

Writing Therapy in Children with Neurodevelopmental Disorder (ADHD & Autism) by Parents: Module Validation

*Lisa Nur Farida*¹, Ira Paramastri¹*

¹Faculty of Psychology, Universitas Gadjah Mada, Indonesia

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Abstract. Therapy modules that are systematically arranged, structured and easy to use become very meaningful when the learning system is carried out independently. The aim of the study is to examine the validity of the writing therapy module "TM3". This module is designed so that parents can use it to train and improve the attention-focusing abilities of children with ADHD & Autism through writing therapy. Participants involved in this study consisted of 5 clinical psychologists, 5 occupational therapists and 42 parents of children diagnosed with ADHD and Autism, all of which were recruited through a semi-online survey. Validation includes two processes, namely: content validation and empirical validation. The results of the validation of the content of the module are 0.827 and the readability validation is 0.833 ($v > 0.5$) with a good validity category. In testing the empirical validity based on responses from 42 participants, the reliability value (r_{11}) = 0.787 was included in the high category. This shows that the "TM3" writing therapy module is valid both empirically and content, and the module can be used to train (therapy) children.

Keywords: ADHD & Autism; the role of parents; writing therapy module "TM3".

Writing is one of the methods that can be used as a therapeutic technique to change an aspect of behavior through handwriting activities. Russel and Wandan (Abdurrachman in Hikmawati & Hidayati, 2014) stated that writing therapy increases the activity of the central nervous system and parts of the body. Writing as therapy can be included in sensory integration therapy because it emphasizes coordinating information to produce desired responses through sensory stimuli (Cornhill & Case-Smith, 1996; Tseng & Murray, 1994; Weil & Amundson, 1994). Coordinating the sensory system will be very beneficial for children with ADHD and autism for the reason of maximizing the development of the sensory system which must be achieved according to the period of development. Coordinating the sensory system can reduce obstacles to cognitive development, especially executive functions which function in a series of cognitive regulatory processes, including working memory, inhibitory control and cognitive flexibility so that thoughts and behavior can be organized (Hughes & Graham, 2002).

Children with ADHD and Autism have difficulties in terms of adjusting to their environment, both in the community and in the school environment. This condition, according to Barkley, is caused by weaknesses in the field of cognitive function that can

consequently cause various disorders including: reduced degrees of children's intelligence, decreased academic achievement, poor timing, decreased verbal or nonverbal memory, inability to plan, less sensitive to mistakes, and less proficient directs purposeful behavior. They may suffer difficulties in the field of academic skills as well which include issues in reading, spelling, counting, and writing. It also extends to problems in the development of language skills (Saputro, [2009](#)). Children with autism may experience learning barriers, related to lack of social skills and behavior patterns that are not the same as children their age (National Institute of Mental Health, [2008](#)). DSM-V categorizes Autism and ADHD into Neurodevelopmental Disorder, which is a group of conditions with onset in the developmental period, usually occurring early in development even until the child enters elementary school with marked developmental deficits that can interfere with personal, social, academic and work functions. The scope of developmental deficits occurs in learning limitations or global impairments in executive function for skills or social intelligence (American Psychiatric Association, [2013](#)).

The existence of a developmental deficit that occurs in children requires a separate program as stated in the National Education System Law no. 20 article 5 concerning education for children with special needs. In the National Education System Law, it is stated that the Government of Indonesia is very concerned about education for its citizens, including education for children with special needs with the aim of minimizing the adverse effects of several disorders experienced by children. Therefore, a special education system is needed that is in accordance with the conditions and abilities of children, both education providers. Formal education are delivered through inclusive schools, special schools, and informal education places such as therapy places. The success of educational programs for children with neurodevelopmental disorder does not stop with formal education providers, but extends to in-home parental involvement or participation in the implementation of the child's learning process in accordance with Article 7 of the National Education System Law no. 20 in legislation Government Indonesia ([2003](#)) so that the learning process can continue both at school and at home.

The participation of parents in children's education is needed especially with the current conditions related to the Covid-19 pandemic where the learning system is mostly carried out "online" according to the regulation of the Minister of Health of the Republic of Indonesia (PERMENKES RI) Number 9 of 2020 concerning Guidelines for Large-Scale Social Restrictions (PSBB) as a measure to handle and accelerate the Corona Virus Disease 2019 (COVID-19) as stated in the minister of health of the Republic of Indonesia ([2020](#)). However this PERMENKES decision is also in contrast with the existence of rules regarding the implementation of the teaching and learning process during the Corona Virus Disease 2019 (COVID 19) Pandemic period set by the Minister of Education and Culture dated June 15, 2020 in SKB 4 Minister ([2020](#)) which entails that the learning process can be carried out from home except for students who are located in the green zone. These students are allowed to carry out face-to-face learning by conducting in strict health protocols and

having obtained permission from the Local Education Office. Learning patterns that use an internet network system (online) from home are also carried out in special schools, both inclusive and special schools, and are carried out in therapy places for children with special needs.

