



Diagnostic Procedures and Treatments for Autistic Children in the Netherlands: A Systematic Review

Rosanne J. Hiemstra

Master Thesis – Klinische Neuropsychologie

[s3968545]

[July] [2024]

Department of Psychology
University of Groningen
Examiner/Daily supervisor:
Dr. Novika Purnama Sari

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate, but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned.

Abstract

Background. The prevalence of autism spectrum disorder (ASD) in children in the Netherlands is relatively high at 2,8% (Centraal Bureau voor Statistiek, 2018). Given that an ASD diagnosis significantly impacts the life of the affected child, there is a clear need for adequate autism services for Dutch children with ASD. Therefore, this study aimed to identify current diagnostic procedures, available treatments and interventions for children with ASD under 18 years old in the Netherlands.

Methods. A systematic literature review was conducted by following PRISMA guidelines, with searches performed in SmartCat, PsycINFO and Google Scholar databases from 2004 up to 2024, resulting in the inclusion of 32 studies after the selection process.

Results. The Netherlands has developed several guidelines for the preferred diagnostics of autism spectrum disorder, but full adherence is currently lacking, leading to potential delays in diagnosis. Interventions mainly focus on skill training, with increasing evidence supporting alternative therapies such as music therapy.

Conclusions. The Netherlands should prioritize improving early detection of autism spectrum disorder to facilitate early interventions and enhance children's well-being, while longitudinal studies are essential to validate the effectiveness of available treatments.

Keywords: ASD, children, diagnostic procedures, treatments, PRISMA

Introduction

Autism is a neurodevelopmental disorder that greatly impacts individuals' quality of life by affecting aspects like stress or sleep (Graham Holmes et al., 2020). Autism, defined as autism spectrum disorder (ASD) is characterized primarily by deficits in two core domains: social communication and interaction, as well as restricted and repetitive behaviours or interests (American Psychiatric Association, 2013). Furthermore, a diagnosis of ASD relies on observation of behaviour including interaction with other children, since there are currently no medical tests available (Van de Westerlo & de Muijnck, 2022).

Worldwide, the prevalence of children with ASD is estimated to be between 0,6% and 1,0% (Bloemink, 2018). In the Netherlands, the prevalence of ASD among children has risen (Schothorst et al, 2009). A study from 2016 found that 3,5% of parents of Dutch children aged 4 to 12 years reported that their child had ASD. This high prevalence can be attributed to improvements in research and diagnostic procedures, as well as heightened recognition and awareness (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). Moreover, the country's individualistic culture, which places significant demands on individuals, may contribute to the earlier identification of problems in daily life. Interestingly, ASD prevalence among children varies between regions within the Netherlands (Roelfsema et al., 2011). For example, according to their study, cities like Eindhoven appear to have a higher prevalence of ASD compared to other cities such as Utrecht.

Children are not the only ones that would benefit from effective diagnostic procedures and interventions; these are also essential for the well-being of their parents. Specifically, having a condition on the autism spectrum not only profoundly impacts the development and functioning of the child, but also significantly affects the lives of those in close proximity, particularly the parents (van Berckelaer-Onnes & van der Gaag, 2009). From the moment the child with ASD is born, the condition affects the entire family (Van Tongerloo et al., 2012).

Caring for a child with ASD notably impacts the quality of life of the parent, influencing their interactions with the child, which may subsequently affect the child's well-being (Ten Hoopen et al., 2021). Therefore, effective autism services, including timely diagnosis and the availability of appropriate interventions, will not only improve the well-being of children with ASD, but also reduce stress and challenges in the lives of their parents.

Early Detection and Intervention

Worldwide, there is increasing awareness of the importance of early detection and access to early intervention for ASD (Snijder et al., 2021). Effective screening instruments used in early detection enable clinicians to identify children at high risk for ASD while preventing unnecessary diagnostic procedures for other children (Deckers et al., 2019). Moreover, early intervention is crucial, as an earlier start of treatment is followed with more favourable treatment outcomes (van Tongerloo et al., 2012).

Effective diagnostic procedures and early detection of ASD are essential for receiving early intervention. However, in the Netherlands, there is still disagreement about the effectiveness of early detection and early interventions for children with ASD. Although the stigma surrounding diagnosing individuals under 18 has decreased, early diagnosis of ASD remains a topic of discussion (Bögels & Braet, 2014). Challenges relating to early diagnosis include the rapid development of young children, the risk of negative labelling, and the challenge of distinguishing issues specific to the child from those within the family. Conversely, there is growing support for diagnosing ASD in young children. Research indicates that diagnosing psychological disorders at an early age, can predict mental health issues later in life (Bögels & Braet, 2014). Early diagnosis of ASD enables the initiation of early intervention and educational planning (van Daalen et al., 2009). Furthermore, it helps professionals to understand ASD's developmental paths and identify outcome predictors.

Thus, more research on the effects of early diagnosis and intervention in the Netherlands is needed to create more clarity on this topic.

Diagnostic Issues

There are several areas for improvement in the diagnostic process for children with ASD in the Netherlands. For example, despite advances in recognition and screening of ASD in Dutch children the past years, certain groups are under-served (Pijl & Servatius-Oosterling., 2021). Specifically, children with migrant backgrounds may have initial ASD symptoms that are less easily recognized due to their overlap with issues related to ethnic background (Begeer et al., 2009). Consequently, screening for ASD may be misinterpreted as adaptation difficulties to the host culture or general language issues. Moreover, autistic behaviour tends to be less recognized in girls than in boys (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). As a result, girls are typically diagnosed later in their life. This delay is attributed to the fact that girls are mainly characterized by their subtle manifestation of communication and social issues, for which girls often develop their own strategies to compensate. These gender differences in ASD prevalence are apparent across all age groups, however, they are most pronounced among children under 18 years old (Rutherford et al., 2016).

In children, autism spectrum disorder (ASD) frequently co-occurs with various other disorders, complicating recognition and diagnosis. According to Kenniscentrum Kinder- en Jeugdpsychiatrie (2024), psychiatric comorbidity is present in approximately 70% of Dutch children and adolescents with ASD. For instance, a study by Van Steensel et al. (2013) revealed that 40% of children diagnosed with ASD also exhibit symptoms of anxiety disorders. Furthermore, attention deficit hyperactivity disorder (ADHD) emerges as one of the most prevalent comorbidities alongside ASD.

Additionally, children in the Netherlands are not diagnosed as early as ideally recommended. Studies indicate that ASD related developmental abnormalities are sometimes

observed in children as young as 12 months (Jones et al., 2014). Thus, an accurate diagnosis of ASD can be established before children reach the age of two. In contrast, the average age of ASD diagnosis for children in the Netherlands is approximately five years (Begeer et al., 2017). Consequently, Dutch children will often receive appropriate interventions on a later moment than preferred. This is concerning, as according to Peters-Scheffer (2012), early intensive behavioural intervention (EIBI) can lead to enhanced cognitive, adaptive, and social functioning, as well as reduced severity of autism and behavioural issues in children with ASD. Moreover, the process of receiving a diagnosis of ASD for Dutch children currently takes an average of three years to be completed (NVA, Nederlandse Vereniging voor Autisme, 2022).

Systematic Review

In the Netherlands, the demand for effective autism services becomes more urgent. It is essential that children exhibiting ASD symptoms, along with their parents, receive prompt and accurate diagnoses and access appropriate support. Ensuring adequate autism services is essential to improve the well-being of these children and their families. Despite heightened awareness of ASD, there is still lack of research specifically focusing on autism services for children under 18 years old in the Netherlands. Therefore, this systematic review aims to provide insights into current autism services in the Netherlands while identifying unmet needs and opportunities for improvements in the future.

This systematic literature review categorizes autism services into two main components: diagnostic procedures and available treatments and interventions. The study addresses two specific research questions: (a) what is the procedure for obtaining a diagnosis of ASD for children under 18 years old in the Netherlands, and (b) what interventions and treatments are currently available for Dutch children diagnosed with ASD who are under 18 years old?

Methods

This study was done by following the reporting guidelines specified in the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA Checklist) (Page et al., 2021). PRISMA facilitates a robust protocol to ensure accurate and reliable reporting of findings in systematic reviews.

Search Strategy and Selection Criteria

A systematic literature search was conducted to explore current diagnostic procedures and treatments and interventions available for children under 18 years old in the Netherlands. For this purpose, several online databases were used. A comprehensive search for English articles was carried out in SmartCat (k = 2198) and PsycINFO (k = 2475), while Dutch articles in Google Scholar (k = 4930) were consulted to obtain relevant articles. The search was performed in June 2024. The literature search was structured in two parts, each addressing one of the main research questions of this study. The first research question focuses on the procedures for obtaining an ASD diagnosis for children under 18 years old in the Netherlands. The second research question pertains to the treatments and interventions available for Dutch children with ASD who are under 18 years old.

To gather relevant literature to the first research question, the following keywords were applied in the search: (*“autism” OR “ASD” OR “autism spectrum disorder”*) AND (*“diagnosis” OR “diagnosing” OR “diagnostics” OR “assessment” OR “screening”*) AND (*“Netherlands” OR “Dutch” OR “Holland”*) AND (*“children” OR “adolescents” OR “child” OR “teenager” OR “youth”*). For the second research question, the keywords used were: (*“autism” OR “ASD” OR “autism spectrum disorder”*) AND (*“treatment” OR “intervention” OR “therapy” OR “management” OR “rehabilitation”*) AND (*“Netherlands” OR “Dutch” OR “Holland”*) AND (*“children” OR “adolescents” OR “child” OR “teenager” OR “youth”*). To optimize the search in online databases, keywords for both

research questions were translated into Dutch allowing access to articles originally written in Dutch. Regarding the first research question, used keywords in Google Scholar were:

(“autisme” OR “ASS” OR “autisme spectrum stoornis”) AND (“diagnose” OR “diagnosticeren” OR “onderzoek” OR “screening”) AND (“kinderen” OR “adolescenten” OR “jeugd” OR “tiener”). Keywords of the second research question consisted of:

(“autisme” OR “ASS” OR “autisme spectrum stoornis”) AND (“behandeling” OR “interventie” OR “therapie” OR “herstel”) AND (“kinderen” OR “adolescenten” OR “jeugd” OR “tiener”). In addition to the database search described above, manual searching of reference lists from relevant articles was done to identify additional literature. This led to a total of 4673 English articles and 4930 Dutch articles.

Eligibility Criteria

Following the database searches, relevant articles were subsequently selected to address both research questions. Included studies consisted of (a) studies involving children up to 18 years of age, (b) studies that were written in either Dutch or English, (c) studies involving both boys and girls as participants and (d) studies that provided access to full-text articles.

Exclusion criteria comprised (a) studies written in languages other than Dutch or English, (b) studies that were not based in the Netherlands, (c) studies older than 20 years, because the focus of this study pertains to current autism services which have evolved over time, and (d) unsystematic narrative reviews, because according to the PRISMA guidelines, those reviews are considered as subjective opinions.

Data Synthesis

Out of the 531 articles assessed for eligibility, 499 were excluded. Main reasons for exclusion were that the participants did not have Dutch nationalities or that articles did not address ASD. In the ultimate review of 32 articles, ten were utilized to address the first

research question on diagnostic procedures, while nineteen articles were employed to explore available treatments and interventions. Additionally, three articles were relevant to both research questions. Specifically, fourteen articles investigated particular types of therapy or intervention, and three articles focused on specific screening instruments. Among the articles reviewed for diagnostic procedures, their content mostly emphasizes early screening of children with ASD. Regarding articles reviewed for treatments and interventions, skill training is a frequently recurring approach.

Data Collection and Extraction

One researcher (R.J.H.) independently conducted the literature search and selection process, initially screening all article titles and abstracts. Following this screening, the full texts of the remaining articles were read to determine their suitability for inclusion.

Subsequently, the relevant literature obtained from all databases was combined to complete the PRISMA flowcharts (Figure 1 & 2). To differentiate the resulting articles in Dutch and English, two separate flowcharts were filled in. The same procedure was applied to both research questions.

Figure 1.

