

Original Article

Descriptive study on the perception of parents about the use of the Goal Attainment Scaling scale as a measure in the achievement of occupational therapy goals based on sensory integration

Estudio descriptivo sobre la percepción de los padres acerca del uso de la escala Goal Attainment Scaling como medida en el logro de metas de terapia ocupacional basada en integración sensorial

Descriptive study on the perception of parents about the use of the Goal Attainment Scaling scale as a measure in the achievement of occupational therapy goals based on sensory integration

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Abstract

Introduction: It is essential to identify the meaningful goals that parents expect from an occupational therapy process based on Sensory Integration, which favors the therapeutic relationship and the connection with the care plan. **Objective:** Understanding the perception of parents regarding the use of the Goal Attainment Scaling (GAS) as a measure for achieving significant goals in care. **Method:** Study with a qualitative approach with an interpretative perspective that employs case studies through qualitative techniques such as participant observation, semi-structured interviews, and questionnaires. **Results:** Parents affirmed that the scale helps them to measure the level of achievement of goals. At the same time, it also allows them to evaluate changes across the time of treatment. It is also perceptible, which is useful for identifying functional areas of attention. In addition, the scale

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and professional recommendations were articulated with the qualitative criteria of GAS and favor their understanding of children's achievements in short-term goals.

Conclusion: The use of GAS has been a valuable methodology to determine the achievement of meaningful goals of children served according to the perception of parents because it measures the achievement of goals, structures the levels of achievement, visualizes the results in relation with the goals and help in making decisions for the continuity or completion of care.

Keywords: Perception, Family, Research/Methods, Occupational Therapy.

Resumen

Introducción: Es esencial identificar las metas significativas que los padres de familia esperan de un proceso de terapia ocupacional basada en Integración Sensorial, ello favorece la relación terapéutica y la conexión con el plan de atención.

Objetivos: Comprender la percepción de los padres de familia sobre el uso de la escala Goal Attainment Scaling (GAS) como medida para el logro de metas significativas en la atención. **Método:** Estudio con enfoque cualitativo con perspectiva interpretativa que emplea el estudio de casos a través de técnicas cualitativas como observación participante, entrevista semiestructurada, y cuestionario. **Resultados:** Se encontró que los padres de familia indican que la escala les ayuda a medir el nivel de logro de las metas. A la vez, manifestaron que les permite evaluar los cambios luego del tiempo de atención. También percibieron, que es útil para identificar las áreas funcionales de atención. Y, que la escala y las recomendaciones profesionales se articulaban con los criterios cualitativos de la GAS y favorecen su comprensión de los alcances de los niños en las metas a corto plazo. **Conclusión:** El uso de la escala GAS ha sido una metodología valiosa para valorar el logro de metas significativas de los niños atendidos de acuerdo a la percepción de los padres de familia porque mide el logro de metas, estructura los niveles de logro, visibiliza los resultados en relación con las metas y ayuda a la toma de decisiones para la continuidad o finalización de la atención.

Palabras-clave: Percepción, Familia, Investigación/Métodos, Terapia Ocupacional.

Abstract

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Conclusion: The use of GAS has been a valuable methodology to determine the

achievement of meaningful goals of children served according to the perception of parents because it measures the achievement of goals, structures the levels of achievement, visualizes the results in relation with the goals and help in making decisions for the continuity or completion of care.

Keywords: Perception, Family, Research/Methods, Occupational Therapy.

Introduction

Sensory processing and integration (SI) is fundamental to children's development and daily functioning. It refers to the process by which the Central Nervous System (CNS) organizes and interprets sensory information from the environment, including visual, auditory, gustatory, olfactory, tactile, vestibular, proprioceptive, and interoceptive stimuli, to produce adaptive and functional responses (Ayres, 2008; Lane, 2014; Grist et al., 2023). However, some children may experience challenges in sensory processing and see their developmental potential limited (Dunn, 2007; Schaaf et al., 2012a).

Sensory integration (SI), as a therapeutic approach, has been used to address sensory challenges in children. The Sensory Integration theory, developed by Ayres, argues that problems in sensory processing can affect their ability to participate in everyday activities (Ayres, 2008; Miller et al., 2007). Occupational therapy (OT) based on sensory integration seeks to improve the child's ability to process, organize, and respond to sensory information more efficiently and effectively (Parham et al., 2007).

In this intervention approach, family participation at different stages of the process is an essential modality (Mulligan, 2018). In the treatment and follow-up stages, different strategies are implemented, in which the occupational therapist together with the parents build a map of sensory processing needs that could interfere with their children's occupational participation and also make a progress route from the beginning to the end using different tools to measure progress (Watling & Hauer, 2015). However, in our country, the use of scales to measure achievements, goals, or objectives is uncommon, leading to families not having an understanding of the final goals of the treatment, and to be confused when relating the modalities of the SI approach to the positive impact on the participation in family, school, behavioral, and emotional life occupations during the process.

Goal Attainment Scaling (GAS) is a tool used to assess the achievement of meaningful goals in the therapeutic intervention process. It was developed by Thomas Kiresuk and Robert Sherman in the 1960s as an alternative measure to traditional assessment scales, which often did not adequately reflect individual achievements and specific goals of each client (Kiresuk & Sherman, 1968). It is based on a client-centered approach and allows for the establishment of individualized therapeutic goals that are relevant and meaningful to each individual using both a quantitative and qualitative rating to assess the degree of achievement of each established goal (Kagan et al., 2017; Krasny-Pacini et al., 2017). It is found to have been widely used as a measurement tool in rehabilitation (Teplicky et al., 2005) and has applicability in the care of older adults (Parra-Esquivel, 2011).

