



## Communication abilities of Croatian and Roma children with mild intellectual disability: Performance on children's communication checklist (CCC)

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*Introduction.* Communication and language development in children with (mild) intellectual disability is generally delayed. Roma national minority children are sequential bilinguals, most introduced to the Croatian language upon entering the educational system. Information on communication in the natural context can be obtained through checklists completed by children's communication partners. *Objectives.* This study aims to obtain insight into the communication and Croatian language abilities of Croatian and Roma children with mild intellectual disabilities. *Method.* The study participants were 52 children between 9 and 16 years old (22 Croatian and 30 Roma). Their performance on the Children's Communication Checklist was analyzed and compared to published thresholds and each other. *Results.* The performance of Croatian and Roma children on the pragmatic composite is comparable to that of British peers with intellectual disability, as both groups scored below the normal range. Only the Roma children performed below clinical thresholds on the Speech and Syntax scale. No group displayed autism features. Mann-Whitney test showed significant differences between the groups in Speech output and Syntax subscales, indicating Roma children's poorer Croatian language abilities. Overall pragmatic abilities did not differ between the groups. Both groups scored below the threshold on the Coherence and Use of conversational context subscales, showing comparable pragmatic profiles. However, Croatian children outperformed Roma children on the Coherence, Use of conversational context, and Conversational rapport subscales. *Conclusion.* Roma children use the Croatian language in a way comparable to their Croatian peers despite being less proficient in its structure. Pragmatic abilities should be targeted in children with intellectual disabilities.

*Keywords:* bilingualism, Roma national minority, language assessment in natural context

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## Introduction

Intellectual disability (ID) represents a neurodevelopmental disorder marked by significant impairments in intellectual functioning and adaptive skills (American Association on Intellectual and Developmental Disabilities, n.d.). Nevertheless, the severity is determined by the level of adaptive functioning in the social, conceptual, and practical domains required to function independently and participate in society (American Psychiatric Association, 2013), including both communication and language abilities. About 1% of the world population has ID and 75% of the population with ID falls into category of mild (American Psychiatric Association, 2013).

There is an association between cognitive, communication, and language development in children with ID (Bailoor & Rao, 2013). Their development is generally delayed and slower in rate (Pranjić et al., 2016), with deviations in language form, content, and use (Bray, 2003; Shree & Shukla, 2016). Research on non-syndromic mild ID (MID) is scarce due to the predominant focus on ID related to genetic syndromes. The existing literature, nevertheless, reports on delayed onset of first words and phrases, noun-dominated vocabulary, reduced use of adjectives, adverbs, and auxiliary verbs, simplified sentence structures, along with challenges in acquiring complex language concepts (Georgieva & Tcholakova, 1996; Patel et al., 2018), narrating (Barton-Hulsey et al., 2017), establishing and maintaining conversation topics (Okraïneć, 1997), and adapting to communication partners and context (Kim et al., 2018).

A significant part of today's society is composed of bilingual and multicultural individuals. Even though defining bilingualism is complex, the most common definition is the ability to use more than one language (Liddicoat, 1991). Bilingualism can be classified by many criteria, such as proficiency in a language and the age of its acquisition (Baker & Jones, 1998). When a primary disorder, such as ID, impacts communication and language abilities in bilingual speakers, all languages are affected (Cheatham et al., 2012). National minorities constitute a distinct subset of the bilingual population whose first and native language is often not the majority language in their country of residence. Twenty-two national minorities currently reside in Croatia (Državni zavod za statistiku, 2022), including the Roma minority, mainly belonging to the Boyash group (Tahiri & Kregar Orešković, 2021). This group's native and first language is *ljimba d Bajaš*, also known as the Boyash dialect of the Romanian language (Šlezak, 2013), while Croatian is their second language (Jelaska, 2005). Boyash is not standardized and contains many loanwords from Croatian (Radosavljević, 2016). Though Roma minority acquire some Croatian vocabulary before entering the education system (Novak Milić et al., 2007), they are most commonly not exposed to Croatian culture and language on a systematic basis before that point (Martan & Srebačić, 2020). Hence, Roma children are faced with the complex challenge of acquiring their second language while receiving instruction in it

simultaneously. The difficulties in acquiring a second language are even greater for Roma children with ID, whose lower intellectual abilities, along with social challenges, further complicate this process.

For a complete picture of children's communication and language abilities, it is necessary to incorporate information about mentioned abilities in everyday context with other assessment methods. The most common means of assessing language structure (phonology, morphology, syntax) and content (semantics) is through standardized tests. However, assessing language use in context (pragmatics) is much more challenging due to the difficulty with eliciting behaviors and their variability (Hoffmann et al., 2013; Lam & Ho, 2014). This information can be obtained through checklists completed by persons familiar with the child (Bishop, 1998; Hoffmann et al., 2013). Such information can assist in identifying areas of strengths and weaknesses (Lane et al., 2018). To date, pragmatic profiles of both typically developing (TD) and children with various disorders were described or compared, including children with ID (e.g., Botting, 2004; Hoffmann et al., 2013; Lane et al., 2018; Smith et al., 2017). However, our literature search yielded no information regarding the performance of children with ID of any level of severity on such checklists in their second language.

Currently, there is no information on communication and language abilities in the natural context regarding Croatian children with MID or Roma children with said disorder in either of their languages. In the case of Roma children, this might be partially true due to the absence of Boyash dialect assessment instruments and bilingual speech-language pathologists. The only study to date conducted by Očurščak Žuliček et al. (2022) found that Roma children with MID are less proficient at some aspects of Croatian noun morphology than Croatian children. Therefore, obtaining additional information is required to expand knowledge and improve clinical practice with these groups.

### **Objective**

This study aims to gain insight into the communication and language abilities in the everyday context in children with MID in Croatian as first (Croatian children) and second (Roma children) language. These goals led to the formulation of the following questions:

1. Does CCC detect communication and language deficits in Croatian and Roma children with MID? Is there a profile of strengths and weaknesses in Croatian and Roma children with MID?
2. Are there statistically significant differences between Croatian and Roma children on the CCC subscales?

## Methods

### Participants

The CCCs were completed by educational rehabilitators, class teachers of 52 children of Croatian (42%) and Roma (58%) nationality with MID attending four schools for children with intellectual disabilities in the Republic of Croatia, where the sole language of instruction is Croatian. The study was communicated to the principals of the mentioned schools via email. If they agreed, they were asked to forward the invitation and instrument to their educational rehabilitators. In the Republic of Croatia, children are enrolled in such schools following an assessment conducted by a multidisciplinary team of professionals (including a psychologist who assesses the child's intellectual ability), which results in a Decision on the appropriate educational program. The intellectual status, as determined by the Decision, served as the basis for the inclusion in the study. The study participants provided consent. Children's ages range from 9 to 16 years old ( $M=12.29$ ,  $SD=2.03$ ). Regarding chronological age, there are no significant differences between Croatian and Roma nationality groups ( $t=.23$ ,  $p>.05$ ). The gender of children is predominantly male (71.2%). Considering Reetzke et al. (2015) suggestion that children must have at least 20% of lifetime exposure to their second language when assessing their abilities in that language, only children in grades 3-8 participated. We excluded children with moderate, severe, and profound ID, as well as children with comorbid autism spectrum disorder (ASD), sensory or motor disorders, and children who cannot express themselves in complete sentences. Table 1 provides sociodemographic information.

**Table 1**

*Sociodemographic characteristics of the study sample*

Variable		N (%)	
		Croatian	Roma
Gender	Male	20 (90.9)	17 (56.7)
	Female	2 (9.1)	13 (43.3)
Chronological age	9	1 (4.5)	2 (6.7)
	10	2 (9.1)	8 (26.7)
	11	4 (18.2)	3 (10)
	12	7 (31.8)	4 (13.3)
	13	2 (9.1)	2 (6.7)
	14	2 (9.1)	4 (13.3)
	15	3 (13.6)	6 (20)
	16	1 (4.5)	1 (3.3)

## Materials and procedure

Information regarding communication and language abilities in the everyday context was obtained using the Children's Communication Checklist (CCC, Bishop, 1998), translated into Croatian. The CCC contains seventy items formulated as statements and divided into nine subscales. Subscale A (Speech output) assesses aspects of speech and phonology, subscale B (Syntax) assesses syntax and morphology, subscales C (Inappropriate initiation), D (Coherence), E (Stereotyped conversation), F (Use of Conversational Context) and G (Conversational Rapport) assess different aspects of pragmatics, while subscales H (Social Relationships) and I (Interests) include characteristics indicative of ASD such as difficulties in establishing relationships with other persons and presence of restricted or unusual interests. (Bishop, 1998; Geurts et al., 2004). Pragmatic composite, a measure of pragmatic abilities, is derived by summarizing the results of Subscales C-G (Bishop, 1998). The persons filling out the checklist must mark if each statement does not apply to the child, somewhat applies, definitely applies, or if they are unable to judge.

Data were collected between June and November 2022.

## Data analysis

The statistical analysis was performed using GNU PSPP 1.6.2. An exploratory analysis revealed that some variables were not normally distributed, and several were highly skewed. We also identified some extreme outliers. Therefore, we employed non-parametric statistics for the remainder of the analysis. The frequency of participants scoring below the published thresholds was determined for each nationality group. We then conducted Mann-Whitney U tests to compare the groups.

## Results and Discussion

To determine whether CCC identifies communication and (Croatian) language deficits in Croatian and Roma children with MID, for each subscale, we calculated thresholds of one and two standard deviations (SDs) below the mean of TD British children of a wide age range (6-16 years) from Bishop and Baird (2001)'s study and compared their performance to the mentioned thresholds. So far, no thresholds have been established specifically for Croatian and Roma children. However, performance (on pragmatic composite) comparable to British children from Bishop and Baird's (2001) study was found in TD children of different nationalities, including Norwegian (Helland & Heimann, 2007), Belgian, Dutch (Geurts et al., 2004), as well as Taiwanese (Wang & Tsao, 2015). This procedure was replicated from Botting's (2004) study, which compared the performance of children with various disorders (including ID) on pragmatic composite, with mentioned thresholds. Additionally, we compared the performance of Croatian and Roma children with the performance of British children with ID from Botting's (2004) study. We have also followed Botting's

criteria, which states that below-average performance refers to one or more SDs below the TD children from Bishop and Baird's (2001) study.

**Table 2**

*Mean scores of Croatian and Roma children with ID on each CCC subscale and the number and percentage of each group performing below published clinical threshold*

	Possible range	Min	Max	Median (IQR)	< 1 or more SD N (%)	<2 or more SD N (%)
A) Speech Output					<34	<32
Croatian	16-38	18	36	34.5 (5)	9 (40.9)	6 (27.3)
Roma		23	36	27 (6)	27 (90)	24 (80)
B) Syntax					<31	<30
Croatian	24-32	26	32	32 (1)	3 (13.6)	2 (9.1)
Roma		24	32	27 (3)	26 (86.7)	24 (80)
C) Inappropriate Initiation					<25	<23
Croatian	18-30	20	30	25 (5.5)	10 (45.5)	5 (22)
Roma		19	30	27 (5.5)	10 (33.3)	7 (23.3)
D) Coherence					<34	<33
Croatian	20-36	22	36	32.5 (4.25)	14 (63.6)	11 (50)
Roma		22	36	28 (5)	27 (90)	26 (86.7)
E) Stereotyped Conversation					<26	<24
Croatian	14-30	21	30	26 (6)	8 (36.4)	3 (13.6)
Roma		17	30	27 (6.25)	11 (36.7)	8 (26.7)
F) Use of Conversational Context					<29	<27
Croatian	16-32	23	32	28 (4)	12 (54.5)	6 (27.3)
Roma		22	31	27 (4)	23 (73.3)	13 (43.3)
G) Conversational Rapport					<31	<30
Croatian	18-34	26	34	33 (4)	7 (31.8)	3 (13.6)
Roma		23	34	32 (3.25)	10 (33.3)	8 (26.7)
Pragmatic composite					<147	<141
Croatian	88-162	127	159	142 (18)	13 (59.1)	10 (45.4)
Roma		116	157	138 (13.75)	23 (76.7)	17 (56.7)
H) Social Relationships					<31	<30
Croatian	14-34	21	33	31.5 (5.25)	7 (31.8)	6 (27.3)
Roma		23	34	31 (3.25)	11 (36.7)	5 (16.7)
I) Interests					<29	<27
Croatian	20-34	27	34	30.5 (4.25)	5 (22.7)	0
Roma		28	35	31 (2)	2 (6.7)	0

Since the only data regarding the performance of children with ID on pragmatic composite was provided by Botting (2004), it is examined first. Most Croatian and Roma children performed below average (Table 2), as did their British peers in Botting's (2004) study. The majority (63% Croatian and 83.3% Roma children) performed within 1 SD of the mean ( $M=141.4$ ,  $SD=11.2$ ) of British children with ID. This suggests that children with MID may display similar pragmatic limitations across languages. Most of our study sample scored below 1 SD below TD children from Bishop and Baird's (2001) study, indicating below-average performance. Further, approximately half of both Croatian and Roma children achieved a score below 2 SDs or less.

The first subscale included in the pragmatic composite is subscale C (Inappropriate Initiation). It deals with behaviors such as to whom and how the child speaks and their turn-taking in conversation (Dukarić et al., 2014). In general, most Croatian and Roma children perform within the normal range on this subscale (Table 2). Subscale D (Coherence) consists of items that evaluate the child's ability to explain and narrate (Dukarić et al., 2014). Coherence refers to the interrelationship between events (Cain, 2003) and requires understanding and expressing them in appropriate language structures (Barton-Hulsey et al., 2017). A substantial number of Croatian and Roma children with MID scored below the thresholds (Table 2), indicating that coherence presents an area of weakness. It is consistent with the literature indicating that children with MID have limited narrative abilities (Barton-Hulsey et al., 2017). Subscale E (Stereotyped Conversation) assesses features such as monitoring conversation partner interest and using over-learned phrases. As most participants scored within the normal range on this subscale (Table 2), this area might be another of their strengths. The subscale F (Conversational context) evaluates a child's understanding of social rules (Dukarić et al., 2014) and adapting to a variety of situations and conversation partners, which is imperative for developing social relationships (Kuvač Kraljević & Olujić, 2015). Both nationalities performed below average on this subscale, suggesting these abilities might be another area of weakness. Lastly, the pragmatic composite includes subscale G (Conversational Rapport), which assesses understanding of facial expressions and gestures and the appropriateness of responses during a conversation (Adams et al., 2017; Bishop, 1998; Botting, 2004). Most participants scored within a normal range on the subscale, indicating that these abilities may also be an area of strength.

Regarding subscales A (Speech Output) and B (Syntax), most Croatian children performed within the normal range (Table 2). Nevertheless, standardized language tests usually show below-average performance in line with the intellectual functioning level (Barton-Hulsey et al., 2017). Additionally, previous research (e.g., Georgieva & Tcholakova, 1996) has shown that children with MID have a variety of limitations across language structure. It is possible that these deficits might be less apparent in a natural context, as they are not

elicited by a specific task. Additionally, subscale items do not capture a wide range of possible language structure deficits. It should be noted, however, that comprehensive speech and language assessments rely on multiple sources of information. Roma children tend to score below average in both subscales (Table 2), which is unsurprising given that they are evaluated in their second language abilities.

As for the final two subscales, H (Social relationships) and I (Interests) neither of the studied groups, in general, exhibited the features associated with ASD with only a small number of participants in both groups manifesting certain autistic features.

Since children with the diagnosis of MID and comorbid ASD were excluded from this research, these results were anticipated.

Overall, the CCC can identify strengths and weaknesses in Croatian and Roma children with MID in several areas of communication and language. As compared to TD children, their pragmatic abilities are lower, and they both exhibit weaknesses in the areas of narration and adjusting to conversational partners. Despite the fact that deficits in language structure may not be apparent to teachers in Croatian as a first language, they are very evident in Croatian as a second language.

To compare Croatian and Roma children's performance on CCC, we used the Mann-Whitney tests. Table 3 summarizes the results.

