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## The Clinical and Classroom Utility of the Inventory of Reading Occupations: An Assessment Tool of Children's Reading Participation

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# The Clinical and Classroom Utility of the Inventory of Reading Occupations: An Assessment Tool of Children's Reading Participation

## Abstract

*Background:* The aim of this study was to determine the initial clinical and classroom utility of the *Inventory of Reading Occupations* (IRO), a new tool to assess children's reading participation.

*Method:* The study used phenomenological qualitative and descriptive methods. The participants included 38 occupational therapists, speech-language pathologists, classroom teachers, and parents who completed or reviewed responses of children on the IRO. To provide triangulation, 20 of the children who completed the IRO were interviewed. Data were thematically analyzed and then categorized using a central Strengths-Weaknesses-Opportunities-Threats premise.

*Results:* The majority of the participants indicated favorable response to the clinical and classroom utility of the tool. Common themes were (a) the IRO is a user-friendly and engaging assessment that allows students to reflect on their reading participation; (b) the IRO is more suitable for children who engage in more structured reading; (c) the IRO can be adapted for older children; and (d) there is a need to identify whether the IRO is better as a screening or a full assessment tool.

*Conclusion:* The study provided useful perspectives on how the tool can be further improved as a measure of the reading participation of school-aged children.

## Comments

The authors have no conflicts of interest to disclose.

## Keywords

occupational therapy, literacy, learning disabilities, special education

## Credentials Display

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Contemporary literature defines reading as a process in which children learn to use cues to identify words in text (Tunmer & Greaney, 2010) and to comprehend the messages that words convey (Nation, Cocksey, Taylor, & Bishop, 2010). Reading is conceptualized as a skill that children acquire to participate successfully in school-related tasks (e.g., complete worksheets, read textbooks) and other daily living activities (e.g., read food labels, read street signs to navigate the community). In the occupational therapy (OT) literature, reading is categorized in the Formal Educational Participation area of occupation (American Occupational Therapy Association [AOTA], 2014). The World Federation of Occupational Therapists (WFOT) defines occupations as “everyday activities that people do . . . to occupy time and bring meaning and purpose to life” (WFOT, 2012, para 2). Resources defining and measuring reading as a meaningful activity or as an occupation in which children participate are not prevalent. Furthermore, how reading is performed as an occupation may be different for children with reported reading difficulties. For example, Kent, Wanzek, and Al Otaiba (2012) found that students at risk for reading difficulties spent only about half of the time during their literacy time in schools actively engaging in reading activities. Increased anxiety levels when participating in literacy tasks have also been documented in children with dyslexia (Carroll & Iles, 2006) and this may impact active engagement in structured reading tasks. Children who have reading disabilities also often believe that their reading ability is controlled by external factors, and that reading is difficult and something they cannot master (Kirby, Ball, Geier, Parrilla, & Wade-Woolley, 2011), which may impact their reading participation. There is also limited literature on occupation-based interventions and assessment tools that specifically target reading from the perspective of participation and engagement.

### **The Occupation and Participation Approach to Reading Intervention and the Inventory of Reading Occupations**

OT intervention focuses on determining what the client most needs and wants to be able to do (WFOT, 2012) and identifying the factors that either support or interfere with the desired performance. The Occupation and Participation Approach to Reading Intervention (OPARI) (Grajo & Candler, 2016a) aims to identify the role of OT in supporting children with literacy problems. Guided by the Theory of Occupational Adaptation (OA) (Schkade & Schultz, 1992; Schultz, 2014), the OPARI assumes that:

- Occupations provide opportunities for children to use their occupational adaptiveness (Grajo, 2017; Schultz, 2014). During engagement in reading occupations, children are given opportunities to use, evaluate, and create various strategies to participate in occupations with mastery.
- The classroom, home, and the community provide the physical, cultural, and social contexts of performance. These performance contexts may have positive or negative impacts on a child to use, evaluate, and participation in reading.
- Children with reading difficulties may show avoidance of and dislike for structured reading tasks. Avoidance and non-participation typically become a child’s default response to a challenging task.
- A child’s adaptation gestalt (i.e., a configuration of plans to respond to an occupational challenge; Schkade & McClung, 2001) during reading performance typically becomes dominated by psychosocial factors. Anxiety, stress, and low self-esteem may significantly impede successful participation in the task.

