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Evidence-Based Phonics Game

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Author Note

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## Evidence-Based Phonics Game

### **Introduction**

Phonics is a method for teaching pre-reading skills that focuses on the relationship between letters and sounds. Current evidence suggests that systematic teaching of a phonics curriculum results in increased reading accuracy later in a child's education as compared to an unsystematic approach to phonics or the use of no phonics curriculum (Brooks, Torgerson, & Hall, 2008). It has also been established that early abilities in associating letter names with their sounds are indicative of later achievements in reading comprehension and spelling (Evans, Shaw, & Bell, 2000). Literacy plays a critical role in a person's ability to thrive in today's society and workforce. Because later success in literacy is built upon pre-reading abilities, providing a child with a solid foundation in phonics is critical for his or her future success (Howat, 2006).

Literacy development is a learning process. Evidence suggests that learning is best achieved through collaborative activity (Howat, 2006). Prior to the late 20th century, education and literacy instruction were mainly viewed as the sole responsibility of teachers and tutors, the individuals who were labeled as “experts” in the development of curriculum (Crawford & Zygouris-Coe, 2006). Because of this attitude, parents adopted a hands-off approach to their children's education. Family involvement in a child's learning experience was largely devalued. More recent research has suggested that the involvement of family is much more important than once thought (Crawford & Zygouris-Coe, 2006). Parental involvement is now regarded as one of the most important elements of the child's education (Hornby & Lafaele, 2011). Strickland (2011) further suggests that children in early childhood learn best when adults plan meaningful activities that encourage their learning. The established importance of phonics learning in the development of literacy and of family involvement in a child's learning warrant an expansion upon the available resources for engaging the family in a child's preschool phonics education.

The purpose of this pilot study was to evaluate a newly-developed phonics game based on evidence-based phonics teaching strategies designed for children to play at home with their families.

Current evidence supports the use of a multisensory approach in phonics instruction. One program that incorporates this approach is Zoo-phonics. Zoo-phonics incorporates auditory, verbal, visual, kinesthetic, and tactile stimuli into preschool and Kindergarten pre-reading education. The Zoo-phonics curriculum was designed in accordance with research in phonics instruction and aims to help students to develop an awareness of the relationship between letters and their corresponding sounds in speech (Zoo-phonics, n.d.). Research supports the efficacy of Zoo-phonics in increasing letter-sound awareness. Gallagher (2003) reported that after 60 days of Zoo-phonics curriculum, students made significant gains in letter-sound recognition. In addition, Vogt (2002) reported that kindergarten students exposed to the Zoo-phonics curriculum throughout the school year made significantly greater advancements in letter recognition and letter-sound awareness compared to previous kindergarten students who had not received instruction via Zoo-phonics.

Research independent of Zoo-phonics has also provided evidence to support the use of a multisensory approach in literacy education. The results of a study performed by Joshi, Dahlgren, and Boulware-Gooden (2002) showed that children who were taught with a multisensory approach made significantly greater gains in phonological awareness, decoding, and reading comprehension compared to children who were taught by a traditional approach. The results of another study performed by Scheffel, Shaw, and Shaw (2008) indicated that alphabetic principle and phonemic awareness skills significantly improved for the children receiving a multisensory approach compared to those receiving traditional instruction. A multisensory approach formed the basis for this game.

The purpose of this study was to evaluate child and caregiver perceptions of a newly developed evidence-based phonics game that was designed to promote parental involvement in children's pre-reading education. The research questions were as follows:

1. Do children find the game fun and enjoyable?
2. Do caregivers view the game as a practical and viable option for practicing sound-letter relationships?
3. Does the caregivers' current use of reading and educational games, television, and apps affect their perceptions of this game?

## **Methods**

### **Description of Game**

The game was designed for preschool-aged children between the ages of 30 and 84 months. The materials consisted of a game mat, spinner, sets of red, green, yellow, and blue cards, a seek and find page, and a binder containing materials for the tactile activity described below. Photographs of these materials are located in Appendix A. A caregiver was needed to assist the child in reading the cards which provides an opportunity for the caregiver to demonstrate reading, assist the child in learning letters and sounds, and provide the child with positive feedback. The cards included activities that were designed to promote the phonics-based skills of sound-letter awareness and letter identification by involving kinesthetic movement and auditory, visual, and tactile stimuli.

The red cards involved kinesthetic movements that linked a letter to an action that represented the sound of that letter. For example, one card read "Up begins with u. Stand up and reach up as high as you can." The kinesthetic activities were designed to use movement as a way to promote sound-letter awareness. Green cards involved a verbal and auditory exercise. They were designed to be read aloud by the caregiver and repeated by the child so that the child

heard the sound and produced the sound represented by that letter. For example, “Alligator begins with a. Repeat after me: a a alligator. What sound does alligator begin with?” These cards were designed to promote sound-letter awareness with emphasis on the sound associated with the letter. Yellow cards involved a visual activity. The child was asked to locate an object beginning with a specified letter in a seek and find page. This activity was designed to visually promote sound-letter awareness. For example, “Cat begins with c. Can you find the cat in the seek and find.” Blue cards represented a tactile activity that required the child to trace the shape of a letter made from a material that began with that letter. For example, one card read “Rough begins with r. