The Impact of Bilingualism on Native Language Reading Comprehension Among University Students

Myeongryun Lee[1], Yeon Seo Kang[1] and Carina Pals[#]

[1]University of Utah, USA
#Advisor

ABSTRACT

Bilingualism has been linked to cognitive and academic benefits, yet its impact on native language reading comprehension among university students is unclear. This study assessed whether bilingual students outperform non-bilingual peers in native language reading comprehension. Fifty-seven students at an international campus in South Korea completed reading assessments using College Scholastic Ability Test (CSAT) reading comprehension sections and TOEIC/English CSAT reading comprehension sections. Results revealed that non-bilingual students scored higher than bilingual students in Korean reading comprehension, likely due to reduced exposure to Korean and lack of systematic CSAT preparation. In contrast, English-speaking bilinguals showed no significant difference, suggesting that balanced language input can mitigate performance gaps. These findings emphasize the need for tailored educational strategies to support bilingual students and highlight the role of linguistic environments in shaping reading comprehension skills. While the small sample size limits generalizability, this study underscores the complexity of bilingualism's cognitive and educational impacts.

Introduction

Bilingualism, defined as the ability to use two languages proficiently, has become increasingly prevalent in our globalized society. With approximately 3.3 billion individuals worldwide identified as bilingual, representing nearly half of the global population (Gration, 2021), the study of bilingualism has garnered significant interest across various academic fields. This study aims to explore the impact of bilingualism on reading comprehension in native languages among university students, contributing to the understanding of how cognitive advantages linked to bilingualism persist into adulthood.

Previous research has consistently demonstrated a positive correlation between bilingualism and academic success, with bilingual children often outperforming their non-bilingual peers in various cognitive and academic domains (Carlson & Meltzoff, 2008). One key aspect of academic performance is reading comprehension, which relies heavily on cognitive skills (Nouwens et al., 2021). Researchers believe the advantage observed in bilingual individuals stems from enhanced executive function skills (Peristeri et al., 2021) developed through managing two linguistic systems. These executive functions, including working memory, cognitive flexibility, and inhibitory control, are essential for processing and integrating information effectively, thus contributing to better reading comprehension.

Literature Review

Extensive research highlights that bilingualism contributes to cognitive development through enhanced executive function skills (EFs), such as a set of cognitive processes that are essential for goal-directed behavior and problem-solving. These processes include working memory, cognitive flexibility, planning, and inhibitory control. Research has shown that bilingual individuals often exhibit enhanced executive function skills compared to their non-bilingual

counterparts. Bialystok (2018) examined the link between bilingualism and executive functions, revealing that bilingual individuals tend to excel in tasks that require inhibitory control and cognitive flexibility. This enhanced ability in executive functions is thought to underpin cognitive benefits, such as better reading comprehension, observed in bilingual individuals (Grant et al., 2014). Supporting this notion, Blom et al. (2014) demonstrated that bilingual children, even those from lower socioeconomic backgrounds, show cognitive advantages in language-independent working memory tasks. These findings emphasize the positive influence bilingualism has on the executive control system, regardless of socioeconomic status.

In addition to cognitive factors such as enhanced executive function, the phenomenon of linguistic transfer plays a critical role for bilinguals and has been extensively studied as a factor that significantly impacts reading comprehension in a second language (L2). Linguistic transfer refers to the influence of skills and knowledge from one's native language (L1) on the acquisition and use of an L2, occurring at phonological, syntactic, and semantic levels (Kroll & Bialystok, 2013). For instance, a study by Siu and Ho (2015) found that syntactic skills acquired in the native language, Cantonese, positively influenced English reading comprehension in young Cantonese-English bilingual students. Similarly, Tong et al. demonstrated that vocabulary knowledge in L1 was positively correlated with L2 reading comprehension, highlighting the importance of lexical skills in language transfer (Tong et al., 2023). These studies suggest that a strong linguistic foundation in L1 can support the development of reading comprehension skills in L2, emphasizing the beneficial impact of linguistic transfer on reading proficiency in bilinguals.

