Reading Profiles May Not Be an Informative Approach to Identifying At-Risk Readers in Middle School

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Abstract

Latent profile analysis is a widely used approach to identifying subgroups of students at risk for reading difficulties. However, evidence from reading research involving middle schoolers challenges the utility and meaning of these putatively categorically distinct reading profiles, which can be statistically derived even in the absence of real profiles. The current study challenges the view that reading profiles reflect distinct groups. In fact, it tests the hypothesis that reading is continuous, with severity gradations in its performance. The sample consisted of 695 seventh graders (M_{age} = 12.76 years, SD_{age} = 0.43) from Slovenia reading in English as a foreign language. The main outcome measures included various assessments of reading skills in English as a foreign language. Results of the latent profile analysis showed that reading profiles were arrayed in a tiered spectrum of severity, from higher to lower reading performance. Profiles were not qualitatively different, and relations with external correlates increased consistently with each profile. Findings suggest that reading profiles in middle school may represent continuous gradations. Hence, reading interventions in middle school should be based on continuous liability assessments rather than profile subtyping.

Key words: *English as a foreign language; middle school; reading groups.*

Introduction

One of the goals of reading research is to identify students who are at-risk for developing reading problems. Identification of such students informs prevention and intervention efforts, which have the potential to ameliorate reading difficulties.

Students differ in their presentation of reading problems, with some showing deficits in specific reading skills and others manifesting more global reading problems. The idea that reading problems are heterogeneous in their representation has prompted researchers to posit the existence of distinct reading profiles. The present study contributes to this research area by examining the utility of these putatively distinct reading profiles. Moreover, this report challenges the view that reading profiles reflect real distinct reading groups and tests the hypothesis that reading performance is continuous, rather than divided into different reading profiles.

In the literature on reading, two different approaches have been used to identify reading profiles: the approach based on theory and the approach based on data. The theory-based approach builds on the idea of profiles being drawn from reading theories. This approach typically grounds its work on the Simple View of Reading framework (Gough & Tunmer, 1986), which defines reading comprehension as a result of independent contributions of word recognition/decoding and language comprehension. Under this reading theory, there are three potential heterogeneous groups that may exhibit difficulties in different reading skills. The first is a profile group marked by phonological coding, decoding, and word-reading deficiencies (Lovett, 1987; Morris et al., 1998; Stanovich & Siegel, 1994). This group has problems related specifically to reading words due to difficulties with word decoding. Reading fluency is also often below average and is tied to decoding problems. Stanovich and Siegel (1994), for example, showed that phonological coding difficulties were associated with poor word recognition of students with dyslexia. A similar finding was further demonstrated in a large, longitudinal study of children at family risk for dyslexia and controls, where groups were identified that differed in difficulties with fluency versus comprehension over the course of the first and second grade (Torppa et al., 2007). This first set of studies shows that decoding and fluency are skills that can be problematic for .students and, therefore, might be useful targets for identifying meaningful profiles. The second group encompasses students with intact decoding skills, but expressed difficulties in language skills. These students exhibit reading comprehension problems due to weaknesses in oral vocabulary and, more broadly, language comprehension, including listening comprehension. They may have difficulties in many specific areas, including the use of comprehension strategies, text structure, and background knowledge (Neuman & Celano, 2006; Rand Reading Study Group, 2002). In short, although this group can decode grade-appropriate texts, they might still have comprehension problems tied to weaknesses in language. The third group encompasses readers with weaknesses in phonological skills and decoding, as well as in core comprehension areas. Unlike the first group, these readers have difficulties in reading comprehension even when reading texts they can decode because of their core comprehension difficulties (Spear-Swerling, 2016). As such, this profile of readers may not be identified until the third grade because it can be characterized by expected comprehension skills in early grades when students are mostly assessed on decoding and fluency measures that do not rely extensively on text comprehension (Catts et

al., 2012; Leach et al., 2003; Lipka et al., 2006). Taken together, research based on the reading theory indicates that the characteristics of potential reading groups are notably dissimilar, such that the responses to treatment might differ across groups.

Unlike the theory-based approach, the data-based approach utilizes statistical analytic techniques to uncover the "real" number of reading profiles. Latent profile analysis is the typical technique, which allows researchers to identify these profiles. Patterns of shared variance among readers are extracted into a reading profile. The resulting profiles are iteratively evaluated based on fit indices to infer belonging to a certain reading group and determine the final number of latent reading profiles within a particular sample. Latent profile analysis has the advantage of using multiple measures to form profiles, thereby reducing measurement error.

The statistical approach to latent reading profiles has been used extensively in the reading literature. For example, studying reading (literacy) profiles of preschool children with language impairment, Justice et al. (2015) identified four distinct profiles. Those were profiles of children in a high-risk category with poor overall literacy skills, a moderate risk category, a low-risk category with pronounced alphabet knowledge, and a low-risk category with average alphabet knowledge. In a similar study among elementary school students (grade 5), highly similar latent profiles emerged in the English language learners group as well as in the group who learned English as the mother language (O'Connor et al., 2019). A profile was found to exist in both groups of students with highly-developed comprehension skills involving above-average performance in reading comprehension, phonology, orthography, semantics, and listening comprehension. Similarly, in both groups there, was a profile of students with below average performance in reading comprehension and other associated reading skills (O'Connor et al., 2019). In another study examining a much later scope of reading development, Brasseur-Hock et al. (2011) first identified ninth graders with poor reading comprehension. Then they examined the reading profiles of these students and determined five distinct reading profiles: severe global weaknesses, moderate global weaknesses, dysfluent readers, students with poorly developed comprehension skills, and students with poorly developed reading skills. In a similar study, Lesaux and Kieffer (2010) identified three latent groups among poor-comprehending sixth graders, defining these groups as slow word callers (struggling readers in word-level skills), globally impaired readers (struggling readers in all reading skills), and automatic word callers (above average readers in word-level skills and reading fluency). Such a finding was replicated in a study on 9,283 fourth graders. Eight profiles of reading performance were obtained where good and average readers exhibited even profiles, whilst poor readers showed more heterogeneous patterns in performance (Wolff, 2010). One interesting finding from Brasseur-Hock et al.'s (2011), Lesaux and Kieffer's (2010), and Wolff's (2010) studies is the uniformity of profiles in middle and high school grades compared to the heterogeneity of profiles in elementary grades. Such a finding was further demonstrated in a study by Foorman et al. (2017). Utilizing the same statistical technique, reading profiles in elementary grades revealed more heterogeneity than those

in middle or high school grades (Foorman et al., 2017). The patterns in middle school followed a typical high, medium, and low reading pattern. Nonetheless, the finding of middle schoolers following such a pattern is not surprising, since better readers choose to read more, and through this greater exposure to print, vocabulary, syntax, and text structure, they gain better skills in each of those areas (Erbeli, van Bergen & Hart, 2020; Foorman et al., 2017; Stanovich, 1986). In sum, it appears that different studies using statistical techniques yield a different number of reading profiles, which become more consistent with students' increasing years of schooling.

Regardless of the approach, both assume that there are theoretically meaningful and practically useful reading profiles. There are gaps in reading skills between these profiles, which make distinctions between students and enable statistical methods to identify reading groups. As such, determining reading profiles is an appealing way that helps focus the search for risk factors that contribute to poor reading. If, indeed, the reading profile approach reflects real categorical differences in readers, it is an incredibly powerful mechanism for identifying the belonging to each profile, tailoring prevention and intervention strategies to each individual group.

However, an alternative hypothesis to the profile approach is also possible. An alternative would be the nonexistence of discrete reading profiles and the characteristics of such potential profiles not being as dissimilar as presumed. Moreover, there is abundant research showing that reading and individual differences in reading run on a continuum, which fluctuates for each student for each reading skill (e.g., Snowling & Hulme, 2012). It follows that students with problems in any reading skill are simply on the low end of the continuous distribution of a particular reading skill, but not a discretely distinct group. However, if there are no heterogeneous reading groups in a population, why do statistical techniques still extract reading profiles that infer membership in reading ability and disability groups? Marsh et al. (2009) advise caution when applying a latent profile analysis. They posit that if there are, indeed, multiple profiles, then a latent profile analysis should identify profiles that differ quantitatively (profile level) as well as qualitatively (profile shape). The authors further claim that all too often latent profile analysis results in profiles in which groups merely differ in terms of quantitative, but not qualitative level (Marsh et al., 2009). See, for instance, the example mentioned in the proceeding section, where middle schoolers had uniformly high, medium and low scores across all variables of the profile (Foorman et al., 2017). Such qualitatively uniform profiles running in parallels may be seen as an indication that the construct under investigation is, in fact, continuous, with no distinct profiles, rather than categorical with distinct profiles (Muthén, 2006).

