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The Impact of Interactive Activities on the Control and Development of Students' Behaviors in UAE ECE Classrooms

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ABSTRACT

This research investigates the impact of interactive activities on the control and development of students' behaviors in Early Childhood Education (ECE) classrooms in a primary school in the United Arab Emirates. This study included a literature review on the focus area of the research. Four different qualitative and quantitative data collection tools, checklists, anecdotal notes, interviews, and a survey were used to gather information related to students' behavior. Four teaching strategies (interactive activities) were implemented: student-teacher interactions, student-peer interactions, student-group interactions, and student-technology interactions. Five Emirati students were chosen to participate in this research after detecting behaviors that need to be addressed. The results collected suggest that there is a significant positive impact of interactive activities on the general behaviors of students.

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Interactive activities; early childhoodeducation; student behavior; classroom management; UAE primary schools

INTRODUCTION

In early childhood education, teachers and students are the major components of the teaching and learning process. Therefore, if the students show disruptive behaviors, the educational process could be affected negatively. Disruptive behaviors include hyperactivity, uttering disturbing noises, aggression, and verbal misbehaviors. Having even one of these misbehaviors in a class could interrupt the pace of the lesson and might affect the implementation of the curriculum. Moreover, teachers might struggle to deal with the mentioned behaviors if they do not have enough experience, resources, knowledge, or information. However, these kinds of situations could be dealt with by researching and finding the best solution for the specific misbehaviors that the teacher is having in the class. Moreover, as McKissick et al (2010) claimed, one of the biggest reasons for students to show disruptive behaviors is the lack of involvement in the lesson. Furthermore, the more involved and encouraged they are, the less misbehavior will occur. Therefore, this research aims to measure the impact of interactive activities on the control and development of behaviors in early childhood education in the United Arab Emirates.

Previous research has shown that one way to decrease those unwanted behaviors might be using a range of interactive activities in the classrooms. As Chi (2009) defined, interactive activities are the ones that require using 'dialogues' to communicate verbally or a kind of movement to interact physically. An

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interaction in a classroom setting could occur between a teacher and a student, a student and a single peer, or a student and a group of other students. Hence, there are many ways for the educator to design their lesson to be interaction-rich, which directly helps students to be encouraged, motivated, and involved in the lesson. In this research, there will be implementations of four different types of interactive activities: Gamification, group activities, peer activities, and usage of interactive technology. Students from grades 1 and 2 will be encouraged to interact with the teacher, a peer, a group of students, and technology through the mentioned activities. The main focus of this group-study research is 5 students in total, who will be observed and interviewed regarding the activities they will be required to do and their behaviors.

The research questions are:

1.What is the impact of the interactive activities on the control and development of behaviors of early childhood education students?

2.How does teachers' guidance in interactive activities enhance the control and development of ECE students' behaviors?

This research hypothesizes that the implementation of different types of interactive activities for early childhood education students will result in a decrease in negative behavior and an increase in positive behaviors. To test this hypothesis, observation methods, interviews, and a survey are conducted with the students and some English teachers.

Literature Review

Alhosani (2022) demonstrated early childhood education in the UAE is the early experiences and knowledge that a child in the UAE shapes to enhance their emotional, social, cognitive, linguistic, and physical domains. Misbehaviors in schools could be explained as a lack of effort, utilitarian sabotage, and failure of discipline (Ackroyd, 2012). It is simply when students show unwanted behaviors that affect negatively either the teaching-learning process, the teacher, or other students in the classroom. Misbehaviors could vary from simple acts such as playing with materials to serious ones like harming classmates. As Sun and Sheck (2012) elaborated, classroom misbehaviors could be disruptive speech, persistent avoidance of studying, clowning, disrupting class activities, bullying peers, verbal abuse, and being impolite to the instructor.

Kurganovna et al (2022) claimed that the teaching process itself is a form of interaction between the teacher and the student. However, there are 3 types of methods of teaching. 1.Passive methods: where the lesson is teacher-centered and the students are listeners. 2.Active method: where there is an activation of student-teacher interactions.3. Interactive method: where there are multiple types of interaction such as student-to-teacher, student-to-peer, student-to-group.

A teacher's guidance is the language that they use to organize, arrange, and structure their lessons and provide pupils with instructions and directions for achieving the activities and lesson outcomes (Zhao and Zhang, 2020). A teacher needs to prepare and plan some instructions to provide the students with to ensure success in learning and classroom management.

A small number of similar studies measured the impact of interaction activities on different types of behaviors. For instance, (Sjöman et al, 2021) searched the matter of peer interaction and teacher responses on the influence on the hyperactivity and engagement of preschoolers. They provided the preschool staff with a questionnaire 3 times in longitudinal research to collect data about 203 Swedish children (with and without special needs). They found that positive peer-to-child interaction in the class predicts a decrease in hyperactive behaviors and increases the engagement of the students. Moreover,

they stated that the high rate of teacher responsiveness in the class results in a great increase in young learners' engagement. However, it does not affect the hyperactivity that occurs in the class.

Another study conducted by Chen et al (2019) investigated the influence of parent-child interaction on Attention Deficit Hyperactivity Disorder (ADHD). They focused on Type D Personality (TDP) parents, who fear expressing their emotions and tend to think negatively in nearly all situations. 47,648 Chinese parents and children participated in this research. The researchers provided the parents with a questionnaire to scale the impact of parents' interactions with children, with their hyperactivity behaviors. They focused on specific interactions such as doing outdoor activities, singing, reading, and chatting with the children. After analyzing the data they got from the 47,648 families, they found out that the results are consistent with their hypothesis: Lower frequencies of parent-child interactive activities will be related to higher levels of children's hyperactive behaviors.

A study conducted by Luckner and Pianta (2011) addressed the impact of teacher-student interactions on peer behaviors and other negative behaviors in the classroom. The participants were 894 fifth-grade students from the NICHD Study of Early Child Care and Youth Development and their teachers. The quality of teacher-student interactions such as emotional support, classroom organization, and instructional support was assessed by classroom observations. Moreover, the teacher reports were used to address the behaviors closely. The results revealed that fifth-grade students in classes with better organizational interactions had more positive peer interactions and lower teacher assessments of relational and aggressive behavior. Additionally, interactions including emotional support were linked to greater social behavior ratings from teachers. However, one limitation of this study is that four out of the five variables were assessed through teacher reports. Therefore, it is important to keep in mind that some teacher characteristics could affect both the interactions in the class and/or the assessment reports.

Another similar study, conducted by Lin et al (2016), investigated peer interaction's influence on learning-related behaviors. 270 preschoolers from the Appalachian community participated in this research. In a timeframe of a full academic year, the teachers assessed the frequency of peer interactions, learning-related behaviors, problem behaviors, and language and literacy. The researchers decided to choose the observations as their main teacher assessments to measure and analyze the impact of peer interactions on several variables. The results show that pairs of children who interacted communicated and got engaged with one another the most tended to have better learning-related behaviors. However, since the assessment applied was only teacher observation, there was a lack of student involvement in the research.

A relevant study, conducted by Ilias and Nor (2012), investigated the influence of teacher-student interactions on classroom behavior and motivation. The research depended fully on 1 questionnaire for teachers of 92 students in Malaysia. The survey contained several questions about student-teacher interactions, and whether they impacted students' behaviors and motivation for learning. Results show that there is a significant positive influence of student-teacher interaction on their behaviors. However, the research only gathered quantitative data through a close-ended questionnaire.

All of the above research claimed that the different types of interactions in a classroom setting impact positively on students' behaviors. However, a study conducted by Cadima et al (2010) claimed the opposite. The study contained 106 first-grade Portuguese students. Data collectors assessed the students using observation methods regarding their behaviors and some other variables they were investigating such as vocabulary acquisition. After that, they provided the teachers with a questionnaire that contained questions about students' behaviors. Using it, the educators measured the behaviors using a 5-point rating

system. The results revealed that there is nearly no relationship between the different kinds of interactions in the classroom and young learners' behaviors.

Current Study

All of the studies were conducted outside of the MENA region, while this research is located in the United Arab Emirates (UAE). Moreover, some of the mentioned studies depended fully on the questionnaire to collect data related to behaviors, while in this research, there is a variety of data collection tools such as observations, interviews, and a survey. Furthermore, in contrast to the research that focuses on collecting one type of data, this study contains both qualitative and quantitative data ensuring the collection of detailed information.

This research is associated with the constructivism theory defined by Lev Vygotsky (1978) since it focuses on the social interactions among young learners in a learning classroom. The various types of interactions such as student-to-teacher, student-to-peer, and students-to-group, which are utilized in this research are implementation of Vygotsky's social interaction theory.

Theoretical Framework

This theory explains how children learn best in an interaction-rich environment. Vygotsky emphasized that an individual's personal cognitive development and education are a social process that leads them to improvements when well-practiced (Luong, 2022). Furthermore, young learners' behaviors are a major part of this research since they are the variables addressed. This leads to the famous behaviorism theory. Behaviorism: is an aspect of pedagogy, theory, and philosophy related to behaviors (Woollard, 2010). Furthermore, Baum (2017) states "Behaviorism is the science of behavior". As Evan Pavlov was examining the change of behavior of his dog after being exposed to some factors, this research will be examining and measuring the change of behavior in grade 1 and 2 students in UAE classrooms. One of the similar studies that was implemented by Lin and others (2016) found that the children who engaged with one another more frequently tended to show stronger and better learning-related behaviors.

METHODOLOGY

The main aim of this research is to investigate the impact of interactive activities on the control and development of behaviors in early childhood classrooms in UAE. As mentioned, this research seeks to answer two main questions:1) What is the impact of interactive activities on the control and development of ECE students' behaviors? 2) How does the teacher's guidance affect the control and development of ECE students' behaviors?

To answer these questions, a cyclic research process was conducted (See Figure 1). It starts with planning, data collection, data analysis, research paper writing, then reflecting. This procedure is described as cyclic since the planning should be based on reflections of previous actions, which makes it a cycle of steps. Hence, the procedure started with planning. Four different types of interactions were planned to be implemented in grade 1 and 2 classes: student-teacher interactions, student-peer interactions, student-group interactions, and student-technology interactions. After that, to initiate the action plan, an ethical consideration permission letter was signed by the principal of a primary school in Ras Al Khaimah in the UAE. The letter contained information about the research, such as its aim and questions. Moreover, it ensures that all the participants would remain anonymous, no harm would reach them, and that they could withdraw from the research at any time. The population of this study was 140 students in grades one and two, whereas the sample was five students with noticeable and repetitive behaviors.

Figure 1. *the cyclic research process*

To measure the impact of the different types of interactions on students' behaviors, two observation methods, a survey, and interviews were conducted with both students and schoolteachers. As Mcilfatrick (2008) defined, observation is the act of intently watching & studying something or someone and having the capacity to note important details. The first observation method was the anecdotal notes (See Figure 2). The pre-service teacher observed the students' behaviors closely while young learners were assigned to work interactively to achieve the outcome of the lesson. Notes and details of behaviors were written down and several anecdotal notes were collected after implementing a total of 15 lessons.

Figure 2: student anecdotal notes

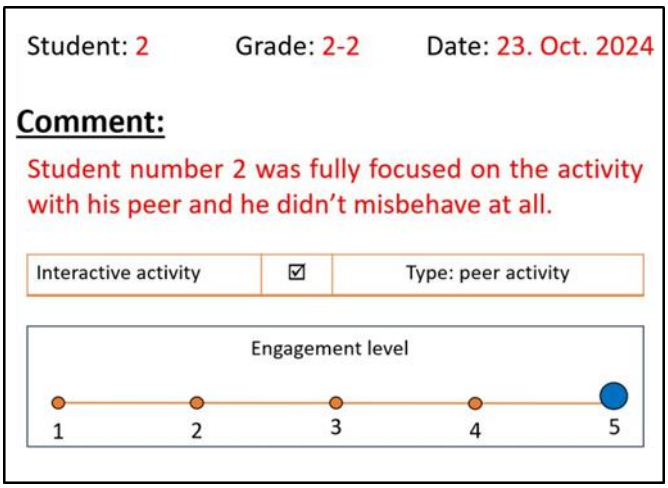

Figure 3. *student anecdotal notes*

The second observation method was a checklist (See Figure 3). It checks whether there was an implication of an interactive activity, its instructions, whether the negative behaviors were controlled, and whether there were any behavior improvements.

The impact of interactive activities on the control and development of behaviors Class: 2/2

Lesson no.	Interactive activity application	If yes, are instructions provided?	Control of negative behaviors	Development of any behavior	Notes
1	✗	✗	✓	✓	I think the main reason was because I'm a new teacher
2	✗	✗	✗	✗	Too much noises. Not following the rules. Not focusing
3	✓	✓	✓	✓	Engaged and motivated for mostly the interactive activity
4	✗	✗	✗	✗	Too much noises. Not focusing
5	✗	✗	✗	✗	Too much noises. Not focusing. Couldn't finish the lesson
6	✓	✓	✓	✓	A huge no. of students were involved, motivated, and encouraged to learn.
7	✓	✓	✓	✓	First time doing peer activity, so a little confused. It was successful and smooth at the end
8	✓	✓	✗	✓	Engaged but fighting a little over the task. Next time, I will give instructions about this issue specifically.
9	✓	✗	✗	✓	I forgot to tell the instructions about the fighting issue, and it happened again
10	✓	✓	✓	✓	Much improved behaviors. There was no fighting. The students understood the lesson fully

The impact of interactive activities on the control and development of behaviors Class: 2/2

Lesson no.	Interactive activity application	If yes, are instructions provided?	Control of negative behaviors	Development of any behavior	Notes
11	✓	✓	✓	✓	A successful lesson without any misbehavior. Lots of positive behaviors were repetitive.
12	✓	✓	✓	✓	Totally focused and engaged for the first time in a while!
13	✓	✓	✓	✓	They were ready to play before I could even finish the instructions. Fully engaged
14	✓	✓	✓	✓	Enthusiastic in peer activity to finish early and be rewarded.
15	✓	✓	✓	✓	Creative group activity > made them motivated. They worked together
16					
17					
18					
19					
20					

Figure 4. *the checklist tool*

Moreover, an interview was conducted with the Mentor School Teacher (MST) and a peer who observed the students regarding the interactive activities and their influence on young learners' behavior. The interview was initiated by asking what kind of behaviors they noticed in one specific class section, as it was chosen to be the research sample. they pointed out a few behaviors, such as chatting and playing during the lesson. Then, a few more questions were asked about those behaviors, such as the potential reasons behind their experience with them. After that, the focus of the interview was shifted to the impact of the implemented interactive activities on the mentioned behaviors. The MST answered by "Students started to focus and participate more in the lesson, which reduced the negative behaviors a lot". In addition, both the MST and the peer claimed that the positive behaviors started to appear more often, especially in the students who were frequently showing negative behaviors. According to Fontana and Frey's (2005) simple definition, an interview is asking questions and receiving answers from the participants. The interview questions aimed to ask them about their perspective on the control or development of behaviors that occurred after applying the interactive activities, if any.

Furthermore, a survey was sent to all schoolteachers in both Arabic and English languages asking them about their experiences with interactive activities and their relationship with young learners' behaviors. It contained questions like the types of behaviors they were facing in their classrooms and their experiences with them. After that the survey focused on the interactive activities, the teachers' experiences with them, and if they noticed any behavioral changes throughout the implementation process. The results of the survey showed that 91.7% of the teachers claim that the interactive activities have a positive impact on their students. According to Scheuren (2004), a survey is A technique for collecting data from a sample of people. The survey can provide the researcher with qualitative, quantitative, or both types of data. Furthermore, As Jones and others (2013) mentioned, a survey has many advantages, one of which is to have a large amount of participation and, therefore, powerful statistical data. Moreover, it can be easily visualized through charts to get the findings of the questions easily and see the rate of answers at a glance. A total of 12 responses were collected from primary school teachers and pre-service teachers who taught in kindergartens and primary schools. The observation tools and interview questions were designed the previous academic semester (Spring 2024).