**Table 3**

*Comparison of Croatian and Roma children's performance on CCC subscales*

Variable	Sum of ranks		U	Z
	Croatian nationality children	Roma nationality children		
A) Speech Output	797.50	580.50	115.50	-4.00**
B) Syntax	836.50	541.50	76.50	-4.79**
Pragmatic Composite	671.50	706.50	241.50	-1.64
C) Inappropriate Initiation	534.50	843.50	281.50	-.90
D) Coherence	786.50	591.50	126.50	-3.78**
E) Stereotyped Conversation	578.50	799.50	312.50	-.08
F) Use of Conversational Context	700.50	677.50	212.50	-2.20*
G) Conversational Rapport	707.00	671.00	206.00	-2.33*
H) Social Relationships	578.50	799.50	325.50	-.08
I) Interests	571.00	807.00	318.00	-.22

\*\*  $p < .01$ ; \*  $p < .05$



The Mann-Whitney U test revealed statistically significant differences between groups on subscales A (Speech Output) ( $z=-4.00$ ,  $p<.01$ ) and B (Syntax) ( $z=-4.79$ ,  $p<.01$ ). Compared to Croatian children, Roma children are less proficient in Croatian language structure. Given that Croatian is their second and less-frequently used language, these differences are anticipated. Despite these differences, Croatian and Roma children do not differ significantly on the pragmatic composite ( $z=-1.64$ ,  $p>.05$ ). These results suggest that there is no difference between their overall pragmatic competence in the Croatian language regardless of the differences in their mastery of its structural components. Literature supports the notion that proficiency in language structure does not necessarily translate into proficiency in its use (Antoniou et al., 2019). Therefore, one can communicate effectively in a given language even if violating some of its structural rules. Even though we found no difference in overall pragmatic ability between groups, we did detect them in its components. Mann-Whitney test revealed statistically significant differences on subscales D (Coherence) ( $z=-3.78$ ,  $p<.01$ ), F (Use of Conversational Context) ( $z=-2.20$ ,  $p<.05$ ) and G (Conversational Rapport) ( $z=-2.33$ ,  $p<.05$ ). Although both groups scored below average on subscale D (Coherence), Croatian children's utterances during conversation and narration were more coherent. Narratives are expressions of one's culture, language, and cognitive and emotional abilities and differ to a level in various languages and cultures (Burck, 2011; Shiro, 2023). Hence, both linguistic and sociocultural differences may contribute to a lower quality of Roma children's narratives in Croatian. Therefore, the transfer of narrative abilities may not be possible between Croatian and Boyash because of such differences, although this issue needs to be further explored. Croatian children performed better on subscale F (Use of Conversational Context) as well, demonstrating higher proficiency in adapting their utterances to different contexts. There is some cultural variation in the rules of socially acceptable behavior (Adair et al., 2015). Cultural differences may be associated with the observed differences, but as no information is available on this aspect of Boyash dialect pragmatics, this assumption is only speculative. The difference between groups on subscale G (Conversational Rapport) was surprising, especially given that both groups scored within the normal range. Croatian children demonstrated superior performance on this subscale as well (Table 3). These differences could also be attributed to sociocultural differences in the use of nonverbal means, but that is yet to be researched.

Our findings could have some implications for intervention in Croatian language pragmatics. Based on our results, the speech and language intervention in children with MID should include narrative abilities as well as rules of how to adapt to different communication partners and contexts. Nevertheless, it is important to strengthen structural abilities in Croatian, especially in Roma students.