In the current report we test this alternative hypothesis and argue that reading profiles can be viewed as gradations on a reading continuum. If reading profiles run in parallel and do not intersect (i.e., if profiles do not differ quantitatively as well as qualitatively), then they most likely represent the gradation from poor and average to good reading. Based on previous research examining middle school reading profiles (e.g., Brasseur-Hock et al., 2011; Foorman et al., 2017), we expected to find qualitative

uniformity in the reading construct rather than distinct profile shapes. Therefore, we sought evidence for a three-fold hypothesis. First, we expected that the fit indices of the latent profile analysis would pinpoint the fact that the fit of the latent model rises with each following, i.e. higher profile. Such a finding would imply that our data are getting increasingly closer to approximating the underlying continuous nature of reading with each additional profile. Second, we expected a normal distribution of students across the profiles. That is, the latent profile lines, spanning from lower to higher attainment of reading skills, would not intersect. Most students would fall into the middle (average) profiles and fewer would be grouped into higher and lower level reading groups, with students not crossing profiles or showing qualitatively different levels. Third, we expected that reading profiles would change consistently, including external correlates. If reading profiles represented severity gradation, then the correlates would change monotonically with profile ranks. By contrast, if reading profiles were qualitatively and quantitatively distinct groups, then external correlates would show little evidence for the stepwise pattern of continuity. The current study builds on these hypotheses using data from a large sample of students reading in English as a foreign language. The large sample gives sufficient reliability to be able to identify potentially different reading profiles. In addition, the study included a wide array of external correlates related to reading in a foreign language, which allowed for us to estimate the external continuity of the extracted reading profiles.

Method
Participants

The sample comprised 695 seventh graders (53.5 % male) aged between 12 to 13 years ($M = 12.76$; $SD = 0.43$) attending middle school in Slovenia in 2011-2012 school year. Students' first language was Slovene and they were instructed in this language from the first grade. All students learned English as a foreign language (EFL), which was a compulsory school subject, at the time introduced in the fourth grade (age 9). The English program includes listening, speaking, use of language, and reading activities. EFL reading instruction includes a balanced combination of decoding-oriented and meaning-based methods. Each student in the present study received approximately 425 hours of EFL instruction at the assessment point. By the end of the sixth grade, students are expected to reach A1 level (i.e., beginner level) and by the end of ninth grade A2 level (i.e., elementary level) of EFL competence in accordance with the Common European Framework for Languages (CEFR; Council of Europe, 2001). Ninth grade is the graduation grade after which students can continue their education in high school.

Procedures and measures

Assessments were group-administered during the spring semester in the students' classrooms by the first author and students' EFL teachers. Teachers received prior training on how to administer the tests. Prior to assessments, a consent to participate in the study was obtained from the students' parents and principals of the participating

schools. The project was approved by the University of Ljubljana's Institutional Review Board (IRB) and was in accordance with of research with human subjects. No ethical issues with the research design were noted by the IRB. There were no unexpected developments or difficulties in the procedure. For more details on the procedure, please see Erbeli (2015).

EFL word reading fluency. Word reading fluency was assessed by the standardized Test of Silent Word Reading Fluency (TOSWRF; Mather, Hammill, Allen, & Roberts, 2004). The TOSWRF is designed to measure the speed of single word identification. Students were presented with a series of words without spaces (e.g., dimhowfigblue) and given three minutes to draw as many lines possible between the words. Each correctly identified word scored 1 point (179 maximum). The test-retest reliability of this item was $r = .86$.

EFL contextual reading fluency. Contextual reading fluency was measured by the standardized Test of Silent Contextual Reading Fluency (TOSCRF; Hammill et al., 2006). The description of this measurement is identical to that of TOSWRF, with the difference that words to read were presented in a series of printed sentences (e.g., AYELLOWBIRDSATONMOTHERSPRETTYHAT). The maximum number of points was 186. The test-retest reliability on this item was $r = .87$.

EFL vocabulary. Vocabulary knowledge was assessed using the Vocabulary Size Test (VOCAB; Beglar & Nation, 2007). The test in the present study consisted of 26 items. Students were instructed to circle the letter in front of the definition of the word that best described the item. Each correctly identified item scored 1 point. The reliability on this item was calculated as $\alpha = .87$.

EFL listening comprehension. Listening comprehension was assessed by the standardized Test for Auditory Comprehension of Language (TACL; Carrow-Woolfolk, 1999). Two subtests were used in the present study: Grammatical Morphemes and Elaborated Phrases and Sentences. The first subtest comprised 12 items and the second 8 items. The teacher read the items aloud, and the student was instructed to circle the picture that s/he believed best represented the meaning of the word, phrase or sentence uttered by the teacher. The number of correctly identified items represented a total score for each measure, respectively. The internal consistency reliability was $\alpha = .83$.

EFL letter choice. Letter choice was measured by the subtest Letter Choice from the Test of Orthographic Competence (TOC; Mather, Roberts, Hammill, & Allen, 2008). Students were shown rows of words. Each row had one of four letters (p, d, b, q) missing (e.g., __etter, b is missing). Students were then given two minutes to insert the missing letters in order to correctly complete as many words as possible. There were altogether 76 rows. Each correctly inserted letter scored 1 point. The test-retest reliability coefficient was $r = .89$.

EFL sight spelling. Sight spelling was measured by the subtest Sight Spelling from the TOC (Mather et al., 2008). A teacher said a word while students looked at the

part of the word with one or more letters missing (e.g., know, students saw ___ow). Students were then asked to fill in the missing letter or letters (which included an irregular or unusual orthographic element) in order to complete the spelling of the word. There were 23 items to be completed. Each correctly completed item scored 1 point. The internal consistency reliability was α = .86.

EFL reading comprehension. EFL reading comprehension was measured by three exploratory and two narrative texts adapted from the Qualitative Reading Inventory (QRI; Leslie & Schudt Caldwell, 2010). Below the texts there were eight open-ended questions, some of which were literal and some inferential. Each correctly and fully answered question scored 1 point. Cronbach reliability was above .79 for all texts.

External correlates. A questionnaire in their first language was administered to students, focusing on those contextual factors which are related to foreign language reading proficiency. The questionnaire had a form of a 5-point Likert scale, with options ranging from *never* (0) to *always/almost every day* (4). For question 7, students could choose between options ranging from *not at all* (0) to *a lot* (4). For question 8, they inserted the age. Students were asked about the following informal foreign language learning opportunities: (1) How often do you use English with people on the internet, for example, when playing online games? (2) How often do you listen to songs in English? (3) How often do you watch movies spoken in English without subtitles? (4) How often do you read books written in English? (5) How often do you read a magazine written in English? (6) How often do you visit websites written in English? (7) How often do you understand lyrics of songs in English? (8) How much do you like learning English? (9) At what age did you start to understand English?

All measures, aside from the questionnaire, were adapted to the English proficiency level of Slovene seventh graders participating in the pilot study.

Data analysis

Descriptive statistics and correlations between pairs of observed variables were calculated in SAS 9.4. Then, data were *z*- scored and standardized scores were used for latent profile analysis. The resulting profile scores were transformed to T-scores with a mean of 50 and a standard deviation of 10.

As previously mentioned, latent profile analysis was the primary analysis of interest for the current study. As in any model testing analysis, theoretical support, prior research, the nature of profiles, and interpretations of uncovered profiles should guide the specification of profiles. However, given the aim of the study, more exploratory analyses for the number of profiles were conducted (Muthén, 2006). Specifically, eight models were fit. Each model was then compared against the previous model or models to determine which number of latent profiles best fits our data (Marsh et al., 2009). To this end, multiple indices were utilized: Bayesian Information Criterion (BIC), the Akaike Information Criterion (AIC; Marsh et al., 2009), entropy (Ramaswamy et al., 1993), and the Lo-Mendell-Rubin Likelihood Ratio Test (Lo et al., 2001). The AIC and

BIC are popular fit indices that take into account model fit, parsimony, and BIC also considers the sample size. Lower AIC and BIC values represent the preferred, more parsimonious model fit. The entropy statistic was used to determine how separated the identified profiles were from one another. In other words, the statistic informed us on how much differentiation exists in profile membership classification. Values greater than .90 are recommended (Ramaswamy et al., 1993). Lastly, Lo-Mendell-Rubin Likelihood Ratio Test was used to compare the models, much akin to the chi-square-difference test in other model testing analyses. The test indicates whether the model being tested fits significantly better for the data, compared to a model with one less profile (e.g., comparing a three-profile model to a two-profile model). Latent profile analysis was conducted using Mplus 7.11 (Muthén & Muthén, 1998-2013).

Each of the eight models was evaluated using fit indices. Once the best fit was determined, we examined external correlates. These are the variables used to validate latent profiles by examining profile-specific means and variances for external correlates without directly including them in the model. This was facilitated by the function AUXILIARY in Mplus. In addition, external correlates were posited to be in correlation with the profiles without specifying any causal ordering (Marsh et al., 2009).

Results

Results of implementing the procedures of descriptive statistics are presented in Table 1. Table 2 presents the correlations between the observed variables. The results given in Table 2 reveal moderate to strong positive associations between the measures.

Table 1
Descriptive Statistics

Observed variable	N	M	SD	Minimum	Maximum	Skewness
1. EFL Word Reading Fluency	692	76.94	26.55	0.00	157.00	-0.32
2. EFL Contextual Reading Fluency	692	75.97	29.08	0.00	182.00	0.33
3. EFL Vocabulary	686	13.73	5.76	0.00	26.00	0.18
4. EFL Listening Comprehension - Morphology	692	8.80	2.78	0.00	12.00	-0.77
5. EFL Listening Comprehension - Elaborative	692	7.04	1.19	1.00	8.00	-1.75
6. EFL Letter Choice	694	16.18	12.06	0.00	64.00	0.42
7. EFL Sight Spelling	694	13.49	4.98	0.00	23.00	-0.34
8. EFL Reading Comprehension 1	690	4.36	1.38	0.00	8.00	-0.20
9. EFL Reading Comprehension 2	690	4.13	1.35	0.00	8.00	-0.06
10. EFL Reading Comprehension 3	690	3.91	1.46	0.00	8.00	-0.30
11. EFL Reading Comprehension 4	690	4.01	1.32	0.00	8.00	-0.48
12. EFL Reading Comprehension 5	690	4.15	1.50	0.00	8.00	-0.31

Table 2
Correlations among the observed variables

Observed variables	1	2	3	4	5	6	7	8	9	10	11
1. EFL Word Reading Fluency	1										
2. EFL Contextual Reading Fluency	.77***	1									
3. EFL Vocabulary	.45***	.54***	1								
4. EFL Listening Comprehension - Morphology	.43***	.51***	.61***	1							
5. EFL Listening Comprehension - Elaborative	.34***	.35***	.38***	.49***	1						
6. EFL Letter Choice	.48***	.48***	.34***	.25***	.19***	1					
7. EFL Sight Spelling	.67***	.67***	.62***	.55***	.41***	.48***	1				
8. EFL Reading Comprehension 1	.75***	.80***	.60***	.48***	.37***	.46***	.68***	1			
9. EFL Reading Comprehension 2	.73***	.75***	.56***	.45***	.40***	.49***	.64***	.83***	1		
10. EFL Reading Comprehension 3	.76***	.79***	.55***	.48***	.33***	.47***	.68***	.81***	.78***	1	
11. EFL Reading Comprehension 4	.77***	.77***	.58***	.50***	.36***	.50***	.64***	.81***	.73***	.82***	1
12. EFL Reading Comprehension 5	.77***	.80***	.59***	.48***	.36***	.46***	.67***	.86***	.81***	.86***	.79***

Note. ***p < .001.

Given the proposed hypothesis, we explored the profiles that characterized students' reading performance. As expected, across all our three methods, results indicated that the reading construct most likely represents severity gradation from good to poor reading performance, and not categorically distinct profiles. Fit statistics for latent profile analysis are presented in Table 3.

Values of fit indices dropped with each increasing number of profiles, indicating that each successive profile demonstrated a better model fit. Regardless of their number, the profiles were not heterogeneous across reading measures. They were only separated by the level of profile (i.e., they were quantitatively different), but not by the shape of profile (i.e., they were not qualitatively different). This is indicated in Figure 1, which displays how reading profiles are spread out in a series of almost parallel profiles ranked from lower levels of reading performance to higher levels of reading performance, with no profiles crossing each other. More students were grouped in the center than in periphery profiles. From low to high, the percentage of students in

Table 3
Fit statistics for latent profile analysis

Number of Profiles	LL	AIC	BIC	Entropy	LMR *p*-value
1	-13893.90	27847.79	27983.10	-	-
2	-12246.43	24584.86	24792.33	.91	.0003
3	-11476.88	23077.76	23357.39	.94	.0318
4	-10903.09	21962.17	22313.97	.94	.0193
5	**-10635.59**	**21459.17**	**21883.14**	**.92**	**.0184**
6	-10527.71	21275.43	21771.55	.90	.7311
7	-10436.41	21124.82	21693.12	.91	.2310
8	-10325.03	20934.06	21574.51	.93	.1654

Note. LL = log-likelihood; AIC = Akaike's Information Criterion; BIC = Bayesian Information Criterion; LMR = Lo-Mendell Ruben test. The best fitting model is in bold.

each of the five profiles was 7.1 %, 25.5 %, 34.7 %, 25.9 %, and 6.8 %, alluding to an almost perfect normal distribution of participants. Third, as presented in Figure 2, the T-scores of external correlates increased with each reading profile. The external correlates of reading in a foreign language changed consistently with each reading profile, with little evidence of changing rank order across profiles.
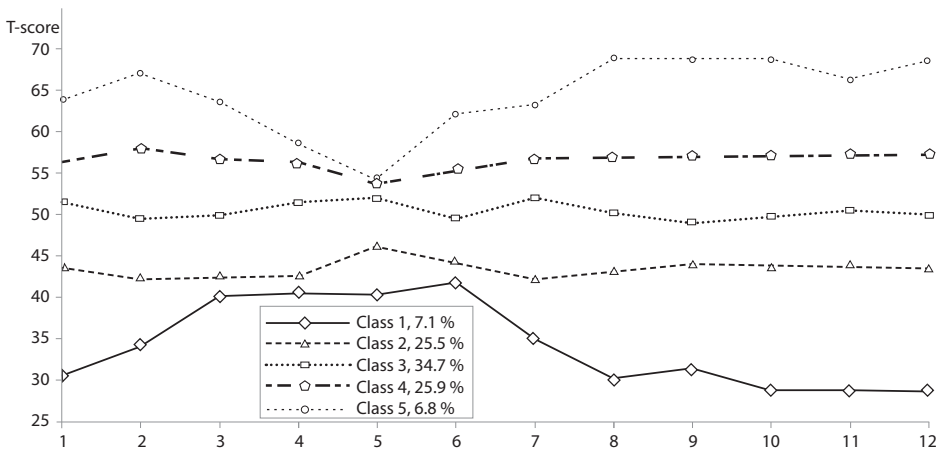

Figure 1. Reading profiles from the best fitting model. Variables are 1 = EFL Word Reading Fluency, 2 = EFL Contextual Reading Fluency, 3 = EFL Vocabulary, 4 = EFL Listening Comprehension – Morphology, 5 = EFL Listening Comprehension – Elaborative, 6 = EFL Letter Choice, 7 = EFL Sight Spelling, 8 = EFL Reading Comprehension 1, 9 = EFL Reading Comprehension 2, 10 = EFL Reading Comprehension 3, 11 = EFL Reading Comprehension 4, 12 = EFL Reading Comprehension 5.
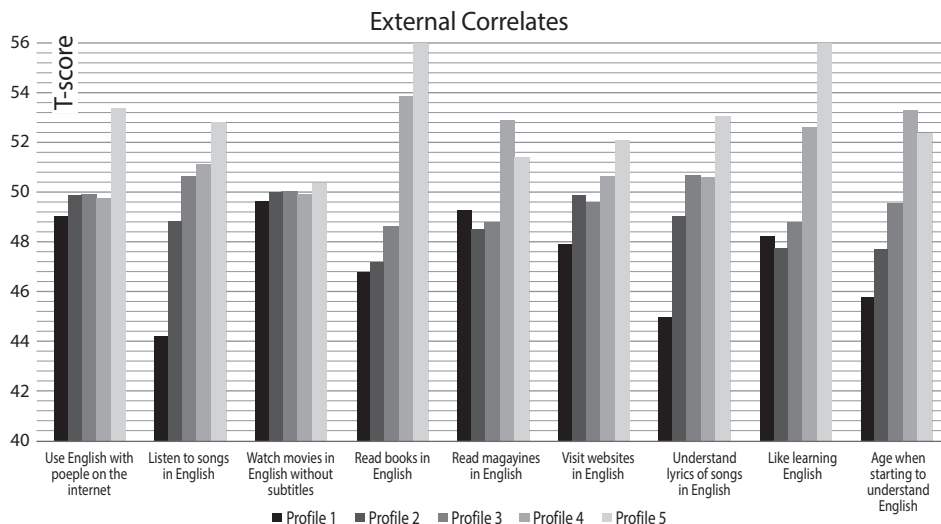
Figure 2. T-scores of external correlates for each reading profile group.

