The Effect of Early Intervention on Parent-Child Interaction: A Randomized Controlled Study

MSC. OT. EZGİNUR GÜNDOĞMUŞ[1], PROF. GONCA BUMİN[1], PROF. DR. S. SONGÜL YALÇIN[2]

[1]HACETTEPE UNİVERSİTY, FACULTY OF HEALTH SCİENCE, DEPARTMENT OF OCCUPATİONAL THERAPY

[2H]ACETTEPE UNİVERSİTY, FACULTY OF MEDICINE, DEPARTMENT OF DEVELOPMENTAL PEDİATRİCS

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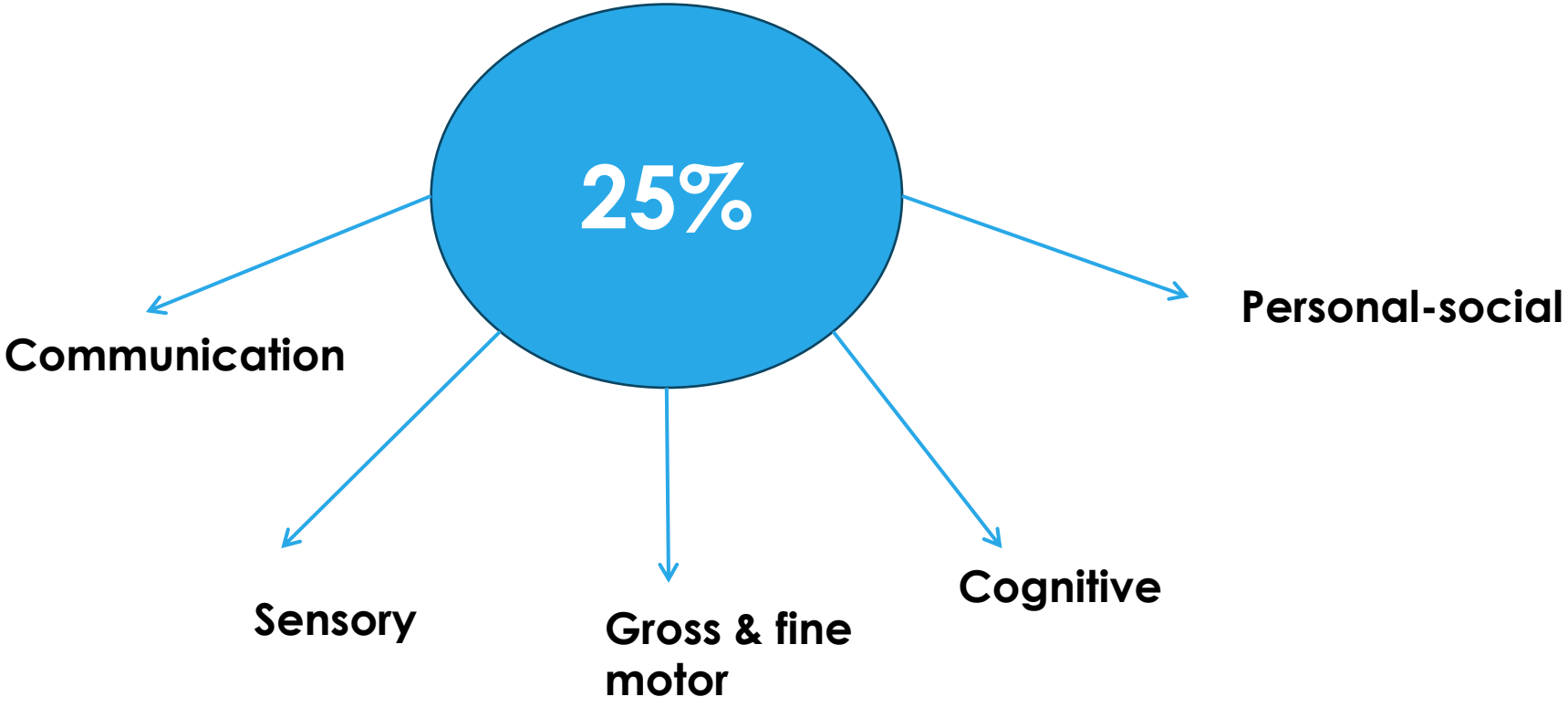
Introduction



Introduction

- In early childhood, **language development** problems occur in approximately **5-12% (median, 6%)** of children, **learning difficulties** are present in **around 8%** (Rittey, 2003), and **cognitive dysfunction** is observed in about **14.3% (in 24 months)** (Rosenberg et al., 2008).

Introduction

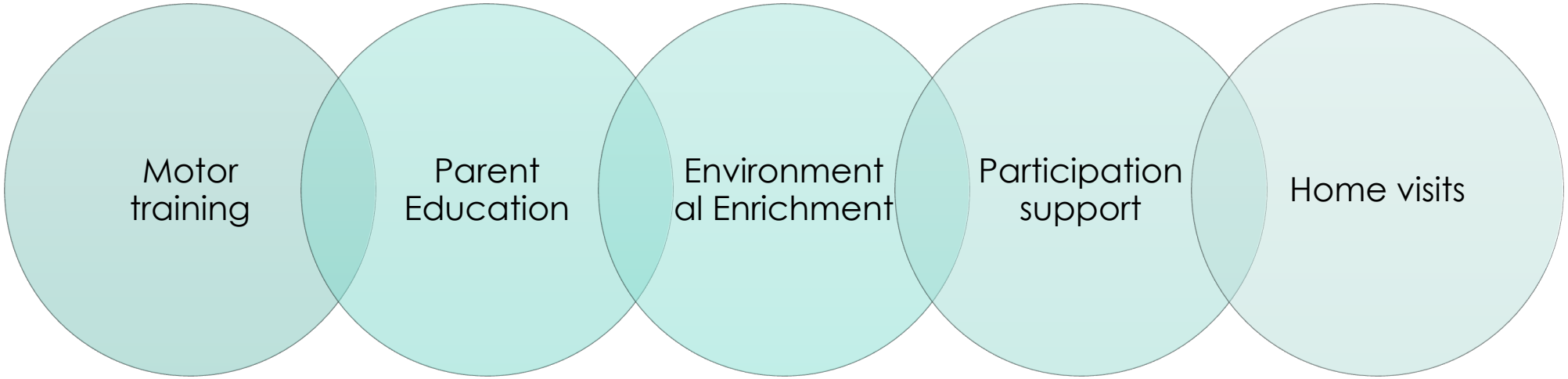
DD may be **temporary or permanent**, and children with permanent DD are at risk for learning disabilities, behavioral problems, and functional disorders later in life (Keogh et al., 2004).

The design and delivery of **early intervention programs** to improve the developmental outcomes of infants having DD in terms of neurodevelopmental disorders has gained importance (Inguaggiato et al., 2017; Kohli-Lynch et al., 2019).

What are EI programs?

- Neurodevelopmental Therapy (NDT) program (Klimont, 2001; Law et al., 1997)
- Goal, Activity, and Motor Enrichment (GAME) (Morgan et al., 2014, 2016; Wu et al., 2019)
- Supporting Play, Exploration, and Early Development Intervention (SPEEDI) Program (Dusing et al., 2020; Finlayson et al., 2020)
- The Infant Behavior Assessment and Intervention Program (IBAIP) (Meijsen et al., 2010; Van hus et al., 2012)

And the literature ..



Why is important parent-child interactions?