Learning patterns from home for children with Autism and ADHD conditions has their own set of problems described in the following: children with ADHD and Autism are difficult to control, they have trouble maintaining their focus / attention when studying (Nur'aeni, [2019](#)), boredom appears both in children and parents. Furthermore, there is a lack of parental knowledge in guiding children's learning. Several studies including the research of Goldstein and Schwebach ([2004](#)) stated that there was no significant difference between children with ASD conditions and children with ADHD conditions in the number of ADHD symptoms. Similar data also reported that children with ASD and those with ADHD did not differ significantly according to parental reports of attention and hyperactivity/impulsivity (Hattori et al., [2006](#); Jensen et al., [1997](#); Luteijn et al., [2000](#)), children with autism (ASD) have difficulty concentrating (Guerrero & Jones, [2013](#)), attention disorders are also experienced by children with ADHD (Anjani, [2013](#); Birda, [2016](#)).

Attention disorders experienced by children cause them to be unable to carry out their duties and responsibilities optimally, especially regarding the implementation of learning which requires attention. This is in accordance with what Hidayati ([2014](#)) stated, where every activity if carried out with concentration will provide better results and be completed quickly. Attention is one elements of the memory or memory stages that occurs in the thinking process carried out by each individual. Attention is the concentration of mental effort on sensory or mental events. Atkinson and Shiffrin (Santrock, [2009](#)) explain that there are 3 stages in the attention process, namely sensory entry into sensory memory. This process uses attention to store information in the short-term memory for about 30 seconds and is lost unless repeated (practice). From short-term memory information is passed to long-term memory for later storage and retrieval. The brain's ability to maintain attention according to Medina ([2009](#)) only lasts 10 minutes. Efforts that can be made to maintain attention for the next ten minutes can be done with three principles, namely: the hook between ten minutes must trigger emotions including (something that can make laughter, happiness, fear, nostalgia, etc.), the hook must be relevant so that it doesn't feel disjointed, and hooks have to move between modules (could be at the end of every 10 minutes, summarizing material, and repeating some aspects of content).

Attention according to Solso, et al. ([2008](#)) is an effort to concentrate clearly / coherently on a number of objects simultaneously. The focalization of consciousness is the essence of attention. Attention is related to brain function. The anterior part in the frontal lobe is in charge of processing attention, while the posterior part located in the parietal lobe keeps the attention process under control. Attention also involves neural activity in the sensory cortex, especially visual and motor. Fatemi, et al. quoted by Kallat ([2013](#)) explained that autistic children give either very weak or very strong responses to stimuli, such as

indifference to pain or panic hearing the voices of many people, autistic children also have additional barriers with attention deficit disorders. Most of them have abnormalities in the cerebellum. There are also those who show disabilities related to large brain damage, such as clumsiness and eye movement disorders (in Kallat, [2013](#)). The forms of attention deficit disorder experienced by children at school are difficulty concentrating on learning, being inattentive to orders from the teacher, looking at their friends all the time, doing activities that are not related to activities at school teasing their friends (Anjani, [2013](#)), as well as other difficulties during learning activities. Recent research found that there is a tendency for children with Autism (ASD) to experience difficulties in several aspects of written expression (Mayes & Calhoun, [2008](#)), including handwriting, spelling, and sentence construction (Finnegan & Accardo, [2018](#)).

Handwriting, spelling and sentence construction are forms of writing results. In a collection of studies aimed at improving basic writing skills and abilities, writing was found to be a challenge for 30% to 40% of students with ASD (Graham et al., [2009](#)). Compared to students their age, children with ASD tend to be slower, misaligned, or have poor handwriting spacing (Hellinckx et al., [2013](#)) with uppercase results (Rosenblum et al., [2016](#)). Writing is part of language skills that are closely related to the development of individual thinking. According to Montessori ([2016](#)) language is something that is spoken with letters that become the transfer of sound as visible signs. Progress in writing is marked by the concomitant development of written and spoken language. Writing provides dual advantage, where the hand is expected to have important skills such as speaking and creating a second means of communication that reflects the spoken word in detail. The views of Berninger et. all about the writing process partly depends on low-level transcription skills. These sets of skills rely on the transcription process, text generation, and executive functions that support students as they translate ideas into writing. Transcription includes the handwriting, typing, and spelling skills necessary to produce print letters. Executive function involves the self-regulation needed to plan, review, revise, and distract while writing (Berninger, et al, [2002](#)).

Writing as a part of expressive language will improve when language and cognitive skills improve with good instruction. Writing is closely related to one's cognitive development. According to Piaget (Santrock, [2012](#)) the stage of cognitive development is the growth of logical thinking from infancy to adulthood which takes place through stages: i). sensori-motor stages with the characteristics of children developing through motor activities (Papalia et al., [2008](#)); ii). the preoperational stage with the characteristics of the child being able to understand the reality in the environment by using signs and symbols, while the way of thinking is still unsystematic, inconsistent and illogical (Surya, [2003](#)); iii). the concrete operational stage where the child is mature enough to use logical thinking or operations but only for existing physical objects (Jarvis, [2011](#)); and iv). the formal operational stage where children are able to use their concrete operations to form more complex operations, understand arguments and think abstractly (Jarvis, [2011](#)). At the

concrete operational stage according to Piaget which has been revised by Neo-Piaget states that for this stage it emphasizes how children use attention, memory, and strategies to process information (Case & Muller in Santrock, [2012](#)).