Discussion and conclusion

One of the common aims in reading research is identifying at-risk readers by presenting specific reading profiles, which reflect distinct reading groups. The current report challenged this view and showed that reading in middle school seems to be, in fact, a continuous construct rather than divided into different reading profiles. The present findings move the field forward by demonstrating that profiles can always be created using different statistical techniques, even when in reality they do not exist in the population.

As hypothesized, across our three criteria, our results suggest that reading is a continuous entity, and not a categorical construct with no distinct reading profiles. First, each added reading profile improved the fit of the model. This finding alludes to the fact that the statistical approach is trying to get closer to an underlying continuous nature of reading with each successive profile. Second, the distribution of students across the profiles was relatively normal, with reading profiles not showing qualitatively different patterns. As such, qualitative uniformity might be an indication that reading profiles might be an artificial creation resulting from various statistical approaches rather than from an actual existence in nature. Third, external correlates of reading changed consistently across the profiles, showing a stepwise pattern of continuity, rather thans not types in the sense of discrete categories. Overall, based on the presented data, it can be seen that all three criteria suggest that students' performance in reading is more a gradient of ability than a reflection of different patterns or profiles of performance, which are meaningfully different across groups of students. As such, the present data allow more of a conclusion that reading is a continuous construct and challenge the reading profiles approach.

Our findings lend support to the idea that reading difficulties are not manifested as distinct categories, but rather as a variability in developing general reading difficulties. Research on individual differences in reading supports this idea. Alleles for different reading groups have not been identified and we do not have risk genes influencing different reading groups, such as a group with decoding problems and a group with reading comprehension difficulties. Rather, much like other complex academic traits, reading is also characterized by polygenetic influences (e.g., Bishop, 2015). When genetic influences are too small and numerous to be phenotypically distinguishable, they interact, aggregate, and work in concert to form a quantitative continuum of reading achievement (e.g., Erbeli et al., 2018; Kovas et al., 2007), making it unlikely that qualitatively distinct groups will arise as a function of polygenetic risk. With numerous interactions and correlations between many genetic and environmental mechanisms at play, it is of no surprise that such complexity should cohere into a small set of distinct profiles. Furthermore, individual differences correlated with reading in a foreign language, such as the ones captured by our external correlates, are themselves continuously distributed traits shaped by a myriad of genetic and environmental influences. Taken together, our results do not support the conclusion that small genetic and environmental influences would aggregate to the extent of producing discrete reading profiles.

Another line of research in support of our findings is research on reading profiles in middle schoolers in contrast to elementary schoolers. It appears that reading performance is much more heterogeneous in elementary school (e.g., Foorman et al., 2017), displaying a huge amount of variability across reading measures. On the contrary, profiles in middle school and high school fall into a pattern of low, medium, and high performance, showing only slight variability in reading comprehension and academic language skills, such as vocabulary and text discourse (Brasseur-Hock et al., 2011; Foorman et al., 2017). Overall, the use of the most common current statistical techniques to identify reading profiles in this research among middle schoolers did not yield evidence to support the validity of distinct reading profiles.

Regardless of the results alluding to underlying continuous gradations of reading, such a result must not be interpreted to mean a total uselessness of profiles in reading research and practice. Much like gradient lines on a topographical map, reading profile groups can function as a convenient way of defining elevations and summarizing changing distributions of reading achievement across overall continuous reading distribution. As such, our study underscores the importance of variability in reading performance via its manifestation and suggests that using rigid pre-defined reading profiles to identify struggling readers may not be a viable way to approach the problem. Instead, reading performance should be viewed as a gradient on a reading continuum, and intervention programs in middle school should be built on continuous liability assessments rather than subtyping based on a particular reading skill. Given the findings of previous research, it appears that reading in elementary grades displays

more heterogeneity than reading in middle school. Therefore, elementary school seems to be an important time to intervene and build differentiated instruction in the form of more intensive support for particular reading skills.

There were limitations to consider when interpreting the present findings. First, it is notable that the present results were indicative of the sample reading in a foreign language (Erbeli & Pižorn, 2012). Future research should determine whether such findings can be generalized beyond this sample to students reading in their first language, and whether evidence of continuity extends beyond middle school. Second, the findings are preliminary and future research using longitudinal designs is needed to confirm these results, also by including other types of external correlates. Third, using the Qualitative Reading Inventory as a measure of reading comprehension can be regarded more as a measure for instruction than research. The Qualitative Reading Inventory was used in the present study because it was part of a research battery used in Slovenian schools at the time the study was conducted. Standardized tests of reading comprehension might have produced different results. Nonetheless, reliability estimates of the reading inventory are similar to other estimates in these kinds of measures, which bolsters our confidence in the usage of this measure.

The idea of identifying students at-risk for reading problems and differentiating instruction based on their reading profiles has been prevalent in reading research for a long time, especially with the increased popularity of sophisticated statistical techniques that enable researchers to classify and cluster students by reading profiles. Such approaches have been useful in particular in elementary school reading research to the extent that the profiles displayed qualitatively as well as quantitatively distinct characteristics. However, when used for purposes of classification, placement, and intervention in middle school, the issue with this method becomes apparent. Reading profiles in middle school most likely fall into a pattern of high, medium, and low, suggesting that reading subtypes might not exist in nature, but rather appear to be artifacts stemming as artificial outcomes of utilized statistical techniques. The findings of our study therefore suggest that identifying at-risk readers in middle school might be better achieved through continuous liability assessments than putatively discrete reading profile subgrouping.

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Čitalački profili ne moraju biti informativan pristup za identifikaciju ugroženih čitatelja u nižoj srednjoj školi

Sažetak

Analiza latentnih profila često je korišten pristup za identifikaciju rizičnih podskupina učenika s teškoćama u čitanju. Ipak, rezultati istraživanja čitanja učenika viših razreda osnovne škole[1] dovode u pitanje korisnost i značenje tih navodno kategorički različitih čitalačkih profila, koji mogu biti rezultat statističkih postupaka čak i u odsustnosti stvarnih profila. U ovom istraživanju propituje se stav da čitalački profili odražavaju jasno diferencirane skupine. U stvari, testira se hipoteza da je čitanje kontinuirano, s gradacijom težine njegove izvedbe. Uzorak je obuhvatio 695 učenika sedmoga razreda (M_{age} = 12,76 godina, SD_{age} = 0,43) iz Slovenije koji su čitali na engleskom kao stranome jeziku. Glavne ishodišne mjere uključivale su raznolike ocjene čitalačkih vještina u engleskom kao stranome jeziku. Rezultati analize latentnih profila pokazali su da su čitalački profili raspoređeni u slojevitom spektru težine, od veće do manje uspješnosti u čitanju. Profili se nisu kvalitativno razlikovali, a njihovi odnosi s vanjskim korelatima jednolično su se povećavali sa svakim profilom. Naime, rezultati pokazuju da čitalački profili u nižoj srednjoj školi predstavljaju kontinuiranu gradaciju. Stoga bi se intervencije u čitanju u nižoj srednjoj školi trebale zasnivati na neprekinutoj procjeni rizika, prije nego na određivanju podtipova profila.

Ključne riječi: *čitalačke skupine; engleski kao strani jezik; niža srednja škola.*

Uvod

Jedan od ciljeva istraživanja čitanja je identifikacija učenika u rizičnoj skupini za pojavu problema u čitanju. Identifikacija tih učenika omogućuje postupke prevencije i intervencije koji imaju potencijal ublažiti teškoće u čitanju. Učenici se razlikuju po izraženosti problema u čitanju, od onih koji pokazuju određeni deficit u specifičnim

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[1] Middle school: u Sloveniji, gdje je provedeno istraživanje, *middle school* je ekvivalent sedmoga i osmoga razreda osnovne škole u Hrvatskoj. U nastavku teksta spominjat će se kao niža srednja škola.

vještinama čitanja do onih s općenitijim problemima u čitanju. Ideja o raznolikosti teškoća u čitanju potaknula je istraživače na utvrđivanje jasnih čitalačkih profila. Ovo istraživanje doprinosi istrazi područja utvrđujući korisnost tih navodno jasnih čitalačkih profila. Štoviše, ono propituje stav čitalačkih profila koji odražavaju stvarne razlike između skupina čitača i testira hipotezu koja govori da je uspjeh u čitanju kontinuiran, a ne podijeljen na različite čitalačke profile.

