

**Empirical Evaluation of the READY! for Kindergarten Program on  
Kindergarten Readiness Scores: Evaluating a Multi-Ethnic and Multi-  
Linguistic Sample**

REPORT ON OTHELLO SCHOOL DISTRICT DATA 2007-2009

**Submitted to:**

Thrive by Five Washington

1218 Third Avenue  
8<sup>th</sup> Floor  
Seattle, WA 98101

**Submitted by:**

Paul Strand, Ph.D., Principal Investigator

Department of Psychology, Washington State University Tri-Cities

**Submitted:**

April 2010

## Table of Contents

I.	PREAMBLE .....	3
II.	EXECUTIVE SUMMARY/ABSTRACT .....	4
III.	OVERVIEW AND PLAN .....	5
IV.	EVALUATION STUDY PLAN .....	6
	<i>Participants</i> .....	6
	<i>Measures</i> .....	7
	<i>Procedure</i> .....	7
	<i>Design</i> .....	8
V.	RESULTS.....	9
VI.	DISCUSSION .....	10
VII.	REFERENCES.....	11
	<b>Tables 1 and 2</b> .....	13-14

## I. PREAMBLE

The present paper reports on the results of an effort to evaluate the Ready for Kindergarten (READY!) program as a means for improving Kindergarten readiness scores. This is the second of two studies for this project, funded by Thrive by Five Washington. It involves data gathered at the Othello School District (OSD) from 2008 to 2009. The first study utilized data from the Kennewick School District (KSD) and was submitted to Thrive by Five in August of 2009.

## II. EXECUTIVE SUMMARY/ABSTRACT

The present study explored data gathered at Othello School District (OSD) to determine if the entering Kindergarten reading readiness scores of children whose families were exposed to READY! differed from those who were not with respect to pre-reading assessments obtained at the beginning of Kindergarten. To test this, data were gathered in the school years 2007-2008 and 2008-2009. Data on children entering Kindergarten in 2007-2008 illustrated that there were no differences between children whose families had participated in READY! and those whose families had not participated in READY! However, because the district did not implement the complete READY! package which consists of three sessions—leaving off the first session which focuses most completely on pre-reading skills—it was decided that this was not a legitimate test of the READY! program. This belief was further supported by the fact that Othello school personnel stated that the implementation of the partial program had been compromised because the staff had insufficient practice due to it having been their first attempt at presenting READY!. These factors led to a request to Thrive by Five for a no-cost extension for the project that would allow for utilization of data gathered in the school year 2008-2009. This request was granted.

As was the case the previous year, OSD made available to the families of preschoolers the opportunity to participate in the Ready for Kindergarten Program. The recruitment procedures were similar across the two years. And as was the case in the first year, standardized pre-reading scores were to serve as outcome measures.

We performed several analyses to determine the effect of family READY! exposure on reading readiness. This involved looking at readiness scores both within and across the two school years. As noted previously, our analysis of the 2007-2008 data revealed no effects for READY! In addition to showing that there was no effect for a partial READY! program implemented by inexperienced staff, this analysis revealed something important about the selection procedures. Specifically, we could conclude that the selection procedures did not result in selection effects favoring the treatment group. If selection effects had been present, the experimental group should have had higher readiness scores despite an ineffective implementation of the treatment. Therefore, the results of the 2007-2008 data gathering effort provided confidence that the selection procedures did not result in selection effects favoring the intervention.

Program implementation in 2008-2009 conformed with standard READY! procedures. Data analyses revealed that the children of families exposed to READY! in 2008-2009 had statistically significant higher scores on a pre-reading letter naming test than did those whose families were not exposed to READY! (average scores were 16.35 and 9.40, respectively) during that same year. Differences did not emerge across the two groups, however, with respect to letter-sounds test scores. Additionally, across cohort analyses revealed that the children exposed to the complete READY! program implemented in 2008-2009 had statistically significant higher letter naming scores than did children exposed to the partial READY! program implemented in 2007-2008. This patterning of results offers support for the effectiveness of READY! while offering some control for selection effects and cohort effects. The fact that the group assignment procedures did not result in selection effects in 2007-2008 does not definitively rule

out the possibility of such effects in 2008-2009. This possibility represents a weakness of the present quasi-experimental study that can only be overcome via clinical trial utilizing random assignment of participants to groups.