In the quantitative rating of the GAS, a numerical scale is used that generally ranges from -2 to +2, with each number representing a specific level of achievement in relation to the stated goal. For example, a score of -2 indicates that the person is very far from achieving the goal,

while a score of +2 indicates that the person has fully achieved the goal, with intermediate scores reflecting different levels of progress towards the goal (Turner-Stokes, 2009).

The combination of quantitative and qualitative rating in the GAS provides a more complete and accurate assessment of the achievement of individualized therapeutic goals. It allows capturing both measurable and observable aspects as well as those that are more subjective in the client's experience (Carswell et al., 2004; Pierce et al., 2017; Ruble et al., 2010). This provides greater sensitivity and specificity to the evaluation of therapeutic results and facilitates communication between the occupational therapist, the client (understood as a person, group and population) and other members of the therapeutic team (Huang & Bundy, 2015; McLaren & Rodger, 2003; Wressle et al., 2013).

The GAS was designed as a sensitive method for measuring results after a period of intervention and is used to know the progress of the treatment in areas that are relevant to the individuals and their families, being a way to detect changes that may occur in the face of professional action (McLaren & Rodger, 2003). It allows determining the level of achievement of goals in occupational therapy treatment based on Sensory Integration in a simple way, without technical language, taking into account the therapeutic progress (Mailloux et al., 2007; Schaaf & Mailloux, 2015a). Although there is research that supports the usefulness of the GAS in pediatric occupational therapy (Bailey Junior & Stashinko, 2012), in Colombia there have been no studies developed regarding its use or on the perspective of families when using this achievement measure. In this sense, analyzing the parents' view of the GAS in our context can provide valuable information regarding its reception, understanding and implementation in the treatment and follow-up in the care of an OT.

Therefore, the objective of this interpretive study is to understand the perception of parents regarding the use of the Goal Attainment Scaling (GAS) scale as a measure for achieving significant goals in the care of five children aged 3 to 6 years linked to Club de Infancia (Children's Club) in Bogotá-Colombia, using SI-based OT.

Club de Infancia (Children's Club) in Bogotá-Colombia

A private center that offers pediatric OT services based on Sensory Integration. In the context of this interpretive study, Club de Infancia (Children's Club) was selected as the institution in which the research would be carried out based on its experience and commitment to evidence-based SI occupational therapy.

For Club de Infancia (Children's Club), the study is relevant to evaluate the achievement of goals in children who receive SI-based OT, to understand the perception of parents regarding the GAS to measure the levels of achievement of significant treatment goals of their children's therapy and to contribute knowledge to the field of pediatric occupational therapy in Colombia.

Method

The methodological design of the research is based on an interpretive qualitative approach where the information that is privileged is given in the understanding of the human world of which the individuals who participate in the program are part, as well as their occupation, and their social and cultural context.

Seeking the reliability and partiality of the research, a triangulation was carried out to make the qualitative practices such as participant observation, semi-structured interview,

questionnaire on the use of the GAS scale, and analysis of documents more dynamic. Participant observation privileges the interaction between researchers and informants in their context. It is understood as “[...] the systematic description of events, behaviors and artifacts in the social setting chosen to be studied” (Piñeiro Aguiar, 2015, p. 82). For participant observation, field notes were taken related to clarity between the professional relationship of OT and the intervention, and the attitude of parents upon starting OT.

The semi-structured interview is based on conversation, with structure and purpose that involves two or more people. In addition, it develops a questioning method that can be step-by-step and focuses on listening. Interview participants tend to be people with a basic knowledge of each other. The interview becomes a spoken text that will be analyzed by others (Packer, 2013).

The questionnaire is a document that have questions aiming to obtain primary and complementary information that helps to collect data. In this case, the questionnaire was useful to know the parents' opinions on goals, methodology, results and suggestions on the use of the GAS scale during the cycle of twenty-five (25) occupational therapy (OT) sessions with children.

The questionnaire was subjected to an expert validation process by consulting a professional with experience in research topics, using the GAS scale methodology for 6 years; and with 20 years of experience in caring for children and their families, occupational performance of children and youth, and with doctoral studies. The objective of this expert validation was to determine the apparent validity of the survey for parents; this consultation was carried out through a validation guide. The expert evaluated the questionnaire based on her experience and knowledge on the subject using a guide of questions that consisted of two categories. The first category corresponds to the identification of the professional; and the second to the table of questions, answers and comments in relation to the clarity, coherence and relevance of the different sections and questions of the survey. The comments and suggestions provided were included to improve and perfect the survey for parents and were related to giving greater clarity to the questions, seeking to make them precise and to inquire about what was intended to be measured.

Document analysis refers to “[...] material that can be analyzed in socio-educational research” (Capellacci & Juarros, 2014, p. 309). This material or document has to do with a variety of written and symbolic texts, or other material that the researcher finds available and that is part of his or her inquiry process. They can be stories, or documents related to lived experiences, records, transcripts, among others. In the case of this research, it was decided to carry out this qualitative practice through the examination and study of the participant observation, the semi-structured interview and the questionnaire “Use of the Goal Attainment Scaling (GAS) scale” carried out with parents.

The qualitative practices were implemented as follows. Initially, a face-to-face meeting was held with the children's mothers and fathers, in which notes were taken for the participant observation, and the semi-structured interview format was followed (Table 1), which at a later time was complemented with the exercise of rating goals in order of importance using the numerical range from 1 (one) to 5 (five), where one (1) is the most important goal and five (5), the least important. A document was used with the list of possible goals for the treatment of their children. The parents chose the five that had been considered most important for their impact on the functionality of their children and that within the framework of this study were called significant goals (Table 2).

Table 1. Semi-structured interview of the Goal Attainment Scaling (GAS) scale.

Semi-Structured Interview Questions:	
1.	Describe to me what is going well or not going so well in your child's daily life.
2.	After showing the child's assessment, relate the assessment results to the occupational areas. "I noticed that (child's name) tends to have a hard time _____ (e.g. falling asleep/sleeping) this could be due to _____ (sensory processing findings, e.g. sensory hyperreactivity) explain."
3.	Looking at these results, how concerned are you?
4.	Imagine that we are sitting in this same place talking in approximately 3 months. What changes would you like to see in your child in that time?
5.	Now read carefully the following list of goals and rate on a scale from 1 to 5 their level of importance (1 being Very important and 5 being Least important).

Source: Taken and modified from Mailloux et al. (2007).

Table 2. Example of a hierarchy of the level of importance of significant goals.

Area: Sleep and Rest	
Long-term goal	He sleeps in weighted pajamas to provide sustained pressure, alone in his room and in his bed.
Short-term goal	He sleeps in weighted pajamas to apply sustained pressure; in his room, alone in his bed and accompanied by his parents until he falls asleep.
Rate the level of importance of the goal on a scale from 1 to 5 (1 very important and 5 less important): 1	
Area: Activities of Daily Living (ADL)	
Long-term goal	Eating a new fruit, reducing the overreaction (gagging and crying) to its texture and taste.
Short-term goal	Eating a small piece of new fruit, reducing the overreaction (gagging and crying) to its texture and taste.
Rate the level of importance of the goal on a scale from 1 to 5 (1 very important and 5 less important): 2	
Area: Education	
Long-term goal	Stays alert and engaged in class, reducing overreactions to the sounds in the environment.
Short-term goal	He stays alert and connected for short periods of time in his class, reducing exaggerated reactions to the sounds in the environment.
Rate the level of importance of the goal on a scale from 1 to 5 (1 very important and 5 less important): 3	
Long-term goal	Sits using muscle strength to keep his back straight and his head aligned while doing pencil and paper activities.
Short-term goal	Sits using muscle strength to keep his back straight and his head aligned while doing pencil and paper activities and double leaning on hand/arm.
Rate the level of importance of the goal on a scale from 1 to 5 (1 very important and 5 less important): 4	
Long-term goal	Self-initiates, maintains, and ends a school activity for 15 minutes while filtering out what is relevant from the environment.
Short-term goal	Self-initiates, maintains, and ends a school activity for 8 minutes while filtering out what is relevant from the environment.
Rate the level of importance of the goal on a scale from 1 to 5 (1 very important and 5 less important): 5	

Then, as part of the GAS scale methodology, scales were developed for each of the children with the significant treatment goals and with their quantitative and qualitative criteria aimed at progress in each of the occupational areas, and which at the end of the 25 intervention/care sessions, were rated by their parents within the ranges of +2 to -2 (Table 3).

Table 3. Example of a GAS scale with the hierarchy of the level of importance for significant goal one (1).

Area: Sleep and rest				
Significant Long-Term Goal: Sleeps alone in his/her bed and room wearing weighted pajamas to provide sustained pressure				
Short-Term Goal: Sleeps in weighted pajamas to provide sustained pressure; in his room, alone in his bed, and with the accompaniment of his parents until he falls asleep.				
-2	-1	0	1	2
Much less than the expected level	Less than the expected level	Expected level	More than the expected level	Much more than the expected level
He sleeps all night in his parents' bed and room.	He sleeps in weighted pajamas to provide sustained pressure, part of the night in his room and part of the night in a spare bed in his parents' room.	He sleeps in weighted pajamas to provide sustained pressure, in his room, alone in his bed and with the accompaniment of his parents until he falls asleep.	Sleeps in weighted pajamas to provide sustained pressure, in his room, alone in his bed and with initial accompaniment of his parents	He sleeps in weighted pajamas to provide sustained pressure, alone in his room and in his bed.
Significant Goal Importance Hierarchy: 1				

Participant observation and the semi-structured interview were conducted in November 2019. After completing the 25 sessions of SI-based OT, parents answered the questionnaire “Use of the Goal Attainment Scaling (GAS) scale” in the period between November and December 2021 (Table 4).

Table 4. “Goal Attainment Scaling” questionnaire and significant goals.

QUESTIONNAIRE: “USE OF THE GOAL ATTAINMENT SCALING (GAS) SCALE”
Name: _____ Age: _____
Relationship with the child: _____
Age of the child: _____ Occupational Therapy Diagnosis: _____
The average time to complete the questionnaire is twenty (20) minutes, which consists of open-ended and closed questions.
Dear Parent,
We thank you for your participation in this research. The purpose of the following questionnaire is to learn about your ideas and suggestions on the use of the GAS scale during the 25-session cycle of Occupational Therapy for your child. The information provided will be used with complete confidentiality.
Date completed: month _____ day _____ year _____

Table 4. Continued...

QUESTIONNAIRE: "USE OF THE GOAL ATTAINMENT SCALING (GAS) SCALE"

The following section will present the implicit objectives of using the GAS scale. Please select one answer per row and indicate with an X within the range of Totally Agree to Totally Disagree if the implicit objectives of using the GAS scale were met.

Objectives of the GAS scale during the intervention of children in the Children's Club (Club de Infancia)	Totally agree	Agree	Indifferent or neutral	Disagree	Totally disagree
The GAS scale was implemented to measure the level of achievement of occupational therapy intervention goals for your child.					
The levels of achievement of goals in intervention were structured taking into account the GAS scale that shows the progress and/or setbacks in your child's performance.					
Therapeutic outcomes related to the goals were generated taking into account the GAS scale.					
The GAS scale was implemented as a basis for determining the continuation or termination of occupational therapy intervention for your child.					
Please answer the following questions:					
Do you think that the initial meeting with the semi-structured interview was a good strategy to establish the areas of intervention in your child's Occupational Therapy and to jointly define the therapeutic goals?					
Was the language used in writing the GAS achievement levels easy to understand?					
Do you think that the sensory diet recommendations were in accordance with the GAS scale?					
What was your level of commitment in the execution of these recommendations?					
Did the use of the GAS scale allow you to know the progress plan for your child's sensory integration occupational therapy intervention/care?					
Did the implementation of the GAS scale allow you to measure changes after the occupational therapy intervention/care?					
Make your suggestions for improving the implementation of the GAS scales at Club de Infancia (Children's club)					

It is worth noting that for the development of the GAS methodology, the 25 sessions of occupational therapy based on SI were carried out by two occupational therapists; the first with studies in Sensory Integration, and the second, is certified in SI with an update in Evaluation Ayres Sensory Integration (EASI) and with Master's studies. The first OT was trained in the GAS scale methodology.