U literaturi koja se bavi čitanjem korištena su dva različita pristupa za identificiranje čitalačkih profila: pristup proizašao iz teorije čitanja i pristup proizašao iz podataka. Pristup zasnovan na teoriji čitanja crpi ideju profila proizašlih iz teorija čitanja. Ovaj pristup tipično utemeljuje svoj rad na teorijskom okviru *jednostavan pogled na čitanje* (Gough i Tunmer, 1986), kojim se definira razumijevanje pročitanoga kao rezultat neovisnih doprinosa prepoznavanja/dekodiranja riječi i jezičnoga razumijevanja. U ovoj teoriji čitanja tri su potencijalne skupine učenika s različitim teškoćama u čitanju. Prva profilna skupina obuhvaća teškoće u fonološkom kodiranju, dekodiranju i čitanju riječi (Lovett, 1987; Morris i sur., 1998; Stanovich i Siegel, 1994). Ovoj skupini svojstvene su specifične teškoće u čitanju riječi zbog problema u dekodiranju. Tečnost u čitanju također je često ispod prosjeka i povezana je s problemima u dekodiranju. Na primjer, Stanovich i Siegel (1994) dokazali su povezanost teškoća u fonološkom kodiranju sa slabim prepoznavanjem riječi učenika s disleksijom. Sličan rezultat dobiven je u velikom, longitudinalnom istraživanju s djecom koja imaju obiteljski rizik za pojavu disleksije, gdje su identificirane skupine različite s obzirom na teškoće u tečnosti u usporedbi s teškoćama u razumijevanju tijekom prva dva razreda (Torppa i sur., 2007). Ovaj prvi niz istraživanja pokazuje da su dekodiranje i tečnost u čitanju vještine koje mogu biti problematične za učenike i kao takve mogu poslužiti kao korisna ishodišta za identificiranje značajnih profila. Druga skupina uključuje učenike s neometenim vještinama dekodiranja, ali s teškoćama u jezičnim vještinama. Ovi učenici pokazuju teškoće u čitanju s razumijevanjem, uključujući slušanje s razumijevanjem. Mogu imati poteškoća u mnogim specifičnim područjima, uključujući upotrebu strategija razumijevanja, strukturu teksta i predznanje (Neuman i Celano, 2006; RAND skupina za istraživanje čitanja, 2002). Ukratko, iako ova skupina može dekodirati tekstove primjerene dobi, tj. razredu, takvi učenici svejedno mogu imati problema s razumijevanjem povezane sa slabim jezičnim sposobnostima. Treća skupina uključuje čitače sa slabo razvijenim fonološkim vještinama i vještinama dekodiranja, kao i teškoće u temeljnim područjima razumijevanja. Za razliku od prve skupine, ovi čitači imaju teškoće u čitanju s razumijevanjem čak i onda kada čitaju tekstove koje mogu dekodirati, zbog manjkavosti temeljnoga razumijevanja (Spear-Swerling, 2016). Kao takav, ovaj profil možda neće biti identificiran prije trećega razreda jer ga mogu karakterizirati očekivane vještine razumijevanja u ranim razredima, kada se učenici ocjenjuju većinom prema sposobnostima dekodiranja i tečnosti koje se ne oslanjaju u velikoj mjeri na razumijevanje teksta (Catts i sur., 2012; Leach i sur., 2003; Lipka i sur., 2006). Sveobuhvatno promatrajući, istraživanje zasnovano na teoriji čitanja pokazuje

znatno različite osobine potencijalnih skupina čitatelja, tako da se reakcije na tretman mogu razlikovati po skupinama.

Za razliku od teorijskoga pristupa, pristup zasnovan na podatcima koristi tehnike statističke analize podataka kako bi otkrio „stvaran" broj profila čitanja. Analiza latentnih profila tipična je tehnika koja istraživačima omogućuje utvrđivanje tih profila. Uzorci zajedničke varijance među čitateljima ekstrahiraju se u profil čitanja. Dobiveni se profili više puta ocjenjuju na osnovi indeksa pristajanja kako bi se zaključilo o pripadnosti određenoj skupini i odredilo konačan broj latentnih čitalačkih profila u određenom uzorku. Analiza latentnih profila ima prednost upotrebe višestrukih mjera za formiranje profila, stoga i smanjivanja greške u mjerenju.

Statistički pristup latentnih čitalačkih profila u širokoj je upotrebi u literaturi o čitanju. Na primjer, istražujući profile čitanja (profile pismenosti) predškolske djece s jezičnim teškoćama, Justice i suradnici (2015) utvrdili su četiri jasna profila. To su bili profili djece u kategoriji visokoga rizika s općenito slabim vještinama pismenosti, kategorija umjerenoga rizika i kategorija niskoga rizika s prosječnim poznavanjem abecede. U sličnom istraživanju s učenicima osnovne škole (peti razred) pojavili su se vrlo slični latentni profili u skupinama učenika engleskoga kao stranoga jezika, kao i u skupinama učenika engleskoga kao prvoga, tj. materinskoga jezika (O'Connor i sur., 2019). U obje skupine postojao je profil učenika dobroga razumijevanja s iznadprosječnom sposobnosti razumijevanja pročitanoga teksta, fonološkom osviještenosti, pravopisnim vještinama, semantičkim znanjem i vještinama slušanja s razumijevanjem. Slično tome, u obje skupine učenika postojao je profil učenika slabih vještina razumijevanja povezanih s ispodprosječnim uspjehom u čitanju s razumijevanjem i svakoj od povezanih vještina čitanja (O'Connor i sur., 2019). U istraživanju koje je ispitivalo puno kasniji stadij razvoja čitanja, Brasseur-Hock i suradnici (2011) prvo su identificirali učenike devetoga razreda sa slabo razvijenom sposobnosti čitanja s razumijevanjem. Nakon toga su ispitali profile čitanja tih učenika i utvrdili pet jasnih čitalačkih profila: ozbiljne opće teškoće, umjerene opće teškoće, čitatelje s teškoćama u tečnosti čitanja, učenike s teškoćama u čitanju s razumijevanjem. U sličnom istraživanju Lesaux i Kieffer (2010) utvrdili su tri latentne skupine među učenicima šestih razreda sa slabo razvijenim vještinama razumijevanja, definirajući te skupine kao spore čitače riječi (učenici s teškoćama na razini čitanja riječi), općenito nerazvijene čitače (učenici s teškoćama u svim vještinama čitanja) i učenike koji čitaju riječi na razini automatizma (iznadprosječni čitači na razini čitanja riječi i tečnosti). Takvi su rezultati potvrđeni u istraživanju provedenom s 9 283 učenika četvrtoga razreda. Dobiveno je osam čitalačkih profila gdje su dobri i prosječni čitači pokazivali jednake profile, dok su slabi čitači imali raznolikiju izvedbu (Wolff, 2010). Zanimljiv rezultat istraživanja Brasseur-Hocka i suradnika (2011), Lesauxa i Kieffera (2010) i Wolffa (2010) jest uniformnost profila u nižoj i višoj srednjoj školi u usporedbi s raznolikosti profila u osnovnoj školi. Takav rezultat dobiven je i u istraživanju Foormana i suradnika (2017). Upotrebom iste statističke tehnike utvrđeno je da se čitalački profili u osnovnoj školi više razlikuju od

onih u nižoj srednjoj ili srednjoj školi (Foorman i sur., 2017). Uzorci ispitanika u nižoj srednjoj školi bili su tipični i slijedili su raspodjelu u visoku, srednju i nisku čitalačku skupinu. Ipak, ovaj rezultat, koji govori da učenici u nižoj srednjoj školi pripadaju takvome uzorku nije iznenađujući jer bolji čitatelji odabiru čitati više i kroz tu veću izloženost tisku, rječniku, sintaksi i strukturi teksta stječu bolje vještine u svakome od tih područja (Erbeli i sur., 2020; Foorman i sur., 2017; Stanovich, 1986). Jednom riječju, čini se da različita istraživanja, upotrebom statističkih tehnika, dobivaju različit broj čitalačkih profila koji postaju sve dosljedniji s godinama školovanja.

Bez obzira na pristup, postoji pretpostavka o postojanju teorijski značajnih i praktičnih čitalačkih profila. Između tih profila postoje razlike u vještini čitanja učenika što omogućuje da se upotrebom statističkih metoda identificiraju skupine čitača. S obzirom na navedeno, utvrđivanje čitalačkih profila pogodno je za fokusiranje istraživanja rizičnih faktora koji pridonose slabije razvijenoj sposobnosti čitanja. Ako čitalački profili zaista odražavaju stvarne kategoričke razlike među čitateljima, to je nevjerojatno moćan mehanizam za identificiranje pripadnosti nekom od tih profila, osmišljavanje strategija prevencije i intervencije za svaku pojedinu skupinu.