The existing literature provides strong evidence that bilingualism in younger age groups enhances executive functions, contributing positively to cognitive development. Additionally, the phenomenon of language transfer observed in bilinguals has been shown to positively impact L2 reading skills, with bilinguals often outperforming non-bilingual in executive function tasks. These findings emphasize the cognitive advantages of bilingualism. However, most studies on bilingual's executive function have focused on younger populations, resulting in a lack of data on older groups. This raises the question whether the positive cognitive effects of bilingualism persist into adulthood. Furthermore, much of the research on bilingualism has centered on L2 proficiency, leaving limited exploration of how bilingualism might affect L1 abilities, such as reading comprehension. This raises the question whether findings from L2 studies could suggest a positive impact on L1. In particular, the phenomenon of language transfer raises the possibility that bilingualism may enhance certain aspects of L1 abilities. Therefore, the current study will focus on assessing L1 reading comprehension among bilingual university students and explore how bilingualism impacts these skills. It is hypothesized that bilingual students will exhibit superior reading comprehension abilities in their native language compared to their non-bilingual counterparts.

Method

This study employs a quantitative research design, with data analyzed using a 2x2 factorial ANOVA. This approach allows for the examination of the main effects of language (English vs. Korean) and bilingualism (Yes vs. No) on reading comprehension, as well as the interaction effects between these variables. Participants' performance on the Reading Comprehension Tests will be evaluated based on both the time taken to complete the tests and the accuracy of their responses.

Participants

The study involved a total of 57 undergraduate students, aged 18 to 26, from Incheon Global Campus (IGC). Participants were native speakers of either English or Korean and were classified into four groups based on their self-reported language proficiency and background: Group 1 (Native Korean non-bilingual, n = 15), Group 2 (Native Korean Bilingual, n = 13), Group 3 (Native English non-bilingual, n = 13), and Group 4 (Native English Bilingual, n = 16).

All participants were asked a set of common questions to establish their demographic and linguistic backgrounds, as well as whether they had ever been diagnosed with any reading or comprehension disabilities, such as dyslexia. Participants with dyslexia or other reading disabilities were excluded from the study. For native Korean speakers, participants were classified as bilingual if they had either attended an international school or had overseas study experience for four years or more. For native English speakers, bilingual classification was based on whether they had a family member who was not a native English speaker and could communicate in a language other than English for daily conversations. They were also asked to specify where and for how many years they had learned this language, with examples including international school or study abroad experiences. Since Incheon Global Campus (IGC) is an English-instructed university campus located abroad, the classification of participants required careful consideration to account for the unique context. Many native English speakers may take Korean language classes at their universities, potentially complicating the distinction between non-bilingual and bilingual classifications. To address this, questions were carefully designed to accurately capture participants' linguistic backgrounds and avoid misclassification. All participants in the study were provided with BBQ Chicken (Hwang-geum Olive Yangnyeom Van + Side Set) as compensation for their involvement. This study was approved by the Institutional Review Board of the University of Utah (Approval No: IRB_00174568). All participants provided informed consent before data collection began.

Materials

The test materials consisted of a set of questions derived from the English section of the CSAT. For the main study, participants were required to answer a total of 40 questions within a 45-minute time limit. The decision to use 40 questions was based on insights from a pilot study. The pilot study involved a native English speaker classified as non-bilingual (Group 3 in our study design), who completed 10 questions within the same time frame and answered all questions correctly. This result suggested that the original question set was too easy, leading us to increase the number of questions to enhance the difficulty level for the main experiment.

Procedure

Participants were given 45 minutes to complete a set of 40 reading comprehension questions. For native Korean speakers, the questions were selected from the Korean section of the CSAT. To create a general Reading Comprehension Test, we intentionally avoided passages that were heavily focused on specific professional fields, ensuring a more balanced selection of topics. For native English speakers, 40 questions were compiled, including 15 questions from the Test of English for International Communication (TOEIC) and 25 questions from the English section of the CSAT. The primary outcome measure was the number of questions answered correctly within the 45-minute time limit. Demographic and linguistic background information was collected prior to the test via a questionnaire.

Results

Effects of Bilingualism and Language on Exam Scores (Two-Way ANOVA)

A two-way ANOVA was conducted to examine the effects of bilingualism (bilingual vs. non-bilingual) and language (Korean vs. English) on exam scores. The analysis showed significant main effect of bilingualism (F (1, 53) = 4.140, p = 0.047) as you can see in Figure 1, but language is not significant (F (1, 53) = 0.578, p = 0.450). Furthermore, no interaction effect was observed between bilingualism and language (F (1, 53) = 3.980, p = 0.051), indicating that the influence of bilingualism on exam scores did not differ by language. Table 1 provides a detailed summary of the two-way ANOVA results.