Participants

Five parents of children between three and six years old whose SI evaluations were carried out between May and June 2019 at Club de Infancia (Children's Club) were selected at convenience. These children had to have been diagnosed with some type of integration and/or sensory processing disorder, and their parents agreed that their children would receive an OT intervention/direct care program based on SI.

This study took into account the ethical guidelines regarding scientific, technical and administrative standards for health research in Colombia established in Resolution Number 8430 (Colombia, 1993). Therefore, the information will be guarded and monitored by the researchers and the anonymity of the participants is guaranteed. In addition, the WFOT code of ethics on the actions of occupational therapists in research was taken into account (World Federation of Occupational Therapists, 2020). This work includes the analysis of participant observation, semi-structured interviews and questionnaires, so the handling of the information did not imply physical, physiological, psychological or social risk for the participants. Their informed and voluntary consent was used.

Results

The results include: sociodemographic data of the participants, notes from participant observation, reports from semi-structured interviews, and data from the questionnaire on the use of the GAS scale.

Demographic data of the participants

Table 5 presents the relationship of the parents, age of the parents and children, gender, and diagnosis. It is worth mentioning that the intervention time was 25 sessions for all children.

Table 5. Demographic data of the participants.

Participant	Relationship	Age	Gender of his/her child	Age of the child	Occupational Therapy Diagnosis Based on Sensory Integration
No. 1	Mother	40	Male	4 years 1 month	Sensory regulatory disorder of early childhood, motor disorganization type and Vestibular-based postural disorder
No.2	Mother	36	Male	4 years and 10 months	Sensory modulation disorder Hyperreactive to tactile and hyporeactive to proprioceptive
No. 3	Mother	34	Male	3 years and 1 month	Sensory regulatory disorder of early childhood, motor disorganization type
No.4	Father	38	Male	6 years and 2 months	Somatodispraxia
No. 5	Mother	42	Male	4 years and 3 months	Bilateral integration and sequencing disorder

Regarding the reasons for consultation, it was found that in three of the cases there was a coincidence of the diagnosis of Sensory Processing Disorder, which involves difficulties in the way the brain receives and processes sensory information, which can affect attention and behavior in children (Mangeot et al., 2001).

Children with sensory processing disorders may show difficulties in planning, organizing, and interacting during play (Imperatore Blanche, 2005), as well as failures to concentrate, follow instructions, and actively participate in the educational environment (Serna et al., 2017). In addition, they have challenges enjoying leisure activities, such as going to the park, riding a bike, or participating in sports; challenges in organizing and sequencing Basic Daily Activities (BDA), and in interpreting social cues, understanding social norms, and establishing interpersonal relationships (Schaaf et al., 2011).

In two cases, the diagnosis was also mixed between Sensory Processing Disorder and Sensory Regulatory Disorder of Early Childhood (Johnson et al., 1997). This regulatory disorder refers to difficulties in emotional and behavioral self-regulation in the first years of life. It has been observed that children with regulatory disorder often present challenges in the integration and modulation of sensory information, which can affect their ability to regulate emotions, behavior, and social interaction (Williamson & Anzalone, 2001).

Participant observation

Initially, all parents showed a lack of clarity as to how occupational therapy could intervene in their children's difficulties with visual processing, sensory integration, attention, following instructions, fine motor skills, posture, and self-regulation. This lack of clarity can be attributed to several possible causes. First, the multidimensional and complex nature of these difficulties can be confusing for parents, as they may be related to different aspects of their children's development and functioning. This complexity may make it difficult to understand how a specific therapeutic intervention can address all these problem areas comprehensively. Secondly, parents' lack of prior knowledge about the specific interventions used in OT also contributes to its lack of clarity. Parents may not be familiar with the therapeutic approaches used in this discipline, which could hinder their understanding of how their children's specific difficulties are addressed and treated.

Also in the participant observation with the parents, it was possible to see expressions of interest and motivational attitudes. These expressions included approving gestures, head nods and smiles, which clearly indicate the parents' support and positivity towards the OT treatment. These positive reactions were a crucial starting point for establishing an effective collaboration between parents and occupational therapists (OTs) in the treatment process.

These expressions indicate that the parents were willing to learn and actively participate in the therapeutic process. By showing approving gestures, nodding, and smiling, the parents convey their agreement and satisfaction with the therapeutic strategies and approach, which reinforces trust and the collaborative relationship with the OTs.

Semi-structured interview of the GAS scale

Through the semi-structured interview with the parents, the barriers to participation in occupations in education, play, leisure activities, activities of daily living (ADL), Sleep/Rest, and Social Participation were determined; also the level of concern about these, their expectations regarding the treatment, and the level of importance of significant goals.

To identify the needs in the different occupational areas, the question used was: Describe to me what works best or what does not work so well in your daily life with your child? The participants expressed that:

[...] I always see him with dark circles under his eyes, even though he is very tired and goes to bed, he cannot fall asleep, he gets out of bed, jumps all the time, asks to play with his cars, makes noises and does not stay still... (P1, 2019).

They also stated:

When we sit down to eat, it's a drama, he starts crying as soon as we call him to the table, he only eats cookies and carrots, when he sees something different on the dish he gags and even though we play games with him and insist, there is no human power to make him try something different (P2, 2019).