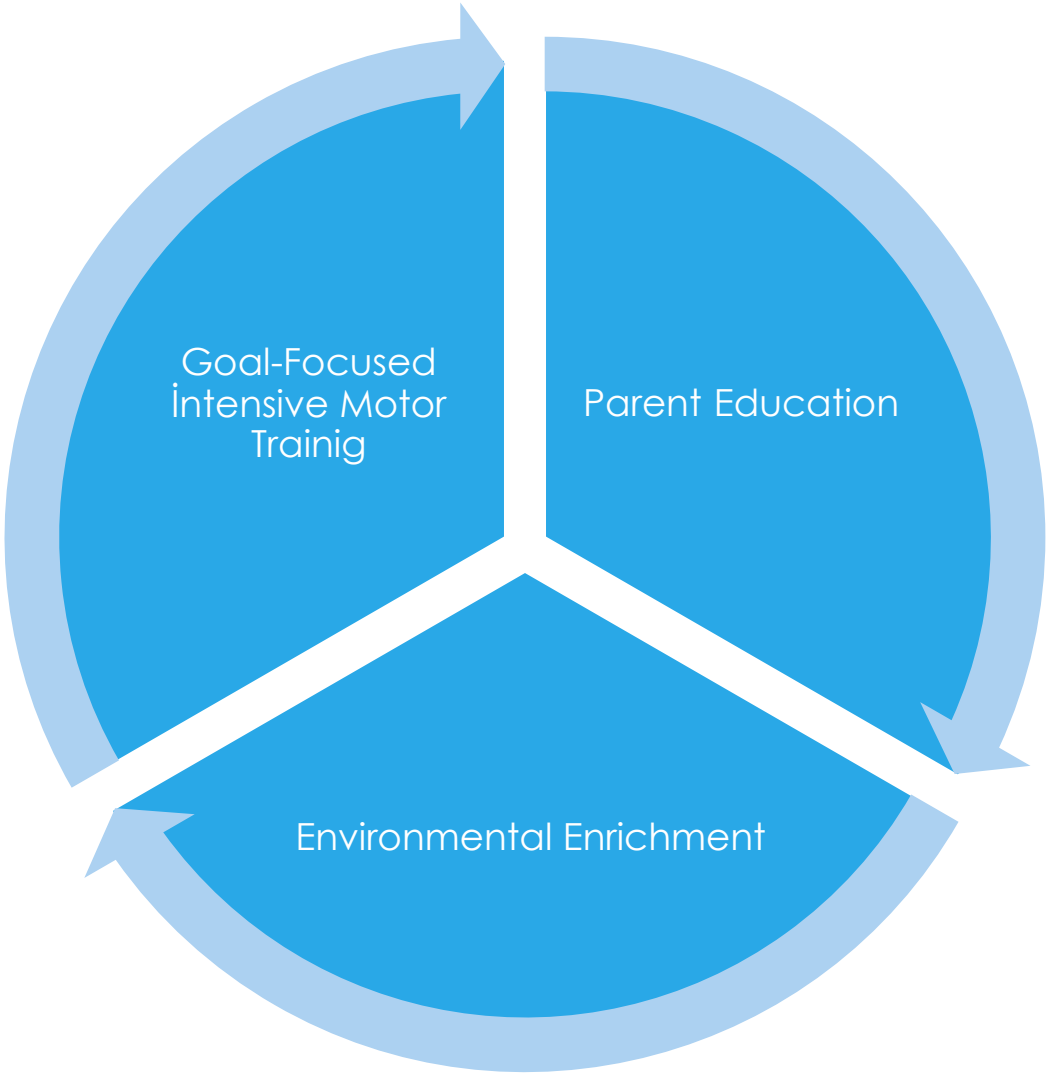
- Specifically, children with developmental disorders appear to be more likely to experience behavioral problems, including difficulties in social-emotional and interactional areas (Reynolds et al., 2007; Steenis et al., 2015).

- Despite this increased risk, there is a research gap regarding the natural reinforcement conditions that children with developmental disorders experience in different settings.
- While it is acknowledged that parent-child behaviors vary depending on the context (Holden & Miller, 1999), surprisingly, very little research has examined spontaneous parent-child interactions in different situations (Humphrey, 2001; Lundqvist-Persson et al., 2012)

Purpose

- Our study aimed to implement a comprehensive early intervention program for children with DD that incorporates the GAME approach's principles of intensive motor training, parent education, environmental enrichment, and a range of activities that promote sensory and cognitive development.

What is Goal, Activity and Motor Enrichment (GAME)?



Method
Participant

The inclusion criteria had developmental delay as assessed by the Bayley III test, being between the ages of 24-36 months

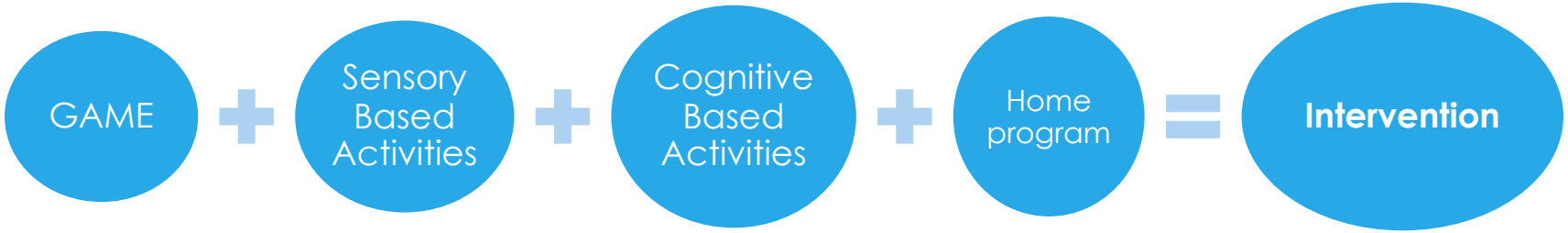
Exclusion criteria were children placed in institutional care, having received any neurological, psychiatric, or orthopedic diagnoses.