### III. OVERVIEW AND PLAN

Decades of research has resulted in the identification of the required conditions for children to become skilled readers (Lonigan, 2006). These skills begin to develop prior to entry into school. In fact, individual differences related to these skills, assessed at or before Kindergarten entry, are significant predictors of subsequent reading skills and overall school success (National Early Literacy Panel, 2009). For these reasons, community agencies and school districts across the country have attempted to identify and implement preschool curricula that provide families with the knowledge and skills to teach their young children pre-reading skills. Similar strategies have been utilized by some Head Start agencies seeking to improve the Kindergarten readiness of the children they serve (Strand, Cerna, & Skucy, 2007).

One commercially available curriculum that focuses on helping families provide children ages 0 to 5 with the skills necessary for Kindergarten success is a program called Ready for Kindergarten (READY!) (The Children's Reading Foundation, 2010). READY! is based on the assumption that parents are motivated to prepare their children for academic success but sometimes lack the necessary skills and support to do so (Fielding, Kerr, & Rosier, 1998; 2004; 2007; The Children's Reading Foundation, 2010). The goal of the program, therefore, is to educate parents about the core skills and competencies that determine Kindergarten readiness and provide them with the materials and knowledge that will allow them to teach those skills and competencies to their own children. The skills taught derive from an extensive review of the educational literature that identifies the predictors of school success (see for example, Bergeson, 2005; Kagan, Britto, Kaverz, & Tarrant, 2005). The skills targeted are organized into three general domains that include: Language and Literacy, Math and Reasoning, and Social and Emotional.

Although READY! takes a holistic approach to Kindergarten readiness, the greatest attention and resources are devoted to the development of pre-reading skills. This is illustrated by the fact that 12 out of the 26 targeted skills identified for improvement fall within the Language and Literacy domain. This emphasis on pre-reading corresponds with the importance of reading as the biggest determinant of overall school success, as illustrated by the empirical literature on early childhood education (Chall, Jacobs, Baldwin, 1990; Ehri, Nunes, Stahl, & Willows, 2001). Despite this emphasis, it is unclear whether or not READY! and programs like it are successful at improving child pre-reading skills.

The present paper reports on a two-year study designed to evaluate the effects of READY! on the pre-reading skills of preschoolers. The study compared pre-reading scores of a group of children exposed to READY! during Year 2 of the study to groups of children whose families did not receive exposure to READY!. Importantly, one of these groups was exposed to a "faux" READY! intervention during Year 1 of the study. That is, this "faux" READY! group was exposed to an incomplete and flawed attempt at implementing READY!. This failed implementation effort during Year 1 stemmed from delays in obtaining materials and training, and also to a lack of staff experience.

Despite the faulty implementation in Year 1, the recruitment procedures for generating both READY! groups (READY! and "faux" READY!) were the same for both years. That is,

the district utilized similar recruitment procedures across the two years and did in fact expose families to an intervention. Therefore, the “faux” READY! group constitutes an inert-treatment control group within the context of this quasi-experimental delayed time-series study. The Year 2 READY! group, on the other hand, constitutes the treatment group. The untreated participants from Year 1 and Year 2 constitute two untreated control groups. The untreated participants consisted of all children who matriculated to Kindergarten during Years 1 and 2 for whom pre-reading scores were available. These groups are described below in more detail.

Within the context of this four-group quasi-experimental design, a series of mean comparisons were to be made to determine whether children exposed to READY! had significantly higher pre-reading scores than those who were not and, if so, whether potential confounds related to cohort effects and self-selection effects could be ruled out. It can be concluded that Kindergarten pre-reading skills are positively affected by READY! if the following conditions are met.