The survey was created the following semester (Fall 2024) as an improvement since collecting quantitative data was needed to strengthen the data. All of the collected data (from observation notes, interview notes, and survey responses) built up strong answers to my research questions. For future research, this study will be conducted in the same cyclic process by reflecting on the research as a whole and planning based on it.

Implementation of the Action Plan

In the planning phase of this study, four different types of interactions were planned to be implemented in grade 1 and 2 classes: student-teacher interactions, student-peer interactions, student-group interactions, and student-technology interactions. They were all implemented successfully. Starting with the student- teacher interactions, several activities that require communication between the teacher and the students were applied, such as competitions, oral question games, and daily routine questions and movements. All of them needed a dialogue creation between the educator and the pupil to be done successfully.

The second type of interaction is the student-peer interaction, which takes place when pair work is applied, such as pair worksheets and other peer assessments. These activities required an effective talk between two students to achieve the task.

The third type of interaction is student-group interaction, which occurs when executing group work activities such as group worksheets, group games, and group activities. These kinds of activities were chosen since they activate the collaboration and communication skills in the group and strengthen the spirit of teamwork.

The fourth and last type of interaction is the student-technology interaction, which happens when implementing online games, active videos, digital active stories, and digital activities. These specific activities were selected as they engage the students and encourage them to move, talk, and apply 21st-century skills such as critical thinking while answering the oral questions. All of the mentioned activities motivated the students to speak with each other, which is the perfect accomplishment of Lev Vygotsky's social interaction theory. Furthermore, the data collection methods were conducted whilst applying all these activities. The questions in all three methods were designed to answer both research questions. They focus on how the activities impact the behaviors and what is the role of the teacher's instructions in the process.

RESULTS

After implementing four different types of interactive activities: student-teacher, student-peer, student-group, and student-technology, a remarkable difference was noticed in the behaviors between the lessons that contained interactive activities and those that didn't. In the process of data analysis, the data were split into two sections: qualitative and quantitative data. The qualitative data includes the observation notes, interview answers, and the open-ended questions in the survey. The quantitative data is collected through the closed-ended questions in the survey in the form of statistics. The following is the data analysis in detail.

Grade 1 and 2 students were observed closely using anecdotal notes and a checklist. The results show that the 5 participants started to not only participate more but also stick to the rules more. The students who showed hyperactive behaviors were concentrating, especially in online and movement games. They were asked to repeat the activities in other lessons. However, the other students who struggled with anger calmed down a bit and focused more on the lesson (See Figure 4).

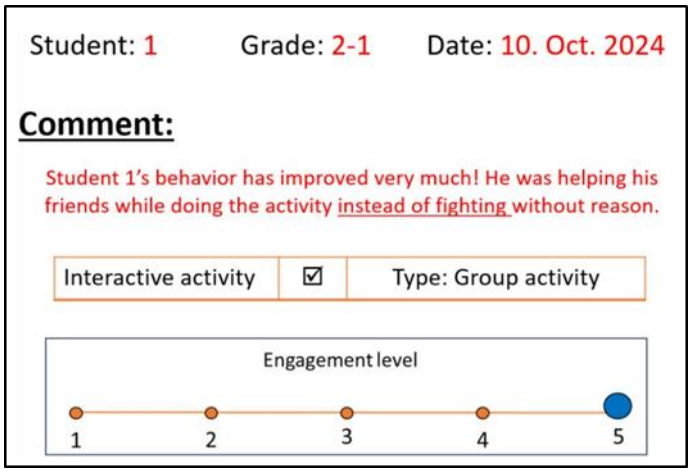

Figure 5. *evidence from anecdotal notes*

The teacher and a peer were interviewed about the behaviors they noticed among the students and if there was any change in behaviors and the role of the instructions in the interactive activities. Both of them answered the questions claiming that there was a positive significant change in behavior since they were showing less misbehavior and repeating the desired behaviors (See Figure 4). They also mentioned the effectiveness of the instruction, describing them as strong and behavior- managing. As per their answers, the students were following the rules more when the teacher mentioned them clearly through the instructions of the activity. Furthermore, the students were interviewed about if they felt that they focused more when doing the interactive activities. All of them answered yes with different justifications such as being able to do the activity because they enjoy it.

A survey was conducted using both Arabic and English language to allow both local and non-local early childhood teachers to participate in my research. A total of 12 responses were collected to the survey. The questions vary from their opinions to their observations and experiences regarding the interactive activities and their relationship with behaviors. Moreover, some questions asked the participants about the role of teacher instructions and guidance during those activities. Results have shown that the teachers experienced better lesson implementations when applying different types of interactive activities since the number of misbehaviors decreased because of them. However, the overall data collected from the teachers shows that three factors affect this matter: student engagement, teacher's instructions, and positive reinforcement (See Figure 5).

First, young learners' levels of engagement affect the success of implementing any activity, and not just the interactive ones, since it increases students' motivation to learn and helps them stay on track with the lesson. Second, the guidance of the teacher eases the requirements for the students and helps them to understand what they are expected to do in terms of the tasks and behaviors. Third, positive reinforcement increases the chances of behavior repentance and sticking to rules since the students get rewarded and feel happy about what they did.

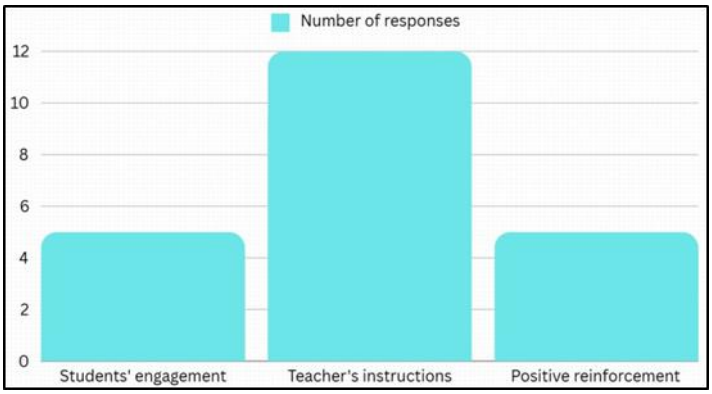

Figure 6.*the number of teachers mentioning factors*

This study found that implementing interactive activities had a significant positive impact on student behavior in UAE early childhood classrooms. Students became more engaged, followed rules more consistently, and displayed fewer disruptive behaviors. These results align with and extend findings from previous research.

For example, Sjöman et al. (2021) and Lin et al. (2016) both highlighted the role of peer interaction in reducing hyperactivity and promoting engagement. Our findings support this and show that both peer and group activities led to better cooperation and focus, especially among students previously identified with behavioral challenges.

Similarly, teacher-student interaction proved critical. Luckner and Pianta (2011) noted that emotionally supportive classroom environments correlate with fewer aggressive behaviors, a finding mirrored in our study, where clear teacher guidance improved classroom discipline. Chen et al. (2019) found that frequent interaction, even in home settings, reduces hyperactivity, suggesting that interaction, in any context, promotes better behavior.

Furthermore, Cadima et al. (2010) reported weak links between classroom interactions and behavior. Our mixed-methods approach, however, allowed for more direct observation and triangulation of data, leading potentially to stronger conclusions.

Overall, our findings reinforce Vygotsky's social constructivist theory and behaviorist principles, demonstrating that well-structured interactive activities and clear instructions can meaningfully support behavioral development in early childhood classrooms.

DISCUSSION

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Limitations

This study contains some limitations, such as:

1.It is a small, focused group that was conducted in one primary school in the UAE. The participants of the research were five students from both grades 1 and 2, which is a small number.

2.The participants did not contain Special Educational Needs (SEN) students, who might need to be considered since they tend to show lots of potentially negative behaviors.

Future Opportunities

Since this research project has some limitations, such as being a small case study in one primary school, there are plans to improve and develop the research. Firstly, we would like to expand the size of the study's implementation to more than one school in Ras Al Khaimah, or even to the other Emirates. Secondly, we would like to include special educational needs students to integrate them with their classmates as per the UAE's SEN students' integration policy. In our experience, SEN students tend to show several misbehaviors that disrupt the teaching and learning process. As Murik et al. (2005) claimed, SEN students show many misbehaviors, and sometimes, they could be extreme, affecting the teachers and their classmates. Their inclusion is therefore highly important. Finally, we would like to consider including more uses of interactive technologies rather than only using the smart board in ECE classrooms.

Potential Project Impact

Persistent disruptive behaviors continue to pose significant challenges in early childhood education (ECE) classrooms, often undermining effective teaching and learning. Despite the application of various classroom management strategies, such behaviors can remain resistant to change and demand substantial teacher time and effort. This study suggests that the integration of interactive activities into daily instructional practices offers a promising approach to addressing these challenges. By promoting engagement, collaboration, and clearer behavioral expectations, interactive strategies have the potential to reduce misbehavior and support the development of positive classroom conduct. Consequently, the findings of this research may contribute meaningfully to improving behavior management practices in ECE settings within the UAE and in comparable educational contexts globally.

Conclusion

This research investigated the impact of interactive activities on the control and development of early childhood education students in UAE classrooms. It aimed to answer two main questions:1) What is the impact of interactive activities on the control and development of behaviors of early childhood education students?2) How does teachers' guidance in interactive activities enhance the control and development of ECE students' behaviors? This study ran 3 data collection methods: observation, interviews, and survey. The results show that interactive activities have a significant positive impact on students' behaviors, leading to a decrease in the negative ones and an increase in the positive ones. However, there are three factors affecting this matter: student engagement, teacher instructions, and positive reinforcement.

There are a few limitations of this study, which are addressed in the future plan for this research. We look forward to carrying out further research into this critical area of enhancing the ECE classroom management through applying interactive activities.

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The Role of Self-Assessment in Developing Letter Recognition Skills in Early Childhood in the UAE

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ABSTRACT

Self-assessment is a formative assessment tool that encourages young learners to reflect on their progress, take ownership of their learning and develop basic literacy skills. The aim of this study is to investigate the role of self-assessment in improving letter recognition among early childhood students (ages 4–6) in UAE government kindergartens. The study uses mixed methods of research design to investigate the effectiveness of self-assessment strategies, to assess students' progress in letter recognition, and to identify challenges in implementation. Teacher interviews, classroom observations, student artifacts, and self-assessment tools (star ratings and emotional emoji scales) were used for data collection. The results show that self-assessment leads to significant improvements in letter recognition skills, and students become more aware of their learning strengths and weaknesses. The most effective methods for supporting early learners were visual and interactive self-assessment methods, especially those that included engaging and age-appropriate tools. However, there were challenges like limited attention span, different levels of developmental readiness, and the need for teacher guidance. This indicates that successful implementation of self-assessment requires structured support and scaffolding. The findings of this study emphasize the need for incorporating self-assessment into early childhood literacy instruction, and show how it can increase student motivation, engagement, and autonomy. Further research should investigate other self-assessment strategies that are appropriate for young learners' cognitive and linguistic development to optimize learning outcomes.

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INTRODUCTION

Self-assessment is a formative assessment strategy that enables students to actively engage in their learning by reflecting on their progress, identifying areas for improvement, and taking ownership of their educational journey. In early childhood education, self-assessment plays a critical role in developing foundational literacy skills, particularly letter recognition, which is essential for reading and writing development. The United Arab Emirates (UAE) has taken great strides in improving English language education, utilizing a number of instructional strategies to improve literacy learning. Yet, the contribution of self-assessment in promoting letter recognition skills in early childhood learners is an area that needs

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further exploration. Assessments are a guideline to educators to track student progress and adjust methods of instruction to match students' needs (Siemund, Al-Issa, & Leimgruber, 2021). Self-assessment is continuously implemented to support personalized learning pathways that enable students to become more self-aware and engaged in their academic growth (Slavin, 2014). Nevertheless, in early childhood education, self-assessment is not implemented in its sufficient degree, and teachers prevail upon student driven ones. Self-assessment has been widely adopted in upper grade levels, but its practical application in early childhood literacy instruction is inconsistent (Pyle & DeLuca, 2013). In UAE government kindergartens, young learners have difficulty recognizing letters but are not encouraged to assess their own learning progress. However, teacher directed instruction is what traditional teaching focuses on and thus has no time to assess self and practice that in turn allows pupils to develop metacognitive skills. The UAE Ministry of Education has introduced self-evaluation training courses to promote self-assessment, but the practical implementation of self-assessment in early literacy instruction is still in its infancy and needs further refinement (Kasanen & Räty, 2002). There are several challenges that prevent the effective integration of self-assessment in early childhood classrooms. Young learners have short attention spans and are not able to engage in sustained self-assessment practices. Moreover, developmental readiness is not the same, as some students need more time and more structured guidance to understand self-assessment (Gullo & Hughes, 2011). However, educators have difficulty finding suitable self-assessment tools for early learners, which restricts their use in letter recognition instruction. Without structured teacher support, it may be difficult for young learners to assess their learning well, thus diminishing the influence of self-assessment on literacy development. Considering these challenges, this study investigates the role of self-assessment in the development of letter recognition skills among early childhood students in UAE government kindergartens. Specifically, it examines how strategies for self-assessment promote letter knowledge acquisition, it determines how well this approach (i.e., self-assessment strategies) works to improve student learning outcomes, and it looks for barriers to implementation of the self-assessment strategies successfully. This research, therefore, contributes to a better understanding of how self-assessment can be effectively integrated in English literacy instruction within the UAE kindergarten classroom and it brings to light the best practices.

Research Questions:

Guided by the problem statement, this research focuses on addressing the following key questions

1. How does self-assessment affect students' letter recognition abilities?
2. What are the different self-assessment strategies in early childhood classrooms?
3. What are the challenges of incorporating self-assessment into English literacy classrooms?

Literature Review

Theoretical Foundations of Self-Assessment

Constructivist learning theories of Piaget and Vygotsky are deeply rooted in self-assessment. According to Piaget's theory, children learn by actively interacting with their environment and combining new information with previous experiences (Alanazi, 2016). This is consistent with self-assessment, as it allows young learners to make meaning from their experiences, monitor their own progress, and adapt their learning strategies.

Vygotsky's Zone of Proximal Development (ZPD) also emphasizes the role of scaffolding, which is the progression from what students can do independently to what they can do with guidance (Butler & Lee, 2010). As a scaffolding tool in the context of literacy development, self-assessment helps children become more aware of their progress and gradually become more independent in learning.

Moreover, self-assessment improves metacognition, which allows learners to think about what they know, ask relevant questions, and develop critical thinking (Scott, 2017). According to Rezaei (2011), self-assessment enhances reflective practices in language learning and enables students to have a better understanding of their strengths and weaknesses (Brown & Harris, 2014).

Understanding Self-Assessment in Early Childhood Education

A formative assessment strategy, self-assessment encourages learners to assess their own progress, reflect on their understanding, and identify areas for improvement (McMillan, 2012). Self-assessment is often used interchangeably with terms like self-evaluation, self-reflection, and self-monitoring, all of which highlight the learner's active role in evaluating their own learning (Herrera et al., 2022). But self-assessment is not just about determining achievement; it is a process-oriented approach that allows students to track their progress, improve their learning strategies and develop confidence in their academic abilities.

Self-assessment is very important in early childhood education, in literacy development especially in letter recognition. Structured self-assessment activities help young learners to understand their strengths and weaknesses and develop the foundational skills necessary for reading and writing. Since early literacy is based on a child's ability to recognize letters, identify their sounds, and make connections between spoken and written language, self-assessment allows students to take an active role in their learning journey (Slavin, 2014).

Benefits of Self-Assessment in Early Literacy Development

Self-assessment promotes active participation as students take ownership of their learning and their academic progress (Slavin, 2014). According to research, self assessment has a positive effect on student motivation and engagement because it enables learners to monitor their progress and celebrate small achievements (Jamrus, 2019). Integrating self-assessment strategies into literacy instruction makes children more invested in learning, which results in more focus, persistence, and confidence (White, 2021).