The sensori-motor stage as the first stage in cognitive development is in line with the theory of neural maturity (Williams & Shellenberger in Kurniawati et al., [2018](#)) in the pyramid of learning. It is mentioned that the sensory system as an element of the first (basic) stage, must be optimized by providing stimuli to enter stage two which is responsible for sensory motor development. In the third stage, there will be perceptual motor development and in the fourth stage is cognitive / intellectual development. In children with sensory processing disorders, the sensory input from the environment and the body cannot work together which, as a result, the child would not know what is going on and what to do. There are 4 stages of the sensory process, namely: a). "recognition" is awareness of the existence of sensations; b). "orientation" is an attempt to pay attention to sensations; c). "interpretation" that is interpreting or understanding the meaning of the information that comes; and D). "organization" is the use of information to produce a response. The response resulting from sensory processing can be an emotional behavior, a motor response, or a cognitive response (Ahn et al., [2004](#)).

Writing as part of language skills has three cognitive processes involved to produce understandable text (Rich Mayer in Santrock, [2012](#)), namely: a). understand sound units in words that include understanding phonemes, b). re-encoding of words which includes converting written words into sound, c). access the meaning of a word by imagining a representation of a word. By increasing language and cognitive skills, it will improve the writing skills of a child with good instructions.

Writing is a basic skill that is a requirement for efforts to learn various other fields of study at school. According to Lerner (Abdurrahman, [2003](#)), there are several factors that influence a child's ability to write, namely: 1) Children's motor development, 2) Children's perception of writing, 3) Children's memory, 4) Ability to carry out cross modal, 5) Use of hands dominant, 6) Ability to understand instructions. These factors must be considered properly and require a stimulus that is appropriate for the child's age. The right stimulus will give maximum results, namely children's writing skills develop well. If one of these factors is experiencing obstacles, the child's ability to write is less than optimal.

Writing is an activity that involves hand motors that are driven by the brain in the executive function. Writing activities are often used by occupational therapists and are more familiar as sensory integration therapy. This treatment method is often used to change the behavior of children with autism (ASD) and children with ADHD. Sensory integration therapy has the goal of unites all information from the five senses to the brain by providing a stimulus to one's five senses including ears, eyes, nose, skin, tongue and two other sensory systems: vestibular and proprioceptive (Hikmawati & Hidayati, [2014](#)). Writing therapy is essentially a neurophysiological process (Sugiarmim, [2005](#)).

Writing therapy is one of the forms of treatment that can be given to children with ASD conditions and children with ADHD conditions, both with pharmacotherapy and without pharmacotherapy. The application of various writing techniques including writing normally (automatically), writing with eyes closed, and writing at a faster speed than usual can improve attention control by using simple verbal instructions so as to produce smooth writing movements in children with ADHD. On the other hand, the use of stimulant drugs (methylphenidate) affects the accuracy and legibility of writing (Tucha & Lange, [2004](#)), reduces hyperactivity behavior in children with ADHD (Hikmawati & Hidayati, [2014](#)), is able to increase accuracy, handwriting speed, social communication skills, and school achievement with the CASL technique (Center on Accelerating Student Learning) in children with ASD conditions (Panos, [2019](#)). The application of writing techniques requires time and participation from parents (caregivers). According to the results of experimental research aimed at reducing hyperactivity in children with ADHD conditions it takes one month to achieve expected results (Hikmawati & Hidayati, [2014](#)). Furthermore there should be consistent instruction in teaching fine motor skills writing (Asher, [2019](#)), participation of parents and teachers in writing therapy (McNamee & Patton, [2018](#)), and requires time consistency between 20-60 minutes once a week for 1 month (Asher, [2006](#)) for this to happen.

According to the results of research presented by McNamee and Patton ([2018](#)), parental participation is essential in writing therapy. The role of parents in determining education or therapy (training) for children cannot be separated, because they are the closest people who know the development and condition of children directly. They also play an important role in the education of their children. The education given by parents to their children is based on their nature as parents and their affection for children (Purwanto, [2009](#)). Hewett and Frenk D, stated that there are several roles performed by parents for children with neurodevelopmental disorder (ADHD and Autism), namely: i). the main companion (as aids) where the role of parents in realizing the goals of a development and treatment (therapy for children); ii). As advocates whose role is to understand, maintain, and strive for children's rights to obtain education according to the special characteristics of children; iii). As a resource that plays a role in providing information on various matters / conditions related to children's growth and development as a basis for providing interventions; iv). as a teacher, he becomes the main educator outside the school in providing provisions for daily life behavior; v). as a diagnostician who has the right to choose and decide on the right treatment according to the special characteristics of children's needs, outside of school activities (Hewett & Frenk. D in Al Darmono, [2015](#)).