- As the child avoids participation in reading, he or she is unable to transfer and generalize learned skills. Increased avoidance leads to occupational dysadaptation. Occupational dysadaptation can hinder the development of learned reading skills and the ability to benefit from skills-based reading intervention.

Therefore, according to the OPARI, the goal of OT using a participation and performance approach to reading is to increase a child's adaptive capacities to increase engagement in reading and provide more opportunities to use existing or emerging reading skills (Grajo & Candler, 2016b). Increased adaptiveness has a holistic impact (Grajo, 2017). That is, it improves the organization of cognitive, motor, language, and perceptual skills needed for effective and efficient reading. In turn, engagement and satisfaction in reading is also improved in the various contexts (Grajo & Candler, 2014). Research related to the OPARI supports the need for occupational therapists to assess the child's level of engagement and participation along with customary measures on specific reading skills (Grajo & Candler, 2016b). The OPARI espouses that this approach will enable occupational therapists to have a more comprehensive understanding of the child's needs.


The Inventory of Reading Occupations (IRO) (Grajo et al., 2016) is a tool constructed to measure participation in reading occupations for children from kindergarten to third grade. The IRO is a two-part screening and outcome measurement tool that assesses children's engagement in different types of reading materials or reading categories (see Figure 1). For each reading category, the IRO asks how much the child likes the material (preference), the child's perceived level of mastery of reading the material (mastery), how often the child reads this material (frequency), the different physical environments where the child reads (physical contexts), the social supports for reading (social contexts), and the available resources for reading (resources). The second part of the IRO asks the child to set reading goals. Based on responses on the first part of the tool, the child identifies five reading categories that he or she wants to be able to read and engage in very well. The preliminary psychometric properties of the IRO have been established using Rasch analysis (Grajo et al., 2016) with 192 students from kindergarten to third grade. Goodness-of-fit analysis indicated that the 17 reading categories of the IRO are in the 0.6-1.4 logit value criteria indicating unidimensionality of the tool and strong internal validity. Analysis of standardized residuals of the tool confirm unidimensionality and support internal validity findings.

### **Purpose**

The purpose of this study was to determine the initial clinical and classroom utility of the IRO. This study is part of a larger study that determined the measurement properties of the IRO using Rasch methods (Grajo et al., 2016). The participants were: (a) children with typical reading skills, (b) children reported as having reading difficulties based on academic assessments, and (c) children formally diagnosed with developmental dyslexia. This study aims to answer the following research questions:

- Does the IRO have clinical and classroom utility based on the perspectives of occupational therapists, teachers, parents, and speech language pathologists who have used the tool?
- What information about reading participation and engagement can be gathered using the IRO?

The Inventory of Reading Occupations (Validation Ver.) Grajo, Candler, & Bowyer






## 1. I read story books, chapter books, and poetry.

YES  
 NO

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**1.1** How much do you LIKE reading it?

1                      2                      3                      4                      5








I want to like it more.
I like it.
I like it a lot.

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**1.2** How WELL do you read it?

1                      2                      3                      4                      5

I'm not so good with it.
I'm okay with it.
I'm very good with it.


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**1.3** HOW MANY TIMES A WEEK do you read it?


1                      2                      3                      4                      5

Very rarely
About once a week
2-3 times a week
3-4 times a week
Almost everyday

**1.4** WHERE do you read it?  
(Check all the places where you read it.)


 At school


 At home


 In the community (church, park, library, others)

**1.5** WHO do you read it with?  
(Check all the people you read with.)

- On my own
- With parents
- With other family members
- With friends and/or classmates
- With teachers, tutors, and/or therapists

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**1.6** What EXAMPLES of story books, chapter books, and poetry do you read?