Self-assessment is one of the key advantages in developing self-regulated learning. Children become more aware of their learning strengths and challenges as they assess their progress, and can adjust their strategies accordingly (James, 2012). This process encourages independent learning habits, decreasing their dependence on teacher feedback and encouraging autonomous decision making in learning (Brown & Harris, 2014).

Not only is self-assessment beneficial for academic development, but it also supports cognitive, social and emotional growth. It helps learners to reflect on their thinking, to articulate their progress and to engage in meaningful discussions about their learning (Miller, 2003). Moreover, self assessment also reduces anxiety associated with teacher led evaluations as students become confident in assessing their own progress without fear of external judgment (Brown & Harris, 2014).

Practical Strategies for Implementing Self-Assessment

In order to make the most of self-assessment in early childhood education, assessment tools should be engaging and developmentally appropriate. The star rating system is one effective method, where students rate their performance by coloring stars according to how independently they completed a task. Likewise, emoji based self-assessments are a visual and intuitive way for young learners to express their understanding (Andrade & Valtcheva, 2009).

Additionally, bcause young learners need structured support, teachers are important in modeling self-assessment strategies and guiding students on how to assess progress. Educators can integrate verbal reflections, checklists, and guided self-assessment activities to help children develop the skills to assess their learning independently (Kumar et al., 2023).

Self-assessment is not only about literacy development, but also about 21st century learning skills like critical thinking, collaboration and self-directed learning. Peer discussions and reflective learning practices encourage students to develop a deeper understanding of their progress and promote cooperative learning and emotional intelligence (Scott, 2017).

METHODOLOGY

Research Design

This action research adopts a qualitative research design to explore the role of self-assessment in developing letter recognition skills in early childhood education. Qualitative approach helps to understand students' learning experiences, engagement and self-reflection in classroom settings (Kothari, 2014). The study captures descriptive data through observations, artifacts, and interviews that highlight patterns, behaviors, and perspectives on self-assessment in literacy learning (Pandey, 2021). To examine real world classroom interactions and provide context specific insights into how young learners engage with self-assessment, a case study methodology was chosen (Merriam, 2009). Since the research is not about measuring numerical outcomes but understanding student experiences, qualitative inquiry is the most appropriate approach.

Participants

The study was carried out in a government kindergarten in Sharjah, UAE, with students aged 4–6, whose first language is Arabic. During circle time, students participated in whole group self-assessment activities and then focused small group sessions with an English teacher. The study was conducted in two phases: a six-week initial period and an eight-week observation period to monitor progress and engagement in self-assessment. The research was supported by the UAE Ministry of Education, which included self-assessment in early literacy instruction and teacher training for implementation.

Data Collection Tools

A multi-method qualitative approach was used to ensure a rich, detailed exploration of students' experiences with self-assessment.

Classroom Observation

Firsthand observations of student engagement with self-assessment strategies offered firsthand insights into student behaviors, interactions, and expressions of understanding (Tilstone, 2013). To document how students responded to self-assessment tasks, their level of independence in evaluating their learning, and their ability to recognize letters through reflective practices, a structured observation sheet was used. Changes in student engagement were tracked through classroom observations and evidence was provided of how self-assessment impacted their literacy development over time.

Artifacts

Student self-assessment sheets, drawings, writing samples and classroom activities were analyzed to track progress in letter recognition and self-reflective skills (Heale & Twycross, 2015). These artifacts offered concrete evidence of students' engagement, and how they assessed their own learning through visuals and written reflections. Qualitative analysis of these materials provided a better understanding of how self-assessment supported letter recognition and literacy growth.

Interview

The classroom teacher was interviewed using a semi structured interview to explore their experiences, perceptions and challenges in implementing self-assessment (Goundar, 2012). The interview addressed the teacher's role in facilitating self-assessment, observed changes in student engagement and letter recognition, and the difficulties in implementing self-assessment strategies in early childhood classrooms. The teacher's insights provided contextual information that was useful in interpreting classroom observations and student artifacts.

Letter Recognition Activities

To incorporate self-assessment into daily learning, letter recognition activities were designed to use tools such as star ratings and emotion-based reflections adopted from PAAI. (Goto Butler & Lee, 2010). These activities allowed students to recognize letters, connect them to sounds, and think about what they knew. Students were able to develop a greater awareness of their progress, challenges, and achievements in literacy development through self-assessment while doing letter recognition tasks (Jamrus & Razali, 2019).

RESULTS

The Effect of Self-Assessment on Students' Letter Recognition Abilities

The first research question was to investigate the effect of self-assessment on students' letter recognition skills. The study showed that self-assessment greatly facilitated the ability of students to identify, pronounce and write letters. At first, students had difficulty with self-assessment because they were not familiar with the concept and needed constant teacher support to complete the process correctly. For example, some students color all stars in the rating system or happily press the happy emoji without thinking about their actual performance in the first place, which indicates that they still do not understand the self-assessment process.

This was done in an attempt to integrate self-assessment into all classroom activities and integrate it into every lesson I taught so that as assessment was a prominent part of the lesson the students were better able to judge their own growth and learning and able to understand where and what they still have to improve in more accurately. Through time, they learned to better recognize their strengths and weaknesses in literacy activities. Students who were actively engaged during self-assessment in the classroom were better able to recognize and differentiate between uppercase and lowercase letters. Moreover, the collection of artifacts from student work showed that there was a striking progression in their letter recognition as letter identification and phonemic awareness were much more accurate as the time passed (Andrade & Valtcheva, 2009).

This finding was confirmed through teacher interviews, in which educators stated that regular use of self-assessment made students more confident in their literacy abilities. In addition, they were more motivated and enthusiastic in classroom activities, especially when using interactive self-assessment

tools. Findings indicate that self-assessment tools that use stars, emotional emoji, etc. adopted from PAAI, promote accessibility and engagement for early learners because of the tools' visual and interactive nature. Further, the responses from the teacher indicated that students using self-assessment tended to be more aware of their own learning, becoming less dependent on teacher for literacy development

This was also confirmed by parental surveys as the parents of many children observed them to become more able to recognize letters at home. Parents reported that students who evaluated themselves were more apt to practice letter recognition at home than those who did not practice it because students assessed themselves and knew where they were in the learning process and where they could improve. These findings do demonstrate that self-assessment is effective both for enhancing letter recognition skills in the classroom, and as an independent learning habit in non-classroom situations (Jamrus & Razali, 2019).

Self-Assessment Strategies in Early Childhood Classrooms

The second research question was to determine the most effective self-assessment strategies for early childhood learners. The first two self-assessment strategies used in the study were the star rating system and emotional emoji reflections.

Observations within the classroom showed that the students considered the star rating system to be more intuitive and engaging than the assessment conducted using emojis. Students were already familiar with stars as a form of reward system, so they were able to understand the self-assessment process. The letter recognition activities were graded with the star system – students assessed their performance in recognition activities by recognizing what they were able to do independently and what tasks they needed teacher assistance with.

However, the emotional emoji system turned out to be initially difficult, as some students found it quite hard to identify relations between their emotions and their learning progress. For younger learners, they needed verbal explanations and repetition of how to correctly use the emoji system. However, over the course of the study, students became more at ease using emojis to represent the degree to which they understood the material, a phenomenon that showed that visual and affective cues were effective at aiding in self-reflection (Goto Butler & Lee, 2010).

The combination of multiple self-assessment strategies was found to be the most effective through teacher interviews and checklists. Incorporating self-assessment with oral questioning in conjunction with peer discussions and the support of the teacher proved most useful to students. In line with the previous research (Brown & Harris, 2013), the finding is consistent with the fact that scaffolding experiences across multiple sensory and cognitive modalities are necessary for young children to acquire the skills of self-assessment.

Challenges of Incorporating Self-Assessment into English Literacy Classrooms

The third research question explored the challenges of implementing self-assessment in early childhood English literacy classrooms. The main challenge that was observed was that students had short attention spans and were unable to consistently engage in self-assessment. The students rushed through the self-assessment tasks to a degree without true reflection, and this needed a lot of teacher modeling and reinforcement initially during the first study. This result is consistent with research that indicates that guidance is needed to teach young learners to regulate themselves (Brown & Harris, 2014).

A second major challenge was students' developmental readiness for self-assessment. Other students did not know the difference between doing an activity and self-assessing their learning. Students at lower academic levels needed much more direct teacher support and scaffolding to meaningfully engage in self-

assessment. Structured teacher support, however, reinforced over time the value of developing strengths and areas for improvement in these students (Andrade & Valtcheva, 2009), as teacher interviews confirmed these students' onset of the ability to recognize their strengths and areas for improvement in the potential for development.

Psychological factors also influenced students' ability to self-assess accurately. However, some students were hesitant to rate themselves honestly because they equate lower self-rates with failure or with something the teacher will feel negative about. Some were reluctant to make their self-assessment decisions without teacher validation. These findings are consistent with previous research that suggests that young learners may have difficulty with self-assessment because they rely on external validation (Rolheiser & Ross, 2001).

Another factor that influenced the effectiveness of self-assessment was parental involvement. Some parents were unsure how to support self-assessment at home as they were not familiar with the process. Parents who were actively involved in their children's self-assessment activities, however, reported positive changes in their child's motivation and confidence in literacy skills (Jafarov, 2015).

It also provides the avenue for teacher feedback to acknowledge that professional development or training is needed in order to be able to implement self -assessment strategies. Initially, some teachers found it difficult to incorporate self-assessment into literacy instruction because it took extra time and necessitated changes to the existing lesson structures. During the later stages of the study, however, teachers noticed that students seem to get used to self-assessment routines and this made the process a smoother integration into daily instruction (Goldhaber et al., 2020).

DISCUSSION AND CONCLUSION

The Effect of Self-Assessment on Students' Letter Recognition Abilities

The main purpose of this study was to investigate how self-assessment can be used as an effective strategy to improve letter recognition among early childhood students. The findings showed that the self-assessment plays an important role for students to identify, distinguish and recall letters when they reflect and engage with their own learning in a structured way. The study also showed that self-assessment helped learners develop a form of basic literacy skills such as listening (to distinguish letter sounds), speaking (to pronounce the letter), reading (to identify different letters) and writing (to construct the letter correctly). These results are in line with previous research showing the importance of self-assessment in enhancing students' metacognitive awareness and academic performance (Andrade & Valtcheva, 2009). During the study, various self-assessment strategies were incorporated into daily classroom activities such as interactive English literacy lessons, educational games, physical activities, writing exercises, and reading tasks. It also facilitated periodic self-assessment after each activity allowing students the opportunity to critically analyze their level of learning, as well as, identifying both their strengths as well as where their needs for improvement. Learners who practiced frequent self-assessment observed student artifacts and were observed to have a more heightened awareness of their learning goals and more independence in their literacy development. These findings coincide with the research stating that self-assessment leads with responsibility and self-regulation in developing the reasoners in young learners (Brown & Harris, 2013).

Self-Assessment Strategies in Early Childhood Classrooms

Learnings from the study include the benefits of visual and interactive self-assessment tools: primarily in the use of the star rating system and emotional emoji reflections borrowed from PAAI. All of these are

developmentally appropriate methods because they allow students concretely and visually to evaluate their learning. Students initially did not understand the purpose of self-assessment but with further exposure and teacher guidance developed a more accurate self-reflective skill. The study showed that adding self-evaluation to other teaching strategies, like oral questioning, peer discussions, and guided teacher feedback was especially helpful to their development of more accurate self-evaluations. The tracking of time spent on this aspect of the assessment again supports the existing literature of the need for scaffolded, self-assessment experiences to be effective for children, and that the process must integrate several cognitive and sensory modalities (Goto Butler & Lee, 2010).

Challenges of Incorporating Self-Assessment into English Literacy Classrooms

The study revealed that though the integration of self-assessment into ECL instruction is effective, there are several challenges and obstacles facing it. A major issue was that students had very short attention spans and could not invest in a self-assessment process. During the implementation of this process in its earlier phase, students often rushed through self-assessment activities with little or no genuine reflection and modelled and reinforced by teachers. This result is consistent with research showing that young learners require formal guidance to improve in self-regulation (Brown & Harris, 2014). A second challenge was students' developmental readiness for self-assessment. The first problem was that lots of participants initially could not tell between assessing their learning and just doing the task. Young students held the view that self-assessment is easier and more beneficial if they have some teacher support and also some structured guidance from the teacher. However, as implementation continued, students started displaying the ability to identify their strengths and weaknesses as well as the part that required improvement, thus emphasizing the significance of teacher scaffolding and continuous feedback in early childhood assessment (Andrade & Valtcheva, 2009). Psychological factors also affected the effectiveness of self-assessment. Still, some students were reluctant to rate themselves lower, as it had the implication of failure or feedback from the teacher that one was not doing well. Some depended on teacher validation before making decisions about self-assessment. This supports previous research that young learners may have difficulty with self-assessment because they rely on external validation (Rolheiser & Ross, 2001). Therefore, teachers normalized self-assessment as a growth tool, not a judgement tool, enabling students to more comfortably utilize self-assessment to check on their learning progress. Self-assessment effectiveness was also influenced by parental involvement. However, some parents might also not be aware of how to support self-assessment at home, based on surveys. However, those who were more involved in their children's self-assessment tasks were more confident and motivated in literacy learning. This supports previous research that parental support enhances children's self-regulation and metacognitive skills in literacy development (Jafarov, 2015).

Limitations and Implications

This study highlights the potential of self-assessment strategies to support early literacy development in young learners, particularly in enhancing letter recognition skills. The findings suggest that integrating simple, visual, and interactive self-assessment tools can increase students' motivation, confidence, and autonomy in learning, while also encouraging teachers to adopt more reflective and student-centered practices. These results have broader implications for teacher education and professional development, as they emphasize the importance of preparing educators to effectively implement self-assessment strategies in early childhood classrooms. At the policy level, the study contributes to ongoing discussions about embedding formative assessment approaches within national literacy initiatives.

The research was conducted in a single school context, which limits the generalizability of the findings. While the in-depth case study design offers rich and detailed insights into the experiences of young learners and teachers, it may not fully represent the diversity of early childhood settings across the UAE or beyond. Future research should extend this work across multiple schools, regions, and learner populations to validate and expand upon these conclusions, thereby strengthening the evidence base for broader application.

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Investigating the Relationship Between Bicycle Use and Positive Psychology Concepts: A Systematic Review

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ABSTRACT

The relationship between physical activity and psychological well-being has been extensively studied in the general literature. But, within this general framework, the number of studies that systematically examine the effects of cycling, in particular, on the aforementioned psychological factors is relatively limited. This study is a systematic review examining the relationship between cycling and positive psychology concepts. The research aims to evaluate the effects of bicycle use on psychological factors such as well-being, happiness, motivation, and hope. A comprehensive literature search conducted on Google Scholar identified 61 studies that met the specified criteria, and 7 of these were included in the review based on inclusion criteria. The findings from the included studies indicate that cycling is associated with well-being, hope, happiness, motivation, and life satisfaction. A positive relationship between cycling and Positive Psychology concepts is among the findings of these studies. While physical activities and Positive Psychology concepts are discussed in the literature, studies specifically linking them to cycling appear relatively limited. Therefore, a systematic review of research associating cycling with Positive Psychology concepts is important for offering insights into future research. In this context, this systematic review provides a crucial foundation for more comprehensively understanding the effects of bicycle use on psychological and emotional health and for developing effective interventions.