First, it must be shown that the mean pre-reading score for the Year 2 READY! group (the treatment group) is significantly higher than the mean score for the Year 1 “faux” READY! group (the inert-treatment control group) and the no-treatment control groups. Given such findings, it is then necessary to rule out cohort effects—the possibility that Year 2 children had higher scores than Year 1 children unrelated to READY! exposure. This potential confound can be ruled out if the mean score for the Year 2 no-treatment control group is not significantly greater than the Year 1 no-treatment control group.

Second, given the absence of cohort effects, it is necessary to rule out selection effects. Selection effects refer to a treatment group having better scores than a control group because those with better scores or greater potential for learning are more likely to participate in the treatment group. In the present study, selection effects can be ruled out as a confound if the mean score for the Year 1 “faux” READY! group is not significantly greater than that of the Year 1 no-treatment control group. Such a finding would illustrate that the selection procedure did not result in a treatment sample that had higher scores than the control group.

The preceding paragraphs describe the design and the planned comparisons of the present study. The study is a quasi-experimental study that takes advantage of the fact that no differences were observed in Year 1 between the children whose families participated in READY! and those who did not (see below).

#### IV. EVALUATION STUDY PLAN

##### *Participants*

Participants in the study attended Kindergarten in the Othello School District (OSD) during the 2007-2008 (Year 1) and 2008-2009 (Year 2) school years. Othello is a district in Central Washington State that serves a community in which 81% of the children are of Hispanic descent and 18% are of non-Hispanic Caucasian descent. Fewer than 1% of children are from the following ethnic backgrounds: Black, non-hispanic or Asian/Pacific Islander, Alaskan Native/American Indian. The district has identified that more than 77% of students qualify for free or reduced-priced meals. About 9% are in special education programs and more than 50% attend a transitional bilingual program or a migrant program (Office of Superintendent of Public Instruction Washington State, 2010).

The present study included as participants any student who participated in the Kindergarten DIBELS Letter Naming Fluency and Initial Sound Fluency testing during Year 1 or Year 2. The sample of children who met this criteria included 270 children for Year 1 and 302 children for Year 2. Excluded from the sample were children identified by the school district as having insufficient fluency in English to qualify for testing due to language background or disability.

The school district made efforts to recruit families to participate in READY! during both years of the study. The procedure for recruitment into READY! for both years involved efforts to encourage as many district families raising children ages 0-5 as possible to attend. The recruitment process involved postings in the local newspaper and community events calendars. The school also identified the dates of all READY! workshops in the school calendar. The classes were also brought to the attention of parents who registered their children for Kindergarten during the preceding Spring semester. (More detail on recruitment is presented below under the Procedures section).

Table 1 presents ethnic information for the Year 1 and Year 2 cohorts. As can be seen, the families of 99 children in Year 1 and 57 children in Year 2 were successfully recruited to participate in READY!. (The Year 1 READY! condition is identified and labeled as Faux READY!). The remainder of children in the two cohorts constituted the control participants for Years 1 and 2. Consistent with the school district from which these participants were recruited, the majority of them are of Hispanic decent. Chi square analyses revealed no differences with respect to ethnicity across these groups (results are not shown). No income data were available for sample participants.

A significant chi square difference did emerge across the two years with respect to the percentage of participants whose families were exposed to READY!. That is, although the recruitment procedures were the same across the two years, the percentage of children entering Kindergarten whose families participated in READY! was smaller for Year 2 than for Year 1 (Chi Square = 22.75,  $p < .01$ ).

### *Measures*

The outcome measure for the present study included the DIBELS Letter Naming Fluency (LNF) and Initial Sounds Fluency (ISF) tests. These are nationally standardized and normed tests that provide estimates of pre-reading skills that predict subsequent reading ability in later grades (Good et al., 2003). DIBELS has been thoroughly researched and each measure demonstrated to be a reliable and valid indicator of early literacy development. In addition, the DIBELS website, located at <http://dibels.uoregon.edu/>, allows for managing data at the level of individual children and for individual schools.

### *Procedure*

Data collection was conducted by the school district and involved tracking pre-school READY! participation and Kindergarten DIBELS performance at both Year 1 and Year 2 of the study. The initial stages of implementing READY! involved purchasing the materials and also visits from the organization that publishes READY!, The Children's Reading Foundation (CRF), to train school district personnel to implement READY! classes.

