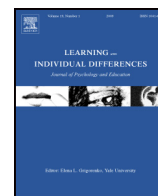




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Q2 Adolescents' use of reading comprehension strategies: Differences related to reading proficiency, grade level, and gender

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ABSTRACT

Q5 Skilled readers engage in purposeful strategies to support understanding and monitor meaning. Questions remain regarding individual differences in the use of reading comprehension strategies by middle and high school students. The goals of this study were to examine differences in adolescents' reading comprehension strategy use related to reading proficiency, grade level, and gender. The study also investigated the factor structure and psychometric properties of a newly-developed scenario-based self-report survey. Participants were 1134 students in grades 7–12. Results indicated that the instrument measures four theoretically-consistent constructs related to the use of strategies for (a) the Evaluation and Integration of current text information with previous text information and world knowledge, (b) Note-taking, (c) Regulation, or modulation of reading approach to enhance understanding, and (d) Help-seeking. The scales were found to have adequate reliability and validity. Findings indicated that adequate comprehenders reported higher use of Evaluation/Integration and Regulation strategies than struggling comprehenders, while the use of Help-seeking and Note-taking strategies did not differ between these groups. Similarly, students at higher grade levels reported greater use of Evaluation/Integration and Regulation strategies than those at lower grade levels. Females reported higher use of all types of strategies than did males. Implications for theory, research, and practice are discussed.

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Many adolescents struggle to comprehend text (Carnegie Council on Advancing Adolescent Literacy (Carnegie Council on Advancing Adolescent Literacy, 2010). On the most recent National Assessment of Educational Progress (NAEP; National Center for Education Statistics, 2013) only 36% of eighth grade students were classified as proficient readers, and 22% of eighth graders were unable to read and comprehend text at even a basic level. Outcomes were even weaker for some subgroups; for example, only 17% of African American eighth grade students were classified as proficient readers and 39% were unable to meet standards for even basic reading proficiency. These widespread problems with reading comprehension limit many students' ability to learn from text they read in science, social studies, and other content area classes and negatively impact college and career readiness (Carnegie Council on Advancing Adolescent Literacy, 2010).

Reading comprehension requires the orchestration of a complex array of processes. A reader must concurrently decode words, access word meanings, and construct meaning from sentences and larger

sections of text, while integrating this new understanding with prior text information and background knowledge to create an ever-evolving mental model of the text, all while monitoring meaning and repairing misunderstandings. For adolescents, developing the ability to comprehend increasingly complex text depends on multiple factors, including the development of basic reading and linguistic skills (Gough & Tunmer, 1986; Hoover & Gough, 1990) and general vocabulary and world knowledge (Barnes, Dennis, & Haefele-Kalvaitis, 1996; Kozminsky & Kozminsky, 2001; McNamara & Kintsch, 1996), as well as the ability to flexibly allocate and re-allocate attention (Perfetti, Landi, & Oakhill, 2005) and to engage in deliberate activities (i.e., strategies) to enhance understanding, monitor meaning, and solve problems (Botsas & Padeljadu, 2003; Vellutino, 2003). While the field has developed an understanding of the role of basic reading skills, less is known about individual differences in adolescents' use of processes essential to reading comprehension.

1. Theoretical foundation

This investigation was guided by van Dijk and Kintsch's (1983) Construction–Integration model of reading comprehension, as described by Kintsch (1994, 2004). van Dijk and Kintsch's (1983) model

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described three levels, or degrees, of text comprehension. Understanding text at the surface level includes comprehension of the words and phrases in the text, while comprehension of a textbase requires integration of these words and phrases to construct a literal understanding of the sentences or idea units in the text. Textbase-level understanding implies a focus on isolated parts of the text with little or no influence of the reader's prior knowledge. According to Kintsch (1994), readers who construct an accurate textbase have basic recall of text information and may be able to identify important ideas in the text; however, textbase understanding is insufficient to learn from a text. Kintsch (1994) suggested that, "Learning from a text implies that one is able to use the information provided by the text in other ways, not just for reproduction... One can infer new facts from the information in the text, use it in conjunction with previous knowledge to solve novel problems, and integrate it with what was already known." (p. 294). Kintsch suggested that learning from text requires that the reader integrate information across a text and integrate text information with the reader's prior knowledge. Through this process of integration, the reader constructs a rich, coherent mental representation of the situation described in the text (i.e., a *situation model*), a mental model of the text that is complete, integrated, and meaningful (van Dijk & Kintsch, 1983). The construction of a coherent mental model of the text situation is dependent on making inferences and applying metacognitive processes such as monitoring and constant comparison of what is being read with what was previously known or believed.