PRISMA flowchart 1: Search in English

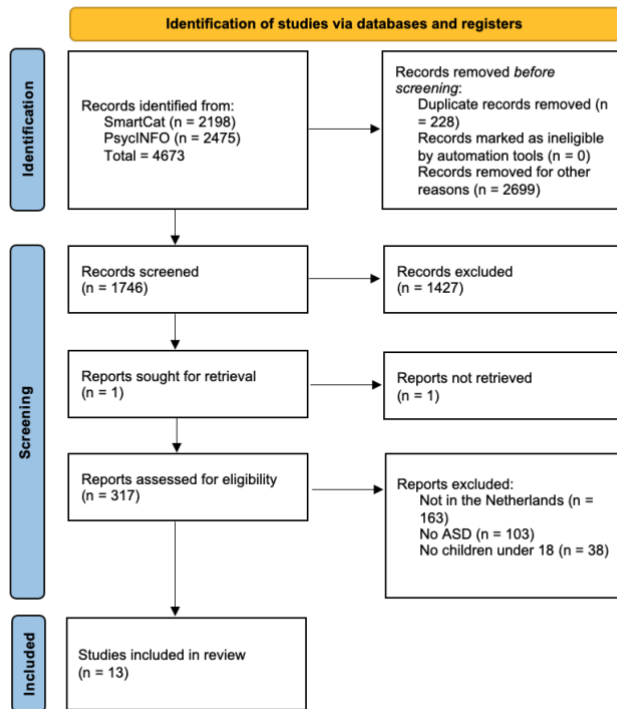
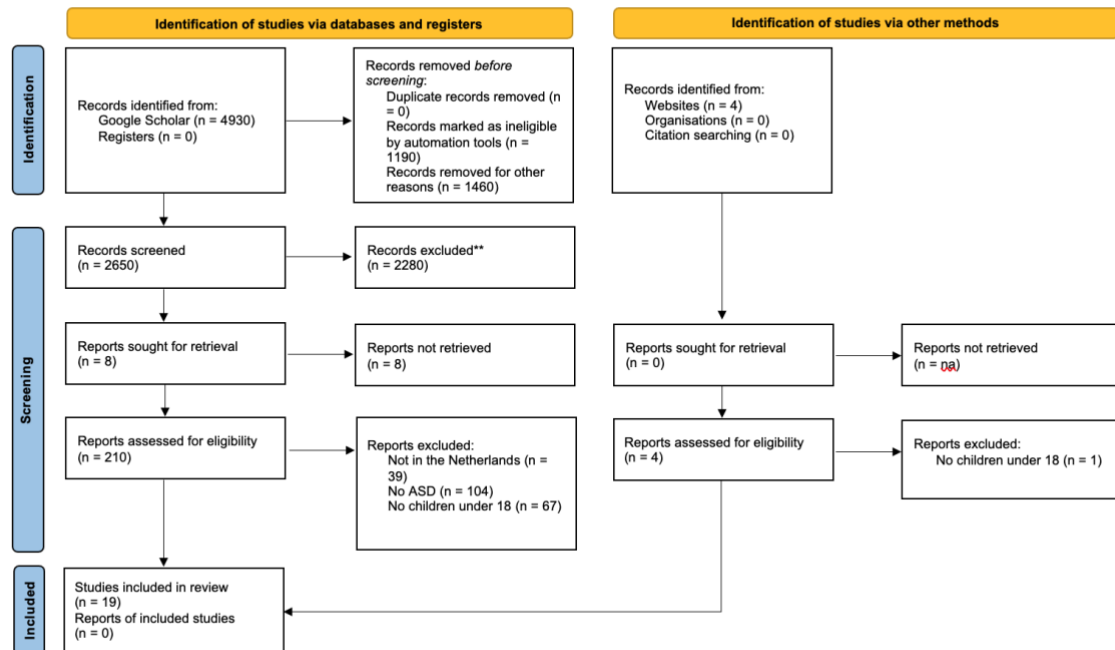


Figure 2.

PRISMA flowchart 2: Search in Dutch



Results

Selection of Literature

The systematic literature search was carried out until June 21, 2024. From the search in three online databases, 8066 articles were retrieved in total, of which 228 duplicates were directly removed. Titles and abstracts of 4396 articles were screened based on the eligibility criteria, excluding 3707 articles. Of the remaining 689 articles, nine could not be retrieved. Finally, 32 articles were eligible to be included in this systematic review. Details of the search and screening process can be seen in Figure 1 & 2.

Study Characteristics

Among the included articles, the majority (12/32, 38%) reported randomized controlled trials (RCTs) or quasi-experimental designs (QEDs) in which interventions and trainings, as well as screening tools, were tested. Remaining articles mostly included reviews or book chapters. For the RCTs and QEDs, participant numbers ranged between 12 and 208, with an average of 91 participants. Outcome measures of RCTs and QEDs commonly included adaptive functioning and the severity of ASD related symptoms. Thereby, scales and tests such as the Social Responsiveness Scale and the Theory of Mind test were also integrated. Additionally, of all 32 articles, nine (28%) focused on skills trainings.

Diagnostic Procedures for Children with ASD

Dutch Diagnostic Guidelines

In the Netherlands, various guidelines have been developed to give direction to preferred diagnostic procedures for ASD (Geurts et al, 2017). In 2009, the 'Richtlijn autisme bij kinderen en jeugdigen' (NVvP, 2009), which is one of the guidelines in the Netherlands, was published. As supported by Snijder et al. (2022), this guideline advises against population-wide screening of all Dutch children on ASD due to the relative low prevalence of ASD. In the guideline, it is highlighted that there are no definitive tests available to diagnose

ASD (*Richtlijn autisme bij kinderen en jeugdigen, 2009*), a point confirmed by a more recent guideline (JGZ-richtlijn, 2015). The ‘Richtlijn autisme bij kinderen en jeugdigen’ emphasizes that the most effective method to detect ASD is through observing the child’s behaviour, preferably in daily life settings. Standardized instruments, such as questionnaires or observation scales, can only assist in confirming an ASD diagnosis rather than serving as diagnostic instrument on its own.

Another important Dutch guideline, the JGZ-richtlijn (2015), was developed to improve early detection of ASD in preventive care (Snijder et al., 2021). In the Netherlands, preventive healthcare aims at staying healthy through both promoting and protecting health (Engberts & Kalkman-Bogerd, 2009). The JGZ-richtlijn (2015) offers recommendations to preventive care physicians at well-baby clinics and outlines the steps to be taken when a child is identified as being at an increased risk for ASD. Well-baby clinics are part of the Dutch preventive healthcare system, where physicians and nurses regularly see young children and their parents. Preventive care physicians play an essential role in early ASD detection within the Dutch healthcare system. However, according to Snijder et al. (2021), there is currently no full adherence to the JGZ-richtlijn (2015).

Screening

Screening can help systematically identifying ASD at an early stage (Dietz & de Bildt, 2018). In the Netherlands, not all children are routinely screened for ASD (Snijder et al., 2022). Only those children who are at an elevated risk of ASD are subjected to ASD-specific screening. Nevertheless, in the Netherlands the general development of all children is monitored during the first four years of life (Pijl & Servatius-Oosterling., 2021). This is accomplished through a screening known as the Van Wiechenonderzoek (VWO) (Dietz & de Bildt, 2018). The VWO includes eight concerning indicators that could be the first signs of ASD in children (Snijder et al., 2021). Those concerning indicators include: (1) babbling by

12 months, (2) showing social interest by 12 months, (3) responding with laughter directed at others by 12 months, (4) reacting to being spoken to by 12 months, (5) using gestures by 12 months, (6) saying first words by 18 months, (7) forming two-word sentences by 24 months and (8) any loss of language or social skills at any age. When a preventive care physician identifies one or more of these concerning indicators, an ASD-specific screening follows. Specifically, ASD-specific screenings are carried out by trained professionals working in the jeugdgezondheidszorg (JGZ) (*Screening van Autisme Bij Kinderen*, 2023). As a result of the Dutch screening procedure, parents are often the first ones that notice concerns in their child (Snijder et al., 2022).