In accordance with the role of parents as primary educators (as teachers) who are responsible for the ongoing learning process outside of school, they need guidance (knowledge) in terms of handling children. Handling in the form of writing therapy (training) for children with neurodevelopmental disorder (ADHD and Autism) in attention deficit disorders during a pandemic also requires a separate system with the aim that

children continue to receive treatment and therapy (training), maintain health or minimize contamination with various diseases, and make it easier for parents to monitor children's development. With that being said, writing therapy needs to be arranged in a module or guide to facilitate its implementation, in line with the definition of the module proposed by Sukiman, namely a unit of learning package material that contains certain topics in accordance with the goals to be achieved (Sukiman, [2011](#)). This is done in order to make it easy for someone to read or learn independently (Prastowo, [2012](#)). The therapy module is a series of teaching units (therapy) which are arranged systematically for therapeutic purposes. Its function is to serve as a learning material for therapy that can be used in student therapy activities.

By paying attention to several considerations including: a). the need to provide a stimulus to optimize the ability of the hand sensory motor system which is expected to have a positive effect on the child's executive function; b). the pandemic situation which limits space for movement so that learning is prioritized at home; and c). an effort to provide guidance for parents so they can be actively involved in stimulating and monitoring the development of children with neurodevelopmental disorder. Several of these reasons gave rise to the urge to create a therapy guide (module), in this case writing therapy, which aims to be done independently with parental supervision at home. In order to make a therapy module that meets the standards of both validity and reliability, this study aims to validate the writing therapy module for children with neurodevelopmental disorder (ADHD & Autism).

Method

This research aims to test the validity of the "TM3" writing therapy module which the author compiled by collecting data using semi-online survey techniques for two stages: content validation test carried out by experts, empirical validity test by parents, followed by a rearrangement of the therapy module after the results of content validation and empirical validity test.

Participants

Participants in this study were divided into two, namely: expert judgment for content validation consisting of 5 Clinical Psychologists and 5 Occupational Therapists with a minimum period of work equal to or more than (>) 1 year, accustomed to handling cases of children with neurodevelopmental disorder (ADHD & Autism). The second participant for the empirical validation test were 42 parents of children with ADHD and Autism. The participant description data are: 40 people are at the same age / less than 50 years old and 2 people are more than 50 years old, have ADHD and Autism children aged between 8 – 12 years and diagnosed with ADHD and Autism. The grouping of parents based on the

condition of the child is: 14 parents have children with ADHD and 28 parents have children with autism. Based on the school / therapy place: there are 23 people from the therapy center, 11 people from special schools, 4 people from elementary / inclusive schools, and 4 people from the hospital. Data from the test results column (IQ) is known that 24 people did not fill out (not yet tested), 12 people with IQ test results <90, 5 people with IQ test results ranging from 90-110, and 1 person with IQ test results > 110. For data based on time of therapy, it is known that there are 10 people with therapy time of less than 1 year, 15 people with therapy time between 1-3 years, 12 people with therapy time between 3-7 years, and 5 people with therapy time of more than 7 years.

Procedure

This research begins with research preparation, namely: preliminary study through literature study, the second step is the module arrangement, the third step is content validation by expert judgment, namely which consisted of 4 clinical psychologists on duty at the local government's ADHD and Autism treatment therapy center and 1 clinical psychologist serving in a government-owned General Hospital with the following tenures: 3 psychologists have a tenure of > 5 years and 2 psychologists have a tenure of 1-3 years. Then a readability test was carried out on the module by the five expert therapists (Occupational Therapists) where 3 therapists worked at the ADHD and Autism child therapy service center and 2 therapists worked at the Regional General Hospital with a working period: 3 therapists had a working period of > 5 years, and 2 therapists have a working period of between 1-3 years. Furthermore, the fourth step is licensing arrangements are carried out to obtain research permits by the UGM Psychological Ethics Commission with letter number 1579/UN1/FPSi.1.3/SD/PT.01.04/2021, the fifth step is empirical validation by conducting module trials through an online surveys to 42 participants to assess the "TM3" writing therapy module after the content validity test was carried out by expert judgment.

Empirical validation and data collection were given to participants through purposive sampling method, a method of determining samples with certain criteria / conditions (Sugiyono, [2010](#)), the specific criteria for participants are: parents who have children aged 8 - 12 years who are diagnosed with ADHD and/Autism as proven by a psychological certificate from a psychologist, has been actively doing therapy either in a hospital or other therapy places, the age of the parents is not more than of (>) 50 years, and willing to be a participant in the study through the willingness to sign an informed consent before the study. Data collection was carried out in a semi-online survey using a google form where informed consent, identity pages, therapy modules and implementation instructions were presented in the form of audio visuals and text books. The sixth step is the preparation of the module after the content and empirical validation has been carried out so that the module is ready.