Once the materials are available and instructors are trained, districts (or sponsoring agencies) can conduct READY! classes. These classes are offered three times per year and are

labeled Fall, Winter, and Spring Sessions. Each session has different but overlapping content. Within each session, families are grouped according to the ages of their children. Separate sessions are held for families of children ages 0-1, 1-2, 2-3, 3-4, and 4-5, respectively. Placement into classes based on child age allows for age-appropriate content and instruction. At Othello, the classes were provided in both Spanish and English. Each session was taught on two different nights, a Saturday morning and afternoon in order to provide parents many opportunities to participate. This system also allowed parents of multiple qualifying children to attend multiple sessions according to their children's ages. To make READY! accessible, childcare was provided free of charge.

Once in class, parents are introduced to other parents and the lesson begins. A PowerPoint slide show presents the curriculum in an orderly and logical manner, assuring that key concepts are covered by the trained instructor. Every class at every age level shares activities related to pre-reading skills, math concepts, and social-emotional development. Thus, if parents have a two-year-old, they will attend a class presenting information specifically about the developmental tasks and activities for children who are two years old.

Approximately 5-20 parents are enrolled in each class, allowing them to interact and learn from each other as well as the curriculum. A trained instructor presents a researched-based lesson using a PowerPoint with video clips, handouts, and hands-on activities. The focus is on age-specific milestones for each domain. That is, parents receive educational materials and learn activities that support their child's early learning at home, and take home a variety of toys and educational games.

In sum, READY! provides parents *information* regarding educationally relevant child development milestones, *skills* for teaching children developmentally-appropriate pre-academic skills, and *educational materials and activities* that ensure a rich early learning environment at home.

### *Design*

The present study utilized data from two cohorts of children who entered Kindergarten in the Othello School District during two different school years. Year 1 of the study occurred during the 2007-2008 school year and Year 2 occurred during the 2008-2009 school year. For each year, the district kept READY! attendance data and LNF and ISF scores for all Kindergarteners. The goal of the study was to evaluate whether children who attended READY! had better LNF and ISF scores than those who did not. As will be discussed below, the study takes advantage of the fact that the original attempt to implement the READY! in Year 1 proved to be flawed and ineffective.

As is discussed below, the failed intervention at Year 1 resulted in an inert-treatment control group for which data analysis revealed the absence of selection effects. That is to say, the Year 1 children whose families attended READY! did not differ from those children in the same cohort who did not participate in the intervention. This finding was relevant for two reasons. First, it was an indication that the initial attempt to implement READY! failed to lead to better scores for those children exposed to the intervention. Second, by way of the fact that there were no differences, it could be concluded that the recruitment procedure resulted in a subset of participants that did not differ from the larger population of Kindergarteners from which that sample was drawn with respect to subsequent pre-reading skills. That there were no differences across these two groups constitutes evidence that the recruitment procedure used in

the Othello district did not result in a treatment group for which pre-reading abilities were superior to the population from which they were drawn.

*Year 1 READY! Implementation.* The district contacted the CRF with the news that they wanted to implement READY! beginning in the school year 2007-2008. This set into motion the process of obtaining the materials and the training of the instructors. These preparatory steps were not completed in time to conduct the Fall session. Therefore, the Year 1 READY! implementation involved only two sessions—Winter and Spring. In addition to this divergence from typical program implementation, it was noted that this initial attempt at implementation may have been adversely affected by a lack of teacher experience with the READY! curriculum.

*Year 2 READY! Implementation.* Implementation of the READY! program was complete in Year 2. That is, all three sessions were implemented on time. Also, it was the opinion of district administrators that the implementation of the classes was better due to experience gained the previous year. While implementation of classes was different, it is important to note that the recruitment methodology was the same.

## V. RESULTS

The present study was designed to evaluate the effectiveness of READY! as a method for improving the pre-reading scores for preschool children. The evaluation involved a two-stage analytic strategy. The first stage involved exploring whether differences existed across the four identified groups with respect to one or both of the pre-reading measures. This was done by conducting a 2 X 3 MANOVA in which the two pre-reading measures, LNF and ISF, served as dependent variables. Given a significant Year by Condition interaction effect, the second stage of the analysis was to involve an examination of the results of the tests of between-subjects effects to identify the dependent variable for which significant results were obtained. The third stage was to involve a series of t-tests to determine the nature of the inter-group differences.