Graesser, Wiemer-Hastings, and Wiemer-Hastings (2001) provided a description of a rich and coherent situation model in narrative text:

For example, the situation model for a story would consist of a microworld with characters who perform actions in pursuit of goals, events that present obstacles to goals, conflicts between characters, emotional reactions, the spatial setting, the style and procedure of actions, objects, properties of objects, traits of characters, and mental states of characters (p. 249).

To comprehend and learn from expository text the reader must construct an evolving mental model of a phenomenon, updating the model as new information is integrated with prior knowledge, evaluating the ideas in the text when they differ from prior understandings, and revising prior misconceptions based on an ongoing process of inference generation, integration, and monitoring (Kendeou & van den Broek, 2007).

2. Self-regulated strategy use

Adolescents' use of general self-regulated learning strategies represents one type of deliberate activity that may influence reading comprehension. Summarizing across different theoretical models, Pintrich (2004) characterized self-regulated learning as an active, constructive process whereby students set goals for their learning, and then proactively work to achieve those goals. One core aspect of this process is students' use of strategies through which they monitor and manage aspects of their own learning (Pintrich, 2004; Wolters, Pintrich, & Karabenick, 2005). Research with adolescent populations has linked students' engagement in the strategic aspects of self-regulated learning with positive academic outcomes (Pintrich & De Groot, 1990). In particular, studies have shown that adolescents who report more frequent use of cognitive and metacognitive strategies tend to get better grades, including grades in courses that depend on students' literacy skills (Pintrich & De Groot, 1990). Moreover, interventions that include instruction designed to increase adolescents' understanding and use of self-regulated learning strategies are associated with improved academic performance (Azevedo, Guthrie, & Seibert, 2004; Cleary, Platten, & Nelson, 2008; Perels, Dignath, & Schmitz, 2009; Perels, Gurtler, & Schmitz, 2005; Reynolds & Perin, 2009; Wong, Butler, Ficzere, & Kuperis, 1996).

3. Reading comprehension strategies

One group of self-regulated learning strategies involves deliberate, effortful activities employed by readers to support the comprehension of text. Skilled readers deploy a range of strategies that vary in form and function and change in response to the demands of text and the needs of the reader (Pressley & Afflerbach, 1995). Researchers have investigated the strategies used by proficient readers while reading challenging text (e.g. Pressley et al., 1995; Wyatt et al., 1993). Based on a meta-analysis of such studies, Pressley and Afflerbach (1995) created a comprehensive catalog of strategies that included setting reading goals, varying reading style according to identified reading goals, going forward and backward in the text to find information relevant to reading goals, making predictions, paraphrasing, interpreting the text, and constructing summaries. While the literature includes studies examining strategies used by proficient readers, questions remain regarding the use of reading comprehension strategies by middle school and high school students with varying levels of reading proficiency when they engage in reading tasks for school. The goals of this study were to examine differences in adolescent reading comprehension strategy use related to reading proficiency, grade level, and gender and to investigate the factor structure and psychometric properties of an instrument developed for this purpose.

4. Measurement of reading comprehension strategy use

Researchers have measured students' use of reading comprehension strategies through a variety of approaches, each of which has advantages and limitations. Some have conducted structured observations of students engaged in reading and study tasks and rated students' observable behaviors hypothesized to represent the use of various strategies (e.g., Dermitzaki, Andreou, & Paraskeva, 2008) or evaluated physical evidence of strategy use such as underlined text (e.g., Braten & Samuelstuen, 2007); however, these approaches allow researchers to study only a small number of strategies since many are not observable and leave no traces.

Several researchers have collected on-line data on strategy use during reading by collecting oral protocols in which readers stop periodically to "think aloud," verbalizing their thought processes (Fox, 2009). Think-alouds have the advantage of capturing on-line processing patterns rather than attempting to reconstruct reading processes after the completion of the task; however, coding verbal protocols can be time-intensive, and publications based on this methodology tend to have relatively small samples (e.g., Schellings, Aarnoutse, & van Leeuwe, 2006; Trabasso & Suh, 1993). The approach has also been criticized because of its potential intrusiveness into the reading process (Stratman & Hamp-Lyons, 1994).

5. Strategy survey research with adolescents

Another approach to the investigation of strategy use involves the administration of surveys on which students self-report the frequency with which they use various learning or reading strategies. Self-report surveys also have limitations, but their primary advantage is that they allow researchers to investigate the use of a wide array of strategies and investigate the latent constructs that represent the nature of strategy use in a given population. Since these instruments can be group-administered, researchers are able to collect data from large numbers of students. Several researchers have used self-report surveys to study adolescents' use of general learning and study strategies (e.g., Cano, 2006; Cleary, 2006; Dowson & McInerney, 2004); however, there are few examples of surveys designed to examine reading comprehension strategy use in middle and high school students. We describe one survey used with freshman college students and another developed specifically for middle and high school students.

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