Figure 1. Sample page from the Inventory of Reading Occupations.

## Method

### Study Design

The researchers used a phenomenological qualitative research approach (Creswell & Poth, 2017) and descriptive design to understand the experiences of the participants and gain experiential insights about the IRO. A phenomenological approach was used to analyze the experiences of the children who completed the IRO. According to Creswell and Poth (2017), phenomenological studies aim to describe the common meaning of participants' lived experiences of an "object" of human experience" (p. 75). In this study, the researchers aimed to understand the participants' perspective of completing and administering the IRO as part of a therapeutic experience. A descriptive design was used to analyze the

results from the Likert-type survey. The Institutional Review Boards (IRB) at Saint Louis University and Texas Woman's University approved this study. All of the participants provided written consent to participate. The participants who were minors gave written assent to participate and parents gave consent. The IRBs did not require the presence of a guardian during the interview.

### **Study Participants**

The researchers invited 45 adult participants who had either administered the IRO or reviewed a child's responses on the IRO from the Rasch study (Grajo et al., 2016). The participants were recruited from workshops conducted by the first author from five metropolitan cities in the US. Thirty-eight adults (OT practitioners,  $n = 21$ ; speech-language pathologists,  $n = 2$ ; classroom teachers,  $n = 7$ ; and parents,  $n = 8$ ) indicated willingness to participate and responded to an anonymous online survey. In addition, the researcher and three graduate students interviewed 20 children. The interviewees included five first graders, five second graders, and 10 third graders. Of the 20 child interviewees, 12 were typical readers and eight were identified with reading difficulties based on either standardized assessments of reading or below-level performance on curricular reading assessments.

### **Data Collection and Analysis**

The researchers gathered data from the adult participants using an online survey tool. The survey contained four Likert-type questions and four open-ended questions that asked about the participants' insights about the clinical or classroom use of the IRO. The data from the four questions were entered in an Excel sheet and reported as frequencies. Data from the four open-ended questions in the survey were gathered and entered in Atlas.ti (ver. 7.5.2) for coding. Once all of the responses were entered in Atlas.ti, the researcher highlighted significant statements from each survey question in a process termed as horizontalization (Moustakas, 1994). After highlighting significant statements from responses to each question, the researchers formed clusters of meanings (Creswell & Poth, 2017) that became themes for analysis. These themes were cross-analyzed with the highlighted statements for accuracy. The central premise that served as a framework to categorize central themes after the thematic analysis of statements was the SWOT analysis (Strengths-Weaknesses-Opportunities-Threats) (Humphrey, 2005). To establish trustworthiness and rigor, the researchers used three methods: member checking, peer review, and establishment of document trail with the use of research memos (Creswell, 2013). Member checking was performed to establish credibility and trustworthiness of the data. The themes and significant statements were sent back to all of the adult participants in the study for review and to verify accuracy. After the survey participants verified the accuracy of the data, the researcher finalized the themes based on the SWOT analysis. The second author served as a peer-reviewer to validate and verify the accuracy of themes based on the responses of the participants and to make sure the themes reflected verbatim responses. The principal investigator also created a series of detailed research memos to establish an audit trail of all the steps and procedures performed during the research activity.

To triangulate the clinical utility study data gathered from the adult participants, the first author and three graduate students interviewed 20 children to gather their thoughts and feelings about answering the IRO and any other suggestions they had to make the tool more engaging for them (see Table 1). To maintain consistency in data gathered from the interviews, the researcher trained the three graduate students to follow strictly an interview guide. The interviews were transcribed and entered into Atlas.ti for analysis. A similar process of horizontalization, thematic analysis, postcategorization based

on SWOT, repeated analysis for accuracy, peer-reviews, and establishing a research memo were done to ensure the veracity and accuracy of the data.