Another parent stated:

His teachers tell us that while he is at the desk he leans on his arm or holds his head with his hand, it's as if he were bored, and when he goes to write he doesn't pick up the paper and slides forward in his chair (P4, 2019).

The level of parental concern was obtained through the question: When you see these results, how worried are you? Three participants showed a moderate level of concern. One parent said: "... my concern is moderate because he has already started school and although I recognize that he is intelligent when he is distracted it is as if he is not, because he is not learning..." (P3, 2019). Another participant stated: "...my concern is moderate and it distresses me to see him frustrated because he wants to write but it is difficult for him..." (P4, 2019). Another participant also stated that "[his concern] is moderate, there are things about him [his son] that disconcert me because he is loving, but when I go to bathe him or dress him it is as if he turns into someone else, he fights and screams as if someone were doing something wrong to him..." (P5, 2019).

On the other hand, two participants expressed a high level of concern, for example one of them stated: "... I am very worried because we have not slept through the night for many months; it is already affecting us even mentally..." (P1, 2019). Another parent stated: "... my concern is so high because I am worried about his development and I know that fruits are important for digestion and have many vitamins that my son is missing..." (P2 2019).

The expectations of progress of the SI-based OT intervention/care were obtained through the question: Imagine that we are sitting in this same place talking in approximately 3 months, what changes would you like to see in your son in that time? One of the participants answered that "... I would like him to be able to sleep at least half

the night and in his room, that way it could also help us all rest...” (P1, 2019). Another parent said: *“... sometimes we don't have time to go with him to the extra classes that his school asks him, it would be nice if he could pay attention, learn and not be left with topics to review at home”*... (P4, 2019). And another parent stated that: *“... it would be great if his [the child's] morning was more peaceful when I bathe him or dress him...”* (P5, 2019).

Questionnaire on the use of the GAS scale

Regarding the fulfillment of the Implicit Objectives of the GAS scale as a tool for measuring progress in the Club de Infancia (Children's Club), four of the participants were in complete agreement and one agreed that the GAS scale was implemented to measure the level of achievement of the significant goals of the Occupational Therapy treatment of their children. Regarding the relationship between the use of the scale to determine the continuity or termination of care, two participants were in complete agreement and three parents agreed that it allowed them to understand when it was necessary for their children to remain in treatment longer.

Regarding the use of the scale and its relationship with the achievement of significant goals in the treatment of OT, all parents fully agreed that it allowed them to measure changes after the treatment period. Regarding the GAS scale and the therapeutic results, two of them fully agreed, two stated that they agreed and one was indifferent that the treatment results were related to the scale.

The participants mentioned that the initial meeting was useful to identify the functional areas of intervention in education, play, leisure activities, ADL, instrumental activities of daily living (IADL), sleep and rest; health management, and social participation within which the significant goals were framed.

When asked about the impact of the semi-structured interview to jointly establish the goals and learn about the GAS, all participants considered that it was useful because it allowed them to feel even more involved to place themselves in the moment of the process and answer questions. They made comments such as: *“... I think it is very important for both parties to be clear about what to achieve and how to achieve it...”* (P2, 2021). They also stated: *“... Yes, we think it is very important to be able to discuss the goals of occupational therapy and resolve doubts”* ... (P3, 2021). Another parent said: *“... It is necessary, otherwise the importance of therapy is not understood”* (P5, 2021).

The technique of writing goals and qualitative descriptors was analyzed with the question: Was the language used in writing the GAS achievement levels easy to understand? All participants stated that the vocabulary used was simple, allowing them to understand what their children's therapeutic progress could look like. They stated: *“...yes, all the words and phrases within the ratings were understandable...”* (P1, 2021). Another participant informed: *“[...] yes, very clear, each description was in a language that I could easily understand...”* (P3, 2021). Another parent said: *“Yes, direct, clear and explanatory”* (P5, 2021).

The relationship between the scale and the professional recommendations was analyzed through the question: Do you consider that the sensory diet recommendations were in accordance with the GAS? All participants considered that these were articulated with the qualitative descriptors of the scale and that it guided them to understand what their children can achieve in significant goals. For example, they said: *“...they were very*

relevant and involved in the routine...” (P1, 2021). They also mentioned: “...[the recommendations] *were very aligned, they are very important because the work must be done as a team and also, because they were real with what we expected from the therapy*” (P2, 2021). Another parent stated: “[...] *yes, their relationship was evident and also one knew why they were making those adjustments or activities*” (P5, 2021).

The interpretation of the level of commitment in the execution by the parents was obtained through the question: What was your level of commitment in the execution of these recommendations? Three of the participants mentioned that they had executed them together with their children, referring that: “*Absolutely, it was a big change of the mindset...*” (P1, 2021). It was also said: “[...] *it is like an exercise of awareness, one must tune in to a new way of doing things every day*” (P2, 2021). Another participant stated: “[...] *yes, we made a daily schedule for the recommendations...*” (P5, 2021).

However, two others were unable to carry them out, stating that: “[...] *they were consistent and I liked them, however, the execution on our part was low*” (P3, 2021). Another parent said: “[...] *sometimes they seem easier to do than what one actually can do on a daily basis, and with so many home and work issues in mind; I often forgot the goals we were working on*” (P4, 2021).

To understand the parents' understanding of the relationship between the scale and therapeutic progress, the question used was: Did the use of the GAS allow you to know the progress plan for your child's sensory integration occupational therapy intervention/care? All participants stated that this scale indicated the stages within their children's progress, giving them security and confidence regarding the level of professionalism to obtain satisfactory results. They pointed: “*Yes, it is like a navigation chart with several stops in which one knows how the child should get to each of them*” (P1, 2021). Another parent said: “*Of course, it looks like the step-by-step of the therapy and that gives a lot of peace of mind*” (P3, 2021). They also stated: “*Yes, one understands how the child starts and how he should finish, that gives confidence in the therapy and the professionals*” (P5, 2021).