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Cycling;
positive psychology;
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INTRODUCTION

Positive Psychology is defined as a scientific field that investigates processes beneficial to an individual's adherence to life and self-development, contributing to their engagement with positive aspects (Peterson, 2000; Gable and Haidt, 2005). Positive psychology asserts that while it does not deny the difficulties in people's lives, focusing solely on these difficulties leads to an incomplete interpretation of an individual's condition (Peterson, 2009). Therefore, Positive Psychology emphasizes an individual's strengths rather than their weaknesses, concerning itself with achieving solutions through an individual's strengths (Demir and Türk, 2020). It is argued that focusing on character strengths will positively impact an individual's life and support their potential realization (Güngör, 2017). Positive Psychology is an

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umbrella term explained by many concepts (Seligman et al., 2005). Positive Psychology addresses concepts such as well-being and satisfaction related to the past, hope related to the future, and happiness related to the present (Seligman and Csikszentmihalyi, 2000).

Well-being is a broad concept encompassing creativity, strong social bonds, successful coping mechanisms for problems, and life expectancy (Diener et al., 2017). Psychological well-being is explained by an individual's understanding of their life goals, awareness of their capacity, and the quality of their social connections (Ryff and Keyes, 1995). Hope is conveyed as a multifaceted human characteristic that arises in response to existing problems and is positioned as a positive emotion (Nazir, 2020). This emotion stems from the expectation of achieving desired goals (Lazarus, 1999). Happiness, in its most general definition, is the feeling of pleasure (Thomason et al., 2020). Happiness is an attempt to maximize the pleasure derived from life (Thomason et al., 2020). Happiness is a concept that encompasses individuals from psychological, physiological, and social perspectives. In psychology, happiness refers to positive affect (Demir and Murat, 2017). Happiness is one of the important concepts in understanding Positive Psychology (Gönener et al., 2017).

The concept of motivation is fundamentally described as a force that drives an individual to behavior, determines the intensity of the behavior, and is effective in its continuity (Schunk et al., 2013). People engage in behaviors more for personal pleasure than for external factors. In this regard, pleasure and curiosity are effective in the formation of intrinsic motivation (Ryan and Deci, 2000). Intrinsic motivation, in its general definition, is an individual performing a behavior solely for personal satisfaction and pleasure (Ryan, 1995). Life satisfaction is conveyed as an individual's emotional responses and attitudes towards life, defined as their time outside of work and responsibilities (Dikmen, 1995). The concept of life satisfaction expresses the result obtained by comparing an individual's expectations with what they possess (Haybron, 2007). Life satisfaction focuses on all areas of life (Veenhoven, 1996). Therefore, life satisfaction is considered one of the fundamental goals of life by individuals (Gündoğar et al., 2007).

Engaging in physical activities is exceedingly necessary for improving individuals' health (Muhammet and Uzuner, 2014). Regularly performed physical activities benefit in alleviating physical ailments and are also effective in individuals' psychological development (Işık et al., 2014). Positive experiences and lived experiences are beneficial in increasing an individual's happiness (Ashby et al., 1999). Activities that support psychological well-being contribute to individuals overcoming difficulties and focusing on the positive in life (Zuzanek, 1998). Physical activities that have a positive effect on mental disorders can also have a preventive effect in these situations. In this respect, physical activities carry the preventive quality of Positive Psychology (Faulkner et al., 2015). Research in the literature indicates that physical activities are discussed together with concepts such as hope, well-being, life satisfaction, and happiness. It is stated that efforts to strengthen well-being will increase physical activity, and thus increased physical activity will be protective of mental health (Roman et al., 2023). Higher physical activity is also reported to be significantly related to better life satisfaction and happiness (An et al., 2020).

In addition to demonstrating the positive effects of physical activity on mental health, this study compiles research specifically examining how cycling might have an effect within the context of Positive Psychology. It determines the extent to which bicycle use is associated with Positive Psychology concepts such as happiness, well-being, motivation, and hope, and explains how the effects of this physical activity on mental health are addressed. Therefore, this review is important for highlighting the role cycling can play in mental health. The study emphasizes how cycling can play a role not only in the treatment of existing mental disorders but also in their prevention. This emphasis contributes to the literature by establishing a connection between the preventive nature of Positive Psychology and the preventive

effects of physical activity. In this way, it provides a practical basis for considering cycling as a tool in public health policies and community-based education programs. Therefore, it is crucial to scientifically and systematically understand the contributions of bicycle use to Positive Psychology and its positive effects on mental health from the studies conducted in this field, and to offer insights for potential future studies.

The purpose of this systematic review is to bring together studies that explain the relationship between cycling or bicycle use and Positive Psychology concepts such as well-being, hope, happiness, motivation, and life satisfaction, and examine the possible effects of this physical activity on these variables.

METHODOLOGY

Research Model

This research is a systematic review conducted to examine the relationships between cycling and the positive psychology concepts of well-being, happiness, motivation, and hope. A Systematic Review (SR) is defined as a scientific research method that aims to find an answer to a specific research question by systematically and unbiasedly searching for studies on the same topic according to predetermined criteria, evaluating the validity of the found studies, and synthesizing them (Çınar, 2021). Systematic reviews aim to reduce bias by using explicit methods for comprehensive literature searching and critical appraisal of individual studies (Crowther et al., 2010). Systematic reviews determine whether scientific findings are consistent and generalizable across populations, settings, and treatment differences, or whether findings differ significantly by specific subgroups (Mulrow, 1994).

Study Selection Process

To identify the studies to be examined within the scope of this research, a search and selection process was carried out using English keywords in research articles published on Google Scholar. To find research addressing both cycling and positive psychology concepts, the terms "Cycling" and "Motivation," "Cycling" and "Hope," "Cycling" and "Happiness," "Cycling" and "Wellbeing," and "Cycling" and "Life Satisfaction" were searched.

Ethical Statement

The research was conducted in compliance with general academic ethical rules. This study did not involve any human or animal experimentation and utilized data solely from open-access sources. Therefore, a separate ethics committee approval was not required.

The scanning and selection process for determining the studies to be examined within the scope of the research involved searching for English keywords in research articles published on Google Scholar. To identify research that addresses both cycling and Positive Psychology concepts, the terms "Cycling" and "Motivation," "Cycling" and "Hope," "Cycling" and "Happiness," "Cycling" and "Wellbeing," and "Cycling" and "Life Satisfaction" were searched as shown in Table 1

Table 1. *Search Keywords Used in Literature Review*

Data Source	Search Keywords	Document Type	Full Text
Google Scholar	“Cycling”” and “Motivation”	Research Article	+
	“Cycling” and “Hope”		-
	“Cycling” and “Happiness”		+
	“Cycling” and “Wellbeing”		+
	“Cycling” and “Life Satisfaction”		+

Various inclusion criteria were considered when selecting the research found as a result of the literature search to be included in the study. The inclusion criteria used for selecting studies to be included in the research scope are presented in Table 2.

Table 2. *Inclusion Criteria for Studies to be Included in the Research Scope*

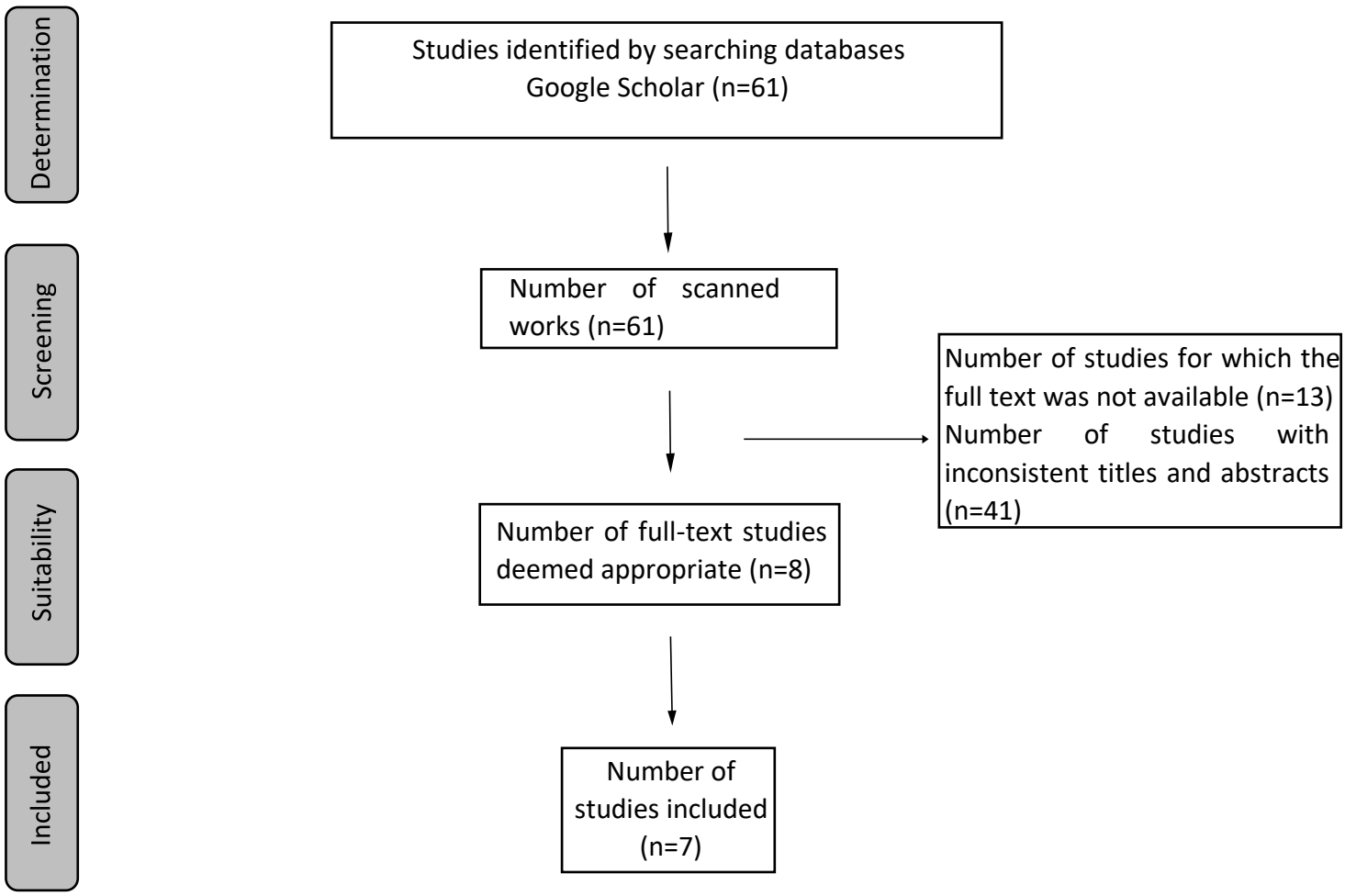
1. Research articles explaining the effect of cycling on Positive Psychology concepts and understanding the underlying Positive Psychology concepts of cycling were included.
2. Research articles available on Google Scholar were included.
3. Research articles were included on the condition that their titles contained the keywords.

As a result of the literature review, 61 studies meeting the specified conditions were found, and among these, 7 research articles were included in the scope of the study, considering the inclusion criteria. The study group consists of 7 research articles accessible from the Google Scholar database that examine the relationship between cycling and Positive Psychology concepts. Information regarding the bibliographic details of the studies examined within the research scope is presented in Table 3.

Table 3. *Studies Examined within the Research Scope*

Author and Year	Title
Barbour ve Mannering, 2023	Intended cycling frequency and the role of happiness and environmental friendliness after COVID-19
Gray ve Gow, 2020	Cycling Without Age: Assessing the Impact of a Cycling-Based Initiative on Mood and Wellbeing
Dementyev, Fish, Opoku, Tesfaye, Chan, Ortiz, Montgomery, Walker, Wilson, 2023	Middle school cycling program is associated with improved mental health and wellbeing in adolescents during COVID-19
Kesenheimer, Sagioglou, Kronbichler, Gauckler, Kolbinger, 2023	Why do people cycle (a lot)? A multivariate approach on mental health, personality traits and motivation as determinants for cycling ambition
Brown, O'Connor ve Barkatsas, 2009	Instrumentation and Motivations for Organised Cycling: The Development of the Cyclist Motivation Instrument (CMI)
Xu, Yuan ve Li, 2019	Exploring the relationship between cycling motivation, leisure benefits and well-being
Ballıkaya, Barut, Demir, Çifçi, Akın, 2018	Examining the relationship between self-efficacy and life satisfaction in cycling and trekking individuals

The flow chart for the systematic search of articles in the study is shown below.



Ethics approval was not required for this systematic review as it exclusively analyzed pre-existing, published data and did not involve human participants or primary data collection.

RESULTS

Table 4. *Features of Reviewed Studies*

Article Title/Author-Year	**Sample**	**Measurement Tools**	**Variables**	**Results**
Intended cycling frequency and the role of happiness and environmental friendliness after COVID-19/Barbourve Mannering, 2023	N=7421 participants	Survey	Cycling frequency Happiness Environmental friendliness	Individuals with high life satisfaction are more likely to increase their cycling frequency.
Cycling Without Age: Assessing the Impact of a Cycling-Based Initiative on Mood and Wellbeing/ Gray ve Gow, 2020	N=49 older adults	Warwick-Edinburgh Mental Wellbeing Scale and UWIST Mood Adjective Checklist	Wellbeing Mood	A cycling activity resulted in short-term positive changes in the mood and well-being of participants, which continued even after the event day.
Middle school cycling programis associated with improved mental health and wellbeing in adolescents	1,268 pre-program and 910 post-program participants-	R4F program and survey	Wellbeing Mental health	Participation in a cycling program helped improve well-being in adolescents,

during COVID-19/ Dementyev, Fish, Opoku, Tesfaye, Chan, Ortiz, Montgomery, Walker, Wilson, 2023	students			depending on factors such as gender, screen time, physical activity level, and sleep duration.
Why do people cycle (a lot)? A multivariate approach on mental health, personality traits and motivation as determinants for cycling ambition/Kesenheimer, Sagioglou, Kronbichler, Gauckler, Kolbinger, 2023	2331 participants	Survey	Mental health Personality traits Motivation	Significant relationships have been found between cycling motivation and the mental health status of participants.
Instrumentation and Motivations for Organised Cycling: The Development of the Cyclist Motivation Instrument (CMI)/ Brown, O'Connor ve Barkatsas,2009	422 participants	Cyclists Motivation Instrument (CMI) Scale	Social-physical experience Self-presentation Environmental exploration Physical health outcomes	Social, economic, and ecological factors influencing cyclists' motivation have led to an increase in their interest and participation levels in the sport.
Exploring the relationship between cycling motivation, leisure benefits and well-being/ Xu, Yuan ve Li, 2019	326 undergraduate students	Survey	Wellbeing Motivation	Cycling motivation is affected by both intrinsic and extrinsic factors, yet psychological benefits are perceived as greater than social benefits.
Examining the relationship between self-efficacy and life satisfaction in cycling and trekking individuals/ Ballıkaya, Barut, Demir, Çifçi, Akın, 2018	156 participants	Perceived Self-Efficacy Expectation Scale Life Satisfaction Scale	Perceived Self-Efficacy Expectation Scale Life Satisfaction Scale	Individuals who regularly engage in cycling and trekking were found to have increased life satisfaction as their self-efficacy scores increased.

This section of the research presents the results obtained from the analyses conducted in line with the general and sub-objectives of the study.