While various screening tools exist to identify children at high risk for ASD, the guideline development group indicates that none currently fulfil all the criteria necessary for a valid diagnostic instrument (Geurts et al., 2017). For screening babies and toddlers specifically, the Communicatieve en Sociale ontwikkelingssignalen (CoSoS) or Modified Checklist for Autism in Toddlers (M-CHAT) is commonly used (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). For children aged 4 and older, other screening instruments are more appropriate. For instance, the Social Communication Questionnaire (SCQ) is frequently applied for this age group (Oosterling et al., 2010). The SCQ has demonstrated strong diagnostic accuracy in school-aged children, but its potential value for children under the age of 4 remains largely unknown. In summary, there is currently no single screening tool in the Netherlands that is particularly effective for detecting ASD. Instead, multiple screening instruments are available, and new ones continue to be developed.

Diagnosis

Following initial screening for ASD, follow-up diagnostics are necessary to either confirm or exclude the diagnosis in children (Dietz & de Bildt., 2018). In the Netherlands, comprehensive diagnostic assessments are typically conducted by mental healthcare centres

and psychologist practices, who are also responsible for providing a diagnosis of ASD (Snijder et al., 2021). Diagnostic criteria in the Netherlands align with the DSM-5 (American Psychiatric Association, 2013), which serves as the primary reference for ASD diagnosis (Bögels & Braet, 2014). The transition from the previous DSM edition to the DSM-5 (American Psychiatric Association, 2013) has resulted in fewer Dutch children receiving an ASD diagnosis. This reduction corresponds to alterations concerning the domain of restricted and repetitive behaviours or interests. Under the DSM-5 (American Psychiatric Association, 2013) criteria, an ASD diagnosis now requires the presence of deficits within this particular domain.

In the Netherlands, the diagnostic process is always conducted by a multidisciplinary team (de Bildt et al., 2021). The process typically starts when concerns about the child's development or behaviour are raised, often initiated by observations from the child's environment (GGZ Standaarden, 2023). When parents suspect ASD in their child, they can be referred to a pediatrician. Elaborate conversations with parents or other caretakers about the child are an essential component of the diagnostic process. These conversations are necessary for obtaining a comprehensive understanding of the development of the child and their current behaviours across various life domains. Both strengths and weaknesses are systematically assessed during diagnostics (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). Furthermore, direct interaction with the child and observations are commonly conducted. If the child is already in school, information from educational settings is integrated for a complete evaluation. It is important that every diagnostic process comprises assessments on cognition and intelligence, to gain information into the child's learning potential (Huskens & Steerneman, 2008). Ultimately, all findings are thoroughly discussed with the child, along with all other individuals who are involved in their care and support (Dietz & de Bildt, 2018).

A range of diagnostic tools is available in the Netherlands. However, no single instrument seems adequate for making a diagnosis independently (de Bildt, 2010). As a result, these diagnostic tools are intended to provide assistance throughout the diagnostic process. The Autism Diagnostic Observation Schedule-2 (ADOS-2) is designed to directly observe interactions and assess behavioural flexibility in children (Dietz & de Bildt, 2018). The ADOS-2, widely recognized as an updated version of the original ADOS, is now extensively utilized in the Netherlands. The ADOS-2 aims at eliciting behaviours through various tasks (de Bildt, 2010). Additionally, many clinics in the Netherlands employ the Achenbach System of Empirically Based Assessment (ASEBA) scales to conduct broad initial screenings for issues in children referred for clinical assessment (Deckers et al., 2019). Although this scale collects information from various informants, its effectiveness seems to be maximized when the screening is primarily conducted by the parents.

Available Treatments and Interventions

General Treatment

In the Netherlands, there is currently no treatment available that can cure ASD (Van der Gaag, 2006). The primary goal of ASD treatment is to improve the well-being of the child and provide support to their family (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). Multiple interventions and treatments are available for children with ASD in the Netherlands. However, there is currently insufficient evidence regarding the effectivity of most treatments (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). Furthermore, there are regional variations in the availability of interventions for children with ASD and their parents throughout the Netherlands (Dietz et al., 2018). Thereby, interventions often do not adequately reflect the individual profile of each child, and treatment options for very young children with ASD are limited (Bruinsma & Stockmann, 2008).

Treatment for Dutch children with ASD usually begins with psycho-education (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). Psycho-education is a type of education that not only provides general information about ASD, but also guides individuals on how to apply the knowledge to their own situations (Vermunt & Bailly, 2013). Psycho-education is considered important in providing parents or other family members with information about the child's diagnosis and future prospects (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). It enhances understanding of the child's challenges and issues in life.

The following sections will discuss the current situation around services for children with ASD in the Netherlands, including some well-known and upcoming treatments and educational services.

Educational Services

Some children diagnosed with ASD have special needs and require additional educational support (Vermeulen, 2006). In such cases, these children may need special education. In the Netherlands, special needs education are included in the national laws, however, there is currently no specific plan or strategy for ASD (van Kessel et al., 2019). Many schools in the Netherlands provide separate classes for children with ASD where they provide tailored support for them (Luteijn et al., 2021). Since the introduction of the law '*passend onderwijs*' in 2014, all Dutch schools are obligated to provide appropriate education. Regular and specialized schools have to collaborate to facilitate education to all children. The law '*passend onderwijs*' promotes the integration of children with ASD into regular schools whenever possible (Luteijn et al., 2021). As a result, teachers working in regular education settings may also have children in their class who require additional support, such as children with ASD (Geveke et al., 2016). If children in regular schools do not receive adequate support, they will be referred to either special primary education (*Speciaal basisonderwijs*; SBO) or specialized education (*Speciale onderwijs*; SO), depending on the severity of

disability in the child (Luteijn et al., 2021). Admission to specialized education requires a *toelaatbaarheidsverklaring* (TLV) (*Hoe Moet Het Met Mijn Kind Met Autisme Op School?* / *Nederlands Jeugdinstituut*, n.d.). In March 2016, the RAAK project was launched to support teachers by providing strategies for managing children with ASD in class (Geveke et al., 2016). Furthermore, since October 2020, the e-learning program '*autisme in de klas*' is made available for teachers with children with ASD in class (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). In this e-learning, teachers are offered information to effectively deal with behavioral problems. In general, the Netherlands is committed to integrating children with ASD into mainstream educational settings whenever feasible. This approach emphasizes the importance of inclusive education, allowing these children to benefit from the same learning environment as their peers. Furthermore, when necessary, a range of additional support services is available to address individual needs. This support can take various forms, including specialized teaching methods, behavioral interventions, and resources for both students and their families, ensuring that every child has the opportunity to thrive in their educational journey.