Research Instruments

Writing Therapy Module "TM3"

The selection of the writing therapy module "TM3" in the research was to test the validation of the module before it was used by parents, the Second is preparation of this module has been adapted to the needs of ADHD and Autistic children to train improve the child's ability to concentrate attention. The writing therapy module "TM3" is structured using Lerner's theory (in Abdurrahman, [2003](#)) considering the factors that affect a child's ability to write (by eliminating the dominant hand use factor) and combines material according to Prasetyono ([2018](#)) taking into account five norms (aspects) namely: letter zone, letter size, writing direction, general form of letters, and cursive writing. This "TM3" therapy module uses four letters, namely "t", "i", "o", and "g" by including three waveform lines, spirals, and sharp mountain-shaped strokes as practice, and uses one sentence structure placed at the end of the therapy module draft session as a final assessment of the therapy module draft.

Based on Russell's opinion (in Ahmad et al., [2011](#)) that there are several things that must be done in making the module in order to have good content validation, namely: clarity in determining the purpose of the module, the modules are arranged sequentially following the suitability of the required instrument, involving experts judgment in their field in providing an assessment, determining the validity and reliability of the module before use, The time allocated for individuals to complete the survey is sufficient, and an increase in attitude after using the module. The writing therapy module or "TM3" is guided by the theory proposed by Lerner (in Abdurrahman, [2003](#)) and Prasetyono ([2018](#)), based on the results of research by Goldstein and Schwebach (2004). The purpose of this module is to make it easier for parents to treat children with ADHD and Autism with specific attention disorders. The preparation of the "TM3" module is carried out sequentially starting from a training session using 3 form models, a core session / therapy session using 4 letter forms, and an assessment session through writing predetermined sentences.

The writing therapy module "TM3" is equipped with 4 devices, namely: a). instructions for implementing the module, b). workbook attachment "Workbook", c). Audiovisual implementation of therapy modules and d). instructions for implementing therapy. These four tools were given in the content validation test, whereas in the empirical validity test only three tools were given, namely: the "Workbook" workbook attachment, audiovisual implementation of the therapy module, and instructions for implementing the therapy (see Table 1).

Table 1.*Material for The Writing Therapy "TM3"*

Session	Activity	Description (for)
Session I Psychoeducation	Preparation Psychoeducation closing	Only Psychologists & Occupational therapists
Session II Implementation	Day 1. Practice making wave lines Day 2. Practice making spiral lines Day 3. Practice making a mountain shape with three sharp peaks Day 4. Practice making/writing the letter "t" Day 5. Practice making/writing the letter "i" Day 6. Practice making/writing the letter "o" Day 7. Practice making/writing the letter "g" Day 8. Practice making/writing predetermined sentences	Psychologist, Occupational therapist & parent
Session III assessment and evaluation	Collecting the results of the "workbook practice book" implementation	Parent

*Material Feasibility Measurement Scale**Module feasibility test instrument and module delivery feasibility test instrument*

The instrument for content validation given to expert judgment is in the form of a module feasibility test that assesses three (3) aspects of Session I Psychoeducation, Session II Implementation and Session III Assessment and Evaluation with 13 statements related to the suitability of the content of the module (and its supporting devices) to the research objectives, while for expert therapists in the form of a feasibility test instrument for delivering modules using four (4) aspects, namely: module effectiveness, ease of use, format, and benefits which are described into 12 statements. Each instrument is given an additional rating consisting of 7 statements. Both instruments use five rating options, namely: value (1) if the statement item does not represent the purpose (STMT) of the module; value (2) if the statement item does not represent the purpose (TMT) of the module; value (3) if the statement item adequately represents the purpose (CMT) of the module; value (4) if the statement item represents the purpose (MT) of the module; value (5) if the item statement is very representative of the objectives (SMT) of the module.

Feasibility Test Instrument Practicing Module

Instruments for empirical validation were given to parents of children with ADHD & Autism, which consisted of 9 statement items regarding the feasibility of the module to be practiced / used. The instrument uses five rating options, namely: value (1) if the statement item does not represent the purpose (STMT) of the module; value (2) if the statement item does not represent the purpose (TMT) of the module; value (3) if the statement item adequately represents the purpose (CMT) of the module; value (4) if the statement item represents the purpose (MT) of the module; value (5) if the item statement is very representative of the objectives (SMT) of the module.

Research Data Analysis

The content validity test on the writing therapy module was carried out through a material test by an expert by through asking for an assessment from ten raters consisting of five (5) clinical psychologists and five (5) expert therapists. The results of the assessment were then analyzed with Aiken's V to get the coefficient of module validity. After the content validation was carried out, the validity and reliability tests were carried out on the survey results given to participants to find out that the empirical validation was carried out through the SPSS 24.0 for windows statistical program.

Results

Content Validation

Module Feasibility Test with module objectives & Module Readability

The results of the assessment on the module feasibility test after an analysis using Aikens'V obtained a value of 0.827 ($v > 0.50$), indicating that the writing therapy module has good content validation (see Table 2). The additional assessment has a value of 0.729 including valid.

