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Autism Awareness and Treatment Options: A Study on How Culture and System Shape the Future of Children with Special Needs in China

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Abstract: With the increase in the number of autistic children diagnosed in China, it is becoming a salient problem that teachers, parents, and other caretakers still lack basic knowledge of this condition. This paper recognizes the need for children with special needs to integrate more completely into mainstream society, aims to raise general awareness, and presents effective platforms via which for children with autism can acquire mainstreaming skills. It also discusses the responsibility shared among policymakers, the government and the education system to support these children and their families. Together, this paper is a call to action with profound implications across a broad range of society, including the psychological, medical, economic, and cultural factors, as well as the microcosm of the nuclear family.

Keywords: Autism awareness, special education, stigma, mental health, health policy, China+

1.Introduction: Current Special Education System for Children With Autism In China

Across the globe, autism has become a growing concern as it is often linked to significant lifetime costs to the individuals, their families and the community in general (Horlin et al., 2014)[1]. More broadly defined, autism spectrum disorders (ASD) are increasingly associated with a high prevalence rate (Sun et al., 2013)[2]. In 2020, it has been reported that 1 in 54 children in the U.S. is diagnosed with an ASD ("National Report on Human Exposure to Environmental Chemicals | CDC", 2020)[3] . Such statistics call for broad and scrupulous screening given its early age of onset, typically about 3 to 7 years of age (Morales-Hidalgo et al., 2018)[4]. Along with the diagnosis, children also tend to experience functional impairments including comorbid psychiatric diagnoses and severe anxiety, with selective mutism an extreme outcome (Steffenburg et al., 2018)[5]. Symptoms of autism can manifest in varied ways, which adds to the challenge of screening. Most notable traits are difficulties with social interaction and communication, and displaying repetitive and stereotyped behaviours, interests and activities (Sun et al., 2013)[2]. The disruptive nature of many symptoms can require children with autism to participate in special-education classes and counselling and/or committed engagement on the part of their parents/guardian.

Compare to the normal classes, special-education classes are primarily provided for children with autism, and Applied Behaviour Analysis (ABA) is the main intervention method widely used in institutions for children with autism. ABA refers to the practical applications of behaviour analysis, including setting step-by-step goals and systematically planning of goals for learning. However, delivering such an intervention at school presents many problems in China: the lack of proper training for teachers, for example. A sophisticated but complex system that regulates professional licensing also adds to the complications and hampers progress among the many autistic children in China (Chang, 2017)[6]. Special-education classes often provide children with only short-term schooling, so family and parents' support and learning are critical for long-term development. This situation increases burden on parents of autistic children, who themselves lack training and support, often negatively effecting family dynamic. For example, research has shown that

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autistic parents seldom smile in front of their children, which has a potential negative impact on the emotional behavior of the children (Wang, 2008)[7]. It is as crucial for parents of children without autism to accept other children with special needs and allow them to share the resources. Liu et al., (2016)[8] also found that low understanding of ASD leads to delays in intervention treatment for autistic children.

One of the main challenges in autism research has been the lack of standardized data and different prevalence rates worldwide (Morales-Hidalgo et al., 2018)[4]. In China, autism has a lower prevalence rate of less than 0.2% (Wan et al., 2013)[9] as compared to 2.7% reported in South Korea (Kim et al., 2011)[10]. However, the low prevalence rate may be a result of under-reporting due to limited knowledge shared by the general public. Such statistics might lead to less attention given by the Chinese government and fewer institutional resources allocated for autism treatments. The reduced attention to autism in China could in turn lead to further under-reporting and maintain the low prevalence rate, hampering future research.

Liu et al (2016)[8] concluded that Chinese preschool teachers lacked understanding of ASD: While 84% of participants correctly answered questionnaires that assessed the understanding of typical development more than half the time, only 17% of participants correctly answered questionnaires that evaluated ASD (Liu et al., 2016)[8]. Autistic children with mild symptoms may benefit from having the opportunity to study in mainstream kindergartens, which can help them develop social skills and better integrate into society during their later stages of life. This makes the lack of autism-related knowledge among kindergarten teachers detrimental to the process, as it may lead to teachers rejecting those with autism at their school or not being able to offer the necessary standard of care.