Early interventions

Early interventions are employed when concerns related to ASD arise in a child before a confirmed diagnosis (Snijder et al., 2022). In the Netherlands, barriers to accessing early intervention services exist. For instance, the availability of healthcare services varies significantly across different regions in the Netherlands (Snijder et al., 2021). Current early interventions are frequently used despite limited evidence supporting their effectiveness. However, two frequently used Dutch early intervention programs that do have supporting evidence are highlighted. One such program is BEER (Blended E-health for children at Early Risk), designed as a short and easily accessible intervention, to tackle the problem of late interventions (Pijl & Servatius- Oosterling, 2021). BEER aims to enhance parental

understanding of the development of their child and provide strategies to improve contact, communication, play and flexibility in their child. Additionally, there is some evidence supporting the commonly used TEACCH (Treatment and Education for Autistic Children and Children with Communicative Handicaps) program (Van Berckelaer-Onnes & van der Gaag, 2009). Toddlers participating in this early intervention program tend to demonstrate significant improvements in social and communication skills (*Richtlijn autisme bij kinderen en jeugdigen* (2009). Nevertheless, the Netherlands requires additional research on early interventions to improve their effectiveness and develop a deeper understanding of their long-term effects.

Skills Trainings

Many ASD treatments for children in the Netherlands focus on improving or teaching social skills. Social skills training (SST), for example, is widely implemented in the Netherlands as an intervention aimed at improving social and communication skills among children with ASD (Dekker et al., 2014). Many healthcare institutions offer SSTs based on practice suggesting their potential benefit for individuals with ASD. However, the training is time-consuming and its effectiveness for children with ASD remains doubtful (Dekker et al., 2014). In the Netherlands, SST is frequently carried out within primary school settings (Luteijn et al., 2021). Within these settings SSTs are delivered alongside other peers in a classroom environment, potentially reducing its efficacy for children with ASD. Instead, specialized social skills trainings offered by trained professionals at mental health institutions are more beneficial. Modifications to these trainings could help maximize their effectiveness for children with ASD.

Pivotal Response Treatment (PRT) is another skills training utilized for children with ASD in the Netherlands. PRT is a promising intervention based on techniques of applied behavioural analysis (ABA) (Van den Berk-Smeekens et al., 2021). Although research on

robot assistance in PRT is limited, the study from Van den Berk-Smeekens et al. (2021) suggests that robot-assisted PRT results in greater improvements of social communication skills compared to traditional methods of PRT without robot-assistance. PRT also shows positive effects on parents of children with ASD (Bruinsma & Stockmann, 2008). In summary, PRT shows great potential for future developments and applications in the field. Its positive outcomes and adaptability suggest that it could play a significant role in enhancing interventions for children with ASD.

Theory of Mind (ToM) trainings are commonly implemented by Dutch children with ASD (Kenniscentrum Kinder- en Jeugdpsychiatrie, 2024). ToM-trainings are designed for children with ASD aged 9-12 who experience difficulties with perspective-taking and understanding other's emotions. Despite their widespread use, empirical evidence supporting their effectiveness remains limited (Hoddenbach et al., 2012). Begeer et al. (2019) report improvements in social understanding following ToM-training. However, their earlier study in 2011 (Begeer et al., 2011) did not find enhancements in elementary understanding, self-reported empathic skills, or parent-reported social behaviour. It remains uncertain whether ToM-trainings are effective in improving skills beyond social understanding.

Alternative treatments

In addition to aforementioned established treatments, there are other alternative treatments that are commonly used for children with ASD in the Netherlands (Breeman, 2021). Music therapy, for example, is a frequently applied treatment for Dutch children with ASD (Pater & van Yperen, 2017), and is currently the most well-developed of all creative therapies (Bartelink & Boendermaker, 2009). Music therapy seems effective in improving communication skills and social behaviour in children (Bartelink & Boendermaker, 2009). Music therapists use music to establish connections and stimulate interaction (Pater & van Yperen, 2017). It also helps in improving the child's concept of the self (Bartelink &

Boendermaker, 2009). Currently, music therapy appears to be a promising alternative treatment option.

Art therapy is another commonly used therapy. Dutch children with ASD are sometimes referred to art therapy, as studies show art therapy contributes to more flexible and relaxed attitudes, improved self-image and better communication and learning skills (Schweizer et al., 2014). The *'Images of Self'* program is a more recently developed art therapy that has shown partial effectiveness for children with ASD problems (Schweizer et al., 2020). Nevertheless, empirical information on the specific parts of art therapy that actually work for children with ASD is still limited.

Other relatively new therapies are interventions supported by animals, often called Animal-Assisted Activity (AAA) (Griffioen & Maurer, 2018). AAA seems effective in the personal development of children with ASD. Thereby, parents of children with ASD report a positive impact of animal-assisted interventions on their child's social skills, communication and self-confidence (Bouma & Orthopedagogiek, 2023).

Finally, anxiety interventions are receiving increasing attention in the Netherlands. Many children with ASD experience anxiety symptoms that are often the underlying cause of their impairments (Wijnhoven et al., 2015). For this reason, anxiety interventions have been developed in the Netherlands to reduce anxiety in children with ASD. The videogame *'Mindlight'* is an example of such an intervention, which appears to be effective. Interventions like *'Mindlight'* show promise in reducing anxiety among children with ASD in the Netherlands.

Discussion

The primary purpose of the present study was to identify current diagnostic procedures and available treatments and interventions for children with ASD under 18 years old in the Netherlands. Our results indicate that several screening and diagnostic instruments are used for diagnosing ASD in children. However, currently there appears no single instrument available that is completely valid for all spectrums of autism (Geurts et al., 2017). Scientific evidence supporting the effectiveness of diagnostic instruments in the Netherlands is also limited (Schothorst et al., 2009). The findings indicate that there is no single instrument capable of solely diagnosing or detecting autism, and further research is still needed to assess the effectiveness of treatments and interventions.

In terms of early detection, this study's findings highlight that in the Netherlands, children are screened specifically for ASD only when concerning indicators are identified during general screenings conducted for all children. Consequently, ASD detection in children likely occurs later than in countries where universal screening for ASD is practiced, such as the United States (Snijder et al., 2022). In Dutch children, ASD diagnosis typically occurs around the age of five (Begeer et al., 2017), which is later than the age at which ASD can be diagnosed. These findings suggest that the current system in the Netherlands, consisting of screening in two steps instead of directly screening all children for ASD, may contribute to delays in diagnoses. A careful examination of the effectiveness of the two-step screening procedure for ASD in the Netherlands is suggested, given that current practices may result in children missing the critical intervention period, which could impact their well-being and development. Screening should aim to detect ASD as early as possible and prevent potential problems before they arise. Therefore, it is recommended to reconsider current screening procedures, as implementing an earlier screening might lead to an earlier detection and intervention.

