

# FEASIBILITY AND EFFICACY OF AN INTERVENTION PROMOTING COGNITIVE SKILLS OF SOCIOECONOMICALLY DISADVANTAGED ROMANI CHILDREN

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## Abstract

Children from a socioeconomically disadvantaged background often show a lack in cognitive skills, such as executive functions, early language, and numeracy skills. When socioeconomical differences intersect with ethnicity these barriers are often amplified. Interventions in an informal educational context have been proven to be an effective way of reducing disadvantages. Our study investigates the feasibility and efficacy of a mentoring program. The intervention was designed for preschool aged children from Romani families who live in a socioeconomically deprived environment in a segregated community. We collected data from 48 participants (52% male, aged 6-7), from which 26 participated in the mentoring program. Children in the intervention group participated in weekly sessions in their home environment. The sessions were led by volunteer mentors under the supervision of a psychologist. The sessions aimed to promote skills related to cognitive and socioemotional development. Children were assessed using the Cognitive Profile Test (Gyarmathy, 2009) upon transition to school in a single-point measure. Data obtained from the intervention group was compared to the control group using an independent samples T-test. Our preliminary analysis showed a significant difference on subtests measuring working memory, such as word repetition ( $p = .002$ ,  $t = -3.29$ ,  $df = 45$ ), number repetition ( $p < .001$ ,  $t = -4.61$ ,  $df = 44$ ) and nonword repetition ( $p = .012$ ,  $t = -2.6$ ,  $df = 46$ ) test. Further details on implementation and feasibility will be presented orally. The mentoring program shows a promising way in reducing disadvantages of children living in low SES and ethnic minority households.

**Keywords:** *Pre-school, elementary school, low SES, ethnic minority, cognitive skills.*

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## 1. Introduction

Children from a socioeconomically disadvantaged background often show a lack in cognitive skills. According to a meta-analysis there is a significant correlation between SES and executive functions, with a small-to-medium effect size (Lawson et al., 2018). Children in low SES households hear less child-directed speech than their peers in middle or high SES homes, that can affect their early language development (Dailey & Bergelson 2022). The SES and home learning environment are associated with the development of numeracy skills (Anders et al., 2012). Lower income and parental education level can lead to household stress, disparities in somatic and mental health affecting the developmental trajectory of children (Santiago et al., 2011). When socioeconomical differences intersect with ethnicity these barriers are often amplified (Dotson et al., 2009). Interventions that are more responsive of the children individual level and needs can be more effective in order to reduce this gap (Banerjee et al., 2016), which is often more applicable in an informal educational context than in a more structured formal school system, as there can be more space for differentiating practices and individual sensitivity to individual needs, so alternative educational approaches have been proven to be an effective way of reducing disadvantages (Dunn, 2012).

## 2. Objectives

Our study aims to investigate the feasibility and efficacy of a mentoring program designed for preschool aged children from Romani families who live in a socioeconomically deprived environment in a segregated community.

### 3. Methods

We collected data from 48 participants (52% male, aged 6-7). From the whole sample 26 children participated in the mentoring program (intervention group), and 22 children were allocated to the quasi-control group. The members of the control group were matched to the intervention group based on age, sex, and socioeconomic status. Children in the intervention group participated in weekly mentoring sessions in their home environment. The intervention was led by volunteer mentors under the supervision of a psychologist. Volunteers visited families in their home environment on a weekly basis and held one-hour sessions that were aimed to promote skills related to cognitive development. The sessions consisted of various age-appropriate playful activities such as card games, arts and crafts, or shared book reading. The volunteer mentors were encouraged to involve parents during the sessions and give feedback about the progress of the children. Children were assessed using the Cognitive Profile Test (Gyarmathy, 2009) upon transition to school in a single-point measure. Data obtained from the intervention group was compared to the control group using an independent samples T-test.

### 4. Results

Our preliminary analysis showed a significant difference on subtests measuring working memory, such as word repetition ( $t(45) = -3.29$ ;  $p = .002$ ), number repetition ( $t(44) = -4.61$ ,  $p < .001$ ) and nonword repetition ( $t(46) = -2.6$ ,  $p = .012$ ) test, meaning the intervention group outperformed the controls. No significant difference was measured in case of early numeracy skills and visuo-spatial attention skills.

### 5. Discussion

Findings of this study indicates that the program assessed can positively influence cognitive skills, particularly working memory of Romani children from a socioeconomically disadvantaged background. Previous studies have found interventions effective in improving working memory in children (Kellens et al., 2023; Zhao et al., 2022). There was no significant difference on early numeracy skills and visuo-spatial attention skills which findings are in line with previous meta-analytic results of Nelson et al. (2019) who suggest that math skills targeted interventions are less effective in case of at-risk population. Further details on implementation and feasibility will be presented orally.

### 6. Limitations

Our research investigates a unique population, that lead to certain limitations about the study design. The relatively small sample size that limits the generalizability of our findings. Furthermore, the single-point measure limits our capacity to control for developmental progress over time. The control and intervention groups were not randomized on an individual level. Variability in how the sessions were held by individual mentors could also influence the outcomes.

### 7. Conclusion

This study highlights the potential of community-based interventions in populations where children face multiple challenges limiting their potential development and further academic success.

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