**Table 1***Interview Questions for Children Participants*


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|   |
|---|
| How did you feel when answering the test?   |
| What did you find out about the kind of reading that you do while answering the test? |
| Do you think the test is easy or challenging? Why?                                    |
| Is the test short, just right, or too long to answer?                                 |
| How do you think we can make this test easier for children your age to answer?        |

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**Results**

Table 2 provides a summary of the responses of the adult participants to the Likert-type survey. The data from the four questions showed that between 65% and 76% of the participants indicated favorable response on the classroom and clinical utility of the IRO. However, qualitative responses indicated stronger positive response on the clinical and classroom utility of the tool (see Table 3).

**Table 2***Clinical and Classroom Utility Survey Responses (5-point Likert Scale).*


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| Survey Question  | M (SD)     | Strongly Agree<br>N (%) | Agree<br>N (%) | Neutral<br>N (%) | Disagree<br>N (%) | Strongly Disagree<br>N (%) |
|--|------------|-------------------------|----------------|------------------|-------------------|----------------------------|
| IRO is a promising tool that measures children's reading participation.  | 3.83 (.70) | 6 (17)                  | 18 (50)        | 12 (33)          | 0                 | 0                          |
| IRO contains useful information for practice.                            | 3.70 (.76) | 4 (12)                  | 18 (53)        | 10 (29)          | 2 (6)             | 0                          |
| IRO can be adapted for use for older children.                           | 3.91 (.72) | 6 (18)                  | 19 (58)        | 7 (21)           | 1 (3)             | 0                          |
| IRO is something I will use/I see useful in clinical/classroom practice. | 3.81 (.73) | 5 (15)                  | 18 (56)        | 9 (27)           | 1 (3)             | 0                          |

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**Table 3**

*Summary of Themes from Adult and Child Participants on the Clinical Use of the IRO Based on SWOT Analysis*

| Aspect of the SWOT Analysis | Themes from Adult Participants   | Themes from Child Participants                         |
|-----------------------------|--|--|
| Strengths                   | Facilitates self-reflection and self-monitoring of reading.<br>User-friendly and engaging format.<br>Wide variety of reading formats and serves its purpose. | “Makes me think about my reading.”<br>“Fun to answer.” |
| Weaknesses                  | Difficult for kindergartners.<br>Child may get self-conscious or may self-inflate abilities.<br>Unsure about “Literacy as an Occupation.”                    | Feelings of nervousness or embarrassment.              |
| Opportunities               | Need for supplemental forms.<br>Can be expanded for older children.  | Need for breaks. Converting to a computer application. |
| Threats                     | Lengthy; issues with administration.<br>Survey versus assessment tool.   |  |

### Strengths

**The IRO facilitates children’s self-reflection and self-monitoring of reading.** A common response from the adult participants indicated that the IRO facilitates children’s self-reflection and self-monitoring of their participation in reading. A classroom teacher reported that when responding to the IRO “a child thinking about their own reading helps them reflect on their own performance.” An occupational therapist responded that the participation focus of the IRO is important: “I think the concept of identifying a student’s interests and building upon them to improve skills and to engage children in active reading is powerful.” Another occupational therapist reflected that “many children would benefit from reflecting on their enjoyment, sense of efficacy, and goals for reading.”

The children who completed the IRO also indicated that the IRO gave them a lot of insights about their reading. One child stated, “It showed me I am a good reader and I learned what I liked to read best. It also showed me I need more practice reading.” A child with reading difficulties shared, “I learned that I do it [reading], but I am not as good as everyone else doing it.” The various responses also indicated the children’s ability to gauge their amount of participation in reading using the IRO with responses like “I learned I read many different things” or “I learned I’m not reading that much.”