Parents of autistic children may face not only psychological pressure but also financial pressure. China's educational system in China requires parents to pay most tuition fees by themselves, and tuition costs can exceed the family's annual income. This could lead to delays in seeking treatment for children with autism. China's government passed the Education Law in 1986 to increase the number of children with disabilities in public education programmes (Huang & Wheeler, 2007)[11]. At present, the Chinese government is starting to subsidise each family with an ASD child with about 10,000 yuan per year (with a slight gap between regions), alleviating some of the financial burden on parents (Liu et al., 2016)[8]. However, the effects have yet to be discerned. There are also cultural distinctions to note. People in China tend to be more negative about disability (STIGMA), thus fearing discrimination and a sense of shame (Zhou et al., 2018)[12]. Some even believe that people with mental disabilities, in contrast with those with physical disabilities, are useless to society. As a result, some parents reject the notion that their children are autistic, However, this opinion is slowly beginning to change in China (Hobart, 2008)[13].

In this paper, we first examine the current situation regarding children with autism and related education systems in China, then explore some possible strategies for improving the treatment targeted at this population. We also share some findings from a survey done in the Tong Xing Children Disorder Caring Centre, Aixingxueyuan Disorder Caring Centre, Chengdu Hengai Autistic Children Caring Centre, Jingqidian Dongli Kindergarten and Jingqidian Zhineng Kindergarten facilities located in Chengdu, China. These findings not only replicate the results from an earlier study (Liu et al., 2016)[8], but also bring in new information regarding the evolving issue of autism in China.

2.Methods: Conduct Online Survey With 4 Groups

We conducted an online survey adopting the questionnaire to assessing participants' the development knowledge of typical children and ASD, the attitude towards ASD, which developed by Liu et al (Liu et al., 2016)[8] ,with participants grouped into four categories: Group 1 included 42 kindergarten teachers; Group 2 included 44 people from the general public; Group 3 included 40 parents with neurotypical children enrolled in kindergarten; Group 4 included 33 parents with autistic children. The survey was distributed and analysed in Wenjianxing, an online crowdsourcing platform based in China.

3.Results: the analysis of the opinions of teachers, parents and general public toward autism

To analyze the data on basic knowledge about children without autism, we have focused on the four most challeng-

ing questions from the original Liu et al's paper[8], for which more than half of the total cohort failed to give a correct answer. Kindergarten teachers performed the best with regard to knowledge about neurotypical development. Parents with autistic children scored the second highest, with at least half of the sample passing three out of four challenging questions. The general population and parents without autistic kids performed worse, with half the sample answering three out of four questions incorrectly. This implies a higher level of understanding shared between teachers and parents with autistic children, with regard to neurotypical development and awareness of typical growth trajectory.

Regarding the knowledge about ASD, all of the groups failed on more than half of the questions, except for the parents with autistic children, who passed two questions out of the four. This indicates a severe lack of basic knowledge about ASD among the general population, especially those with limited exposure to the condition.

Furthermore, we examined the degree of advocacy for children with autism. More than half of the surveyed population disagreed that the resources allocated for children with special needs are adequate in China. An overwhelming number of respondents believed that the government should allocate more resources to this end. It is also interesting that more than a third of the general population disagree with integrating children with special needs into mainstream schooling, either by including children in mainstream classes or allowing parents' presence in the classroom.

Among parents without autistic children, about half of people disagree with accommodating children with special needs in the mainstream classroom. This is a higher percentage than the general population, which can be linked to their worry that integrating the schooling system may disrupt the education for their children. Similar to the general population, parents also believe that resources for children with special needs are scarce in China, with an overwhelming 90% agreeing that the government should allocate more resources.

Interestingly, even among parents with autistic children, between one-quarter and one-third disagree that autistic children should be integrated into mainstream schooling. This could be reflective of the rampant stigma around autism in China, causing parents to be hesitant to send their children into a mainstream classroom.