Due to the Dutch screening procedure, parents are often the first to notice concerns in their child (Snijder et al., 2022), suggesting their significant influence on initiating the diagnostic process. Therefore, parents should be highly involved in the early detection of children with ASD. There is a pressing need for emphasizing the benefits of early detection, as well as to educate parents on recognizing potential concerning indicators they might observe in their children. Investments should be made in accessible information for parents. One approach could be to launch national campaigns focused on the eight concerning indicators for ASD, to raise awareness and promote quicker identification. Such initiatives could lead to parents recognizing ASD symptoms earlier, seeking professional help sooner and ultimately achieving earlier diagnoses.

Results indicate that in the Netherlands, certain groups of children are typically overlooked during ASD diagnosis (Pijl & Servatius-Oosterling, 2021), indicating that current diagnostic procedures in the Netherlands are not optimal. Diagnostic procedures might be biased towards identifying more stereotypical cases. It is essential to reduce this diagnostic bias and ensure that children with fewer symptoms or atypical presentations of ASD are also recognized (Riphagen, 2020). There is a need for more inclusive diagnostic criteria, alongside trainings for Dutch healthcare professionals and schoolteachers to better recognize and deepen their understanding on the diverse presentations of ASD in children.

Although diagnostic guidelines are specifically developed for children with ASD in the Netherlands, the guidelines are currently not fully applied (Snijder et al., 2021). One possible explanation could be that there are inconsistencies in the interpretation and application of these guidelines among Dutch healthcare professionals. As a result, there could be variability in diagnosis across different regions or among different professionals, potentially resulting in unequal access to support for children with ASD. This indicates the need for modification of

the existing guidelines. Further research should be conducted to understand the factors contributing to the incomplete adherence of the guidelines by Dutch healthcare professionals.

In general, various treatments for children with ASD have been developed in the Netherlands. However, due to lacking research in Dutch children with ASD specifically, the effectiveness of many of these treatments remains unclear, suggesting difficulties in determining which treatment is the most beneficial for a certain child. As a result of delayed diagnoses, interventions for children with ASD are often initiated later. This delay is undesirable, as later interventions are associated with more issues in the lives of both children and their parents (Peters-Scheffer et al., 2012). Early interventions receive considerable attention in the Netherlands, yet their availability and accessibility for very young children remains limited. This could be due to these children not yet having received a diagnosis, which prevents them from receiving any treatment.

Findings on educational services revealed that children with ASD participate in regular education where possible (Luteijn et al., 2021), meaning that efforts are made to integrate these children into classrooms alongside their peers. If additional assistance is needed, various trainings or alternative options such as referring to special education are available. This may suggest that the educational system for children in the Netherlands is flexible and aims to meet the needs of all children. Inclusion of children with ASD in regular education is actively pursued within the Netherlands, while recognizing that some children with ASD may benefit from specialized support and services.

Limitations

The findings of the present study should be interpreted in consideration of several limitations. This study was systematically reviewed following PRISMA guidelines (Moher et al., 2010), ensuring transparency and high-quality reporting. Moreover, this study benefits from the inclusion of both English and Dutch articles. However, using the PRISMA method

does not eliminate publication bias. Studies with negative results are less frequently published, potentially leading to their underrepresentation in this review. Secondly, single screening was applied during data collection, with every article only being assessed by the main researcher. While this approach efficiently uses time and resources, it also increased the likelihood of missing relevant studies and diminished the reliability and validity of this review. Furthermore, the risk of bias in study selection was elevated. Subjective interpretations or decisions by the single researcher may have influenced the study's objectivity despite clearly established selection criteria.

Another limitation relates to the heterogeneity of ASD. ASD is a very broad concept, and it is questionable whether all studies concerning ASD investigate the exact same type of ASD to make generalized statements. Lastly, studies limited to the period between 2004 and 2024 were included due to restricted availability of studies in this exact topic. This study's primary focus was on identifying current autism services, but a span of 20 years may not be recent enough to provide valid insights into contemporary autism services in the Netherlands.

Future Directions

In general, to improve early detection and early interventions, close collaboration between preventive care and regular care physicians is recommended in the future. Additionally, professionals across all regions of the Netherlands are advised to co-operate to ensure that every child in the country receives consistent support. Efforts should be made to reduce individual differences in access to help, ensuring that children in all regions of the Netherlands receive adequate help.

To address the limitations of this study, it is recommended that other researchers replicate this systematic review while adding quality assessments to test and validate the findings. Replication should ideally be conducted after a few years to evaluate if and how the field of autism services for children in the Netherlands has developed. Additionally, future

research with large sample sizes is crucial to make valid statements about the efficacy and effectiveness of available interventions and therapies. Longitudinal studies are particularly important for exploring children's responses to different treatments and assessing the long-term effects of treatments on their well-being.

Conclusions

Despite the availability of numerous diagnostic instruments and treatments, their effectiveness remains uncertain. There is an urgent need for improving diagnostic procedures and early interventions for children with ASD in the Netherlands. Improving early detection through better awareness of professionals and education for parents is essential. Furthermore, cooperation among professionals working with ASD should be encouraged to ensure equal access to support for all children. Ultimately, these efforts aim to improve the well-being of children with ASD and guide them towards a brighter future.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Bartelink, C., & Boendermaker, L. (2009). Creatieve therapie.
- Begeer, S., Bouk, S. E., Boussaid, W., Terwogt, M. M., & Koot, H. M. (2009). Underdiagnosis and referral bias of autism in ethnic minorities. *Journal of autism and developmental disorders*, 39, 142-148.
- Begeer, S., Gevers, C., Clifford, P., Verhoeve, M., Kat, K., Hoddenbach, E., & Boer, F. (2011). Theory of mind training in children with autism: A randomized controlled trial. *Journal of Autism and Developmental Disorders*, 41(8), 997–1006.
<https://doi.org/10.1007/s10803-010-1121-9>
- Begeer, S., Hoddenbach, E., van Wettum, E., Scheeren, A. M., & de Veld, D. M. (2019). De Theory of Mind training voor kinderen met autisme: een gerandomiseerde gecontroleerde trial. *Neuropraxis*, 23(5), 113-119.
- Begeer, S., van Wijngaarden M., Vreugdenhil M., Wijnker-Holmes B. (2017). *Jaarrapportage Nederland Autisme Register*. Nederlands Autisme Register.
- Bloemink, S. (2018). *Diagnosedrift: Hoe onze labelcultuur kinderen tekort doet*. Amsterdam University Press.
- Bögels, S., & Braet, C. (2014). DSM-5 en psychische problemen bij kinderen. *PsychoPraktijk*, 6(4), 29–32. <https://doi.org/10.1007/s13170-014-0057-8>
- Bouma, M. (2023). *Wat vinden ouders van dierondersteunende interventies?*
- Breeman, A. (2021, July 6). *Mensen met autisme gebruiken vaak alternatieve zorg*. NVA | Nederlandse Vereniging Voor Autisme. <https://www.autisme.nl/2021/07/01/mensen-met-autisme-gebruiken-vaak-alternatieve-zorg/>