Međutim, alternativna hipoteza profilnom pristupu također je moguća. Ona podrazumijeva da ne postoje jasni čitalački profili i da osobine takvih potencijalnih profila možda nisu toliko međusobno različite kao što se pretpostavlja. Štoviše, veliki broj istraživanja pokazuje da čitanje i individualne razlike u čitanju funkcioniraju u kontinuitetu koji se razlikuje od učenika do učenika za svaku vještinu čitanja (npr., Snowling i Hulme, 2012). Iz navedenoga proizlazi da su učenici s teškoćama u bilo kojoj čitalačkoj vještini jednostavno na niskom kraju kontinuuma raspodjele određene vještine čitanja, ali ne i diskretno različita, tj. jasna skupina. Ipak, ako u populaciji nema različitih skupina čitatelja, zašto se statističkim postupcima još uvijek dobivaju profili čitatelja koji ukazuju na pripadnost skupinama sposobnih čitača i onih s teškoćama? Marsh i suradnici (2009) savjetuju oprez prilikom primjene analize latentnih profila. Marsh i suradnici (2009) tvrde da ako zaista postoje višestruki profili, onda bi analiza latentnih profila trebala polučiti kvantitativno (razina profila) kao i kvalitativno (razina oblika) različite profile. Autori dalje tvrde da analiza latentnih profila prečesto rezultira profilima u kojima se skupine razlikuju samo u smislu kvantitativne, ali ne i kvalitativne razine (Marsh i sur., 2009). Razmotrimo li primjer istraživanja u kojemu su učenici niže srednje škole imali jednolično visoke, srednje ili niske rezultate u svim varijablama profila (Foorman i sur., 2017), možemo uočiti da takvi kvalitativno uniformni paralelni profili pokazuju da istraživani konstrukt, u stvari, predstavlja kontinuum bez jasnih profila, a ne kategorički konstrukt s jasno različitim profilima (Muthén, 2006).

U ovom izvješću testirali smo alternativnu hipotezu kojom se tvrdi da se čitalački profili mogu promatrati kao gradacija na čitalačkom kontinuumu. Ako su čitalački profili paralelni i ne presijecaju se (tj. ako se ne razlikuju kvantitativno ni kvalitativno), onda najvjerojatnije predstavljaju stupnjevanje od loše razvijene preko prosječno razvijene do stvarno dobro razvijene sposobnosti čitanja. Zasnovano na prijašnjim istraživanjima koja su ispitivala čitalačke profile učenika u nižoj srednjoj školi (npr.

Brasseur-Hock i sur., 2011; Foorman i sur., 2017), očekivali bismo rezultat kvalitativne jednoobraznosti u konstruktu čitanja prije nego različite oblike profila. Tražili smo dokaze za našu hipotezu koristeći tri metode. Prvo, očekivali smo kako će indeksi valjanosti analize latentnih profila biti pokazatelj činjenice da s višim profilom raste i valjanost latentnoga modela. Takav bi nalaz implicirao da se naši podatci sve više približavaju prikazu pozadinske kontinuirane prirode čitanja sa svakim dodatnim profilom. Drugo, očekivali smo normalnu distribuciju učenika po profilima, tj. da se linije latentnih profila, raspona nižega do višega uspjeha u čitanju, neće presijecati. Većina učenika pripala bi srednjem (prosječnom) profilu, a manji broj bio bi u skupini čitatelja viših i nižih sposobnosti, s tim da se učenički profili ne bi presijecali niti predstavljali kvalitativno različite razine. Treće, očekivali smo da će se čitateljski profili jednolično mijenjati s obzirom na vanjske korelate. Ako profili čitatelja predstavljaju stupnjevanje težine, onda bi se vanjski korelati jednolično mijenjali s porastom profilnoga ranga. Suprotno tome, ako su čitateljski profili kvalitativno i kvantitativno različite skupine, onda bi vanjski korelati pokazivali malo dokaza stepenastoga uzorka kontinuiteta. Ova studija proizlazi iz tih hipoteza i koristi podatke dobivene na velikome uzorku učenika koji čitaju na engleskome jeziku kao stranom jeziku. Veliki uzorak pruža nam mogućnost utvrđivanja potencijalno različitih profila čitatelja. Osim toga, istraživanje je uključilo široki raspon vanjskih korelata povezanih s čitanjem na stranome jeziku, omogućujući procjenu vanjskoga kontinuiteta dobivenih čitalačkih profila.

Metoda
Sudionici

Uzorak je obuhvatio 695 učenika sedmih razreda (53,5 % dječaka) u dobi od 12 i 13 godina (M = 12,76; SD = 0,43) koji su pohađali nižu srednju školu u Sloveniji 2011./2012. školske godine. Materinski jezik učenika je slovenski i učili su ga od prvoga razreda. Svi učenici učili su engleski kao strani jezik (EFL), koji je u to vrijeme bio obavezni školski predmet od četvrtoga razreda (9 godina). Program engleskoga jezika uključuje slušanje s razumijevanjem, govorne sposobnosti, upotrebu jezika i aktivnosti čitanja. Poduka čitanja u EFL-u obuhvaća uravnoteženu kombinaciju metoda zasnovanih na značenju i dekodiranju. Svaki je učenik u ovome istraživanju do trenutka provođenja istraživanja prisustvovao na 425 školskih sati poduke u području EFL-a. Od učenika se očekivalo da do kraja šestoga razreda dosegnu A1 razinu (tj. početničku razinu), a do kraja devetoga razreda A2 razinu (tj. elementarnu razinu) EFL kompetencija u skladu sa *Zajedničkim europskim referentnim okvirom za jezik* (CEFR; Vijeće Europe, 2001). Deveti razred je razred mature, prije nego učenici nastave obrazovanje u višoj srednjoj školi.

Postupci i mjerni instrumenti

Ocjenjivanje je proveo prvi autor i učitelji engleskoga jezika sa skupinama učenika tijekom proljetnoga dijela školske godine u učionicama. Učitelji su prethodno poučeni

o načinu primjene testova. Prije ocjenjivanja dobivena je suglasnost za sudjelovanje u istraživanju roditelja učenika i ravnatelja škola sudionica. Projekt je odobrio Institucionalni revizijski odbor (IRB) Sveučilišta u Ljubljani, a isti je u skladu s principima istraživanja s ljudskim ispitanicima. IRB nije pronašao etičke probleme u istraživačkom dizajnu. Nije bilo neočekivanih razvoja događaja ni poteškoća u postupku. Više detalja o postupku može se pronaći u radu Erbelija (2015).

EFL fluentnost čitanja riječi. Fluentnost čitanja riječi ocjenjivala se upotrebom standardiziranoga Testa fluentnosti tihoga čitanja riječi (TOSWRF; Mather i sur., 2004). TOSWRF je osmišljen za mjerenje brzine identifikacije jedne riječi. Učenicima se prikazao niz riječi (npr. dimhowfigblue) u kojemu su za tri minute trebali povući granice između onoliko riječi koliko su znali. Svaka točno prepoznata riječ vrednovana je jednim bodom (179 maksimalno). U ovome istraživanju pouzdanost testa-retesta iznosila je $r = {,}86$.

EFL fluentnost kontekstualnoga čitanja. Fluentnost kontekstualnoga čitanja mjerena je standardiziranim Testom tečnosti tihoga kontekstualnoga čitanja (TOSCRF; Hammill i sur., 2006). Opis mjernoga instrumenta je isti kao i za TOSWRF, s tom razlikom da su riječi koje je trebalo pročitati prezentirane u nizovima cjelovitih rečenica (npr. AYELLOWBIRDSATONMOTHERSPRETTYHAT). Maksimalan broj bodova bio je 186. Pouzdanost testa-retesta bila je $r = {,}87$.

EFL rječnik. Poznavanje vokabulara ocijenjeno je upotrebom Testa opsega rječnika (VOCAB; Beglar i Nation, 2007). Test se u ovome istraživanju sastojao od 26 čestica. Učenici su dobili uputu zaokružiti slovo ispred definicije riječi koja ju najbolje opisuje. Svaka točno prepoznata čestica vrednovana je jednim bodom. Pouzdanost u ovom istraživanju bila je $\alpha = {,}87$.

EFL slušanje s razumijevanjem. Slušanje s razumijevanjem ocjenjivano je upotrebom standardiziranoga Testa slušnoga razumijevanja jezika (TACL; Carrow-Woolfolk, 1999). U ovom istraživanju korištena su dva podtesta: Gramatički morfemi i Elaborirane fraze i rečenice. Prvi podtest sastojao se od 12 čestica, a drugi od 8. Učitelj je naglas pročitao dijelove testa, a zadatak učenika bio je zaokružiti sliku za koju su smatrali da najbolje predstavlja značenje riječi, fraze ili rečenice koju je izgovorio učitelj. Broj točno identificiranih čestica predstavljao je ukupan rezultat za svaku mjeru. Unutarnja pouzdanost ovoga dijela istraživanja iznosila je $\alpha = {,}83$.