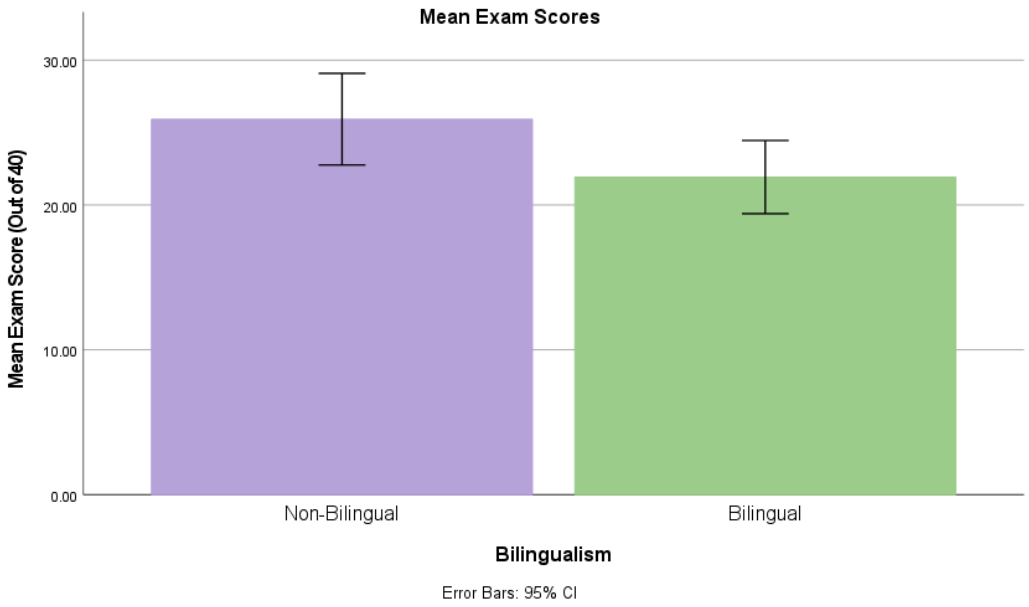

Figure 1. Mean exam scores for non-bilingual and bilingual groups

Note. Mean exam scores for bilingual and non-bilingual participants with 95% confidence intervals are presented. The mean score for non-bilingual participants was 25.93 (SD = 8.16), while the mean score for bilingual participants was 21.93 (SD = 6.64).