- Buruma, M., & Blijd-Hoogewys, E. (2023). *Meer doen met diagnostiek bij meisjes met autisme*. *Vroeg*, 40, 4-6.
- Centraal Bureau voor Statistiek (2018). *Autisme onder 4–12 jarigen*. Den Haag: CBS.
- De Bildt, A. (2010). ADOS en ADI-R: gebruik in de klinische praktijk bij diagnostiek van ASS. *Psychopraktijk*, 2, 27-30.
- De Bildt, A., Slaats-Willemse, D., & van den Bergh, M. (2021). Van (vroeg) herkenning naar diagnostisch profiel. *Autisme bij kinderen: Signalering, diagnostiek en behandeling*, 89-110.
- Deckers, A., Muris, P., & Roelofs, J. (2019). Screening for Autism Spectrum Disorder with the Achenbach System of Empirically Based Assessment Scales. *Journal of Psychopathology and Behavioral Assessment*, 42(1), 25–37.
<https://doi.org/10.1007/s10862-019-09748-9>
- Dekker, V., Nauta, M. H., Mulder, E. J., Timmerman, M. E., & de Bildt, A. (2014). A randomized controlled study of a social skills training for preadolescent children with autism spectrum disorders: generalization of skills by training parents and teachers? *BMC Psychiatry*, 14, 189. <https://doi.org/10.1186/1471-244X-14-189>
- Dietz, C., & de Bildt, A. (2018). Screening en diagnostiek bij kinderen en jongeren. *Autismespectrumstoornis: Interdisciplinair basisboek*, 99-114.
https://doi.org/10.1007/978-90-368-2042-4_8
- Dietz, C., Visser, J. C., Van Berckelaer-Onnes, I. A., & Peters-Scheffer, N. C. (2018). Vroege interventie bij autismespectrumstoornissen: State of the art. *Tijdschrift van de Vereniging voor Kinder- en Jeugdpsychotherapie*, 45, 1-23.
- Engberts, D. P., & Kalkman-Bogerd, L. E. (2009). Preventieve gezondheidszorg. *Bohn Stafleu van Loghum eBooks*, 159–169. https://doi.org/10.1007/978-90-313-7642-1_8

- Geveke, C., Steenbeek, H., & de Vries, D. (2016). RAAK Publiek-project Werken met autistische kinderen in de klas. *Partner: werkveldkrant Pedagogische Academie*, 2016 (May).
- GGZ Standaarden (2017). *Zorgstandaard Autisme*.
<https://www.ggzstandaarden.nl/zorgstandaarden/autisme/specifieke-omschrijving-autisme>
- Graham Holmes, L., Zampella, C. J., Clements, C., McCleery, J. P., Maddox, B. B., Parish-Morris, J., et al. (2020). A Lifespan Approach to Patient-Reported Outcomes and Quality of Life for People on the Autism Spectrum. *Autism Research*, 13(6), 970–987.
<https://doi.org/10.1002/aur.2275>.
- Griffioen, R., & Maurer, C. (2018). Dierondersteunde programma's voor kinderen met Downsyndroom en/of autismspectrumstoornis. *Jeugdbeleid*, 12, 113-119.
- Hoddenbach, E., Koot, H. M., Clifford, P., Gevers, C., Clauser, C., Boer, F., & Begeer, S. (2012). Individual differences in the efficacy of a short theory of mind intervention for children with autism spectrum disorder: a randomized controlled trial. *Trials*, 13, 206.
<https://doi.org/10.1186/1745-6215-13-206>
- Huskens, B., & Steerneman, P. (2008). Van diagnostiek naar behandeling. *Begeleiding van kinderen en jongeren met autisme: Van onderzoek naar praktijk*, 51-66.
- Jones E. J. J., Gliga T., Bedford R., Charman T., Johnson M. H. (2014). Developmental pathways to autism: A review of prospective studies of infants at risk. *Neuroscience and Biobehavioral Reviews*, 39, 1–33.
- Kenniscentrum Kinder- en Jeugdpsychiatrie. (2024). *Autismspectrumstoornissen (ASS) bij kinderen en adolescenten - Kenniscentrum Kinder- en Jeugdpsychiatrie*.
<https://kenniscentrum-kjp.nl/professionals/autisme/>

- Luteijn, E., Slaats-Willemse, D., & Merks, D. (2021). Begeleiden in het onderwijs. *Autisme bij kinderen: Signalering, diagnostiek en behandeling*, 209-230.
- NVA, Nederlandse Vereniging voor Autisme. (2022, July 7). NVA - De diagnose. NVA Nederlandse Vereniging Voor Autisme. <https://www.autisme.nl/over-autisme/wat-is-autisme/diagnose-autisme/>
- Oosterling, I., Rommelse, N., de Jonge, M., van der Gaag, R. J., Swinkels, S., Roos, S., Visser, J., & Buitelaar, J. (2010). How useful is the Social Communication Questionnaire in toddlers at risk of autism spectrum disorder? *Journal of Child Psychology and Psychiatry*, 51(11), 1260–1268. <https://doi.org/10.1111/j.1469-7610.2010.02246.x>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., et al. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Journal of Clinical Epidemiology*, 134, 178–189. <https://doi.org/10.1016/j.jclinepi.2021.03.001>
- Pater, M., & van Yperen, T. (2017). Muziektherapie voor kinderen en jongeren met ASS: Een overzicht van de relevante literatuur. *Kind en adolescent*, 38(4), 233-259
- Peters-Scheffer, N., Didden, R., Korzilius, H., & Matson, J. (2012). Cost comparison of early intensive behavioral intervention and treatment as usual for children with autism spectrum disorder in the Netherlands. *Research in Developmental Disabilities*, 33(6), 1763–1772. <https://doi.org/10.1016/j.ridd.2012.04.006>
- Pijl, M., & Servatius-Oosterling, I. (2021). (Vroeg) Herkenning en screening. *Autisme bij kinderen: Signalering, diagnostiek en behandeling*, 67-88.
- Riphagen, W. E. (2020). *De invloed van SES en aantal symptomen op herkenning van ASS en ADHD* (Master's thesis).