Table 2.
Module Feasibility Test Analysis

Rater Rating		Aiken's V	information
Module (Module Feasibility Test)	Session I	0.820	
	Session II	0.850	0.827 Valid
	Session III	0.813	
Additional assessment			0.729 Valid

The results of the assessments given by the five therapists after the validation analysis of Aiken's V obtained a value of 0.833 ($v > 0.5$) indicated that the readability results of the

module content had good validity and were declared valid (see table 2). Likewise for an additional assessment of the readability of the module, having a validity value of 0.771 can be categorized as valid. Additional assessments related to language, time allocation for implementation, material in modules, audio visual displays, workbooks, implementation and editorial procedures with statistical (quantitative) and qualitative analysis results (on discussion of qualitative analysis results).

Tabel 3.
Module Readability Test Analysis

Rater Rating		Aiken's V	information
Module Submission (Readability)	Module effectiveness	0.75	0.833 Valid
	Ease of use	0.75	
	Format	0.93	
	Benefits	0.90	
Additional assessment		0.771	Valid

Empirical Validation

The results of the trial of practicing the module

Data analysis was carried out with the Pearson Product Moment (r_{xy}) correlation test by comparing the value of the correlation coefficient of the item scores compared to the correlation coefficient value in the r-table. The results obtained from the trial of practicing the module through 9 statement items have a validity value ranging from 0.770 to 0.866 with an explanation of 4 questions entering the high validity criteria and 5 questions entering the very high validity criteria. Furthermore, the reliability test was carried out to obtain a reliability value (r_{11}) of 0.787 which was included in the high category.

Table 4.
Participants' Understanding of the Module

Participant	Understand module	Don't understand module
Parents ADHD	10 (23,81%)	4 (9,52%)
Autism	21 (50 %)	7 (16,66%)

The results of the analysis of understanding data on the module and instructions for implementing writing therapy "TM3" for participants who have children with ADHD and AUTIS conditions obtained only 0.26% of participants who do not understand the following explanation: 4 of 14 participants are parents who have children with ADHD or have 0.28% who do not understand the module. In the participants of parents who have children with

autism conditions, there are 7 out of 28 people or 0.25% who do not understand the module (see table 4).

The results of the analysis based on the percentage of known questions in question no. 2 and no. 3 which were considered quite difficult questions for 40% of participants, namely are questions about the ease of practicing the module and questions about the ease of conditioning children for the implementation of "TM3" module therapy. Regarding questions number 2 and 3, there are similarities in the answers from the results of the descriptive analysis related to obstacles, both related to conditions encountered in children and parents as well as obstacles seen from the therapy module.

Results of Qualitative Data Analysis

The results of the analysis based on suggestions from clinical psychologists in the additional assessment of the module feasibility test are grouped into four validity values (content validity for the suitability of the modul with the modul objectives): i). The validity value is 0.65 for the material in the module, meaning the module material is quite good but needs to be packaged in an easier language and the module material is more effective for mild cases; ii). The value of validity is 0.7 at the point of language and editorial, meaning: it is necessary to simplify the language so that it is not too long, with editorials that need to be simplified; iii). the validity value is 0.75 at the point of time allocation for implementation, audio-visual display, and implementation procedures, meaning: 60 minutes for time allocation / adjusted to the concentration range, taking into account the readiness of the child (client) and creating a rapport to gain client trust, the audio-visual display is quite good but it needs to be reproduced and changed the intonation to reduce the monotony, related to the implementation procedure the experts consider it good iv). the validity value of 0.8 at the point of the workbook where the expert thinks the workbook to be clear and good.

Additional assessments by Occupational Therapists for module readability in the module delivery test are grouped into three (content validity for module readability): i). the validity value of 0.75 is related to language, material in the module, audio-visual display, workbook and implementation procedures, meaning: using Indonesian with shorter instructions, it is also necessary to have instructions to condition children before therapy, to consider pre-writing stage (scribbles, circles, lines, etc.), on the audio visual display is very helpful for parents, only needs to be made clearer, related to workbooks need to be made more interesting, as for the implementation procedure for the instructions using concise and easy-to-understand language; ii). The validity value of 0.8 is related to editorial, meaning: it is necessary to include and add a bibliography regarding the stages of children's abilities in pre-writing skills; iii). The validity value of 0.85 is related to the time allocation for implementation, meaning: the time allocation is sufficient by taking into account the level of hyperactivity and attention ability of the child.

Descriptively, 74% (31 people) understand and 26% (11 people) do not understand the "TM3" writing therapy module. If you look at the percentage of each question, there are 2 (two) questions that are considered quite difficult for 40% of participants, namely question number 2 about the ease of practicing the module and question number 3 about the ease of conditioning children for the implementation of "TM3" module therapy. Regarding questions number 2 and 3, there are similarities in the answers from the results of the descriptive analysis related to obstacles, both related to conditions encountered in children and parents as well as obstacles seen from the therapy module. Obstacles encountered from the parents and children's side include difficulty in concentrating, mood instability caused by the appearance/form of fine and very tight writing, different cases or developmental disorders experienced by children, and busyness / lack of time for parents to accompany children. The obstacles encountered in the module were the lack of clarity on when the therapy program ended (meeting stages), the long implementation time, the need for simple language and more detailed explanations for parents with limited general education levels, and the large number of repetitions in the module.