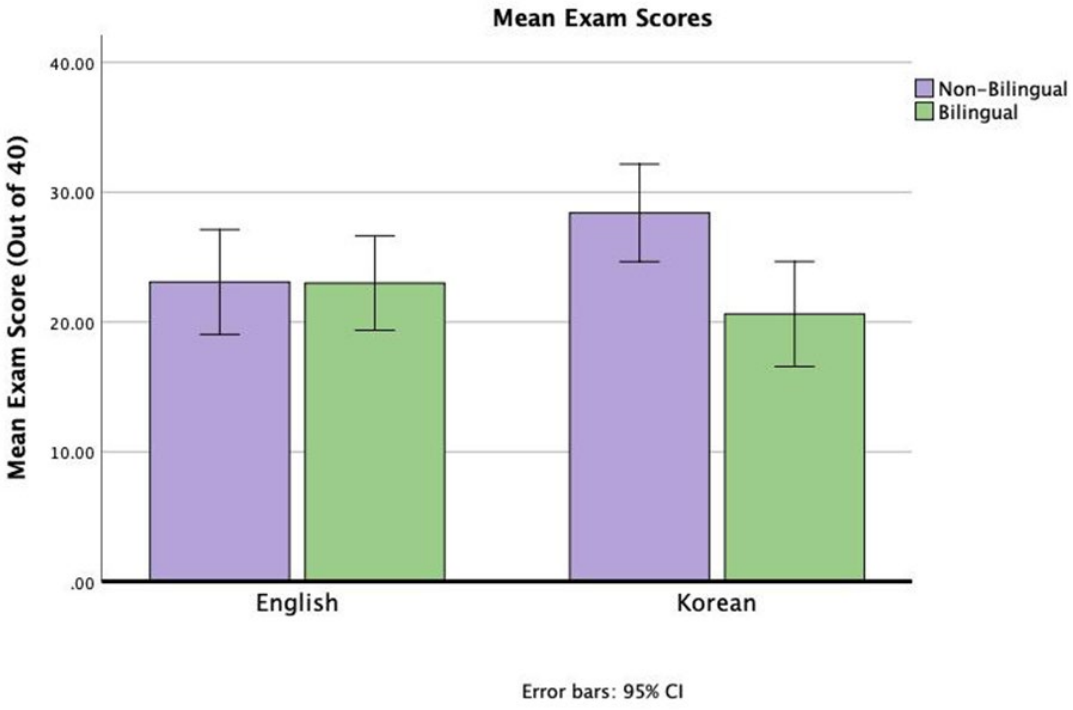

Figure 2. Mean Exam Scores by Language Condition (English and Korean) and Bilingualism: Findings from a Two-Way ANOVA

Note. This figure illustrates the mean exam scores across language conditions (English and Korean) and bilingualism groups (non-bilingual and bilingual). Analysis using a two-way ANOVA revealed a significant main effect of bilingualism (F (1, 53) = 4.140, p = 0.047), with non-bilingual participants outperforming bilingual participants. However, the interaction between bilingualism and language did not reach statistical significance (F (1, 53) = 3.390, p = 0.051). Error bars represent 95% confidence intervals.

Table 1. Results of Two-Way ANOVA for Bilingualism and Language Effects on Exam Scores

Effect	**F**	**df**	**p-value**
Bilingualism	4.140	1, 53	**0.047**
Language	0.578	1, 53	0.450
Bilingualism x Language	3.980	1, 53	0.051

Note. Summary of two-way ANOVA results examining the effects of bilingualism and language.

Detailed Comparisons by Language Condition

Korean Exam Scores

An independent samples t-test revealed that Korean non-bilingual participants scored significantly higher (M = 28.40, SD = 7.89) than Korean bilingual participants (M = 20.61, SD = 6.89) on the Korean Reading Comprehension Test (t (26) = 2.76, p = 0.010). The effect size was large (Cohen's d = 1.046), indicating a substantial performance gap.

English Exam Scores

In contrast, no significant difference was observed in English Reading Comprehension Test scores between English Native English non-bilingual (M = 23.08, SD = 7.80) and Native English bilingual participants (M = 23.00, SD = 6.45) (t (27) = 0.029, p = 0.977). This finding suggests that bilingualism did not affect performance on the English Reading Comprehension Test.

Discussion

Summary of Key Findings

This study aimed to investigate whether bilingualism enhances native language reading comprehension in adults, hypothesizing that bilinguals would outperform non-bilinguals. Contrary to our hypothesis, the results revealed that non-bilingual students scored higher in reading comprehension compared to bilingual students. Bilingualism significantly affected reading comprehension, with non-bilingual students outperforming bilinguals (F (1, 53) = 4.140, p = 0.047). Specifically, the study found that the Native Korean non-bilingual group outperformed the Native Korean bilingual group (t (26) = 2.76, p = 0.010), while no significant difference was observed between the Native English bilingual and non-bilingual group (t (27) = 0.029, p = 0.977).

Interpretation of the Results

The results of this study showed that non-bilingual native Korean speakers outperformed bilingual native Korean speakers in L1 reading comprehension. This finding aligns Morgia (2011), who suggests that insufficient input can lead to weaker language development. Specifically, when living abroad or in environments with reduced exposure to Korean, the native language may weaken, leading to poorer performance. In our research, Native Korean bilingual participants study abroad or attend international school for 4 years or more. Bilingual participants may thus have had limited exposure to Korean, which could have negatively affected their Korean reading comprehension. This input deficiency could be the reason why non-bilingual participants outperformed bilinguals in Korean reading comprehension.

Contrary to the pattern observed in the Korean group, the Native English speaker group showed no significant difference in native language reading comprehension between non-bilingual and bilingual participants. This result is consistent with Nicoladis & Genesee (1997), which suggested that bilingual children begin to differentiate and use both languages from an early age. English likely became the dominant language for bilingual participants, which may explain why no difference in English reading comprehension was observed between the two groups. Furthermore, the results for the Native English speaker group suggest that when there is no conflict or interference between languages, bilingual individuals can maintain similar developmental levels to non-bilinguals. This indicates that if bilinguals receive adequate input in both languages, the developmental gap between the two languages can be minimized. Thus, in environments where English is the primary language, bilinguals may show no difference from non-bilinguals in native language reading comprehension.

