Chapter 6
Neurodivergence and Reading Skills in K12:
Exploring the Malleability of RAN Skills With Students With and Without Autism

Jessica Block
Fairleigh Dickinson University, USA

ABSTRACT

Rapid automatic naming (RAN) is commonly thought of as one of the best predictors of reading achievement when compared to phonological awareness and letter name knowledge. Early intensive RAN interventions may minimize the number of resources that will be needed later to remediate developing reading challenges. Schools may be able to reduce the likelihood of an individual developing a reading disability or minimize the effects of one already developed if identified and intervened early. RAN and word reading efficiency was found to improve during an effective RAN intervention. This chapter discusses the Block study and how it could be conducted for the benefit of students with individualized education plans (IEP) or with other qualifying educational eligibilities including autistic-like behavior.

INTRODUCTION

Reading is different for each person with autism, just as each person with autism has their own unique manifestations of this complex neurological condition. However, reading, for all people, tends to be a major point of access to education, or a major barrier to success in education and in life. Thus, if an intervention is identified as possibly constructive or helpful to eliminating barriers, then it can and should also be investigated for eliminating barriers for the population of individuals with autism.

According to the research, reading challenges can manifest in people with autism as comprehension challenges (Henderson, Clarke, and Snowling, 2014). But only if the text can be read first. Reading processing challenges also exist, with students with autism struggling to recognize and decode words (Henderson, Clarke, and Smowling, 2014). Rapid automatic naming (RAN) is the speed at which an

DOI: 10.4018/978-1-6684-5103-8.ch006

individual can name highly familiar stimuli (Georgiou et al., 2008) and it is a necessary process for reading fluency. There is an opportunity to further discuss how RAN can be examined as it applies to autism. The original (Block, 2022) study was conducted on students with IEPs including those identified as having Emotional Health Impairments or Other Health Impairments and so there is evidence that a study on RAN can be conducted effectively with students on IEPs and those who are neurodivergent.

BACKGROUND

RAN deficits can predict later reading failure. Arnell et al. (2009) found that RAN performance is highly predictive of difficulties with reading rate and comprehension in adulthood, indicating that RAN deficits continue to impact individuals' reading ability throughout their lives. However, RAN measures are not typically used in schools as a universal screening tool nor as a method of defining intervention. RAN deficits can impact those without a reading disability as well. Therefore, the early discovery of an otherwise neurotypical student with a RAN deficit may indicate a need for more intensive instruction or early intervention than the typical classroom provides. This type of screening would allow the student to receive early intervention, ultimately reducing frustration and feelings of failure or stupidity that may occur without such instruction. Early intensive RAN interventions may minimize the number of resources that will be needed later to remediate developing reading challenges. Schools may be able to reduce the likelihood of an individual developing a reading difference or minimize the effects of one already developed if identified and intervened early (Catts et al., 2013).

Forty-four percent of fourth graders read below the National Assessment of Educational Progress basic achievement level in 2019 (U.S. Department of Education, 2020) despite school professionals emphasizing reading acquisition during the earliest years of learning. These students have difficulties such as reading comprehension and fluency, impacting many other school subjects. In addition to academic issues, struggling readers are at risk for decreased academic self-concepts (Baum, 2017; Kelly & Norwich, 2004; Zeleke, 2004) and stereotype threat (Kelly & Norwich, 2004). Such students often need more extensive and intensive instruction, in addition to general education classroom teaching, to develop key reading skills. Therefore, it is critical to identify readers who require special instruction and emphasize remediation of the underlying processes that contribute to each student's reading difficulty.

Schwanenflugel et al. (2006) explain the process by which neurotypical individuals become proficient readers. Beginning readers are required to decode all words rather than read them automatically. Readers consciously create and remember links between the visual written letters and their corresponding sounds. Next, readers rely on strategies such as sounding out each letter, which requires foundational skills such as phonological and phonemic awareness of sounds, as well as orthographic recognition of letters. Over time, typically developing readers will begin to process these written letters automatically and with appropriate word recognition allowing them to shift their attention from decoding to higher-level reading skills such as reading fluency and comprehension. RAN is the ability to instantaneously remember the representational link between a familiar written stimulus and its corresponding name. RAN skills are necessary to read fluently and, therefore, comprehend. Those with RAN deficits elicit the representational link far slower than the typical reader and may be forced to slowly decode rather than do so with automaticity. Thus, those reading with a RAN deficit use more of their cognitive reserve, have more difficulty allocating cognitive resources for reading comprehension, and require more time to complete the text (Schwanenflugel et al., 2006).