EFL odabir slova. Odabir slova mjeren je podtestom Odabir slova iz Testa pravopisa (TOC; Mather i sur., 2008). Učenicima su pokazani redovi riječi. U svakom redu je nedostajalo je jedno od četiri slova (p, d, b, q) (npr., __etter, nema slova b). Učenici su imali dvije minute vremena da upišu slovo i ispravno nadopune što više riječi. Ukupno je bilo 76 redova. Svako točno umetnuto slovo vrednovalo se jednim bodom. Koeficijent pouzdanosti testa i retesta bio je $r = {,}89$.

EFL prepoznavanje riječi kao slika. Pisanje frekventnih riječi po automatizmu mjereno je podtestom Prepoznavanja riječi kao slika po viđenju iz TOC (Mather i

sur., 2008). Učitelj bi rekao riječ dok su učenici gledali dio riječi u kojima nije bilo jednoga ili više slova (npr. know, students saw ___ow). Učenici su zatim trebali upisati slovo ili slova koja nedostaju (uključene su bile riječi s nepravilnim ili neuobičajenim elementima pravopisa) kako bi nadopunili napisanu riječ. Ukupno je trebalo nadopuniti 23 čestice. Svaka točno nadopunjena čestica vrednovana je jednim bodom. Unutarnja pouzdanost bila je α = ,86.

EFL čitanje s razumijevanjem. EFL razumijevanje pročitanoga mjereno je putem tri eksploratora i dva narativna teksta iz Kvalitativnoga inventara čitanja (QRI; Leslie i Schudt Caldwell, 2010). Ispod tekstova bilo je osam pitanja otvorenoga tipa, od kojih su neka bila doslovna, a neka su zahtijevala zaključivanje. Svaki točan i puni odgovor vrednovan je jednim bodom. Cronbachov alfa koeficijent za sve tekstove iznosio je iznad ,79.

Vanjski korelati. Učenici su ispunjavali anketni upitnik na materinskom jeziku koji se fokusirao na kontekstualne faktore vezane za uspješnost u čitanju na stranome jeziku. Upitnik je bio u obliku petostupanjske Likertove skale, s mišljenjima u rasponu od nikada (0) do uvijek/gotovo svaki dan (4). Na sedmom pitanju učenici su mogli odabrati između opcija od ne uopće (0) do puno (4). Osmo pitanje odnosilo se na njihovu kronološku dob. Učenike se pitalo o sljedećim neformalnim prilikama za učenje stranoga jezika: (1) Koliko često koristiš engleski jezik u komunikaciji s ljudima na internetu, na primjer, prilikom igranja *online* igara? (2) Koliko često slušaš pjesme na engleskom jeziku? (3) Koliko često gledaš filmove na engleskom jeziku bez titlova? (4) Koliko često čitaš knjige na engleskom jeziku? (6) Koliko često posjećuješ mrežne stranice na engleskom jeziku? (7) Koliko često razumiješ tekstove pjesama na engleskom jeziku? (8) Koliko voliš učenje engleskoga jezika? (9) S koliko godina si mogao/la razumjeti engleski jezik?

Sve mjere, osim upitnika, bile su prilagođene razini znanja engleskoga jezika slovenskih učenika sedmoga razreda u pokusnoj studiji.

Analiza podataka

Program SAS 9.4. korišten je za deskriptivnu statistiku i izračun korelacija između parova proučavanih varijabli. Nakon toga podatci su pretvoreni u *z* rezultate, a standardizirani rezultati su upotrjebljeni za analizu latentnih profila. Dobiveni rezultati profila pretvoreni su u T-rezultate s aritmetičkom sredinom 50 i standardnom devijacijom 10.

Kao što je prije spomenuto, u ovom istraživanju primarna je bila analiza latentnih profila. Kao u bilo kojoj analizi testiranja modela, specifikaciju profila trebaju voditi otkrivene teorijske značajke, prijašnja istraživanja, priroda profila i tumačenja profila. Ipak, s obzirom na cilj istraživanja, provedeno je više eksplorativnih analiza (Muthén, 2006) te je ustanovljeno pristajanje osam modela. Svaki je model zatim uspoređen s prijašnjim modelom ili modelima kako bi se utvrdio broj latentnih profila koji najbolje odgovaraju našim podatcima (Marsh i sur., 2009). Zbog toga su korišteni

višestruki indeksi: Bayesian Information kriterij (BIC), Akaike Information kriterij (AIC; Marsh i sur., 2009), entropiju (Ramaswamy i sur., 1993) i Lo-Mendell-Rubin test omjera vjerojatnosti (Lo i sur., 2001). AIC i BIC su popularni indeksi pristajanja koji uzimaju u obzir pouzdanost modela i njegovu štedljivost, a BIC i veličinu uzorka. Niže vrijednosti AIC i BIC predstavljaju željeno, štedljivo pristajanje modela. Statistika entropije korištena je kako bi se utvrdilo koliko su identificirani profili međusobno različiti. Drugim riječima, podatci govore o tome koliko razlike ima u klasifikaciji pripadnika profilima. Preporučene su vrijednosti veće od ,90 (Ramaswamy i sur., 1993). Naposljetku, korišten je Test omjera vjerojatnosti Lo-Mendell-Rubin za usporedbu modela, vrlo sličan hi-kvadrat testu razlika u drugim analizama testiranja modela. Test pokazuje odgovara li testirani model podatcima značajno bolje od modela s jednim profilom manje (npr. uspoređivanje modela s tri profila s modelom s dva profila). Analiza latentnih profila provedena je upotrebom Mplus 7.11 (Muthén i Muthén, 1998-2013).

Svaki od naših osam modela evaluiran je upotrebom indeksa pristajanja. Nakon što je utvrđeno najbolje pristajanje, ispitani su vanjski korelati. To su varijable korištene za validaciju latentnih profila putem ispitivanja aritmetičkih sredina profila i varijanci za vanjske korelate bez njihova direktnoga uključivanja u model. Ovaj postupak omogućio je funkcioniranje AUXILIARY-ja u Mplusu. Osim toga, vanjski korelati postavljeni su u vezu s profilima bez pobližega određivanja bilo kakvoga kauzalnog poretka (Marsh i sur., 2009).

Rezultati

Rezultati primjene postupaka deskriptivne statistike predstavljeni su u Tablici 1. U Tablici 2 prikazane su korelacije između promatranih varijabli. Pregled Tablice 2 otkriva umjerenu do jaku povezanost između mjera.

Tablica 1.

Tablica 2.

S obzirom na postavljenu hipotezu, istraživali smo profile koji karakteriziraju uspjeh učenika u čitanju. Kao što je i očekivano, u sve tri metode rezultati su pokazali da konstrukt čitanja vjerojatnije predstavlja stupnjevanje težine, od dobre do loše izvedbe u čitanju, nego kategorički različite profile. Mjere pouzdanosti analize latentnih profila prikazane su u Tablici 3.

Tablica 3.

Vrijednosti indeksa pristajanja modelu opadale su sa svakim sljedećim, tj. višim profilom, ukazujući na to da je svaki sljedeći profil bolje pristajao modelu. Bez obzira na njihov broj, profili nisu bili heterogeni u odnosu na sve mjere čitanja, već su se razlikovali samo prema razini profila (npr. bili su kvalitativno različiti). Ovaj rezultat prikazan je na Slici 1 koja prikazuje kako se profili čitanja šire u nizu gotovo paralelnih

profila rangiranih od nižih razina uspjeha u čitanju do viših razina čitalačke izvedbe, bez međusobnoga presijecanja. Više je učenika bilo grupirano u središtu nego na rubnim dijelovima profila. Od niskih do visokih, postotak učenika u svakom od pet profila bio je 7,1 %, 25,5 %, 34,7 %, 25,9 % i 6,8 %, sugerirajući gotovo savršeno normalnu distribuciju sudionika. Treće, kao što je prikazano u Tablici 2, T rezultati vanjskih korelata povećavali su se sa svakim čitalačkim profilom. Vanjski korelati čitanja na stranom jeziku jednolično su se mijenjali sa svakim sljedećim profilom, s malo dokaza promjene ranga u svima profilima.

Grafikon 1.

Grafikon 2.

