Scottish/English culture. Therefore, while this study found that autism is seen as a predominantly male condition, that girls are less likely to be recognised, that their diagnoses harder to accept, and their support poorer than boys, this effect may not be the same across cultures. Therefore, further research on how culture affects our perception of boys and girls, how girls with autism present, and greater awareness of this presentation, is required to ensure girls are not unfairly prejudiced against receiving a diagnosis and getting support.

4.2. A female presentation?

Gender differences in biology and culture may make a different set of narrow constructs and behaviours more likely, depending on gender. Yet, participants were clear that not all boys with autism presented one way, and girls another; boys may show a more female-typical set of narrow constructs and behaviours, and vice-versa. Indeed, given higher rates of gender diversity in autism (Dewinter, de Graaf and Begeer, 2017), further research on how gender identity impacts the presentation of autism is warranted. It may therefore be more accurate to consider autism presentations in terms of trans-diagnostic constructs such as social awareness, emotional recognition, and internalising/externalising, rather than by gender. Thus, the issue of accurate identification and diagnosis of girls with autism can be reframed to accurate identification and diagnosis of autism in those higher levels of social awareness, social drive, internalising coping strategies, and emotional recognition. This presentation is less recognised and harder to diagnose, and requires a level of experience and confidence on the part of the clinician.

4.3. Strengths and limitations

This study facilitated the exploration of autism outwith diagnostic criteria. While qualitative approaches are limited in their generalisability, many of the themes generated are supported by previous research, such as Head, McGillivray, and Stokes (2014), Hiller, Young, and Weber, (2014), and Bargiela et al. (2016). Collectively, this suggests that these findings are somewhat generalisable.

During interviews, participants were asked to only consider children without a learning disability, so the results may not apply to the learning disability population with autism. However, results relating to the core conception of autism may have more applicability, as this will likely be formed from all their experiences of autism, including from those with a comorbid learning disability.

As participants were asked to only consider children up to age 18 during discussions, these results may not be applicable across the lifespan. Yet, while the issues faced by adults with autism, and their presentation, may be different to children, the broad and narrow constructs underlying autism are less likely to change, and so may have some applicability. For example, Bargiela et al. (2016) identified similar challenges faced by women that this study identified for girls.

Replication of this study with other stakeholders in autism is needed. Clinical psychologists can only offer one perspective, and may be professionally predisposed to overweight internal thought processes and thinking styles. In comparison, speech and language therapists for example, may put greater emphasis on the details of language use and nonverbal communication. Therefore, replication with other healthcare professionals may confirm our findings, identify areas missed, or offer a contrasting perspective.

Participants may have been susceptible to confirmation bias. In asking about differences, participants may have been more likely to consider and overweight cases where girls' presentations differed from boys, stood out, or fitted with existing research. While this bias is impossible to avoid and should be considered, given the strength of existing empirical evidence, it is more parsimonious to cautiously assume it had limited influence.

4.4. Implications

Three implications for diagnostic criteria and their use emerge from the broad conception of autism. First, it appears the definition of autism in the current diagnostic criteria is not inherently gender biased, and is equally applicable across genders. Second, the

diagnostic criteria only capture part of autism, with some areas such as motor clumsiness, executive functioning and emotional dysregulation missed, despite being important indicators for clinicians. Finally, clinicians' conceptions of social interaction and communication difficulties as both necessary and sufficient, questions the conception of autism used in the criteria. Further research on whether RRBIs are a necessary component of autism, or a secondary effect of autism is needed. For example, Wigham, Rogers, South, McConachie, and Freeston (2015) noted that anxiety and intolerance of uncertainty mediated the relationship between sensory sensitivities and rigid and repetitive behaviours, suggesting such behaviours could be a strategy to reduce anxiety. This could imply that restricted and repetitive behaviours are a consequence of anxiety and autism, rather than a core component of autism.

Importantly for clinical practice, the finding of gender differences in narrow constructs closely related to autism highlights the need for broader assessment of individuals. By considering aspects such as coping styles, social motivation, insight, and cultural effects, diagnosticians may be better able to uncover underlying difficulties previously consciously or unconsciously hidden from the surface presentation. Further, while this is particularly important for females, males may also require such a holistic formulation as gender differences in autism are not perfectly binary.

Finally, the thematic model created by participants serves as a framework for clinicians to understand how and where gender differences may arise, and facilitates building aforementioned holistic formulations.

Conflict of interest

The authors have no conflicts to declare.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.rasd.2019.03.004.

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