Finally, in contributions to the implementation of the GAS in the Club de Infancia (Children's Club), two of the participants mentioned: “It would be good to be able to compare the results of the initial evaluation with the qualification criteria to see which one the child starts with...” (P1, 2021). Another parent said: “[...] *although each qualification has its descriptor, I would also like to be given other examples of activities to which these achievements apply*” (P2, 2021). Another parent pointed: “[...] *this method is very useful for us and to know what happens in the therapy, it would be positive to remind us every month that we must read the goal plan*”... (P3, 2021). It was also explained: “*I was thinking about the long-term goal and I neglected to see that in this time of twenty-five appointments, the short-term goal was more important, it is worth emphasizing this in the initial meeting...*” (P4, 2021). Finally, they mentioned: “[...] *we already understand how it works, so we should continue using it for the next period of sessions*” (P5, 2021).

Discussion

In Latin America there are no studies that take into account the research of methods to assess the effectiveness of SI-based occupational therapy (OT) interventions for children. For this reason, due to the importance of establishing the therapeutic alliance

and the lack of evidence on the use of methods to evaluate the impacts of occupational therapy, this study is proposed to investigate the perception of families regarding the use of the GAS scale.

The scale has been used in the United States, where there is evidence, firstly, of interest in identifying outcome measures and knowledge about the effectiveness of SI from the point of view of the evaluation of the intervention and secondly, of value for the identification of sensory, functional and adaptive behaviors. These intentions are also evident in this study because there is a motivation to know the effectiveness of the scale and its relationship with therapeutic goals (Pfeiffer et al., 2011; Schaaf, et al., 2012b).

Studies such as that of Pfeiffer et al. (2011) have also been interested in knowing the effectiveness of SI-based interventions, finding significant positive changes in the scores of the goal achievement scale for the group that was guided through the SI theory. This is in line with the purpose of this study in identifying the effectiveness of SI-based OT interventions and at the same time, in finding progress in the level of goal achievement through the scale.

For their part, Ruble et al. (2012), showed that the equivalence of the scale descriptors can be evaluated, that the behavioral samples are representative for teachers and that they can be reliably coded. This is related to the findings of this study because parents are able to identify the equivalence of the scale, understand the expected behavior of children and their process within the scale.

The results of the research showed that the articulation between the scale and the recommendations of the professionals was clear to the parents, which shows that GAS describes particular or unique facts of each of the cases. In addition, the equivalence of the proposed descriptions can be evaluated in this case by the families, and in other studies by the teachers versus the researchers (Ruble et al., 2012).

The development of this research shows rigor in the protocol carried out of the necessary stages for the application of the GAS method, which allows it to be applied in other cases with similar goals. In the same way, other research is evident that has been interested in evaluating the effects of the intervention in relation to the family needs, in which it was shown that higher scores were obtained in the goal achievement scales (Schaaf & Mailloux, 2015b).

This bond or therapeutic alliance with the family was also an essential factor in this study, relating to studies such as those of Krasny-Pacini et al. (2017), which also shows the importance of preparing professionals to predict goals and goals for the family, indicating that it is an essential challenge for the use of the GAS scale in the clinical practice context.

Limitations and Strengths of the Study

It is important to note that this study focused on the perception of the parents of five children aged 3 to 6 years from the Club de Infancia (Children's Club) in Bogotá, Colombia. While the results provide a valuable perspective, it should be noted that the sample is limited and may not be representative of all parents of children in SI-based OT. Therefore, it is recommended to carry out future studies with larger and more diverse samples to obtain a more complete view of the parents' opinion on the use of the GAS scale in this therapeutic context.

In addition, the study is focused on SI-based OT intervention, which is why it is established as a specific therapeutic orientation. For this reason, it should be noted that the GAS scale can be implemented in other populations such as children with Autism Spectrum Disorder (ASD), and in different settings such as psychosocial or in clinical practice.

This is an initial study that contributes to the construction of the therapeutic relationship, the consolidation of the therapeutic alliance, knowledge for the continuing education of occupational therapists, the training of future therapists, the permanent updating of the profession, and the continuous dialogue with other disciplines that are articulated in the care of children with sensory challenges, and their families. Therefore, it aims to make a contribution to the use of the GAS scale methodology but does not intend to make generalizations. It is recommended to continue developing studies to demonstrate the effectiveness of the use of the scale in the Latin American context.

Conclusions

Parents identified both strengths and weaknesses perceived in the use of the GAS. Among the strengths mentioned, the possibility of assessing progress through specific goals stands out, which allowed them to have a clear vision of the progress achieved by their children. This ability to set concrete goals and measure the achievements obtained is an important advantage, as it gives parents a tangible tool to communicate and celebrate the results obtained in the OT.

However, some weaknesses were also identified in the use of the GAS. One of these was the need for greater understanding of the tool by parents, especially in relation to the qualitative indicators of the quantitative scores of the scale. This suggests that it is important to provide parents with adequate training and a detailed explanation on how to use the scale effectively. By improving parents' understanding, their active participation in the process of rating their children's progress is facilitated.

Another weakness identified was the need to place greater emphasis on short-term goals over the 25-therapy period, rather than focusing exclusively on the long-term goal. This finding suggests that it is important to communicate to parents that although the ultimate goal is to achieve the long-term goal, the achievements made along the way through the short-term goals should also be recognized and valued. Highlighting short-term successes fosters parents' motivation and continued engagement in the therapeutic process.

Additionally, it was mentioned that on some occasions parents did not have enough time to share experiences with their children that would allow them to identify whether they had achieved any of the established achievement levels. This highlights the importance of promoting active parental participation in their children's daily lives and encouraging the establishment of moments for thorough observation of goal achievement. It is essential that parents are aware that their active participation and commitment in the therapeutic process is crucial for the success and progress of their children.

