

# The Gamification Elements Speech-Language Pathologists Use to Motivate Children for Speech Therapy Training

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**Abstract.** Motivation is an important factor in paediatric speech therapy. Rehabilitation is often long-term work that requires many repetitions and home training with parents. Therefore, one of the most important tasks of paediatric speech-language pathologists (SLPs) is to find different ways, over and over again, to motivate children for training. As different types of games themselves have already been identified as important motivational tools used by SLPs, the purpose of this study was to investigate what kind of gamification elements SLPs use in therapy, in addition to the games themselves, to motivate children for training. 26 Finnish SLPs responded to an online questionnaire consisting of four open-ended questions. Our results indicate that SLPs typically use several different motivational methods, which they aim to personalize as much as possible to individually support motivation. SLPs make a special effort to increase children's intrinsic motivation by employing motivational features commonly used in gamification, such as playfulness, the child's own interests, and goal setting.

**Keywords:** Motivation, Gamification, Speech Therapy, Survey

## 1 Introduction

Motivation is a complex psychological and behavioural component that aims to explain why individuals act as they do and what makes them make different decisions about, for example, the use of time and energy [1,2]. Motivation can be divided into intrinsic and extrinsic motivation [1,3]. Intrinsic motivation means that a person is motivated to do something because the thing itself gives the person pleasure or enjoyment [1,3]. An intrinsically motivated person does something because they are interested in it, and because doing it brings them value. If a person is intrinsically motivated to do something, their actions are not influenced by external factors. As opposed to an externally motivated person who will do something because doing it will lead to the desired result

[1,4]. This result could be, for example, getting a reward or social acceptance [1]. Studies indicate that a person can also be both intrinsically and extrinsically motivated to do something [5,6].

Motivation also plays an important role in rehabilitation processes [7,8], including speech therapy. Speech therapy rehabilitates children and adults with challenges in areas such as communication, social interaction, language, and swallowing [9,10]. It is often long-term work and requires many repetitions. Especially in the rehabilitation of children with speech motor challenges, such as childhood apraxia of speech, high repetition rates play an important role in successful rehabilitation [11]. Thus, one of the most important tasks of paediatric speech-language pathologists (SLPs) is to find ways, over and over again, to motivate the children and their parents to engage in speech therapy, which has proven challenging in previous studies [12,13].

Gamification refers to the use of game elements for non-gaming purposes to make them more engaging and motivating [14]. Gamification has been found to positively influence targeted behavioural outcomes, cognition, and user experience in health and well-being related interventions. Previous research indicates that different types of games themselves are one of the most recognised motivational tools used by SLPs [12,15-17]. It is therefore important to explore how the constantly evolving field of gamification can bring new opportunities for rehabilitation. In this study, we explore their ways of gamifying speech therapy, i.e., what kind of gamification elements SLPs use in therapy, in addition to the games themselves, to motivate children for training.

## **2 Methods**

### **2.1 Study Design and Participants**

The data was collected through an online questionnaire. The questionnaire targeted SLPs of any grade or place of employment in Finland. A voluntary participation request and a link to the online questionnaire, seen as an appendix, was sent to several social media communities for SLPs in December 2021 and a total of 26 responses were received. To maximize anonymity, occupation was the only demographic information collected.

The research team developed the first version of the questionnaire, which was edited based on feedback from an external SLP. After editing, the questionnaire was tested with another external SLP. This version was accepted as final. The online survey contained 4 items: (1) How have you made speech motor exercises motivating for a child? Give at least three concrete ideas, (2) Give at least three concrete examples of tasks that motivate to practice speech motor skills at home, (3) In your experience, what practical factors prevent the implementation of home practice? and (4) Free comments on the topic. With the exception of one participant, all respondents answered all three first questions. Twelve participants also expressed their free comments.

## 2.2 Analysis

The data were analyzed, and themes created inductively [18]. Firstly, the researchers familiarized themselves with the data, and focused in particular on the responses including ideas related to motivation. Next, the first researcher collected every motivational tool or idea mentioned by SLPs and thematized the responses. Ideas directly related to actual games were left out because they have already been covered in another published article [12]. However, some ideas were accepted for this article that were also selected for inclusion in the previous article on games published from the same data. In these ideas, elements of gamification emerged in addition to the specific game ideas. Following that, the rest of the research team checked that all of the motivation-related responses had been identified and commented on the thematization. Based on the feedback and discussion, the thematization was refined. Finally, all of the researchers reviewed the thematization together and discussed the differences until they reached a conclusion about the themes, resulting in a codebook containing six major themes, one of which has two subthemes.

## 3 Results and Discussion

As seen in Table 1, the motivational tools identified by participants are divided into the following six main themes: (1) the expertise of a speech-language pathologist (2) extrinsic motivators, (3) playfulness, (4) concretizing progress, (5) child's interests, and (6) environment. Theme 1 is further divided into two subthemes: (1A) ideas related to practices, and (1B) interaction and therapeutic relationship. It is worth noting that there is also a slight overlap between themes 2 and 4, as four responses contained ideas related to both of these two different themes, and therefore were placed in both of the themes. Similarly, one response was placed under both theme 1 and 3.