Study Groups

The studies correlating cycling with Positive Psychology concepts have been conducted with various groups. In the study by Gray and Gow (2020), 49 older adults residing in care homes and supported living environments who could provide informed consent were included in the study group, with specific inclusion and exclusion criteria. These older adults were capable of answering questions but required assistance in physically completing them. In the study by Dementyev et al. (2023), data was collected from 1,268 pre-program and 910 post-program participant students from 20 middle schools in North America participating in the R4F academic middle school cycling physical education program. The age range of the participating students was 11-14, depending on their grade level. In the study by Barbour and Mannering (2023), the final sample, determined by various inclusion and exclusion criteria, consisted of 7421 participants. In the research conducted by Xu et al. (2018), a university sample was selected to form a

convenience sample. A total of 326 participants-students were included as the study group. In the study by Kesenheimer et al. (2023), a suitable sample was found by utilizing social media applications (mostly cycling-specific Facebook groups, Instagram, and Strava) and a cycling podcast. Out of 2,366 participants who completed the survey over seven weeks, 35 were excluded as they did not consent to the use of their data at the end of the survey. The resulting sample consisted of 2331 participants. The study group showed a diverse distribution from 59 countries and more than 27 occupational groups. In the study by Ballıkaya et al. (2018), the sample consisted of 156 participants (51 women, 105 men) who regularly cycled in Mersin province. The average age of the participants was 38.79 ± 14.89 years. In the research conducted by Brown et al. (2009), 422 participants selected from 2000 registered cyclists in Victoria, Australia, were identified as the study group. Demographic characteristics of the participants included age, gender, marital status, employment status, cycling class, and regular training speed.

Measurement Tools

In the study conducted by Brown et al. (2009), the measurement tool was specified as the Cyclists Motivation Instrument (CMI). CMI was developed to measure cyclists' motivation. CMI measures five factors influencing cyclists' motivation: social, physical experience, self-presentation, environmental exploration, and physical health outcomes. The measurement tool consisted of 51 items, and participants were asked to express their opinions on these items using a seven-point Likert scale. The measurement tool was developed and tested to understand cyclists' motivation. Furthermore, the psychometric properties of the measurement tool (principal components analysis, confirmatory factor analysis) were examined, and the reliability and validity of the measurement tool were found to be sufficient.

In the study conducted by Dementyev et al. (2023), PSC-17-Y (Pediatric Symptom Checklist-Youth Version) and WHO-5 (World Health Organization-Five Well-Being Index) were used as measurement tools. PSC-17-Y is a measurement tool used to identify and evaluate emotional and behavioral problems in children and adolescents. It has externalizing, internalizing, and attention sub-dimensions. The externalizing sub-dimension includes behavioral problems, while the internalizing sub-dimension includes anxiety and mood disorders. The attention sub-dimension includes attention deficit hyperactivity disorder (ADHD) and attention deficit disorder (ADD). WHO-5 is a measurement tool used to measure well-being. It consists of five questions and measures well-being experienced in the last two weeks. Additionally, a survey was used in the study in addition to the measurement tools. The survey was designed to measure students' opinions and experiences about the R4F program. In the study by Barbour and Mannering (2023), a survey was used as the measurement tool. The characteristics of the survey and the details of the scales used were not discussed in the research. The measurement tool in the study by Xu et al. (2018) utilized a questionnaire to assess participants' opinions on cycling motivation, benefits obtained from leisure activities, and well-being levels. The questionnaire included demographic information, bicycle ownership status, cycling experience, and items aimed at measurement. The questionnaire used a 5-point Likert scale. It contained 38 items to evaluate participants' opinions regarding cycling motivation, benefits from leisure activities, and well-being levels. In the study conducted by Kesenheimer et al. (2023), the Ten-Item Personality Inventory (TIPI), Brief Sensation Seeking Scale, International Classification of Functioning, Disability and Health (ICF) Checklist, Self-Generated Sport Motivation Scale, Self-Generated Cycling Masochism Scale, and Cycling-Related Pain Proximity scales were included. Different psychological and motivational factors were attempted to be evaluated through the measurement tools used. TIPI is a 10-item measurement tool developed to assess personality traits. The Brief Sensation Seeking Scale and ICF Checklist were used to assess physical and mental problems. The measurement tools for the research conducted by Ballıkaya et al. (2018) are the Perceived Self-Efficacy Expectation Scale and the Life

Satisfaction Scale. The Perceived Self-Efficacy Expectation Scale measures individuals' beliefs about performing the actions necessary to cope with potential situations. The Life Satisfaction Scale was used to measure life satisfaction. In the study by Gray and Gow (2020), the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) and the UWIST Mood Adjective Checklist (UMACL) scales were used. WEMWBS is a 14-item scale that measures aspects of mental well-being such as positive emotions, satisfying social relationships, and positive functioning. WEMWBS uses a 5-point Likert scale and consists of 14 items. The total score is 70, and higher scores are associated with better mental well-being. UMACL measures mood using 24 adjectives and is divided into three subscales. This scale uses a 5-point Likert scale. The total score is 120, and higher scores are associated with a more positive mood. The measurement tools of the studies reviewed in the compilation include various scales for assessing participants' motivation, well-being, and psychological states.

Examined Variables

Since this study is a systematic review examining research that correlates bicycle use with Positive Psychology concepts, all selected studies included the variables "happiness," "motivation," "hope," "wellbeing," and "life satisfaction" in relation to cycling. In addition to these variables, other variables were included in the studies: in Brown et al.'s (2009) study, social-physical experience, self-presentation, environmental exploration, and physical health outcomes influencing motivation; in Dementyev et al.'s (2023) study, physical activity, screen time, socioeconomic status; in Barbour and Mannering's (2023) study, gender, age, ethnicity; in Kesenheimer et al.'s (2023) study, mental health, cycling masochism, and propensity for cycling-related pain; in Ballıkaya et al.'s (2018) study, self-efficacy and cycling duration; and in Gray and Gow's (2020) study, mood, length of residency, and number of event participations. The reviewed studies commonly examined the relationships between cycling and Positive Psychology concepts such as "happiness," "motivation," "hope," "wellbeing," and "life satisfaction". The studies generally investigated the effects of individuals' cycling experiences on motivation and well-being. Additionally, factors such as social interactions, physical health outcomes, self-efficacy, mood, and socioeconomic status were considered important variables in analyzing these relationships.

Research Findings

The research conducted by Brown et al. (2009) revealed social, economic, and ecological factors influencing cyclists' motivation. These factors were stated to affect cyclists' interest and participation levels in the sport. In the study by Dementyev et al. (2023), the R4F program was found to be effective in improving mental health and well-being in all students. A significant decrease was observed in the attention, internalizing, and externalizing sub-dimensions after the program. The proportion of participants with a PSC-17-Y score ≥15, which was 30% before the program, decreased to 27% after the program. The proportion of participants with a WHO-5 score ≤50, which was 26% before the program, decreased to 21% after the program. The R4F program facilitated an understanding of its effectiveness in improving adolescents' mental health and well-being and the role of various factors in these effects.

In Barbour and Mannering's (2023) study, many individuals intending to increase cycling frequency after the COVID-19 pandemic stated a reason such as "I realized I really love cycling". Employees, those with high happiness, and environmentally conscious individuals were found to have a higher likelihood of increased cycling frequency compared to others. Although women tended to cycle less than men, it was stated that women were more likely to increase their cycling frequency after the pandemic. In Xu et al.'s (2018) study, significant relationships were found between cycling motivation, benefits derived from leisure activities, and well-being levels. According to the research results, cycling motivation and leisure

activities were found to positively affect well-being. The results indicated that cycling can provide various benefits for individuals' well-being.

In Kesenheimer et al.'s (2023) research, cycling motivation was found to be significantly linked to personality traits, mental health, and cycling-related psychological factors. Cycling motivation was found to be related to personality traits, masochistic tendencies, and attitudes towards cycling-related pain. Various types of motivation, such as extrinsic motivation, health motivation, social motivation, and well-being motivation, were found to influence the cycling experience. In the study conducted by Ballıkaya et al., it was understood that individuals who regularly cycled and trekked had high average scores for life satisfaction and self-efficacy. No statistically significant difference was found between self-efficacy and life satisfaction scores based on gender and age variables. Furthermore, a positive correlation was reported between participants' self-efficacy and life satisfaction scores. In Gray and Gow's (2020) research, the activity was found to have positive effects on the mood and well-being of older adults. A significant increase in WEMWBS and UMALC scores was observed in older adults participating in the activity after the event. The reviewed studies emphasize various psychological and physical benefits of cycling. Cycling motivation is seen to be associated with social, economic, and ecological factors and to influence individuals' levels of engagement in the sport.

DISCUSSION

This study aimed to systematically examine the relationships between bicycle use and Positive Psychology concepts, identify whether the variables affect each other, and compile the studies reviewed for this purpose to provide a framework. Based on the results of the studies included in the research, it can be generally concluded that bicycle use and Positive Psychology concepts influence each other. Therefore, relationships were found between bicycle use and the concepts of happiness, motivation, well-being, and life satisfaction (Ballıkaya et al., 2018; Barbour and Mannering, 2023; Brown et al., 2009; Dementyev et al., 2023; Gray and Gow, 2020; Kesenheimer et al., 2023; Xu et al., 2019). In three of the selected studies, bicycle use was found to be associated with well-being. In this regard, it was understood that the concept of well-being was most frequently associated with bicycle use in the studies (Dementyev et al., 2023; Gray and Gow, 2020; Xu et al., 2019).

In most of the reviewed studies, it was stated that cycling has positive effects on mood, motivation, and well-being. From this, it was emphasized that cycling affects Positive Psychology concepts (Ballıkaya et al., 2018; Brown et al., 2009; Dementyev et al., 2023; Gray and Gow, 2020; Kesenheimer et al., 2023; Xu et al., 2019). In addition to this emphasis, it was stated that Positive Psychology concepts also affect cycling; individuals who are happy and have life satisfaction have a higher cycling frequency compared to others (Barbour and Mannering, 2023). The common emphasis on the effects of motivation on cycling and the psychological benefits it creates ensured that the studies had mutually supportive results (Brown et al., 2009; Kesenheimer et al., 2023; Xu et al., 2019). Gray and Gow's (2020) study, which showed that cycling activities in older adults led to short-term positive changes, was supported by Kesenheimer et al.'s (2023) study, which emphasized the importance of motivation. However, in studies addressing cycling and motivation, motivation was differentiated by being separately associated with environmental factors and intrinsic psychological benefits (Brown et al., 2009; Kesenheimer et al., 2023).

In studies conducted by age groups, differences were observed between the effects on adolescents and older adults. For example, the increase in psychosocial well-being in adolescents was understood to be more pronounced when compared to the short-term effects in older adults (Dementyev et al., 2023; Gray and Gow, 2020). The reviewed studies focused on a specific age, demographic group, or geographical region. Therefore, limitations regarding generalization can be stated. Since most studies used surveys

based on participants' self-reports, there may be uncertainties regarding the objectivity and accuracy of the responses. The lack of control groups in some studies can create difficulties in determining the relationship between correlation and causality. Considering it as a systematic review, while the diversity of the reviewed studies offers an advantage in distinguishing similarities and differences, this diversity can also lead to more superficial evaluations and difficulty in clarifying the context of the subject.

Looking at the studies in the literature, a positive significant relationship between physical activity and psychological well-being levels has been stated (Elmas et al., 2021). Therefore, it has been supported by the reviewed studies that cycling, as a physical activity, has a positive relationship with well-being. It has also been stated that physical activity positively affects quality of life (Karataş, 2018). Indirectly, through quality of life, the idea that cycling has a positive relationship with life satisfaction has been supported. In this regard, the assertion that cycling is positively related to the concept of happiness has been strengthened. In a study addressing the relationship between physical activity and motivation, it was stated that motivation is an important determinant of physical activity in children and adolescents (Çiftçi and Ballıkaya, 2023). Additionally, intrinsic motivation was stated to be an effective motivator for physical activities. From the literature, the conclusion that there is a mutually influencing positive relationship between bicycle use and the concept of motivation has been supported. Based on the findings obtained from the results of this systematic review, it is seen that bicycle use has a strong relationship with Positive Psychology concepts. In this context, some points arise that should be suggested for future research. Firstly, it is important for future research to increase sample size to conduct studies across a wider demographic spectrum, encompassing different socioeconomic conditions and cultural differences. With the use of control groups and objective measurements, future research can more clearly establish cause-and-effect relationships of bicycle use. Furthermore, to understand the effects of motivation on bicycle use in more detail, it would be beneficial to conduct studies focusing on how motivation is related to environmental factors and intrinsic psychological benefits. These suggestions can guide future research in understanding the effects of bicycle use on psychological and emotional health more comprehensively and developing more effective interventions.

Conclusion

This systematic review compiled research examining the relationship between bicycle use and Positive Psychology concepts such as well-being, happiness, motivation, and life satisfaction. The study generally reveals a positive, reciprocal relationship between bicycle use and these psychological factors.

The reviewed studies indicate that bicycle use is most frequently associated with the concept of well-being. Findings state that cycling has positive effects on mood, motivation, and well-being , while also showing that individuals with high life satisfaction and happiness have a higher cycling frequency. The study also determined that the psychological benefits of cycling differ across age groups. These findings support that cycling has a positive effect on individuals' psychological and emotional health.

Limitations and Suggestions for Future Research

This systematic review significantly contributes to understanding the relationship between bicycle use and positive psychology concepts, yet it has some practical limitations stemming from the nature of the reviewed literature. Specifically, the limited number of studies focusing on bicycle use has narrowed the scope of the review. Most of the studies included are correlational, which makes it difficult to determine whether the relationship between bicycle use and positive psychology concepts is one of causality or merely correlation. To overcome this, conducting experimental and longitudinal studies is recommended.

In many studies, psychological concepts like happiness, well-being, and motivation were measured using self-report questionnaires. These subjective data have the potential to be influenced by factors like social desirability or memory bias. It is recommended that more objective measurements be used in the future to address this issue.

Also, by integrating cycling into school-based educational programs, the long-term effects on positive psychology concepts from the individual to the community level can be understood. Such applied studies will provide practical information on how cycling can be used as an intervention tool to enhance psychological well-being.

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The Importance of Teacher Interaction Behaviors in Interactive Book Reading for the Listening Comprehension and Language Skills of Children with Autism: A Traditional Review

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ABSTRACT

This study was conducted as a narrative review to examine the significance of teacher interaction behaviors within the context of interactive book reading (IBR) on the listening comprehension and language skills of children diagnosed with autism spectrum disorder (ASD). The research design was based on a traditional review approach, and the literature search was carried out using the PubMed, Scopus, Web of Science, and Google Scholar databases. Findings from the reviewed studies indicate that IBR is a structured method that enhances children's vocabulary, expressive abilities, and listening comprehension. In particular, the PEER and CROWD strategies have been found effective in supporting the language development of children with ASD. During this process, teachers' sensitive, responsive, and directive interaction behaviors strengthen both social interaction and cognitive learning. The review results highlight the necessity of individualizing IBR practices and improving teachers' pedagogical knowledge. Accordingly, providing training for teachers and parents on the use of IBR may contribute to long-term and sustainable improvements in the language development of children with ASD.

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INTRODUCTION

Language development is among the fundamental skills shaping an individual's cognitive, social, and academic life; linguistic competencies acquired during early childhood directly affect lifelong learning and social adaptation processes (Lord et al., 2004; Rogers & DiLalla, 1990). For children diagnosed with Autism Spectrum Disorder (ASD), this process becomes more complex due to developmental limitations and difficulties in social interaction (APA, 2013). Therefore, it is of great importance to use structured instructional methods to support the language and communication skills of individuals with ASD.

In this context, the Interactive Book Reading (IBR) method has emerged in recent years as an evidence-based practice that promotes the active use and comprehension of language while prioritizing social interaction (Whitehurst & Lonigan, 1998). IBR refers to a dialogic process in which the adult not only reads the book but also facilitates the child's participation. This process, structured with strategies such as PEER (Prompt, Evaluate, Expand, Repeat) and CROWD (Completion, Recall, Open-ended, Wh-questions,

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Distancing), has been shown to support significant progress in vocabulary acquisition, expressive abilities, and listening comprehension (Hargrave & Sénéchal, 2000; Tager-Flusberg et al., 2005).

In the interactive book reading process, the teacher's role goes beyond merely implementing strategies; the interaction behaviors exhibited by the teacher directly influence the child's participation, language use, and socio-emotional development (Hamre & Pianta, 2007). These behaviors include verbal and non-verbal actions such as sensitivity, responsiveness, acceptance, guidance, and reinforcement (Diken, 2009; Mahoney & Wheeden, 1999). For teachers working with children diagnosed with ASD, structuring these behaviors within the framework of pedagogical knowledge and awareness is critical for the effectiveness of IBR (Wright, 2011).