To encourage greater parental participation, it is necessary to explain to them the importance of their engagement in OT and to provide them with practical guidelines on how they can support their children at home. In addition, resources and activities can be offered to the parents about what they can do with their children outside of therapy sessions, to reinforce the established goals and facilitate conscious observation of the achievement levels. This may include suggestions for sensory and practical

activities that parents can do in the home environment to strengthen the skills acquired during therapy.

Lack of time on the part of parents to participate in conscious observation of goal achievement can be a significant obstacle. It is important to address this aspect and work on raising parents' awareness of their essential role in supporting and acquiring skills for their children. This may include promoting time management strategies, such as allocating specific times during the day to interact and actively participate in the activities proposed by therapists.

The implementation of GAS at Club de Infancia (Children's Club) has proven to be satisfactory according to the parents' perspective. The scale has met the objectives of measuring the achievement of therapeutic goals, structuring levels of achievement, generating results related to the goals, and serving as a basis for determining the continuity or termination of care. Parents value the semi-structured interviews, the scale's comprehensibility, and the therapist's recommendations within their children's therapeutic process. Parents' contributions and suggestions highlight the importance of considering outdoor interventions, further explanation of the GAS, and comparative review of the results with the initial evaluation. These findings support the continuity and improvement of the implementation of the GAS at Club de Infancia (Children's Club), focusing on the parents' active participation, strengthening of the therapeutic alliance, and constant monitoring of children's therapeutic progress. In future research, it is suggested to examine the impact of interventions aimed at improving parents' participation in their children's daily lives on the evaluation of progress using the scale. It would also be valuable to investigate the effect of a greater emphasis on short-term goals on parental motivation and engagement, as well as on children's overall progress in OT.

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References

- Ayres, J. A. (2008). *La integración sensorial en los niños: desafíos sensoriales ocultos*. Madrid: TEA Ediciones.
- Bailey Junior, A., & Stashinko, E. (2012). Goal attainment scaling: a short primer for the pediatric clinician. *Pediatric Clinics of North America*, 59(3), 719-729.
- Capellacci, I., & Juarros, M. (2014). La metodología cualitativa según la teoría crítica en la investigación socioeducativa. In F. Osorio (Ed.), *Epistemología y ciencias sociales: ensayos latinoamericanos* (pp. 303-312). Santiago: LOM Ediciones.
- Carswell, A., McColl, M. A., Baptiste, S., Law, M., Polatajko, H., & Pollock, N. (2004). The Canadian Occupational Performance Measure: a research and clinical literature review. *Canadian Journal of Occupational Therapy*, 71(4), 210-222.
- Colombia. Ministerio de Salud. (1993, 4 de octubre). Resolución n° 8430 de 4 de octubre de 1993. Por la cual establece las normas científicas, técnicas y administrativas para la investigación en salud. *Diario Oficial*, Bogotá. Recuperado el 5 de diciembre de 2023, de <https://www.minsalud.gov.co/sites/rid/lists/bibliotecadigital/ride/de/dij/resolucion-8430-de-1993.pdf>
- Dunn, W. (2007). Supporting children to participate successfully in everyday life by using sensory processing knowledge. *Infants and Young Children*, 20(2), 84-101.
- Grist, N., Brown, T., Yu, M.-L., & Clark, E. (2023). An exploration of the association between sensory