**Table 1.** Themes and subthemes related to motivational tools identified from the data, with examples mentioned by SLPs and the number of ideas related to each theme.

Theme	Subtheme	Examples of the motivational tools mentioned (with respondent ID in parentheses)	The number of ideas related to this theme
The expertise of a speech-language pathologist			34
	Ideas related to practices	<p>“It is the therapist's responsibility to commission exercises at the appropriate level and to highlight and reinforce progress.” (SLP 15)</p> <p>“Varied and diverse types of exercises” (SLP 17)</p> <p>“Electronic exercises: speech motor exercises can easily be added to a theme that motivates the child, e.g., a Minecraft game” (SLP 11)</p>	21

Interaction and therapeutic relationship	<p>“The therapeutic relationship is the main motivating factor!” (SLP 15)</p> <p>“Use of funny words and pictures” (SLP 12)</p> <p>“Asking parents about the child's progress” (SLP 18)</p> <p>“I also take into account the child's initiatives” (SLP 10)</p>	13
Extrinsic motivators	<p>“Fast and clear enough rewards” (SLP 2)</p> <p>“I have advised families about external motivators, e.g., sticker board, beads in a jar, practice first then playtime...” (SLP 5)</p> <p>“A cereal exercise to train oral motor skills: children love cereal, so a training session is a treat at the same time” (SLP 10)</p>	27
Playfulness	<p>“Practising while playing” (SLP 9)</p> <p>“By making the training functional and relevant to the child's world” (SLP 23)</p>	26
Concretizing progress	<p>“A training calendar at home, in which you always note when you have practised” (SLP 24)</p> <p>“Using different timers on your tablet” (SLP 2)</p>	23
Child's interests	<p>“The exercises include pictures of your child's favourite characters (Minecraft, Starwars, Minions, Angry birds...)” (SLP 6)</p> <p>“Exercises based on the child's interests” (SLP 24)</p>	15
Environment	<p>“Usually, the best motivator is an enthusiastic parent who encourages the child to practise. Home practice rarely works if the parents are not interested.” (SLP 3)</p> <p>“By mapping the family's daily routines and brainstorming together to link the exercise to a familiar habit/moment.” (SLP 23)</p>	10

**The expertise of a speech-language pathologist.** The largest theme was motivational ideas related to SPLs. The first subtheme included ideas concerning practices, both the ones done with the SLP and the ones SLP instructed to be done at home with the parents. The ideas mentioned in this subtheme were related to the number, duration, content, and difficulty of the exercises, which SLPs said they aim to personalize as much as possible, so that the child and their parents are motivated by the home exercises provided. For example, electronic, tablet-based exercises were mentioned as motivational in many of the responses, which has been noted also in previous studies. For example, Zajc et al. [19] mentioned that mobile technologies can increase children's motivation to speech therapy and also the duration of exercises.

Interaction and therapeutic relationship between the SLP, the child and their parents were mentioned as another way to maintain and increase motivation for speech therapy training. Our results suggest that trust and positive interaction between the therapist and the child play an essential role in motivation, as do giving positive feedback, verbalizing progress, and having fun while doing the exercises.

**Extrinsic motivators.** The second largest theme was motivational tools and ideas related to extrinsic motivators. SLPs generally mentioned the use of rewards as a motivating factor, but also gave more details about the rewards they use, such as stickers, treats, checklists, and tablet games. Although gamification is mostly based on increasing intrinsic motivation [20], it can often include elements that increase extrinsic motivation [21], such as (virtual) prizes, scoring, and ranking of players. The use of external motivation seems to be one of the motivational tools used by SLPs, but the results suggest that they do not use it as the only motivational tool, but rather as an aid when the child's intrinsic motivation is weaker. SLPs also work with very young children, who may not yet understand the purpose of the exercises and therefore do not yet have a strong intrinsic motivation to exercise, so it is understandable why they also rely on external motivational tools in their work.

**Playfulness.** The third largest theme consisted of motivational tools and ideas related to playfulness and functionality in speech therapy training both with SLP and with parents at home. For example, lego building, tag, feeding the training pictures to a figure, throwing paper airplanes, ninja kicks, and jumping on a trampoline were mentioned. This theme was unsurprising given that several prior studies have shown that there is a relationship between playfulness and motivation [22-24], as playfulness is a component of intrinsic motivation that encourages participation in games [22,25]. By adding game elements and playfulness in therapy exercises, SLPs may be able to strengthen the child's feelings of competence, autonomy, and relatedness, and thus increase the child's intrinsic motivation [25,26,28].

Our results suggest that playfulness and functionality can increase a child's motivation and improve performance even if sitting still at a desk is challenging for the child, for example because of attention and concentration challenges. As one SLP (SLP 25) pointed out, they use functional exercises if the child is very mobile and desk work is therefore challenging.