Similarly, the percentage of teachers surveyed who were against integrating special education into mainstream schooling was overwhelming at more than 70%. This finding signals the gap between special-education programs and regular teaching, further strengthening the argument for increasing resources in China so that children with ASD can have a uniquely designed practicum.

In general the results tracked those of Liu et al.[8], suggesting a stable need in China that requires attention from the government both financially and systematically. One exception stands out, however: Based on our sample, the percentage of people agreeing that the government should allocate more resources for children with special needs was even higher than that in Liu et al.'s[8] larger cohort. While the sample size of the current study was too modest to make a broader extrapolation, this finding could indicate either rising need in China, rising awareness, or both.

4.Discussion: Strategies on Improving the Education System for Children with Autism

Keeping in mind the current situation of autism awareness in China, this paper further explores the topic by reviewing possible treatment options available for children with autism. Multiple strategies have been developed to involve different aspects of the community in order to better treat children with autism. Here we evaluate the 1) ABA as a method that relies on mental health professionals, 2) P-ESDM as a form of parent-focused intervention, 3) peer-related interventions, and 4) technology-based gamification.

1.The first strategy represents treatment methods that stem from empirically tested findings. The ABA intervention methods are often structured on the basis of learning and operant conditioning. The aim is to define discrete intervention targets and to modify behaviors as a result (Mohammadzaheri et al., 2014)[14]. Such methods often involve licensed mental health professionals delivering the treatment. It presents a higher demand on the government, as it requires a systematic way of training and testing for qualified individuals (Clark and Zhou, 2005)[15].

2.Zhou et al., (2018)[12] proposed that a 26-week, high-intensity, Parent-implemented Early Start Denver Model (P-ESDM) should be used to educate parents with autistic children. P-ESDM is a comprehensive approach to the Naturalistic Behavioural Interventions (NDBIs) implemented in Early Start Denver Model (ESDM). Based on the present

situation in China, autism parents may benefit from participating in teaching, because in China, the opportunity of autistic children education is limited compared with that in America (McCabe, 2007)[16]. Although P-ESDM is less influential than ESDM on early childhood development outcomes and diagnosis, Zhou et al., (2018)[12] proposed that after receiving training, parents have gradually developed greater understanding in communication with their children and changed in a positive way their acceptance of their children and their children's behavior. The P-ESDM approach has been shown to significantly improve social behavior, though the level of adoption by the parent is affected by the parent's educational background. However, this method requires significant time and energy for parents to study, and the application of P-ESDM will be positively affected by the educational background of parents (Zhou et al., 2018)[12].

3.Peer-mediated intervention usually makes use of peer relationships between neurotypical children and autistic children that allow the latter to function better in social settings, improve their behaviours through social learning, and ultimately prepare them for a smoother integration into the mainstream community. In peer-mediated intervention, it is very important to change peer expectations as they may affect the frequency of peer-mediated interaction with autistic children (Rosebthal, 1963)[17]. The method of changing expectations can be arranged by situations or conditions to promote optimal peer relationship, which can be accomplished by means of social-skills training and critical response training (DiSalvo & Oswald, 2002)[18]. Following social-skill training, children with autism should be able to respond to others in a mutually reinforcing manner, to adapt social behaviours to different environments, and to actively interact in natural social environments, an approach that can be supported in the context of sociology theory (Rogers, 2000)[19]. Compared with adults teaching social skills to autistic children, peer intervention makes children's social interaction environment more natural, and the social skills learned in this process are more effectively applied by peers (Rogers, 2000)[19]. It's important to help peers better understand and support children with autism: when children with disabilities are trained in how to interact with their peers and when receptive peers can interact with them, peer-mediated intervention can proceed successfully. As neurotypical peers interact with autistic children, they improve their friendship skills and reduce the stigma related to autism (Rogers, 2000)[19].