Measurements

- Sosyodemographic Information Form
- BAYLEY III
- PICCOLO

PICCOLO

- To evaluate parent–child interaction, approximately 10-min video recordings of parents playing with their children, obtained from parents, were sent to us and evaluated by a certified occupational therapy researcher (Ezginur Gündoğmuş) using the Turkish version of the PICCOLO. It includes a checklist of 29 observable behaviors. The aim was to analyze parents' interactions with children in four domains:
- Affection,
- Responsiveness,
- Encouragement, and
- Teaching.


GAME
Sensory Based Activities
Cognitive Based Activities
Home program
Intervention

Intervention

İntervention Group: This program was applied in a pediatric clinic for **1 hour a day, twice a week for 12 weeks**, face to face. In addition to this program, an individualized home program was also given to the intervention group according to the developmental assessment results on admission applied in the first stage. The home program was implemented by the parents of the children for **1 hour a day, three days a week for 12 weeks**, in their own homes. Parents contacted the OT via WhatsApp program or phone calls.

Control Group: According to the evaluation results, and an individualized home program was prepared by an OT for this group. Home programs were implemented by the children's parents, **five days a week, 1 hour a day for 12 weeks in their own homes**, and were followed by the OT via WhatsApp application, phone calls, and control charts.

Results

Table 1. Demographic characteristics of participants on admission

	Overall	Intervention Group	Control Group	p
N	70	30	40	
Child age, mo*	30.6±2.9	30.7±2.6	30.6±3.1	0.887
Child sex, female	31.4%	26.7	35.0	0.457
Prematurity	42.9%	46.7	40.0	0.577
Single child, %	60.0%	76.7	45.7	0.014
Mothers' age, yr*	34.7±4.3	36.6±4.8	33.3±3.3	0.003
Mothers' education ≥ university	70.0%	80.0	62.5	0.114
Fathers' age, yr*	36.3±4.6	38.0±5.0	35.1±3.9	0.008
Fathers' education ≥ university	70.0 %	73.3	67.5	0.598
Parent income, MW				0.755
Less than MW	15.7%	13.3	17.5	
MW	38.6%	43.3	35.0	
High than MW	45.7%	43.3	47.5	

**mean±SD; MW: minimum wage*

Table 2. PICCOLO scores on admission, after intervention and absolute change during follow-up period

PICCOLO	Intervention Group (n=30)	Control Group (n=40)	p
Affection			
On admission[&]	113.5 [93.6, 113.4][a]	85.5 [68.7, 102.3][b]	***<.001***
After intervention[&]	92.8 [74.0, 111.7]bc	78.6 [62.7, 94.5]c	
Absolute change, %[&&]	17.7 [24.2-11.1]	8.6 [13.4-3.7]	***.005***
Responsiveness			
On admission[&]	8.6 [7.8, 9.4]b	6.9 [6.3, 7.6]a	***<.001***
After intervention[&]	11.7 [10.9, 12.5]c	8.0 [7.3, 8.6]b	
Absolute change, %[&&]	58.2 [43.3, 73.1]	31.6 [20.6, 42.7]	***.001***
Encouragement			
On admission[&]	7.6 [6.9, 8.3]ab	6.6 [6.0, 7.2]a	***<.001***
After intervention[&]	11.5 [10.6, 12.3]c	8.0 [7.3, 8.7]b	
Absolute change, %[&&]	58.7 [47.8, 69.6]	25.8 [17.7, 33.9]	***<.001***
Teaching			
On admission[&]	6.4 [5.6, 7.3]ab	5.0 [4.3, 5.8]a	***<.001***
After intervention[&]	10.9 [10.0, 11.8]c	6.6 [5.9, 7.4]b	
Absolute change, %[&&]	100.5 [78.7, 122.3]	48.5 [32.3, 64.7]	***<.001***

Conclusion

- The results of this study, which thoroughly examines the parent-child interaction skills of infants having DD, implementing an early intervention program consist of activity-based interventions, parent education, and environmental enrichment (which are the parameters included in the GAME approach), will shed light on pediatric rehabilitation, literature, and clinical practices.