Although these results provide insight into the communication and (Croatian) language abilities of Croatian and Roma children with MID, they should be interpreted cautiously. Due to the sample being both convenient and small, the ability to generalize these findings is limited. Moreover, there was a lack of control over certain variables, such as the amount of exposure to Croatian in Roma students. Furthermore, without the data on the performance of TD Croatian and Roma children on CCC, there is no certain way to determine that their peers with MID truly perform below their average. Moreover, the newer version of the checklist (CCC-2; Bishop, 2003) has already been translated and adapted into many languages and has been used extensively in international research and standardized as a clinical tool (Andrés-Roqueta et al., 2021). A standardized and redefined version of CCC-2 already exists for the Serbian language (Andrés-Roqueta et al., 2021; Glumbić & Brojčin, 2012). Thus, it may be more appropriate to adapt and standardize this version to Croatian. This might facilitate the conduct of crosslinguistic and cross-cultural research. It is also important to note that the CCC-2 has been used in more extensive research on a wide range of disorders, such as mental illness and intellectual disability, which may allow for comparisons as well (Wellnitz et al., 2021). Another limitation of this study is that only class teachers completed the checklists. Ideally, multiple experts, or an expert and a parent, should complete CCC to enhance reliability. Based on all the above, it is evident that further research is necessary.

### **Conclusions**

The aim of this study was to determine whether a checklist used to assess communication and language abilities in a natural context can identify components of said abilities that represent strengths and weaknesses in children with MID who speak Croatian as their first and second language and whether there are differences in their mastery of different aspects of mentioned abilities. Our results indicate that despite being less proficient in structural components of the Croatian language, Roma children with MID can still use the language components they have acquired in everyday communication as effectively as their Croatian peers. Furthermore, the two groups display the same profile of strengths and weaknesses in different areas of language pragmatics, and their overall pragmatic abilities are below average. The area of language use should, therefore, be targeted during speech and language therapy, especially the areas of narration and adjusting to different conversation partners. However, it is important to develop clinical thresholds for the Croatian and Roma children on this instrument or adapt a newer and wider used one. Additional research is needed to improve understanding of communication and language in monolingual and bilingual children with MID.

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## Komunikacijske sposobnosti dece hrvatske i romske nacionalnosti s lakim intelektualnim teškoćama: Postignuće na Ček-listi dečje komunikacije (CCC)

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*Uvod:* Komunikacijski i jezički razvoj u dece s (lakim) intelektualnim teškoćama obeležen je kašnjenjem. Deca romske nacionalnosti su dvojezična deca. Njihova izloženost hrvatskom jeziku najčešće započinje ulaskom u vaspitno-obrazovni sistem. Skale popunjene od komunikacijskih partnera omogućavaju prikupljanje podataka o dečjim komunikacijskim sposobnostima u prirodnom kontekstu. *Cilj:* Cilj ovog istraživanja je da se dobije uvid u komunikacijske i jezičke (hrvatski jezik) sposobnosti dece hrvatske i romske nacionalnosti s lakim intelektualnim teškoćama. *Metode:* U istraživanju je učestvovalo 52 dece hronološke starosti između 9 i 16 godina (22 hrvatske i 30 romske nacionalnosti). Analizirana su njihova postignuća na Ček-listi postignuća u dečjoj komunikaciji, te upoređena s prethodno objavljenim graničnim vrednostima i međusobno. *Rezultati:* Postignuće hrvatske i romske dece na pragmatičkom kompozitu ispodprosečno je i uporedivo s postignućem njihovih britanskih vršnjaka s intelektualnim teškoćama. Ispodprosečno postignuće na podskalama Govor i Sintaksa prisutno je samo kod dece romske nacionalnosti. Nijedna grupa ne pokazuje obeležja poremećaja iz spektra autizma. Man-Vitnijev test pokazao je statistički značajne razlike između grupa na podskalama Govor i Sintaksa, što govori o lošijoj ovladanosti jezičkom strukturom kod dece romske nacionalnosti. Grupe se ne razlikuju u pragmatičkim sposobnostima. Obe grupe postigle su ispodprosečan rezultat na podskalama Koherencija i Upotreba konteksta, pokazujući uporedive pragmatičke profile. Deca hrvatske nacionalnosti

pokazuju značajno bolje postignuće na podskalama Koherencija, Upotreba konteksta i Raport. *Zaključak:* Deca romske nacionalnosti upotrebljavaju hrvatski jezik jednako uspešno kao i hrvatski vršnjaci uprkos slabijoj ovladanosti njegovom strukturom. Pragmatičke sposobnosti trebalo bi da budu uključene u tretman dece s intelektualnim teškoćama.

*Ključne reči:* dvojezičnost, nacionalna manjina, procena jezika u prirodnom kontekstu

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