**Concretizing progress.** The fourth theme consisted of ideas related to concretizing progress. The ideas cited included, e.g., calculators, training grids and tables, and training calendars. Responses echoed the idea that these different monitoring methods allow the child to see how much training they are doing and how they progress. As one SLP (SLP 14) explained, "child's understanding of the importance of practice and progress, e.g., on a pictorial scale, is motivating". Gamification and serious games can be valuable tools to illustrate the process and its goals and importance [31]. The visualization of progress, e.g., through a training calendar, is often based on the fact that at the end of the calendar there is a goal created together with the child and the family, e.g., a certain number of repetitions achieved. As previous studies have shown, there is a

strong link between goal setting and motivation [29-31]. It has been studied that when children and parents are involved in goal setting, they have a high level of engagement in achieving it [27]. In addition to the autonomy of the child and their parents in relation to goal setting, other means of goal setting that increase motivation to achieve goals are appropriate attention and commitment, and task persistence [27,32].

**Child's interests.** The fifth largest theme involved responses on how the child's interests are taken into account in speech therapy practices. SLPs listed different characters and themes that they have used to motivate children to do exercises. Examples of these include Paw Patrol, Frozen, Minions, and dinosaurs. These characters and themes have been used by SLPs, e.g., by adding pictures of favorite characters to exercises or by choosing words to practice according to a motivating theme. This finding mirrors prior findings of studies by Lanou et al. [33], in which using child's own interests made the strategy used for self-monitoring and asking for help meaningful and motivating, and by Vassileva [34] wherein it was described that since motivation is personal, also personalization can be considered essential.

**Environment.** The sixth largest, final major theme was motivational ideas related to the environment. The responses addressed the role of parents in motivating children to participate in home practice; SLPs highlighted the importance of a motivated parent and the importance of the SLPs in motivating parents to participate. As one SLP (SLP 3) pointed out in their response "home practice rarely works if parents are not interested". The lack of parental motivation and engagement has also been highlighted in several previous studies [12,35]. The lack of motivation and commitment may be influenced by factors, such as a lack of understanding of the importance of home practice or a lack of belief in its benefits [12,35-37]. For these reasons, it is particularly important for the SLP to work closely with the child's family members and share information and guidance for them. Our results also suggest that one way to engage and motivate children and their parents in speech therapy home practice is to send practice videos to parents and ask parents to send videos of home practice to the SLP. This can also serve as a way to increase parents' understanding of speech therapy training and provide a low-threshold avenue for asking for help.

Our study contained some limitations that could be addressed in future studies. Firstly, in this study, we were interested in the motivational ideas used by speech-language pathologists in general, regardless of the age of the children they work with. Thus, based on this study, we cannot say which game elements motivate children of a certain age. Further, as it is understandably possible that therapists are not aware of all the possibilities of game elements and gamification, potential future work should include the identification of gamified possibilities from a game design perspective. For example, a focus group or a design group activity to put game designers and therapists together would be an interesting study.

## 4 Conclusions

It is known that motivation has a significant impact on speech rehabilitation processes, which are often long and challenging. Adding gamific elements to therapy practices, i.e., gamification of therapy, has the potential to address the discussed major challenge of pediatric speech therapy, as they can make training activities more internally motivating and engaging, for example by generating automated, accurate positive feedback that contributes to the feeling of competence and, consequently, improves intrinsic motivation [38]. This study provided data on what kind of gamification elements SLPs use in therapy, in addition to the games themselves, to motivate children for training.

The findings of the present study indicate that SLPs use versatile game elements to motivate children and their parents to do speech therapy exercises. The mentioned methods and tools employed motivational features like playfulness, continuous guided progress paths, feedback, and individual goal setting, as well as tangible rewards, for example, stickers, which are fundamental parts of gamification [14][31].

Our future goal is to build on the game elements successfully used by SLPs to create a framework to gamify speech therapy training, so that not only the children but also their parents would be motivated to do the training at home, as it is known that a motivated parent plays an essential role in the child's rehabilitation process. The results of this study provide an excellent starting point for this further work.

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## Appendix

### Participation request

Questionnaire on motivation for speech motor training for speech-language pathologists

A key problem, especially in the rehabilitation of children's speech motor skills, is the successful implementation of home practice: it is challenging to get children to do exercises on a long-term basis. In this short questionnaire, we collect experiences on motivation to practice and barriers to home practice.

Participation in this research is completely voluntary. The information you provide will be used in theses and scientific articles published on the research data. The data collected will only be accessible to the people working at the university who carry out this research. The study data will be destroyed at the latest one year after the publication of the study. The privacy notice of the study is available here: XXXX

For further information on the study, please contact Johanna Virkki, Docent (tel. 0408490618, johanna.virkki@tuni.fi)

1. How have you made speech motor exercises motivating for a child? Give at least three concrete ideas.
2. Give at least three concrete examples of tasks that motivate to practice speech motor skills at home.
3. In your experience, what practical factors prevent the implementation of home practice?
4. Free comments on the topic.

Thank you for your answers! The privacy notice of the survey is available here: XXXX.

I have read the privacy notice.

yes

By selecting "I agree!" and by submitting the form, you consent to the use of the information you provide for research purposes as described in this form.

I agree!

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