**The IRO has a user-friendly and engaging format.** The majority of the adult survey respondents also considered the IRO “user-friendly,” “easy to administer,” and effective as an “easy to use assessment to measure reading success in children.” Several of the parents also shared that the children enjoyed looking at the pictures,” that the IRO “captures students’ attention,” and that it became “an interactive process between parent and student.” One parent reported that the IRO “is easy to



understand and explain to children. The pictures and simple phrases are helpful in determining the intent of the questions.”

The responses of the child participants support the adults’ perspectives. The majority of the children reported that the IRO was a fun tool to complete. A second grader shared, “It was fun and different but I liked that I got to talk about my reading.” Several of the children felt nervous at first thinking the IRO might be a test that will impact their school grades, but after realizing that the tool focused on their reading participation, most of the children felt fine and “happy” completing the questionnaire. One first grader reported, “I was so excited. It’s really fine answering it. At first I did not know what we will do and I was a bit nervous but I liked answering the test.”

**The IRO contains a wide variety of reading formats and serves its purpose.** The adult respondents shared many insights about the IRO’s strengths. The respondents indicated that the tool covers a wide variety and exhaustive list of reading opportunities for children. One classroom teacher stated that the IRO can indicate the “result of increased engagement of the child . . . and that the inventory has the potential to be a well-respected tool.” An occupational therapist shared that the IRO can provide information that “can help provide a quantifiable aspect for documentation and goal development.” Several other common statements include the IRO being able to survey “real life” contexts where children read and “I think it could be useful as a tool to discover some interesting ways to get students who do not read to get interested in reading.”

### **Weaknesses**

**The IRO is more suitable for children who are already doing structured reading.** The majority of the parents and OT practitioners who have administered the IRO to children in kindergarten found the IRO difficult to administer and challenging for children who are just beginning to explore reading. An occupational therapist shared, “I read the questions exactly as written to a kindergartner and he didn’t have the exposure to understand what exactly was being asked.” One parent also reported that the “child does not fully comprehend questions, parents influence child’s responses.” Additional feedback from teachers pertain to the contents of the IRO that may be better suited for children who have already had more exposure to structured reading. A classroom teacher suggested that “there is a need for better questions for early 5-year-olds and beginning readers.” One parent also shared that “I think that it can be helpful if the student is at least in a grade level that they are expected to know how to read on their own.”

**Children may get self-conscious, may self-inflate abilities, and feel nervous or embarrassed when completing the IRO.** Two classroom teachers shared that they observed children inflate their reading abilities and participation. Two parents also shared that the children to whom they have administered the IRO showed indicators of being self-conscious when talking about their reading.

Some children with reading difficulties stated feeling uneasy when asked about their reading participation. One third grader indicated “I felt embarrassed having to talk about my reading,” and one first grader indicated “I felt nervous answering the test,” and that “reading isn’t fun. I learned that I don’t read that much.”

**Unsure about readiness of school-based practitioners in addressing literacy as an occupation.** One OT respondent indicated that some occupational therapists or school personnel might not be ready for the notion of “reading as an occupation.” A classroom teacher indicated, “I believe it would require some training of school personnel to be receptive to the occupation perspective to

reading,” while an occupational therapist indicated “I do not feel it is in my scope of practice at this point in time . . . . But I feel that it is, indeed, an area that could be included in OT someday.” There were also a couple of respondents who stated that they were unsure how information from the IRO can produce intervention ideas. These insights, however, were different from the responses of a larger number of respondents who indicated “the IRO can be a useful tool to discover some interesting ways to get students who do not read to get interested in reading.” Another respondent indicated that the IRO will be useful in guiding goal development in practice.

### **Opportunities**

**Development of additional supplemental forms may further strengthen the IRO.** Two classroom teachers indicated that the IRO may be strengthened and be more useful for clinical and classroom practice if it has supplemental forms. These suggested supplemental forms are portions that parents and teachers can complete to add information to what the child has shared about his or her reading participation. Another suggestion about information that can be added to the IRO is a parent and/or teacher goal section in the second part of the tool.