Rasprava i zaključak

Jedan od uobičajenih ciljeva u istraživanju čitanja je utvrđivanje ugroženih čitatelja prikazivanjem specifičnih čitalačkih profila koji odražavaju jasne, tj. različite čitalačke skupine. U ovom istraživanju propituje se navedeno gledište i pokazuje da je čitanje u nižoj srednjoj školi, u stvari, kontinuirani konstrukt prije nego podijeljen u različite profile čitanja. Rezultati ovoga istraživanja pomiču polje prema demonstraciji činjenice da se profili uvijek mogu stvoriti upotrebom različitih statističkih tehnika, čak i kada u stvarnosti ne postoje u određenoj populaciji.

Kao što se pretpostavljalo, naši su rezultati za sva tri kriterija pokazali da čitanje nije kategorički konstrukt s različitim čitalačkim profilima, već kontinuirani entitet. Prvo, svaki sljedeći čitalački profil poboljšao je pouzdanost modela. Ovaj rezultat ukazuje na činjenicu da se statistički pristup pokušava približiti pozadinskoj kontinuiranoj prirodi čitanja sa svakim idućim profilom. Drugo, distribucija učenika po profilima bila je relativno normalna, s tim da čitalački profili nisu pokazivali kvalitativno različite uzorke. Kao takva, kvalitativna jednoobraznost može biti pokazatelj umjetno stvorenih čitalačkih profila raznolikim statističkim pristupima, a ne njihova stvarnoga postojanja u prirodi. Treće, vanjski korelati čitanja jednolično su se mijenjali po profilima, pokazujući stepeničasti uzorak kontinuiteta, a ne tipove u smislu jasno različitih kategorija. Zasnovano na dobivenim podatcima, može se tvrditi kako sva tri kriterija ukazuju na to da uspjeh učenika u čitanju predstavlja stupnjevanje sposobnosti, a ne odraz različitih uzoraka ili profila izvedbe koji bi se značajno razlikovali po skupinama učenika. Stoga dobiveni podatci navode na zaključak da je čitanje kontinuirani konstrukt i dovode u pitanje pristup čitalačkim profilima.

Naši rezultati podržavaju zamisao da teškoće u čitanju možda nisu izdvojena kategorija, već varijabilnost u riziku za razvoj općih problema u čitanju. Istraživanje individualnih razlika čitanja podržava ovu zamisao. Aleli za različite skupine čitatelja nisu utvrđeni niti su pronađeni rizični geni koji bi utjecali na različite čitalačke skupine, poput skupine s problemima dekodiranja i skupine s teškoćama u čitanju s razumijevanjem. Umjesto toga, poput drugih složenih akademskih osobina, čitanje

je također karakterizirano višestrukim genetskim utjecajima (npr. Bishop, 2015). Kada su genetski utjecaji premali i prekobrojni da bi se odrazili u fenotipu, oni su u interakciji, spajaju se i djeluju usklađeno kako bi formirali kvalitativni kontinuum uspjeha u čitanju (npr. Erbeli i sur., 2018; Kovas i sur., 2007), čineći pojavljivanje različitih skupina kao rezultat funkcije višestrukoga genetskoga rizika malo vjerojatnim. S obzirom na brojne interakcije i korelacije između mnogih genetskih i okolišnih mehanizama, nije iznenađujuće da bi se takva složenost trebala podožiti malom nizu jasno određenih profila. Osim toga, individualne razlike u čitanju na stranome jeziku, poput onih zabilježenih u našim vanjskim korelatima, kontinuirano su distribuirane osobine oblikovane raznolikim genetskim i okolišnim utjecajima. Sveobuhvatno, naši rezultati ne podržavaju zaključak da se mali genetski i okolišni utjecaji spajaju kako bi proizveli posebne čitalačke profile.

Još jedan skup istraživanja koji podržava ovdje dobivene rezultate jest onaj o čitalačkim profilima učenika niže srednje škole u odnosu na osnovnoškolce. Čini se da je uspjeh u čitanju mnogo raznolikiji u osnovnoj školi (npr. Foorman i sur., 2017), s velikom količinom varijabiliteta u svim mjerama čitanja. Suprotno tome, profili u nižoj srednjoj i srednjoj školi pripadaju uzorku slaboga, srednjega i dobroga uspjeha u čitanju, pokazujući samo neznatan varijabilitet u čitanju s razumijevanjem i akademskim jezičnim vještinama poput rječnika i tekstnoga diskursa (Brasseur-Hock i sur., 2011; Foorman i sur., 2017). Općenito može se zaključiti kako upotreba trenutačno najuobičajenijih statističkih tehnika za utvrđivanja čitalačkih profila u suvremenom istraživanju čitanja učenika niže srednje škole u ovom istraživanju nije dala dokaze koji bi podržali valjanost pretpostavke o postojanju jasno razlučivih čitalačkih profila.

Bez obzira na rezultate temeljnoga kontinuiranog poboljšanja sposobnosti čitanja, takav rezultat ne smije se tumačiti kao potpuna beskorisnost čitalačkih profila u istraživanju čitanja i prakse. Poput linija gradijenta na topografskim kartama, skupine čitalačkih profila mogu funkcionirati kao konvencionalan način definiranja uzvišenja, tj. razvoja i sumiranja promjenjivih raspodjela uspjeha u čitanju u cijeloj kontinuiranoj distribuciji čitanja. Iz toga proizlazi naglasak koji ovo istraživanje stavlja na važnost promjenjivosti uspjeha u čitanju putem njegove manifestacije i sugerira da upotreba rigidnih, unaprijed uspostavljenih čitalačkih profila u identifikaciji ugroženih čitača možda nije održiv način pristupa problemu. Umjesto toga, uspjeh u čitanju treba se promatrati kao gradijent na kontinuumu čitanja, a programi intervencije u nižoj srednjoj školi trebali bi se zasnivati na kontinuiranoj procjeni rizika, a ne na utvrđivanju podtipova određenih vještina čitanja. Rezultati prijašnjih istraživanja govore u prilog činjenici da čitanje u osnovnoj školi obilježava veća raznolikost nego ono u nižoj srednjoj školi. Stoga se čini da je vrijeme osnovne škole važno za intervenciju i izgrađivanje diferencirane pouke u obliku intenzivnijega razvijanja određenih vještinama čitanja.

Prilikom tumačenja rezultata ovoga istraživanja trebalo je razmotriti određena ograničenja. Prvo, vrijedno je napomenuti da su rezultati ovoga istraživanja indikativni za uzorak ispitanika koji čitaju na stranome jeziku (Erbeli i Pižorn, 2012). Buduća

istraživanja trebaju utvrditi mogu li se ti rezultati generalizirati izvan granica ovoga uzorka na ispitanike koji čitaju na materinskom jeziku i vrijede li dokazi kontinuiteta izvan granica niže srednje škole. Drugo, rezultati ovoga istraživanja su preliminarni i potrebno je buduće istraživanje longitudinalnoga dizajna kako bi se rezultati ponovili, također uz uključivanje drugih tipova vanjskih korelata. Treće, upotreba *Kvalitativnoga inventara čitanja* kao mjernoga instrumenta za čitanje s razumijevanjem može se više smatrati poukom nego istraživanjem. *Inventar kvalitativnoga čitanja* koristio se u ovom istraživanju jer je bio dio istraživačkoga kompleta koji se u vrijeme provođenja istraživanja koristio u slovenskim školama. Standardizirani testovi čitanja s razumijevanjem mogli su polučiti različite rezultate. Ipak, procjene pouzdanosti inventara čitanja slične su drugim procjenama tih vrsta mjera, što podiže naše pouzdanje u upotrebu ovoga mjernog instrumenta.

Zamisao identificiranja ugroženih učenika od razvoja teškoća u čitanju i diferenciranje pouke zasnovano na njihovim čitalačkim profilima dugo je prevladavalo u istraživanju čitanja, posebno s rastućom popularnosti sofisticiranih statističkih tehnika koje su omogućile istraživačima klasifikaciju i grupiranje učenika prema čitalačkim profilima. Takvi pristupi bili su korisni, posebno u istraživanju čitanja u osnovnoj školi, do te mjere da su profili prikazivali kako kvalitativno, tako i kvantitativno različite osobine. Ipak, kada se koristi za svrhe klasifikacije, smještanja i intervencije u nižoj srednjoj školi, problem ove metode postaje očit. Profili čitanja u nižoj srednjoj školi najvjerojatnije pripadaju uzorku visoko, srednje i slabo razvijenih sposobnosti, sugerirajući da podvrste čitanja ne postoje u stvarnosti, već su prije umjetan rezultat upotrebe statističkih tehnika. Kao takvi, rezultati našega istraživanja pokazuju da bi identifikacija učenika u rizičnoj skupini za razvoj teškoća u čitanju u nižoj srednjoj školi bila uspješnija u obliku kontinuirane procjene rizika, nego kao određivanje navodno različitih čitalačkih profila.