The fact that the difference in reading comprehension abilities between non-bilingual and bilingual speakers appeared only among native Korean speakers, may point to explanations unrelated to bilingualism. In this case, it could potentially be due to the nature of the reading test used in this study, which included questions taken from the CSAT. The CSAT is a critical exam required for university admission in South Korea, with reading comprehension being one of its key components. In Korea, preparation for the CSAT involves rigorous training in critical reading and understanding complex vocabulary. This typically happens during high school, the time period which many of our Korean bilingual participants spent abroad or in international school. This CSAT training likely contributed to the strong reading abilities of the non-bilingual group. Bae and Lee (2018) found that factors such as text length and question type significantly influence test-takers' performance on the CSAT, with longer passages often eliciting better comprehension outcomes. This suggests that the CSAT not only assesses language proficiency but also evaluates cognitive endurance and problem-solving skills, further highlighting its role in shaping students' advanced reading abilities.

In contrast, bilingual speakers, especially those raised abroad or in environments where Korean was not the primary language, would likely not have undergone the same systematic training. The lack of exposure to the CSAT's structured preparation process could result in relatively lower test-taking skills, or lower proficiency in critical reading skills in Korean, particularly under time pressure. Furthermore, differences in the quantity and quality of language input in such cases may have contributed to the observed reading comprehension gap between the two groups. Taken together our results do not support a bilingual benefit in native language reading comprehension, and instead point to potential negative consequences of reduced native language exposure and education on native language reading comprehension.

Considerations for Educational Approaches

This study suggests that bilingualism does not necessarily provide an advantage in native language reading comprehension and may even be detrimental. Specifically, bilingual native Korean speakers performed worse in reading comprehension, likely due to reduced exposure to Korean and lack of systematic training. Therefore, it is crucial to develop tailored educational strategies that address the linguistic and academic needs of bilingual students.

Educational approaches in multicultural and multilingual environments should balance the quantity and quality of language input, providing opportunities that support academic success for bilingual students.

Conclusion

This study provides insights into the complex relationship between bilingualism and native language reading comprehension, suggesting that bilingualism does not consistently confer an advantage in reading comprehension skills and may, in some cases, even negatively affect them. While, we initially hypothesized that bilingual students would outperform non-bilingual students, our findings indicate that non-bilingual students achieved slightly higher scores. This effect appeared to be driven specifically by the Korean non-bilingual group who vastly outperformed the Korean bilingual group, possibly due to rigorous test taking and reading comprehension training received in Korean high school. The outcome highlights the possibility that factors such as familiarity with specific test formats and educational context may play a more significant role in shaping reading comprehension skills than bilingualism alone.

These results contribute to ongoing discussions on the cognitive and academic effects of bilingualism, underscoring the importance of considering linguistic and cultural contexts. Our findings align with previous research that shows mixed outcomes regarding bilingualism's cognitive benefits, emphasizing that any potential advantages may not be uniformly applicable across different contexts and populations.

The implications of this study extend to educational practices and policies, encouraging educators and policymakers to recognize that bilingualism does not automatically enhance academic performance. Instead, educational strategies should be adapted to meet students' diverse linguistic backgrounds and learning needs. Such tailored approaches may support more effective learning outcomes by acknowledging the various ways bilingualism interacts with individual academic experiences.

This study also has several limitations, including a relatively small sample size and the focus on time-pressured testing environments, which may limit the generalizability of the findings. Future research should expand upon these results by exploring a broader range of bilingual experiences, educational settings, and cognitive factors, such as working memory and attention, to better understand how bilingualism influences reading comprehension. By addressing these limitations, future studies may further clarify the nuanced impact of bilingualism on cognitive and academic performance.

This study invites a careful re-evaluation of the assumed cognitive benefits of bilingualism, highlighting the need for a more context-sensitive approach to understanding bilingualism's role in education. Through continued research, scholars and educators can develop more effective strategies to support bilingual students, fostering educational practices that align with the increasingly diverse and globalized nature of classrooms today.