**The IRO can be further expanded for older children.** The majority of the respondents agreed that the IRO can be further expanded for use for older children. Respondents indicated that by “modifying the reading materials,” “using the same questions but revising the format,” and “adding broader criteria,” the IRO can be used for children and adolescents through high school.

**Giving breaks and converting the IRO from a paper format to a computer or tablet application can improve ease of use.** Almost all of the children interviewed indicated that providing one to two breaks during the administration of the IRO can help them refocus and get to think about their reading participation more. Breaks are not currently included in the instruction section of the IRO. Also, when asked what the researchers can do to make completing the IRO easier, the majority of the children indicated that converting the tool to a computer or tablet application would make completing the IRO much easier and more engaging.

### **Potential Threats**

The majority of the adult participants and the child interviewees shared that they find no reasons for not using or wanting to complete the IRO. However, two essential themes from the survey and interview responses were analyzed as potential threats.

**The IRO is quite lengthy and there are issues with administration formats.** A couple of adult respondents and a few children found the IRO “a bit too long” but the length problem “can be overcome by breaking it down in to parts.” A classroom teacher indicated that “it takes too long to get that much information and there is not enough class time to administer individually.” Another participant, however, thought that a class administration would be a better format for administering the IRO, citing that “it is difficult to measure student’s reading and focus with a one-on-one administration.”

**Screening versus full assessment tool.** Another theme raised by two respondents was whether the IRO is better as a screening tool or as a full assessment tool. Many respondents agreed that the IRO is a promising and useful assessment tool for clinical and classroom practice. One respondent asserted that the IRO “is more useful as an evaluation/assessment in practice” while one respondent gave feedback that “there is not much information gathered from the questions other than a very basic screen.”

## Discussion

This study reported positive perceptions on the clinical and classroom utility of the IRO. The participants indicated that the IRO is a promising and useful tool that can help inform clinical practice and classroom teaching. Responses from the adult and child participants indicated that some of the strengths of the IRO include its ability to facilitate children's and classroom teacher reading participation and its engaging format.

The results also indicated that the tool was difficult to use with kindergartners. This researcher and the graduate student assistants had similar experiences. During the class administration, the researchers found that the majority of the students needed maximum prompting to fill out parts of the IRO; children complained that the test is long (despite built-in breaks); and it took more than an hour to complete the IRO. The findings from the Rasch analysis of the tool (Grajo et al., 2016) support findings in the clinical and classroom utility study that the current version of the IRO might be most suitable for children in the first to third grades.

Some opportunities for the tool and future directions for research include the potential development of supplemental forms that will provide input from parents and teachers about the child in terms of reading in different contexts. Other opportunities include the conversion of the tool to a computer application for improved administration and adaptation of the tool for older children. Some threats for clinical or classroom use include the length of the tool and the need for further clarification on its use as a screening or assessment tool.

### Study Limitations

This study was part of a larger study on the measurement properties of the IRO. The qualitative study had limitations in the sample of participants included. The participants in the child interviews did not include kindergarten participants. Perspectives from kindergarten students could have provided similar or varying perspectives about the usefulness of the IRO for younger readers. Also, because the adult respondents were recruited from workshops conducted by the first author, there were no licensed reading specialists included in the survey participants. As part of a reading intervention team, reading specialists could provide helpful insights about the classroom utility of the IRO. In addition, the pool of adult respondents in this study do not constitute a general representative sample of pediatric or school-based practitioners.

### Conclusion

This study presented preliminary findings on the clinical and classroom utility of the IRO. The IRO is an occupation-based, participation-focused assessment of children's reading. The IRO aims to support the OPARI, an intervention approach that addresses reading from an engagement and participation perspective. In summary, the IRO is a simple, engaging, and useful assessment tool that occupational therapists, speech-language pathologists, classroom teachers, and reading specialists can use to measure children's engagement in reading activities and gather information on how children with reading difficulties can be supported in schools.

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