Table 5.
Analysis of Participants' Answer Categories

Answer Category	Number of participants
The benefits and convenience of the module	15 (35,71%)
Hope (Module development)	17 (40,47%)
Constraints (conditions found in children & parents)	5 (11,9%)
Constraints (seen from the therapy module)	5 (11,9%)

Analysis based on answers from participants in the research question form can be grouped into four things, namely: i). The benefits and convenience of the module (Clarity: Language & Procedure) proposed by 15 (35.71%) participants include: The module is very helpful for parents, and easy to practice; Spoken language and explanation ("Audio Visual display") in the module makes it clearer; and easy to understand the implementation process; ii). Expectations (Module Development) expressed by 17 (40.47%) participants include: Needing a way (guide) to make it easier to interact & talk; It is necessary not to continue so that it will develop in the future & be realized as a reference; So that every child with special needs is introduced to the writing therapy module; It is easier to understand learning in writing; Need more varied ways and methods to train children; Modules are packaged in soft files, virtual classes and home visits are needed; iii). Constraints (conditions found in children & parents) stated by 5 (11.9%) participants include: Difficult to practice for children who have trouble maintaining concentrating, fine writing and meetings greatly disturb the mood for children with autism, cases of different children; Parents need a companion to practice the module, because of the busyness factor; iv). Constraints (Judging from the Therapy Module) stated by 5 (11.9%) participants include: Clarity of time for meeting stages

(end of program); Need more detail, and continue to be developed; Need simple language for parents with limited general education (less); The time to execute is long; number of repetitions (see Table.5).

Discussion

This study aims to validate the "TM3" writing therapy module before being applied by parents to children with the aim of being able to improve children's ability to focus attention. Data collection was carried out using semi-online survey technique and it was concluded that: The results of the content validation analysis of the module conducted by clinical psychologists showed that the content validation of the "TM3" module was 0.827 with the value of the readability test result carried out by the therapist 0.833 in the valid category because it had a value greater than 0.5 ($v > 0.5$). So it can be concluded that the content validation in the "TM3" writing therapy module is valid, which means it can be used for further research.

The results of empirical validation through a trial of practicing the module given to parents, obtained a good validity value moving between 0.770 to 0.866 with an explanation of 4 questions included in the high validity criteria and 5 questions entering the very high validity criteria. Furthermore, the reliability test was carried out and the reliability value of Cronbach's Alpha (r_{11}) 0.787 was included in the high category. The hypothesis in this study is accepted, namely the "TM3" writing therapy module is valid both empirically and content.

The research findings related to additional assessments on content validation stated that overall the "TM3" therapy module was quite good, clear and precise with a validity value of 0.729 (assessment by psychologist) and 0.771 (assessment by therapist) in the valid category. The implementation procedure is also stated to be good, coherent and has sufficient time allocation (60 minutes/session). There are several suggestions that need to be considered in the language therapy module which are: it should be presented using Indonesian as a whole with consideration of its wider use; need to consider the child's ability in the pre-writing skill stage; and views that say this therapy module is effective for cases with mild categories (the child is quite able to understand the instructions given and the child's motor coordination is quite well developed when compared to the medium and severe categories). The effectiveness of this module will be achieved if several conditions are met, namely: children's age range between 8-12 years, elementary school / inclusive school children's education, have been or are still active in therapy, IQ test results are in the range of 90-110 (average intelligence) based on a psychological certificate from a psychologist.

Findings about the obstacles faced by parents who still need assistance to practice the module, especially if the condition of the parents is busy and lacks time to accompany the child. This condition is not in accordance with the role of parents as the main companion

and the role of parents as teachers outside the school environment (Hewett & Frenk. D in Al Darmono, [2015](#); McNamee & Patton, [2018](#)) which demands full responsibility and role from parents. To complete the role that is the responsibility of parents, monitoring is needed so that the therapy process can run optimally, it can also be given training to parents before practicing the therapy module directly on children.

The sentences/languages in the instructions for the implementation instructions are arranged in detail step by step implementation which is adjusted to the cognitive process theory proposed by Rich Mayer (in Santrock, [2012](#)), namely: a). understanding the sound units in words which includes understanding phonemes; b). re-coding of words which includes converting written words into sound; and c). access the meaning of words by imagining the representation of a word and the theory from Ahn, et al. ([2004](#)) regarding the 4 stages of the sensory process, namely: a). "Introduction" in the form of awareness of the existence of sensations, this stage is seen in the third step through instructions to write letters that are delivered in detail aimed at attracting children's attention so that children can understand and imagine the shapes and letters conveyed; second stage b). "Orientation" is an attempt to provide a sensation, the third stage c). "Interpretation" which means interpreting or understanding the meaning of the information that comes in these two stages is seen when the child follows the instructions in the third step by writing on the workbook that has been prepared; fourth stage d). "Organization" is the use of information to produce a response seen in the child's willingness and ability to write and complete tasks on the second sheet (exercise sheet) according to the information in the instructions. The expected response in the form of a motor response is the result of writing in accordance with the instructions.