Studies show that IBR positively impacts both receptive and expressive language skills of children with ASD, while teachers require professional development to implement this method effectively (Ergül et al., 2016). However, there is a limited number of studies in the literature that deeply synthesize how teacher interaction behaviors integrate with the IBR process and affect the listening comprehension and language development of children with ASD.

Therefore, the aim of this study is to examine the effects of teacher interaction behaviors on the listening comprehension and language skills of children diagnosed with ASD within the context of interactive book reading, based on theoretical frameworks and current findings. Conducted as a traditional review, this research analyzes the intersection points of teacher interaction and interactive book reading practices by reviewing quality literature from international databases such as PubMed, Scopus, Web of Science, and Google Scholar. The study aims to provide a theoretical framework of teacher interaction behaviors to enhance the effectiveness of IBR in the field and to develop recommendations for practitioners.

METHODOLOGY

Study Design

This study was conducted as a narrative review to examine the effects of teacher interaction behaviors within the context of interactive book reading (IBR) on the language and listening comprehension skills of children diagnosed with autism spectrum disorder (ASD). The narrative review design allows for a comprehensive examination of the literature and synthesis of existing findings.

Data Collection

The literature search was carried out using the PubMed, Scopus, Web of Science, and Google Scholar databases. Keywords included "Autism Spectrum Disorder," "Interactive Book Reading," "Dialogic Book Reading," "Shared Book Reading," "Teacher Interaction," "Language Skills," and "Listening Comprehension." Only peer-reviewed articles were considered, while irrelevant or non-research studies were excluded. Full texts of the selected studies were accessed, and findings related to IBR applications in children with ASD were examined.

Data Analysis

The selected studies were analyzed using a thematic approach, with children's language development, teacher interaction behaviors, and IBR strategies identified as primary themes. Findings from each study were summarized, compared, and synthesized to identify common trends and differences across the literature.

Teacher Interaction Behaviors

Teacher interaction behaviors encompass both verbal and non-verbal strategies used throughout the instructional process to support and guide children's learning and to ensure their active participation in the learning environment. These behaviors include asking open-ended questions, modeling appropriate language use, expanding on children's utterances, maintaining joint attention, and employing gestures and facial expressions. Particularly for children diagnosed with ASD, these behaviors serve as a bridge for developing communication and comprehension skills. Teachers' sensitivity to children's communicative attempts and their ability to respond appropriately based on developmental levels foster a supportive and responsive learning atmosphere (Mulat et al., 2019).

A pioneering study conducted at Utrecht University by Wubbels and colleagues (1987) demonstrated a strong relationship between teachers' interpersonal classroom behaviors and discipline issues. Based on Leary's two-dimensional model (dominance and proximity), this approach categorizes teacher behaviors into eight types for analytical purposes (Wubbels, Creton & Haymayers, 1985). The resulting "Teacher Interaction Questionnaire" is used to identify discrepancies between teacher and student perceptions (Wubbels & Levy, 1993).

Research in the field indicates a strong association between teacher interaction behaviors and students' cognitive (academic success, language development) and affective (motivation, sense of belonging, attitudes) outcomes (Rawnsley & Fisher, 1998; Wubbels & Levy, 1991; Telli et al., 2010). Students who perceive their teachers as helpful and understanding tend to develop more positive attitudes toward learning, whereas perceptions of indecisiveness or authoritarianism may lead to negative attitudes. In this regard, cultural values, as well as non-verbal cues such as tone of voice, body language, and eye contact, play a crucial role (Saydam & Telli, 2011).

According to Hamre and Pianta (2007), emotional support, effective language use, and diverse materials are key indicators of quality teacher interactions. The teacher's role as a guide, supporter, and model influences the quality of interaction and directly affects students' motivation and participation through the establishment of a trusting relationship (Hathazi, 2014).

Teacher interaction behaviors should be considered not only within the instructional dimension but also across emotional, cognitive, and behavioral aspects. These behaviors shape students' attitudes toward learning, enhance their classroom participation, and contribute directly to the development of their social skills. In the literature, such behaviors have been classified in various ways. Sensitivity refers to the teacher's ability to closely observe student behaviors and respond with appropriate verbal or behavioral cues (Perry, Donohue & Weinstein, 2007). Responsiveness involves recognizing and reacting suitably to students' non-verbal cues (Howes, Matheson & Hamilton, 1994). Acceptance focuses on affirming students' actions, thereby enhancing their self-confidence and engagement (Sazak-Pınar & Güner-Yıldız, 2013). Reinforcement refers to encouraging positive behaviors through rewarding feedback (Tekin-İftar, 2014), while guidance involves the teacher's degree of control over activities and its impact on the child's development of independence (Diken, 2009). Enjoyment relates to the creation of a positive classroom atmosphere and the teacher's satisfaction in interactions with students (Vygotsky, 1998; Tu & Hsiao, 2008). Together, these components demonstrate that effective teacher-student interaction significantly contributes not only to academic success but also to students' psychosocial development.

With the advancement of technology, teacher-student interaction has extended beyond the classroom into digital environments. Virtual field trips, in particular, have emerged as experiential learning opportunities guided by teachers. These trips offer learning experiences in inaccessible locations, capturing students' attention and enhancing motivation (Behrendt & Franklin, 2014). Immersive

experiences using virtual reality (VR) headsets allow students to feel more present in the learning environment, positively impacting achievement (Makransky & Lilleholt, 2018). However, online learning environments also carry the risk of social isolation due to the absence of face-to-face cues (Bolliger & Halupa, 2012). In this context, the concept of social presence becomes central. Social presence involves individuals' ability to express themselves, build relationships, and sustain interaction (Garrison et al., 1999). Accordingly, teacher-student interaction influences not only academic success but also the sense of belonging and motivation within the learning process (Moore, 1989; Martin et al., 2018). In online discussions, the teacher's guiding role, the content of feedback, and communication style shape student participation and community building (Zhang et al., 2022). Teacher interaction behaviors thus constitute a multifaceted process that shapes students' socio-emotional development, learning motivation, and participation levels. Whether in physical or digital settings, effective teacher interaction remains a key determinant of student success.

The Importance of Interactive Book Reading for Children with ASD

Interactive Book Reading (IBR), also known as shared or dialogic reading, is an instructional strategy in which adults and children read books together through mutual interaction. In this process, the adult not only reads the book but also asks questions, encourages predictions, expands on the child's responses, and communicates through the narrative. For children diagnosed with ASD, IBR provides a structured and meaningful learning environment for areas of developmental difficulty such as communication, joint attention, and turn-taking.

IBR practices are of particular importance for children with ASD, as they tend to learn more effectively in structured and predictable environments (Whalon et al., 2009). The visual and narrative elements of books offer cues for language processing and comprehension, while the teacher's modeling and structured support enhance the process. Research has shown that IBR sessions incorporating visual supports and active teacher interaction behaviors enable children with ASD to construct longer and more meaningful sentences, expand their vocabulary, and increase their level of engagement (Mulat et al., 2019; Ziegler et al., 2020).

Language development in early childhood is a fundamental area that directly affects individuals' social, cognitive, and academic success. In individuals diagnosed with ASD, language and communication skills include not only expressive language but also the ability to establish relationships with others and to support mental processes. ASD is a neurodevelopmental disorder typically diagnosed in early childhood, characterized by limitations in social interaction and communication, as well as repetitive behaviors and restricted interests (APA, 2013). Delays in language development observed in these individuals pose risks not only for academic progress but also for social adaptation and emotional development (Lord et al., 2004; Rogers & DiLalla, 1990).

Therefore, IBR—an evidence-based instructional method—is considered effective for both typically developing children and children with ASD. In IBR, the child transitions from being a passive listener to an active participant. According to Vygotsky's (1978) Zone of Proximal Development (ZPD) theory, children can unlock their cognitive potential through social interaction. The PEER (Prompt, Evaluate, Expand, Repeat) and CROWD (Completion, Recall, Open-ended questions, Wh-questions, Distancing) strategies developed within this framework support children's processes of language processing, vocabulary acquisition, and meaning-making (Whitehurst et al., 1988; Hargrave & Sénéchal, 2000).

These strategies consider the individualized needs of children with ASD, such as difficulties in generalization, limited vocabulary, and short attention spans (Tager-Flusberg et al., 2005; Lonigan &

Whitehurst, 1998). Studies have shown that IBR can be implemented in home and school settings, during individual or group activities, and even through online platforms (Ergül et al., 2016).

IBR not only supports vocabulary learning but also teaches how to use words in social contexts. Through structured interaction, children with ASD have been observed to improve their generalization skills (Carnahan et al., 2009; Mucchetti, 2013; Wright, 2011). However, in order for these gains to occur, factors such as book type, question structure, frequency of repetition, and the interaction environment must be planned according to individual needs (Justice et al., 2005; Tekin-İftar & Kırcaali-İftar, 2006).

IBR is a flexible, research-based approach that supports language development, social interaction, and early literacy skills. For children with ASD, personalized and structured IBR applications can contribute to both language and social skill development and enable them to establish more effective communication with their environment.

The Importance of Interactive Book Reading on the Listening Comprehension and Language Skills of Children with ASD

Children with ASD often experience significant difficulties in listening comprehension, vocabulary acquisition, and narrative (storytelling) skills. However, these skills are essential not only for academic success but also for effective social communication. IBR allows children to hear words repeatedly in meaningful contexts, encouraging interactive conversations around the text. This process supports the development of syntactic and semantic knowledge, strengthens sequencing abilities in storytelling, and enhances higher-order language competencies such as inference-making (Crane et al., 2011).

IBR fosters active participation in the reading process by moving children beyond passive listening. Sessions enriched with cognitively demanding questions—such as "why" and "how"—support deeper language processing and inferencing skills. Children with ASD particularly benefit from such structured and visually supported environments. Indeed, research has shown that IBR improves turn-taking, initiations in communication, and overall language comprehension in children with ASD (Whalon et al., 2009; Ziegler et al., 2020).

Individuals with ASD often require intensive support in language and communication skills. Language is not only a tool for self-expression but also a core cognitive structure that facilitates interaction with others, learning, and mental development (Lord et al., 2004; Rogers & DiLalla, 1990). Therefore, there is a need for effective, evidence-based, and structured instructional approaches to support language development in children with ASD. IBR is an interactive learning experience built on the dynamic between the child, the adult, and the book. In this method, the child is not just a listener but an active participant engaging with both the text and the adult (Whitehurst et al., 1988). When supported with strategies such as PEER (Prompt, Evaluate, Expand, Repeat) and CROWD (Completion, Recall, Open-ended questions, Wh-questions, Distancing), IBR promotes vocabulary development, narrative competence, and listening comprehension (Hargrave & Sénéchal, 2000).

The common challenges observed in children with ASD—limited vocabulary and difficulty in generalization—can be addressed through IBR using targeted questioning, individualized repetitions, and visual supports (Tager-Flusberg et al., 2005; Carnahan et al., 2009; Wright, 2011). IBR also helps to extend attention spans and strengthen the capacity to extract meaning from text. Thus, IBR is an effective, evidence-based, and customizable approach for developing both listening comprehension and expressive language skills in children with ASD. The method’s reliance on repetition, visual-verbal richness, and active participation contributes significantly to improvements in both receptive and expressive language development.

The Importance of Teacher Interaction Behaviors in Interactive Book Reading

Interactive Book Reading (IBR) is a structured instructional process that supports not only language development but also children's social communication, attention, and participation skills. The success of this process largely depends on the quality of teacher interaction behaviors. Teachers' sensitivity to verbal and non-verbal cues, as well as their ability to provide timely and appropriate responses to children's communicative efforts, creates a reciprocal and meaningful learning environment. This is especially critical for children with ASD who struggle with expressive language and social reciprocity (Mulat et al., 2019).

Effective teacher interaction behaviors not only enhance vocabulary and syntactic skills but also support children in maintaining attention and engaging in social communication throughout the reading session. Strategies such as consistent reinforcement, positive feedback, and emotional support help encourage children's active participation and increase their motivation for learning.

Professional development programs focused on responsive teaching strategies and language facilitation techniques improve teachers' ability to implement IBR effectively. Research by Ziegler et al. (2020) indicates that training based on interactive alignment and emotional attunement yields positive outcomes in the language development of children with ASD. Therefore, investing in teacher professional development and promoting conscious interaction behaviors are essential to maximizing the potential of IBR.

The teacher's role in the IBR process goes beyond simply reading the text; it involves applying strategies that enhance participation, prompt language processing, and foster meaningful interaction. This interaction shapes not only cognitive but also socio-emotional development. According to Vygotsky (1978), social interaction is the most powerful tool in supporting the child's zone of proximal development. In this regard, the teacher is not merely a provider of knowledge, but a social facilitator guiding the child's linguistic engagement during IBR sessions (Whitehurst & Lonigan, 1998; Hargrave & Sénéchal, 2000; Justice & Pullen, 2003; Blom-Hoffman et al., 2007).

Studies have shown that the type and frequency of strategies used by the teacher vary depending on the child's developmental level. Justice et al. (2005) found that when teachers provide explanatory commentary and offer opportunities for active participation, children make greater gains in storytelling and vocabulary skills.

The importance of teacher interaction behaviors becomes even more apparent in studies involving children with special needs. Considering the limited vocabulary and generalization difficulties commonly observed in children with ASD, providing individualized and structured interaction is critical (Tager-Flusberg, Paul & Lord, 2005). The teacher's interaction style in IBR is not limited to delivering book content; rather, the teacher serves as a guide who helps the child structure language, construct meaning, and produce linguistic outputs. The quality of this interaction plays a decisive role in the development of expressive language, vocabulary, and listening comprehension skills in children with ASD. Therefore, the success of IBR largely depends on the teacher's pedagogical competence, strategic guidance, and interactive awareness.

Conclusion

This review study examined the impact of teacher interaction behaviors on the IBR process, specifically for children diagnosed with ASD, and evaluated how such interactions influence listening comprehension and language development. Findings from the literature reveal that directive, responsive, and expansive interaction styles exhibited by teachers have significant effects on vocabulary acquisition, expressive

language use, and listening skills. Structured strategies such as PEER and CROWD used during the IBR process increase the participation of children with ASD and facilitate the production of linguistic outcomes. These strategies not only support language development but also enhance children's socio-emotional adjustment and higher-order cognitive skills such as narrative sequencing.

In this process, the teacher's pedagogical competence, strategic awareness, and interactive guidance play a determining role in the effectiveness of the practice. The research underscores the need to increase teachers' awareness of their interactive behaviors during IBR and highlights the importance of supporting them through professional development programs. Additionally, involving parents in the IBR process helps extend natural learning environments and reinforces language development.

The flexible, individualized, and socially interactive nature of IBR offers significant opportunities for improving communication and cognitive skills in children with ASD. Therefore, IBR should not be viewed merely as a reading activity but rather as a comprehensive instructional strategy that supports the holistic development of the child. When combined with sensitive teacher interactions, a high-quality IBR process has the potential to meaningfully advance the language, thinking, and social participation skills of children with ASD.

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Screen Time in Children Aged 0–6 in Türkiye: A Systematic Review Study

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ABSTRACT

With the continuous development of technological devices, it is thought that the time children spend in front of screens has increased. This increased screen time may cause various positive or negative effects on children. The aim of this systematic review is to provide information about the average screen time spent by children aged 0-6 years in Türkiye and to examine the effects on children due to the increase in this time. PRISMA guide was used in this systematic review study. A literature search was conducted between November 2023 and December 2023 in the TRDizin and Google Scholar databases using the keywords "Screen time in children", "Screen exposure in children", "Screen time", "Screen exposure", "Screen", and "Exposure" in Turkish to include research articles. As a result of the search, 77 studies were found. They were evaluated in accordance with the selection criteria determined for this study and 6 articles that met the criteria were included in the study. The selected articles were analysed in terms of the sample characteristics, the measurement tools used, the variables examined and the results obtained. Across the reviewed studies, children's screen time was found to vary according to age, parental education level, socioeconomic status, and maternal employment. Screen use was also associated with sleep duration, language development, and parents' own screen habits. These findings suggest that screen exposure in early childhood has multifaceted effects on children's development. Therefore, the results underline the importance of limiting and carefully monitoring children's screen time during early childhood.