Limitations

The limitations of this study include several key factors that may have influenced the results. First, the pre-questionnaire used to classify participants into bilingual and non-bilingual groups was based on criteria such as the duration of overseas education and family language background. It is possible that some participants who lived abroad were still in environments where their native language was predominantly used, which could have affected their bilingualism and reading comprehension. Future studies should consider these variables more thoroughly to provide a clearer understanding of bilingualism's effects. Second, the Reading Comprehension Test for Native Korean participants were based on the CSAT, which may not have been an ideal measure of reading ability, especially for those who had not received extensive preparation for this exam. Similarly, using the TOEIC and the CSAT to assess Native English speakers' reading comprehension may not have fully captured bilingual reading skills, as these tests are not specifically designed for this purpose. Finally, the relatively small sample size of 57 participants limits the robustness and external validity of the findings. A larger and more diverse sample would help ensure the results are more generalizable.

Therefore, further research with a larger sample is recommended to enhance the reliability and generalizability of the outcomes and better understand how linguistic and cultural contexts influence the cognitive effects of bilingualism.

Future Direction

While this study classified participants into bilingual and non-bilingual groups based on factors such as the duration of overseas education and family language background, these variables exhibited significant variation between participants within each group, which could have contributed to the high variability in exam scores and, consequently, to the non-significant results. Therefore, future research should carefully account for these variables, considering factors such as the type and extent of bilingual exposure, the linguistic environment, and other contextual influences. A more detailed and controlled classification process will provide a clearer and more robust understanding of the effects of bilingualism on cognitive abilities, including reading comprehension.

Acknowledgments

This work was supported by funding from the Undergraduate Research Opportunity Grants at the University of Utah Asia Campus. We would also like to express our gratitude to Professor Jaewon Oh for his valuable assistance with the statistical analysis. Additionally, we thank Kaeon and Sieun for their support in data collection.

References

Bae, M., & Lee, B. (2018). Effects of Text Length and Question Type on Test-takers' Performance on Fill-in-the-blank Items in Korean CSAT. *English Education*, *73*(4), 149–174. https://db.koreascholar.com/Article/Detail/368131

Bialystok, E. (2018). Chapter 13. Bilingualism and executive function. *Studies in Bilingualism*, 283–306. https://doi.org/10.1075/sibil.54.13bia

Blom, E., Küntay, A. C., Messer, M., Verhagen, J., & Leseman, P. (2014). The Benefits of Being Bilingual: Working Memory in Bilingual Turkish–Dutch Children. *Journal of Experimental Child Psychology*, *128*(1), 105–119. https://doi.org/10.1016/j.jecp.2014.06.007

Carlson, S. M., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental Science*, *11*(2), 282–298. https://doi.org/10.1111/j.1467-7687.2008.00675.x

Grant, A., Dennis, N. A., & Li, P. (2014). Cognitive control, cognitive reserve, and memory in the aging bilingual brain. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01401

Gration, E. (2021, November 9). *Bilingualism Statistics in 2021: US, UK & Global*. Preply.com. https://preply.com/en/blog/bilingualism-statistics/

Kroll, J. F., & Bialystok, E. (2013). Understanding the consequences of bilingualism for language processing and cognition. *Journal of Cognitive Psychology*, *25*(5), 497–514. https://doi.org/10.1080/20445911.2013.799170

Morgia, L. (2011). Bilingual first language acquisition: the nature of the weak language and the role of the input - DORAS. *Doras.dcu.ie*. https://doras.dcu.ie/16056/1/La_Morgia_PhD.pdf

Nicoladis, E., & Genesee, F. (1997). *Language development in preschool bilingual children.* https://doi.org/10.7939/r3348gw0n

Nouwens, S., Groen, M. A., Kleemans, T., & Verhoeven, L. (2020). How executive functions contribute to reading comprehension. *British Journal of Educational Psychology*, *91*(1), 169–192. https://doi.org/10.1111/bjep.12355

Siu, C. T.-S., & Ho, C. S.-H. (2015). Cross-Language Transfer of Syntactic Skills and Reading Comprehension Among Young Cantonese-English Bilingual Students. *Reading Research Quarterly*, *50*(3), 313–336. https://doi.org/10.1002/rrq.101