Implications for Occupational Therapy Practice

- Parent–child interaction should be considered in early intervention studies.
- Providing education to parents increases parent–child interaction with at-risk infants.
- Providing clinic-based therapies along with a home program to children with DD can result in significant improvements in developmental parameters and parent–child interaction.

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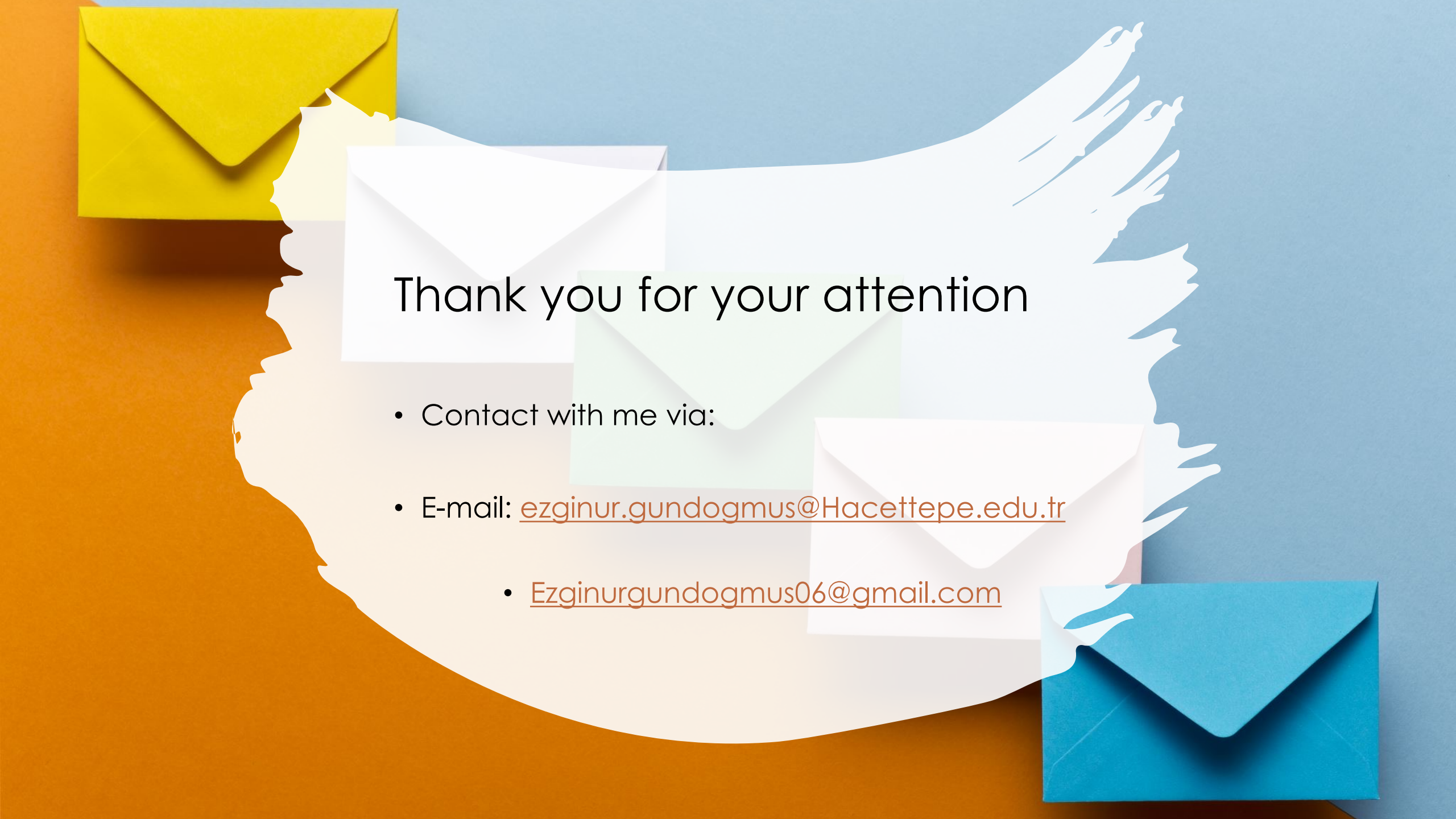

Thank you for your attention

- Contact with me via:
- E-mail: ezginur.gundogmus@Hacettepe.edu.tr
- Ezginurgundogmus06@gmail.com