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INTRODUCTION

The rapid evolution of technology and the widespread use of digital screens have become central to our daily lives. This situation, especially influenced by recent developments, has led technological devices to become an inseparable part of both adults' and children's lives (Clarkson & Zierl, 2018; Çetintaş & Turan, 2018). Today, factors such as the increasing variety of these devices and their portability have paved the way for ease of use in various areas. Technological tools have started to attract attention across all age groups and have especially become a subject of curiosity for young children, continuing to do so (Zimmerman et al., 2007). From an early age, screens such as televisions, computers, smartphones, tablets, and video game consoles are playing an increasingly prominent role in children's lives. This has also led to changes in the social and physical contexts in which children interact with screens (Robin et al., 2017).

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However, the impact of these developments on children, particularly during the critical 0-6 age period when fundamental skills are acquired and development is shaped, has become a significant concern. Screen time (ST) is defined as the amount of time an individual spends using electronic/digital environments (Connell et al., 2015; Schmidt et al., 2020; Smith et al., 2021). The Oxford English Dictionary defines screen time as "time spent using a device such as a computer, television, or game console." Screen exposure, on the other hand, is defined as encountering devices such as phones, tablets, computers, and televisions (McGough, 2022). This exposure can occur on various digital platforms such as television, computers, tablets, smartphones, and video game consoles. Studies have shown that screen exposure can be a significant factor affecting an individual's developing cognitive, social, and emotional processes, particularly during childhood (Jones et al., 2019). In this context, screen exposure is an important concept for understanding an individual's interaction with digital media and the potential effects of this interaction. The effects of excessive screen exposure during the critical period of brain development (ages 0-6) have started to be confirmed through necessary research studies (Black et al., 2017). Within this scope, it has been supported by research that technological devices have both positive and negative effects on children. In recent years, while children's daily exposure times to screen-based technological devices have increased, the age of initial exposure has been observed to decrease (Dumuid, 2020). According to studies conducted by the American Academy of Pediatrics regarding the increase in screen time, it has been found that children spend an average of 16–17 hours per week in front of screens (American Academy of Pediatrics, 2011). The World Health Organization (WHO) has recommended that children aged 2 to 5 should be exposed to screens for no more than 1 hour per day (WHO, 2019).

Current literature focuses more on the negative effects of screen time and has revealed that increased screen time leads to developmental issues in children across various domains (Christakis et al., 2016). In a study by Tanrıverdi (2014), it was concluded that technological devices could weaken children's thinking skills and pose a barrier to socialization. Other similar studies have observed that spending excessive time in front of screens may harm children physiologically and lead to problems such as sleep disturbances and eating disorders (Akçay, 2017; Sourtiji, 2018). Studies by Gündoğdu and others (2016) have shown that screen exposure in children is associated with developmental issues in speech and delays in self-expression. A 2023 study by Torun Yeterge demonstrated a relationship between prolonged screen exposure in children and autism spectrum disorder symptoms. A review of the relevant literature shows that the harmful effects of screens on children's cognitive development (Tomopoulu et al., 2010; Radesky & Christakis, 2016) and academic achievement (Hancox et al., 2005; Poulain et al., 2018) have been supported by research findings. At the same time, the duration of screen use and exposure in children has been linked to sleep (Cain & Gradisar, 2010; Radesky & Christakis, 2016; Brockmann et al., 2016) and eating disorders (Coley et al., 2013; Hingle & Kunkel, 2012; Veldhuis et al., 2012), as supported by various studies.

Considering these studies, it appears that the increasing screen time among children may lead to difficulties in the development of speech skills and a rise in the severity of autism spectrum disorder symptoms. However, when examining the relevant literature regarding the potential positive effects of screen exposure, it is also evident that screen use can positively influence children's physical, socio-emotional, motor, and language development. Studies conducted by Anderson et al. (2001) demonstrate that children who regularly watch educational programs show improvements in their social and language skills, as well as in school readiness. In an experimental study involving six-year-old children attending preschool, the impact of computer-assisted instruction on concept development was investigated. In the experimental group, children received computer-assisted instruction once a week over a period of 15

weeks, while the control group did not receive a similar intervention. According to the research conducted by Ayhan and Aral (2009), the concept development scores of the children in the experimental group differed significantly from those in the control group. These findings suggest that computer-assisted instruction can positively contribute to the conceptual development of six-year-old children.

Another important finding is that time spent in front of screens does not always have to be a passive and sedentary experience. On the contrary, digital media can promote and support physical activity. Particularly from the age of three, children are able to imitate and participate in activity-based applications designed for them (Moody et al., 2010). These findings underscore the importance of parents and professionals in managing and limiting screen use in a balanced manner. During childhood and adolescence, screen use can have a significant impact on development; therefore, managing screen time in a qualitative way is essential for supporting a healthy lifestyle (Brown & Harris, 2020). When evaluated in the context of the aforementioned studies, it is evident that screen time can lead to multiple effects. Among these, the negative effects appear to be particularly prominent. Based on the studies reviewed, the hypothesis that excessive screen time negatively impacts children's development is supported by empirical findings.

Taking all of these studies into account, the aim of this systematic review is to present information about the average screen time of children in Türkiye and to examine the negative consequences of increased screen exposure on children. To this end, the effects of screen time on children aged 0–6 were explored through a comprehensive literature review.

Research Questions

1. 1.What data collection tools and procedures have been used in national-level studies examining screen time in children aged 0–6?
2. 2.What problems are associated with excessive screen time among children aged 0–6 in national studies?
3. 3.To what extent does increased screen time affect children aged 0–6 at the national level?

METHODOLOGY

This research is a systematic review study conducted to examine screen time among children aged 0-6 in Türkiye at a national level. A systematic review, one of the types of review, involves systematically and objectively screening studies conducted on a specific topic within defined criteria, evaluating the identified studies, and combining them within the set criteria (Çınar, 2021). In this context, searches were conducted in the TRDizin and Google Scholar databases, and studies that met various inclusion criteria were included in the research. The studies included in the research were analyzed using the document analysis method, one of the qualitative research methods. The document analysis method is a technique used to collect, examine, question, and analyze different written texts (O'Leary, 2017).

A structured literature review was conducted in the research framework to identify the studies to be examined. The literature review was conducted in Turkish between November 2023 and December 2023, focusing on research articles published in the TRDizin and Google Scholar databases. To identify studies related to screen time in children aged 0-6 in Türkiye, terms such as "Screen time in children," "Screen exposure in children," "Screen time," "Exposure to screens," "Screen," and "Exposure" were used in the Turkish literature. The search keywords used in the literature review are presented in Table 1.

Table 1. *Search Keywords Used in the Scope of the Literature Review*

Database	Search Terms	Document Type	Full Text

TRDizin	"Screen time in children" "Screen exposure in children" "Screen time" "Screen exposure" "Screen" "Exposure"	Research Article	+
Google Scholar	"Screen time in children" "Screen exposure in children" "Screen time" "Screen exposure" "Screen" "Exposure"	Research Article	+

Different inclusion criteria were considered when determining which studies obtained from the literature review would be included in the scope of the study. The inclusion criteria used for selecting the studies to be included in the research are presented in Table 2.

Table 2. *Inclusion Criteria Used for the Selection of Studies to Be Included in the Research*

1.	Quantitative studies on screen time and screen exposure in children aged 0–6 were included in the scope of the research.
2.	Research articles available in the TRDizin and Google Scholar databases were included in the scope of the study.
3.	Studies conducted in Türkiye were included in the scope of the research.
4.	Articles written in Turkish were included in the scope of the research.
5.	Studies conducted between 2018 and 2023 were included in the scope of the research.
6.	In the database search, the articles were analyzed in terms of their titles and keywords.

As a result of the literature review, a total of 77 studies were identified. From these studies, 6 research articles were included in the scope of the research, considering the inclusion criteria. The study group of the research consists of 6 research articles on screen time in children aged 0–6 in Türkiye, available in the TRDizin and Google Scholar databases. Information regarding the citations of the studies examined in the research is presented in Table 3.

Table 3. *Studies Examined in the Scope of the Research*

Author and Year	**Title**
Keskindemirci & Gökçay/2020	Screen exposure in children with language delay: Results of pilot study
Yasacı & Mustafaoğlu/2020	Does dıgıtal technology exposure affect children's sleep duratıon?
Çelen Yoldaş & Özmert/2020	Evaluating the habits of playing, reading with child and screen viewing of families applying to health centers at different levels
Gökçe, Arslan, Ülgen Öz, Mete, Taşçı & Yengil Taci/2021	Mobile screen exposure in children under seven years of age
Yıldız, Öztora & Dağdeviren/2022	Use of technological devices and their parents' attitude and behavior among kindergarten children
Kebir & Özkaya/2023	Investigation of the effect of screen exposure on language development in children between 16-36 months

In the study, the flowchart of the systematic screening process of the articles is presented in Figure 1.

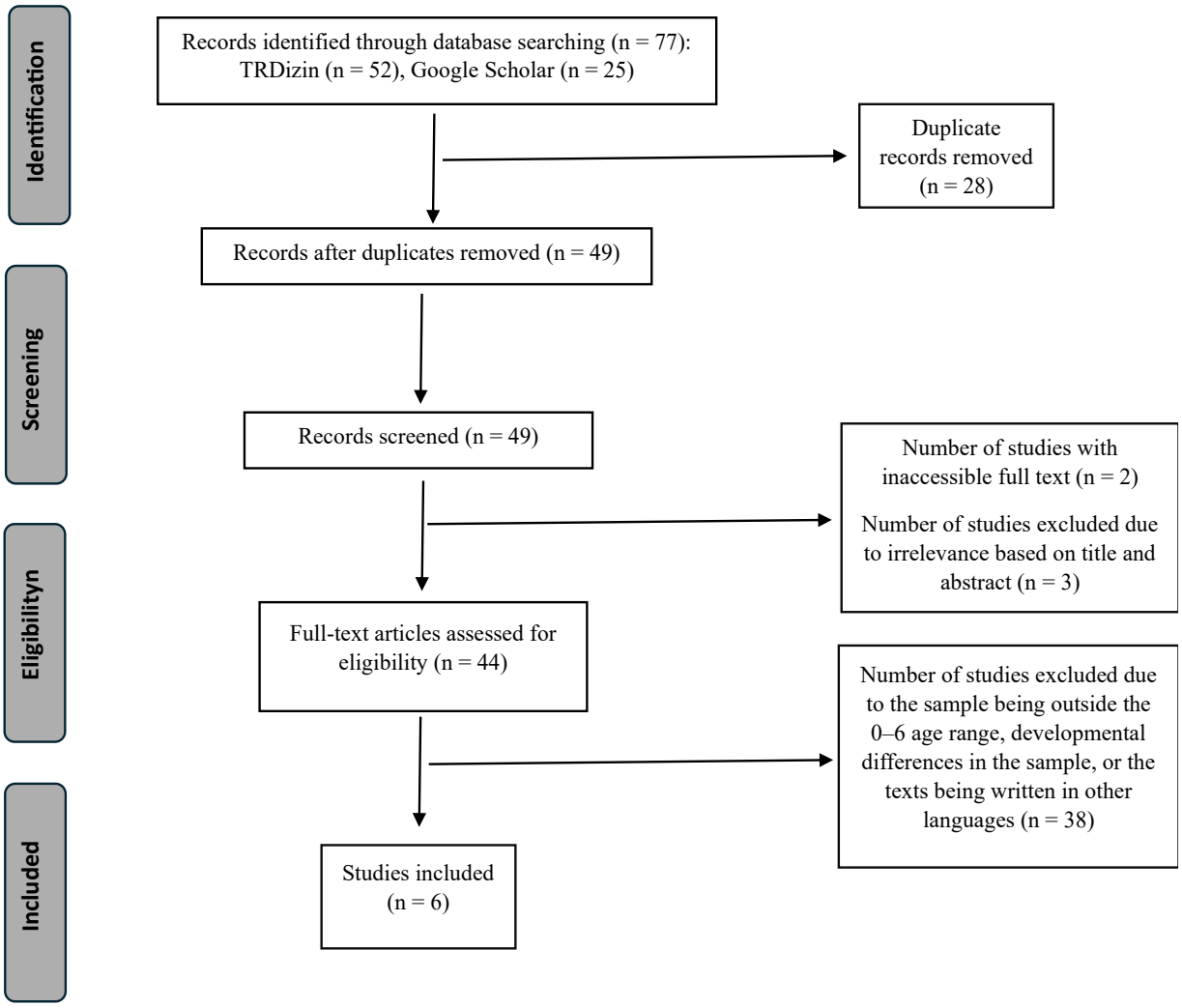

Figure 1.*PRISMA Flowchart for Article Screening in the Scope of the Study*

Findings

Within the scope of this study, six research articles focusing on screen time among children aged 0–6 in Türkiye were selected and analyzed. The characteristics of the selected studies are presented in Table 4.

Table 4. Characteristics of the Articles Reviewed Within the Scope of the Study

Title of the Article	Author / Year	Sample	Measurement Tools	Examined Variables	Findings / Results
Screen exposure in children with language delay: Results of pilot study	Gonca Keskindemirci, Gülbin Gökçay/2020	N=187 Children aged 18 to 36 months who presented to the Child Health Monitoring Outpatient Clinic of the Department of Social Pediatrics, Istanbul University Istanbul Faculty of Medicine	Social Communication Area Screening Test, Modified Checklist for Autism in Toddlers (M-CHAT)	Language Development Level, Screen Exposure (Minutes), Background Screen Exposure (Minutes), Gender	The average daily screen time was found to be 120 minutes in the case group and 60 minutes in the control group. As a result, the risk associated with screen exposure duration was observed to be 1.01 times higher in the case group compared to the control group.
Does dıgıtal	Zeynal Yasacı,	N=128 Children	Semi-Structured	Screen Time/Exposure	The use or exposure

technology exposure affect children's sleep duratıon?	Rüstem Mustafaoğlu/ 2020	aged 1 to 96 months	Assessment Form	Duration, Presence of Digital Technology in Children's Bedrooms, Sleep Duration, Sleep Quality, Age, Frequency of Parents' Use of Technological Devices	to technological devices was found to be highest in children aged 25 to 48 months, with an average of 157.3 minutes.
Evaluating the habits of playing, reading with child and screen viewing of families applying to health centers at different levels	Tuba Çelen Yoldaş, Elif Özmert/2020	N=151 Children between the ages of 1 and 6	The Questionnaire Form prepared by the researchers and the Hollingshead-Redlich Scale	Play Habits, Reading Habits, Screen Exposure Habits, Child's Age and Gender, Mother's Age and Educational Background, Socioeconomic Status and Referred Institution, and the Child's Development	The findings indicated that children's average daily screen time was 2.64 hours, with a marked increase observed after the age of 36 months.
Mobile screen exposure in children under seven years of age	Aksanur Gökçe, İsmail Arslan, Sema Ülgen Öz, Uğur Mete, Damla Taşçı, Duygu Yengil Taci/2021	N=300 Children aged 6 to 84 months who presented to the Family Medicine outpatient clinics of Ankara Training and Research Hospital	The questionnaire form designed by the researchers	Mobile Screen Exposure Duration [categorized as children who actively use mobile devices and those who do not, as well as those who use them for playing games and those who do not], Mobile Screen Exposure Timing [categorized based on whether the child watches screens while eating or not, and whether the child watches screens immediately after waking up or not], Parental Monitoring of Screen Content, Maternal Employment Status, Use of Mobile Devices with Internet Access, Age, Gender	Findings revealed that 92.7% of the children were exposed to some form of technological device, with an average daily screen time of 186.2 ± 132.2 minutes.
Use of technological devices and their parents' attitude and behavior among kindergarten children	Hüsniye Yıldız, Serdar Öztora, Hamdi Nezih Dağdeviren/ 2022	N=942 Children and their parents enrolled in all public/private kindergartens and pre-schools in the central district of Edirne	The questionnaire developed by the researchers	Child's Gender, Child's Age, Parents' Educational Level, Family's Income Level, Parents' Screen Time, Children's Use of Tablets While Falling Asleep, Children's Use of Tablets While Eating, Parents' Use of Technological Devices as Rewards or Punishments for Children, Restrictions on Children's Use of Technological Devices	Findings indicated that 42.1% of the children had a total daily screen time exceeding one hour.
Investigation of the effect of screen exposure on language development in children between 16-36 montsa	Ceren Kebir, Hilal Özkaya/2023	N=90 Children aged 16 to 36 months who presented to the Department of Pediatrics at Başakşehir Cam and Sakura City Hospital, Health Sciences University	The questionnaire developed by the researchers and the Turkish Communication Development Inventory-II (TİGE-II Scale)	Screen Time, Digital Screen Exposure, Digital Media Exposure, Language and Speech Skills, Maternal Employment Status, Maternal Education Level, Paternal Education Level, Gender, Age of First Exposure to Screen, Age of First Interaction with Screen, Enrollment in Preschool Education, Number of Children in the Household, Subscales of the TİGE-II Scale [Categorized into subcategories such as Words and Sentences Used by Children and Children's Grammar]	The study found that 88.9% of the children were exposed to screens before the age of 2. Furthermore, 55% of the children had an average daily screen time that exceeded one hour.