- Roelfsema, M. T., Hoekstra, R. A., Allison, C., Wheelwright, S., Brayne, C., Matthews, F. E., & Baron-Cohen, S. (2012). Are Autism Spectrum Conditions More Prevalent in an Information-Technology Region? A School-Based Study of Three Regions in the Netherlands. *Journal of Autism and Developmental Disorders*, 42(5), 734–739.
<https://doi.org/10.1007/s10803-011-1302-1>
- Rutherford, M., McKenzie, K., Johnson, T., Catchpole, C., O'Hare, A., McClure, I., Forsyth, K., McCartney, D., & Murray, A. (2016). Gender ratio in a clinical population sample, age of diagnosis and duration of assessment in children and adults with autism spectrum disorder. *Autism*, 20(5), 628-634. <https://doi.org/10.1177/1362361315617879>
- Schothorst, P. F., Van Engeland, H., Van der Gaag, R. J., Minderaa, R. B., Stockmann, A. P. A. M., Westermann, G. M. A., & Floor-Siebelink, H. A. (2009). Richtlijn diagnostiek en behandeling autismespectrumstoornissen bij kinderen en jeugdigen. *Nederlandse Vereniging voor Psychiatrie*.
- Schweizer, C., Knorth, E. J., & Spreen, M. (2014). Art therapy with children with Autism Spectrum Disorders: A review of clinical case descriptions on 'what works'. *The Arts in Psychotherapy*, 41(5), 577–593. <https://doi.org/10.1016/j.aip.2014.10.009>
- Schweizer, C., Knorth, E. J., van Yperen, T. A., & Spreen, M. (2020). Evaluation of 'Images of Self,' an art therapy program for children diagnosed with autism spectrum disorders (ASD). *Children and Youth Services Review*, 116.
<https://doi.org/10.1016/j.childyouth.2020.105207>
- Screening van autisme bij kinderen. (2023). *Autisme Jonge Kind*.
<https://www.autismejongekind.nl/professionals/van-vroegherkenning-tot-diagnostiek/screening-van-autisme/#:~:text=Met%20screenen%20wordt%20hier%20bedoeld,met%20informatie%20van%20ouders%2Fverzorgers>

- Snijder, M. I. J., Dietz, C., van Andel, M., Ruiter, E. L. M., Buitelaar, J. K., & Oosterling, I. J. (2022). Social COmmunication Program supported by E-health (SCOPE) for infants and toddlers at elevated likelihood of autism spectrum disorder: study design of a cluster randomized controlled trial. *BMC Psychiatry*, 22(1), 772. <https://doi.org/10.1186/s12888-022-04351-x>
- Snijder, M. I., Kaijadoe, S. P., van 't Hof, M., Ester, W. A., Buitelaar, J. K., & Oosterling, I. J. (2021). Early detection of young children at risk of autism spectrum disorder at well-baby clinics in the Netherlands: Perspectives of preventive care physicians. *Autism*, 25(7), 2012-2024. <https://doi.org/10.1177/13623613211009345>
- Snijder, M. I. J., Langerak, I. P. C., Kaijadoe, S. P. T., Buruma, M. E., Verschuur, R., Dietz, C., Buitelaar, J. K., & Oosterling, I. J. (2022). Parental Experiences with Early Identification and Initial Care for their Child with Autism: Tailored Improvement Strategies. *Journal of autism and developmental disorders*, 52(8), 3473–3485. <https://doi.org/10.1007/s10803-021-05226-y>
- Ten Hoopen, L. W., de Nijs, P. F. A., Duvekot, J., Greaves-Lord, K., Hillegers, M. H. J., Brouwer, W. B. F., & Hakkaart-van Roijen, L. (2020). Children with an Autism Spectrum Disorder and Their Caregivers: Capturing Health-Related and Care-Related Quality of Life. *Journal of autism and developmental disorders*, 50(1), 263–277.
- Van Berckelaer-Onnes, I., & van der Gaag, R. (2009). Autismespectrumstoornissen. *Psychiatrische stoornissen*. https://doi.org/10.1007/978-90-313-9322-0_4
- Van Daalen, E., Kemner, C., Dietz, C., Swinkels, S. H. N., Buitelaar, J. K., & van Engeland, H. (2009). Inter-rater reliability and stability of diagnoses of autism spectrum disorder in children identified through screening at a very young age. *European Child & Adolescent Psychiatry*, 18(11), 663–674. <https://doi.org/10.1007/s00787-009-0025-8>

- Van de Westerlo, L., & de Muijnck, W. (2022). Mensen met autisme krijgen geen kans in de huidige maatschappij.
- Van den Berk-Smeekens, I., de Korte, M. W. P., van Dongen-Boomsma, M., Oosterling, I. J., den Boer, J. C., Barakova, E. I., Lourens, T., Glennon, J. C., Staal, W. G., & Buitelaar, J. K. (2021). Pivotal Response Treatment with and without robot-assistance for children with autism: a randomized controlled trial. *European child & adolescent psychiatry*, 31(12), 1871–1883. <https://doi.org/10.1007/s00787-021-01804-8>
- Van Der Gaag, R. J. (2006). Autismespectrumstoornissen. *Bijblijven*, 22(5), 215–223. <https://doi.org/10.1007/bf03059939>
- Van Kessel, R., Roman-Urrestarazu, A., Ruigrok, A., Holt, R., Commers, M., Hoekstra, R. A., Czabanowska, K., Brayne, C., & Baron-Cohen, S. (2019). Autism and family involvement in the right to education in the EU: policy mapping in the Netherlands, Belgium and Germany. *Molecular Autism*, 10(1). <https://doi.org/10.1186/s13229-019-0297-x>
- Van Steensel, B., Bögels, S., De Bruin, E., & Dirksen, C. (2013). Angststoornissen bij kinderen met autismespectrumstoornissen. *Kind & Adolescent Praktijk*, 12, 110-117.
- Vermeulen, P. (2006). *Mijn kind heeft autisme*. Lannoo Uitgeverij.
- Vermunt, L., & Bailly, J. (2013). E-Health psycho-educatie, een exploratief onderzoek. *Kind en Adolescent Praktijk*, 12(3), 100–107. <https://doi.org/10.1007/s12454-013-0033-1>
- Wijnhoven, L. A. M. W., Creemers, D. H. M., Engels, R. C. M. E., & Granic, I. (2015). The effect of the videogame Mindlight on anxiety symptoms in children with an Autism Spectrum Disorder. *BMC Psychiatry*, 15, 138. <https://doi.org/10.1186/s12888-015-0522-x>