As expected, the results of the MANOVA revealed a significant Year by Condition interaction effect (Wilks' Lambda = .988,  $F(2, 567) = 3.43$ ,  $p < .05$ ). This finding illustrates that differences exist across the groups with respect to one or both dependent variables. Tests of between-subjects effects illustrated that the Year by Condition effect was significant for LNF ( $F(1, 568) = 6.58$ ,  $p = .01$ ), but not for ISF ( $F(1, 568) = 0.85$ , ns). Therefore, the results of the MANOVA reveal a significant Year by Condition interaction effect for one type of pre-reading skill but not the other.

Given these findings at the level of the MANOVA, the next data analytic step is to determine if the pattern of mean differences across the four groups is consistent with READY! as an effective method for improving pre-reading scores for preschool children. Such support would be evident if the following two conditions are met: (1) The LNF scores of children whose families were exposed to READY! have higher pre-reading scores than the children of families who were not, and (2) a lack of mean differences across the three control groups allows for ruling out potential confounds related to selection effects and cohort effects.

Table 2 displays these means and standard deviations. The results of the analyses revealed that the READY! intervention group had a higher mean LNF score than did the: (a) faux READY! control group ( $t = -2.23$ ,  $p < .03$ ), (b) the Year 1 control group ( $t = 2.59$ ,  $p < .02$ ),

and (c) the Year 2 control group ( $t = 2.96, p < .01$ ). Additionally, mean comparisons across the three control groups reveal no significant differences (in each case  $t < 1.00, ns$ ).

## VI. DISCUSSION

The results of the present study are consistent with the idea that READY! exposure is related to improved pre-reading scores for preschoolers entering Kindergarten. The conclusion derives from the fact that children whose families were exposed to READY! during preschool had higher Letter Naming Fluency scores than did children whose families were exposed to a faux READY! intervention, and children whose families did not participate in any READY! meetings.

The present study utilized data collected over a two-year period in an attempt to overcome potential confound effects that oftentimes plague studies that do not employ random assignment to groups. Two of the most common confounds are self-selection effects and cohort effects.

With respect to controlling for selection effects, the present study took advantage of the fact that the initial effort to employ READY! (during Year 1) was a failure. That is, although they intended to implement all three READY! sessions during the first year, delays in obtaining materials and training resulted in a failure to implement the Fall session. And although the other two sessions were implemented, it was felt that the quality of implementation suffered due to a lack of experience on the part of the instructors. The belief that READY! implementation was compromised by these problems was supported by the fact that data analysis revealed no differences during Year 1 between the DIBELS scores of children whose families participated in READY! and those whose families did not.

The absence of treatment effects for the Year 1 represented a fortuitous opportunity for a longitudinal evaluation of READY!. That is true because the null findings rule out the possibility that the selection procedure resulted in groups with pre-existing differences with respect to reading scores. That is, the recruitment procedures did not result in the selection of a READY! sample that had higher pre-reading scores than the population from which it was drawn.

The fact that the faux READY! group did not differ from the remainder of the sample suggests that the recruitment procedure used in the present study generated a sample uncontaminated by selection effects. Therefore, to the extent that similar recruitment procedures were to be used the next year, one could make the case that the Year 1 faux READY! group represents an inert-treatment control group. If differences emerged across the two samples, and cohort effects could be ruled out, those differences could be attributed to the intervention.

Cohort effects were ruled out via a comparison of the Year 2 no-treatment control and the two Year 1 groups. The fact that no differences emerged across the no-treatment control groups rules out cohort effects as an explanation for the statistically significant higher scores of the READY! group compared to the no-treatment control groups and the faux READY! group.

Despite these promising findings, the present study does not definitively rule out the possibility of selection effects. That is, just because the recruitment procedure utilized in 2007-2008 produced no selection effects does not mean that it was similarly successful in 2008-2009.