The concept of using language that seems repetitive in this module is adapted to the cognitive development of a person proposed by Piaget (Santrock, [2012](#)) where after the sensory motor stage, the second and third stages are the preoperational and concrete operational stages. This is done in order to optimize these stages by training children to think logically systematic, structured through the stages of implementation instructions in the module which are presented in a coherent and systematic manner. In addition, with clear language pronunciation accompanied by sound transfer through the three cognitive processes involved in writing, it will be able to improve language and cognitive abilities so that children's writing skills increase (Rich Mayer in Santrock, [2012](#)).

Constraints experienced by children with ADHD and Autism in the form of difficulty in concentrating (attention) are clearly illustrated in the DSM-V on Neurodevelopmental Disorder (American Psychiatric Association, [2013](#)) in children's executive functions. The executive function refers to a series of cognitive regulatory processes, including working memory, inhibitory control and cognitive flexibility so that thoughts and behavior can be organized (Hughes & Graham, [2002](#); Kendall-Taylor et al., [2010](#)).

Attention is related to brain function. The anterior part in the frontal lobe is in charge of processing attention, while the posterior part is in the parietal lobe which keeps the

attention process under control. Attention also involves nerve activity in the sensory cortex, especially visual and motor which results in such as clumsiness and disturbances of eye movement (Fatemi et. al in Kallat, [2013](#)). So according to the conditions given by the participants, it is related to the condition of children who cannot focus and experience mood disorders because the written material is presented in fine writing (upright cursive). The form of cursive upright writing becomes the material in the presentation of the "TM3" writing therapy module because it has benefits for training children's social skills, the ability to speak, and the ability to interact socially (Prasetyono, [2018](#)). The form of writing that is presented continuously is an exercise in children's sensori-motor where at this stage it is necessary to optimally stimulate all sensory systems before entering the perceptual motor and cognitive stages (Williams & Shellenberger in Kurniawati et al., [2018](#)).

In the writing therapy module "TM3" it uses Lerner's theoretical basis (in Abdurrahman, [2003](#)) regarding the factors that affect a child's ability to write (by eliminating the dominant hand use factor) and combines the material according to Prasetyono ([2018](#)) by paying attention to five norms (aspects), namely: letter zone, letter size, writing direction, general form of letters, and continuous letter writing. The writing material presented by Prasetyono is presented based on Lerner's theory regarding the factors that affect children's ability to write. These are: training children to make scribbles / lines as an effort to develop children's motor skills, providing examples of letters that are pronounced (pronounce) and how to write them as an effort to improve children's perception of writing and children's memory, rewriting what has been heard and seen (in the workbook). A an effort to improve the ability to transfer and organize visual to motor functions (cross modal) and the ability to understand instructions, repetition will be carried out at each stage of the therapy process which is different on the task targets given for each session.

This research is not free from limitations which include: the trials conducted in this study were only at the survey stage given to parents and not yet at the implementation practice stage, the number of participants with an unbalanced percentage between parents who have children with ADHD conditions and parents who have children with In autistic conditions, presenting the module in the form of a simple audio-visual display with a standard voice display and the delivery of language that seems monotonous, the module display should be in audio-visual form with different color settings so that it gives the impression of a different spirit and situation. In addition, there is no clear time limit regarding the end of the therapy program in the module, which makes parents feel confused about ending the program.

Conclusion

Based on the research conducted, it can be concluded that the "TM3" writing therapy module has good content and empirical validity. This module needs to be tested to see its

effectiveness in improving writing skills, before it can be used as a program for writing therapy for children diagnosed with ADHD and Autism. Most of the parents as participants in this study felt helped by the existence of this module which could be used to train children. Parents hope that this module can be given to every child who has the same condition (ADHD & Autism), with the presentation of more attractive module in the form of text books and audio-visuals, as well as the need for clear breaks between sessions and the deadline for the end of the therapy program.

Recommendation

There are Several considerations that researchers can consider suggest for future studies: 1). Regarding the number of participants for the next researcher, data with a balanced number of participants should be taken, 2). For further researchers, the "TM3" writing therapy module can be applied by parents to children while monitoring is still carried out as part of the module's effectiveness test to determine understanding and practice directly so that the benefits (influence) on children's abilities can be seen by taking into account the child's age, IQ test results and parental involvement; 3). For the application of the writing therapy module "TM3", it is necessary to clarify the limit for the end of the therapy process, namely 8 sessions (each session is 1 day and can be repeated until satisfactory results are maximum 3 days) for 1 month; 4). To anticipate the less than optimal results in efforts to increase the concentration of attention in children, it is necessary to test intelligence first by selecting the intelligence of children who are included in the average category (90 - 110) who can be given writing therapy according to the "TM3" therapy module; 5). By looking at the enthusiasm and expectations of parents so that children who have the same condition also get writing therapy, it is recommended for further researchers to be able to develop modules that are more appropriate to use for children who have intelligence less than 90 (< IQ.90) and are adapted to the abilities of the stages of motor development child.

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Conflict of Interest

No potential conflict of interest was reported by the authors

Orcid ID

Lisa Nur Farida <https://orcid.org/0009-0001-3381-3257>

Ira Paramastri <https://orcid.org/0000-0002-9005-1025>

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