4.Beyond the treatment options mentioned above, technology has also allowed the gamification of behavioral-reinforcement treatment solutions for children with autism, so as to better facilitate the learning and coping process (Gay et al., 2013)[20].

For autistic children, Gay et al., (2013)[20] identified and expressed emotions as one of their main challenges. Capture My Emotion provides a new way for autistic people to understand their emotions and integrate into society. The app uses wireless biosensors to identify and sense emotions, and uses this technology on smartphones and tablets to help children with autism. Since most autistic children are visual learners, there is a certain attraction to them through these mobile electronic devices. Other apps have been designed to help people with autism to understand their emotions, but the mechanism in these cases uses fixed sets of photos, videos, and audio, instead of using sensors to provide physiological data to identify the mood of the specific app user. Those apps are based on observations of the self and caregivers. This is undoubtedly a great challenge for inexperienced parents. But Capture My Emotion combines recording with wireless physiological sensing and facial recognition to automatically determine one's emotional state. The app will capture autism photos, videos, and sounds, and in response will immediately attach emotion data and a self-portrait photo. This tailored approach is likely to greatly improve the accuracy of emotion recognition and the efficacy of feedback.

That said, the software has limitations. The sensors can be affected by the outside world. For example, spending a whole day in an air-conditioned room and then going out on a sunny day can affect the accuracy of the results. To some extent, this problem is solved by including the short-term median value. This app can help caregivers (parents and teachers) to understand the emotions of autism, and it also helps autistic people to understand their emotions in real time and to manage them dynamically.

In a similar way, Brain Power System is designed to help autistic children and adults teach themselves important social and cognitive skills, which can at least partially mitigate the problem of treatment shortage. The system helps people with autism address a wide range of issues including emotion recognition, eye contact, self-control and educational programs. Since its introduction, the researchers who created the system have also improved the emotion-recognition technology, demonstrating its usability and accuracy over time ("Brain Power - Affectiva", 2020)[21].

Another technology-based treatment option, Autism Emotion, uses pictures and music to help children with autism learn different emotions. While based on generalized rather than user-based information like Capture My Emotion, such training helps with emotion recognition and allows for modeling among children with autism. This is also accessible and cost-effective ("Autism Emotion", 2020)[22] when compared with in-person treatment methods with registered professionals.Other smaller apps are also helpful in facilitating learning for autistic children. Proloquo2Go is designed to help people who cannot speak or need help to be understood. It helps autistic children express complex thoughts independently by gradually improving their language skills through the use of pictures and sounds. Autism Express offers practices that help recognise facial expressions and allow children with autism understand social skills. Model Me Going Places provides guidance for daily life, such as how to shop in the store, to help autistic children adapt to social life rules. Grace uses images to compose complex sentences to solve communication problems of children with autism, such as inability to express complex ideas. Look in My Eyes helps autistic children adjust to the discomfort of making eye contact, with the aim to reduce the anxiety (Applied Behavior Analysis Programs Guide, 2020)[23].

5.Conclusion: The Key to Solve the Social-level Problem of Autism

Key to solving the societal-level problem of autism is to educate the general public and to eventually minimise the gap between special education and normal schooling. The end goal is to eliminate stigma against children with autism by modifying common belief that autistic children will negatively impact mainstream schooling. To do so, the government and its education system should clarify the standard for schooling and the distinction between that and special education. There is a need to establish a clear-cut line for allocating children with autism into special education programs.

Education is also needed for society to recognize different types of autism: not all children with autism require special education classes. This information could be disseminated via media such as state-owned and social platforms, non-profit organizations, and charity groups. And also, the role of parenting is crucial beyond the direct influence within a nuclear family. The responsibility of parents lies in every family, including but not limited to those with autism .

Lastly, society needs to acknowledge and support the important role parents play in improving the lives and outcomes of children with autism. Because of the cultural background, the parenting style in China is likely to remain passive in the question of autism, or how to handle autism when it occurs within or close to a family. A means to reduce stigma in school is to target the root cause of the problem – to educate parents so that they accept children with autism to share the classroom.

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