- processing and interoceptive awareness in neurotypical school-aged children. *Journal of Occupational Therapy, Schools & Early Intervention*. En prensa.
- Huang, H. H., & Bundy, A. C. (2015). Reliability and validity of the Goal Attainment Scaling: a systematic review. *Australian Occupational Therapy Journal*, 62(2), 93-103.
- Imperatore Blanche, E. (2005). Déficit de integración sensorial: efectos a largo plazo sobre la ocupación y el juego. *Revista Chilena de Terapia Ocupacional*, (5), 1-6.
- Johnson, J. E., Fieler, V. K., Jones, L. S., Wlasowicz, G. S., & Mitchell, M. L. (1997). *Self-regulation theory: applying theory to your practice*. Pittsburgh: Oncology Nursing Press.
- Kagan, A., Galgon, A., & Becker, M. (2017). Goal Attainment scaling: a review and applications in rehabilitation. *Rehabilitation Psychology*, 62(4), 397-410.
- Kiresuk, T. J., & Sherman, R. E. (1968). Goal attainment scaling: a general method for evaluating comprehensive community mental health programs. *Community Mental Health Journal*, 4(6), 443-453.
- Krasny-Pacini, A., Pauly, F., Hiebel, J., Godon, S., Isner-Horobeti, M. E., & Chevignard, M. (2017). Feasibility of a shorter Goal Attainment Scaling method for a pediatric spasticity clinic: the 3-milestones GAS. *Annals of Physical and Rehabilitation Medicine*, 60(4), 249-257.
- Lane, S. J. (2014). Interoception: how to help children develop a better sense of self-awareness. *The American Occupational Therapy Association*, 12, 1.
- Mailloux, Z., May-Benson, T. A., Summers, C. A., Miller, L. J., Brett-Green, B. A., Burke, J. P., Cohn, E. S., Koomar, J. A., Parham, L. D., & Roley, S. S. (2007). Goal attainment scaling as a measure of meaningful outcomes for children with sensory integration disorders. *The American Journal of Occupational Therapy*, 61(2), 254-259.
- Mangeot, S. D., Miller, L. J., McIntosh, D. N., McGrath-Clarke, J., Simon, J., Hagerman, R. J., & Goldson, E. (2001). Sensory modulation dysfunction in children with attention-deficit-hyperactivity disorder. *Developmental Medicine and Child Neurology*, 43(6), 399-406.
- McLaren, C., & Rodger, S. (2003). Goal attainment scaling: clinical implications for paediatric occupational therapy practice. *Australian Occupational Therapy Journal*, 50(4), 216-224.
- Miller, L. J., Coll, J. R., & Schoen, S. A. (2007). A randomized controlled pilot study of the effectiveness of occupational therapy for children with sensory modulation disorder. *The American Journal of Occupational Therapy*, 61(2), 228-238.
- Mulligan, S. (2018). Sensory integration intervention: historical concepts, treatment strategies, and clinical experiences. In S. J. Lane & A. C. Bundy (Eds.), *Kids can be kids: a childhood occupations approach* (pp. 277-316). Philadelphia: F. A. Davis Company.
- Packer, M. (2013). La entrevista de la investigación cualitativa. In M. Packer (Ed.), *La ciencia de la investigación cualitativa* (pp. 49-66). Bogotá: Ediciones Uniandes.
- Parham, L. D., Cohn, E. S., Spitzer, S., Koomar, J. A., Miller, L. J., Burke, J. P., Brett-Green, B., Mailloux, Z., May-Benson, T. A., & Roley, S. S. (2007). Fidelity in sensory integration intervention research. *The American Journal of Occupational Therapy*, 61(2), 216-227.
- Parra-Esquivel, E. I. (2011). Terapia ocupacional: una mirada a la cognición. In M. F. Lara Diaz (Ed.), *Calidad de vida en el envejecimiento normal y patológico: una perspectiva terapéutica* (pp. 171-227). Bogotá: Editorial Universidad Nacional de Colombia.
- Pfeiffer, B. A., Koenig, K., Kinnealey, M., Sheppard, M., & Henderson, L. (2011). Effectiveness of sensory integration interventions in children with autism spectrum disorders: a pilot study. *The American Journal of Occupational Therapy*, 65(1), 76-85.
- Pierce, L., Stechmiller, J., Lorenz, R., & Roche, J. (2017). Using goal attainment scaling with older adults with dementia. *Journal of Gerontological Nursing*, 43(1), 16-23.
- Piñero Aguiar, E. (2015). Observación participante: una introducción. *Revista San Gregorio*, (esp. 1), 80-89.
- Ruble, L. A., McGrew, J., Dalrymple, N., & Jung, L. A. (2010). Examining the quality of IEPs for young children with autism. *Journal of Autism and Developmental Disorders*, 40(12), 1459-1470.
- Ruble, L., McGrew, J. H., & Toland, M. D. (2012). Goal attainment scaling as an outcome measure in

- randomized controlled trials of psychosocial interventions in autism. *Journal of Autism and Developmental Disorders*, 42(9), 1974-1983.
- Schaaf, R. C., & Mailloux, Z. (2015a). *Clinician's guide for implementing ayres sensory integration: promoting participation for children with autism*. Bethesda: AOTA Press.
- Schaaf, R. C., & Mailloux, Z. (2015b). Clinical features of sensory processing disorders. In R. C. Schaaf & S. J. Lane (Eds.), *Handbook of clinical and research practices in pediatric occupational therapy* (pp. 65-88). New York: Elsevier.
- Schaaf, R. C., Benevides, T., Mailloux, Z., Faller, P., & Hunt, J. (2012b). Disruptions in sensory processing of adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 42(11), 2096-2108.
- Schaaf, R. C., Hunt, J., & Benevides, T. (2012a). Occupational therapy using sensory integration to improve participation of a child with autism: a case report. *The American Journal of Occupational Therapy*, 66(5), 547-555.
- Schaaf, R. C., Toth-Cohen, S., Johnson, S. L., Outten, G., & Benevides, T. W. (2011). The everyday routines of families of children with autism: examining the impact of sensory processing difficulties on the family. *Autism*, 15(3), 373-389. <http://dx.doi.org/10.1177/1362361310386505>. PMID: 21430016.
- Serna, S., Torres, L., & Torres, V. (2017). Desórdenes en el procesamiento sensorial y el aprendizaje de niños preescolares y escolares: revisión de la literatura. *Revista Chilena de Terapia Ocupacional*, 17(2), 83-91.
- Teplicky, R., Law, M., Rosenbaum, P., Stewart, D., DeMatteo, C., & Rumney, P. (2005). Effective rehabilitation for children and adolescents with brain injury: evaluating and disseminating the evidence. *Archives of Physical Medicine and Rehabilitation*, 86(5), 924-931.
- Turner-Stokes, L. (2009). Goal attainment scaling (GAS) in rehabilitation: a practical guide. *Clinical Rehabilitation*, 23(4), 362-370.
- Watling, R., & Hauer, S. (2015). Effectiveness of Ayres Sensory Integration® and sensory-based interventions for people with autism spectrum disorder: a systematic review. *The American Journal of Occupational Therapy*, 69(5), 1-20.
- Williamson, G. G., & Anzalone, M. E. (2001). *Sensory integration and self-regulation in infants and toddlers: helping very young children interact with their environment*. Washington: Zero to Three.
- World Federation of Occupational Therapists – WFOT. (2020). *Código de ética*. Recuperado el 5 de diciembre de 2023, de <https://wfot.org/resources/code-of-ethics>
- Wressle, E., Eeg-Olofsson, A. M., & Marcusson, J. (2013). Goal attainment scaling in community-based rehabilitation for people with acquired brain injury: development of a structured multi-dimensional approach. *Journal of Rehabilitation Medicine*, 45(3), 217-223.

Author's Contributions

The authors of this article participated in the research idea, data collection, text conception, organization and analysis of the results, discussion, revision of the text, and contributed to the bibliography. Carolina López Díaz wrote the first version of the article, collected data through participant observation and semi-structured interviews. Eliana Isabel Parra-Esquivel wrote the method, developed the instruments, collected data from the parent questionnaire, and discussed and combined the document with the bibliography. All authors approved the final version of the text.

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