This concern is highlighted by the fact that the recruitment procedure resulted in a smaller number of READY! participants in Year 2 than it did in Year 1. On the other hand, it is clear that the recruitment procedures used in Year 2 resulted in comparable groups in Year 1.

The present results are positive with respect to the effectiveness of READY! as a district-wide intervention strategy for improving school readiness for multi-ethnic, multi-lingual preschoolers in public school systems. These results suggest that READY! is worthy of future program evaluation efforts.

## VII. REFERENCES

- Bergeson, T. (2005). *Student readiness for Kindergarten: A survey of Kindergarten teachers in Washington State*. Olympia: Office of Superintendent of Public Instruction.
- Bordens, K.S., & Abbott, B.B. (1991). *Research design and methods: A process approach* (2<sup>nd</sup> ed). Mountain View, CA: Mayfield Publishing Co.
- Chall, J. S., Jacobs, V., & Baldwin, L. (1990). *The reading crisis: Why poor children fall behind*. Cambridge, MA: Harvard University Press
- Ehri, L.C., Nunes, S.R., Stahl, S.A., & Willows, D.M. (2001). Systematic phonics instruction helps students learn to read: Evidence from the national reading panel's meta-analysis. *Review of Educational Research*, 71, 393-447.
- Fielding, L., Kerr, N., & Rosier, P. (1998). *The 90% reading goal*. Kennewick, WA: The New Foundation Press.
- Fielding, L., Kerr, N., & Rosier, P. (2004). *Delivering on the promise*. Kennewick, WA: The New Foundation Press.
- Fielding, L., Kerr, N., & Rosier, P. (2007). *Annual growth for all students*. Kennewick, WA: The New Foundation Press.
- Good, R.H., Kaminski, R.A., Smith, S.B., Simmons, D.C., Kameenui, E., & Wallin, J. (2003). Reviewing outcomes: Using DIBELS to evaluate Kindergarten curricula and interventions. In S. Vaughn & K.L. Briggs (Eds.). *Reading in the classroom: Systems for the observation of teaching and learning* (pp. 221-266). Baltimore: Paul H. Brookes Co.
- Kagan, S.L., Britto, P.B., Kaverz, K., & Tarrant, K., (2005). *Washington State early learning and development benchmarks*. Olympia: The State of Washington.  
(<http://www.k12.wa.us/EarlyLearning/Benchmarks.aspx>).
- National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel*. Washington, DC: National Institute for Literacy
- Children's Reading Foundation (2010). *The Children's Reading Foundation Official Program*. Kennewick, WA: Author. (retrieved March 23, 2010 from [www.readyforkindergarten.org](http://www.readyforkindergarten.org)).

Office of Superintendent of Public Instruction Washington State (2010). Washington State Report Card: Othello School District. (retrieved March 29, 2010 from <http://reportcard.ospi.k12.wa.us/summary.aspx?groupLevel=District&schoolId=13&reportLevel=District&orgLinkId=13&yrs=&year=2008-09>).

Strand, P.S., Cerna, S., & Skucy, J. (2007). Assessment and decision-making in early childhood education and intervention. *Journal of Child and Family Studies*, 16, 209-218.

**Table 1: Ethnic Breakdown of Participants for Year 1 and Year 2 According to Condition.**

Ethnicity	Year 1 (2007-2008)		Year 2 (2008-2009)	
	Faux READY! (N=99)	Control1 (N=171)	READY! (N=57)	Control2 (N=245)
Hispanic	90	147	51	212
White, Non-Hispanic	7	21	5	28
Other	2	3	1	5

**Table 2. Means and Standard Deviations for Each of the Study Conditions.**

	<b>Ready! 2008-09 (N=57)</b>		<b>Faux READY! 2007-08 (N=99)</b>		<b>Control 1 2007-08 (N=171)</b>		<b>Control 2 2008-09 (N=245)</b>	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
LNF	16.56	17.47	10.56	13.66	10.04	13.02	9.29	12.099
ISF	9.68	7.57	7.06	8.73	6.99	8.58	8.10	8.402