Sample

In the study conducted by Keskindemirci and Gökçay (2020), the research group consisted of children aged 18-36 months who presented to the Pediatric Health Follow-up Clinic of the Department of Social Pediatrics at Istanbul University Istanbul Faculty of Medicine between January and March 2018. Among those who presented during this period, children diagnosed with isolated language development delay and children with age-appropriate healthy development formed the experimental and control groups. A total of 187 children presented to the Pediatric Health Follow-up Clinic, 22 of whom were diagnosed with isolated language development delay and were included in the experimental group. The control group consisted of 21 healthy children whose development was age-appropriate. The control group consisted of 57.14% boys and 42.86% girls, while the experimental group consisted of 68.18% boys and 31.82% girls.

In the study conducted by Yasacı and Mustafaoğlu (2020), a research group of 147 children aged 1-96 months was formed, based on various inclusion and exclusion criteria, between January and May 2019. To gather information about children in this age group, research was conducted with voluntary parents of children aged 1-96 months. Due to 19 parents filling out the form incompletely, 128 children were included in the study, and complete information was obtained from 128 parents. Of the children included in the study, 51.6% were boys, 47.7% were girls, with an average age of 43.5 months.

The research conducted by Çelen Yoldaş and Özmert (2020) included 451 children aged 1-6 years between January 2015 and January 2016. For this age group, research was conducted with parents who sought medical services for their children. Of the children included in the study, 51% were boys, 49% were girls, with an average age of 37 months.

In the study conducted by Gökçe et al. (2021), the participants were 300 children aged 6-84 months who presented to the Family Medicine outpatient clinics at Ankara Training and Research Hospital between June and August 2017. To gather information about children in this age group, research was conducted with voluntary parents of children aged 6-84 months. Of the children included in the study, 50% were boys, 50% were girls, with an average age of 48 months.

In the study conducted by Yıldız, Öztora, and Dağdeviren (2022), inclusion and exclusion criteria were established to form the study group. Children and parents registered in all public and private kindergartens and pre-schools in the central district of Edirne in October-November 2019 were included. The study aimed to be conducted with 1,892 children and parents registered in 30 kindergartens and pre-schools, but 942 individuals who completely filled out the form provided by the researchers were evaluated within the scope of the study.

Measurement Tools

In all of the selected studies, a demographic information form was used. Each of these demographic forms included age and gender characteristics. The information gathered through the demographic forms is presented below:

Keskindemirci and Gökçay (2020) collected demographic information related to the child’s age, gender, development, medical and family history, nutrition, and vaccinations (with a unique health record for each child) in their study.

Yasacı and Mustafaoğlu (2020) designed a semi-structured assessment form in their study. This form consists of three sections. The demographic information section includes details about the child's age, gender, parents' education levels, and the number of children. The technology usage section gathers information about the frequency of device usage by both the parent and child, the age at which the child began using technological devices, and the presence of technological devices in the child's bedroom. The

sleep-related behavior section includes data on the child's daily sleep duration, sleep onset time, and screen time before sleep.

Çelen Yoldaş and Özmert (2020) created a 13-item questionnaire for their study. This form collected demographic information such as the child's age, gender, mother's age, father's age, mother's education level (categorized into primary school, secondary school, high school, and university), father's education level (categorized into primary school, secondary school, high school, and university), father's occupation, marital status, and socioeconomic status. In addition to this, the form included the following key questions:

- Do you play age-appropriate games (such as toys, cars, house play, puzzles, hide and seek) with your child to support their development?
- Do you read books to your child every day?
- If you do read books to your child, when did you start?

How many hours does your child spend in front of a screen (TV, computer, tablet, phone, etc.) on a daily basis?

In the study conducted by Gökçe and colleagues (2021), a 15-item questionnaire consisting of multiple-choice and fill-in-the-blank questions was developed. This questionnaire collected demographic information regarding the children's age, gender, and the parents' ages and occupations. Additionally, it included questions about how many hours the children spent per day using devices such as TV, tablets, mobile phones, and computers, the appropriateness of the content they watched for their age, the parents' opinions on whether the content contributed to the children's healthy development, and whether the parents monitored the content the children were exposed to. The questions included:

- Does the child have their own phone and/or tablet?
- If the child has their own phone and/or tablet, is it used with internet access?
- At what times of the day does the child use technological devices? (Immediately after waking up? During meals? Before sleeping?)
- For what purposes does the child use technological devices? (Games? Cartoons?)

In the study conducted by Yıldız and colleagues (2022), a 59-item questionnaire was prepared. The first page of the questionnaire included an informed consent form, which was completed by the parents. The remaining section of the form gathered demographic information, including the child's gender, age, marital status of the parents (categorized into married and single), working status of the mother (categorized into working, not working, and no response), working status of the father (categorized into working, not working, and no response), educational level of the mother (categorized into illiterate, literate, primary school graduate, secondary school graduate, high school graduate, and university graduate), educational level of the father (categorized into illiterate, literate, primary school graduate, secondary school graduate, high school graduate, and university graduate), and who cares for the child when the parents are not at home (mother, father, grandmother/grandfather, caregiver, and other). The questionnaire also included questions regarding the attitudes and behaviors of the parents and children related to technological devices and the internet.

In the study by Kebir and Özkaya (2023), a 25-item questionnaire was prepared. This questionnaire collected demographic information regarding the child's age, gender, working status of the mother (categorized into working and not working), educational level of the mother (categorized into primary school and below, secondary school, high school, undergraduate, and graduate), educational level of the father (categorized into primary school and below, secondary school, high school, undergraduate, and graduate), occupation of the mother, occupation of the father, and family income. The questionnaire also

included questions related to the screen time of the child and parents, as well as the parents' opinions on screen usage.

When examining the scales used in the selected studies, it was observed that three of the six studies employed different scales. In one study, the Social Communication Area Screening Test developed by Sertgil and colleagues (2015) and the Modified Early Childhood Autism Screening Test (M-CHAT) developed by Kara and colleagues (2015) were used (see Keskindemirci and Gökçay, 2020). In another study, the Hollingshead Redlich Scale developed by Hollingshead and Redlich (2007) was used (see Çelen Yoldaş and Özmert, 2020). In one study, the Turkish Communication Development Inventory-II (TİGE-II Scale), developed by Aksu Koç and colleagues (2019), was employed. This scale was divided into two subcategories: Words and Sentences Used by Children, and Children's Grammar (see Kebir and Özkaya, 2023).

Examined Variables

This study aims to conduct a systematic review of the studies conducted on screen time for children aged 0-6 years in Türkiye. Therefore, all the selected studies include the variables of "screen time" or "screen exposure" and "age." In addition to these two variables, the selected studies also investigate several other variables, including gender (see Keskindemirci and Gökçay, 2020; Çelen Yoldaş and Özmert, 2020; Gökçe et al., 2021; Yıldız et al., 2022; Kebir and Özkaya, 2023), language development level (see Keskindemirci and Gökçay, 2020; Kebir and Özkaya, 2023), the presence of digital technology in children's bedrooms, sleep duration and quality, the frequency of technological device use by parents (see Yasacı and Mustafaoğlu, 2020), playing habits, reading habits, screen viewing habits, maternal age, the institution consulted, child development (see Çelen Yoldaş and Özmert, 2020), parents' education level (see Çelen Yoldaş and Özmert, 2020; Yıldız et al., 2022; Kebir and Özkaya, 2023), socioeconomic status, mobile screen exposure time (see Gökçe et al., 2021; Yıldız et al., 2022), parents' monitoring of the content viewed, using mobile devices with internet access (see Gökçe et al., 2021), maternal employment status (see Gökçe et al., 2021; Kebir and Özkaya, 2023), parents' screen time, use of technological devices as reward or punishment for children (see Yıldız et al., 2022), age at which the child was introduced to screens, preschool attendance, and the number of children in the household (see Kebir and Özkaya, 2023). These variables were all included in the study.

Results of the Selected Studies

When examining the results of the selected studies, information regarding screen time for children aged 0-6 years was found in six studies (see Keskindemirci & Gökçay, 2020; Yasacı & Mustafaoğlu, 2020; Çelen Yoldaş & Özmert, 2020; Gökçe et al., 2021; Yıldız et al., 2022; Kebir & Özkaya, 2023). In one study, findings indicated a significant relationship between age and screen time (see Gökçe et al., 2021), while another study found no significant relationship between these variables (see Yasacı & Mustafaoğlu, 2020). Among the studies that used language development as a variable, no relationship was found between children's screen time and language development in one study (see Keskindemirci & Gökçay, 2020), whereas another study identified a significant relationship (see Kebir & Özkaya, 2023). Two studies found no significant relationship between screen time and gender (see Keskindemirci & Gökçay, 2020; Gökçe et al., 2021), while one study found a significant relationship between these variables (see Yıldız et al., 2022). One study observed a significant relationship between screen time and the timing of screen use (e.g., watching while eating, upon waking, before sleep) (see Gökçe et al., 2021), while another study found no significant relationship between the use of technological devices during meals and sleep with screen time (see Yıldız et al., 2022). Screen time or screen exposure was found to be related to sleep duration (see

Yasacı & Mustafaoğlu, 2020), the activity level of mobile devices and their use for gaming (see Gökçe et al., 2021), parents' educational level (see Yıldız et al., 2022; Kebir & Özkaya, 2023), income level (see Yıldız et al., 2022), maternal employment status (see Gökçe et al., 2021), and the relationship between parents' screen time and children's screen time (see Yıldız et al., 2022). No significant relationship was found between screen time before sleep and sleep onset or duration (see Yasacı & Mustafaoğlu, 2020), nor between parents' frequency and duration of technology use and children's use of technological devices (see Yasacı & Mustafaoğlu, 2020; Yıldız et al., 2022). Additionally, it was observed that the supervision of what children watched by their parents and whether the content was deemed suitable for children's development did not correlate with screen time (see Gökçe et al., 2021). Furthermore, it was found that children's screen time varied according to the healthcare institution they attended (see Çelen Yoldaş & Özmert, 2020). In cases where parents were engaged in other tasks, children's screen time increased, and it was observed that parents who used technological devices as rewards or punishments for their children also allowed greater use of these devices (see Yıldız et al., 2022).

Discussion, Conclusion, and Recommendations

In recent years, the increasing integration of technology into human life has brought about several issues. The rapid development of technology has had a profound impact on children's daily lives. In particular, access to electronic devices such as computers, tablets, smartphones, and televisions has become an important part of children's daily routines. This situation raises the issue of screen exposure in children, leading to many discussions regarding the positive and negative effects of this exposure.

This systematic review study aims to compile research on screen time among children aged 0-6 in Türkiye. Upon reviewing the relevant literature, it was found that the results of studies on screen exposure and screen time yielded both positive and negative outcomes. The results of the studies analyzed in this research showed that the findings regarding the variables related to screen time differed and also had some similarities. Although the selected studies diverged on certain points, overall, the effects of screen exposure and screen time use on children aged 0-6 align with similar findings in the existing literatüre. One of the variables examined in this review was language development. Kebir and Özkaya (2023) found a relationship between screen exposure and screen time and language development. Looking at the literature, it was observed that there are studies that show a relationship between language development and screen time (Perdana et al., 2017; Linebarger & Vaala, 2010; Byeon & Hong, 2015). However, in Keskindemirci and Gökçay's (2020) study, no such relationship was found. Similar results were observed in other studies as well (Zhang et al., 2022; Vohr et al., 2021). In the study by Gökçe et al. (2021), which examined the relationship between screen time and age, no significant relationship was found. Similarly, in the study by Yasacı and Mustafaoğlu (2020), no relationship was found between screen time and age. A review of the related literature revealed that the relationship between screen time and age varies across different studies (Kaur et al., 2019; Robidoux et al., 2019; Shah et al., 2019).

In this systematic review, the study conducted by Gökçe et al. (2021) found a significant relationship between screen time and screen duration. On the other hand, in the study by Yıldız et al. (2022), the relationship between screen time and the duration of children's use of technological devices was examined, but no significant relationship was found.

When reviewing studies on the relationship between screen time and sleep, a connection between screen time and sleep has been observed (Tandon et al., 2019; Laurson et al., 2014; Olieve et al., 2022; Reyna Vargas et al., 2022). The results of the studies conducted by Yıldız et al. (2022) and Yasacı & Mustafaoğlu (2020) in this review align with the findings of the studies mentioned above. Parents' technology usage habits play a significant role in determining how much time children spend in front of

screens during the day. Children may adopt an interest in technology through modeling by their parents, which in turn can influence the amount of time they spend on screens. Yasacı & Mustafaoğlu (2020) found no relationship between the frequency and duration of parents' technology use and the frequency and duration of children's use of technological devices. A study conducted in China found a relationship between parents' screen use and the screen time of their children, with the results suggesting that parents' screen time and children's screen time mediate this relationship. Supporting studies were also observed (Hu, Jhonson, & Wu, 2018; Gentile & Walsh, 2002; Hill et al., 2016; Lee & Chae, 2007). In a national representative study conducted in the United States, researchers concluded that parenting styles had a mediating effect on the connection between excessive screen time exposure and executive functions in children (Linebarger et al., 2014). The findings suggest that parenting styles could be linked to increased screen time through changes in executive functions in children. Therefore, these results indicate that parenting styles may have an indirect influence on children's screen usage habits.

In recent years, the issue of screen time exposure among children aged 0–6 has garnered increasing concern and attention from parents, pedagogues, and researchers. Given that this developmental period lays the foundation for children's cognitive, emotional, and social growth, the potential effects of exposure to screen technologies have become a significant topic of investigation. Studies have demonstrated that excessive screen time in early childhood may negatively impact language development, attention span, and social interaction skills. Furthermore, it has been emphasized that interactive and concrete experiences—more suitable for learning and development during this critical period—should be prioritized over passive screen viewing. Within this context, it is essential that parents assume responsibility for guiding their children toward healthy engagement with technology. However, further research and expert insights are required, as the rapid evolution of technology continuously shapes how children adapt to and interact with these tools.

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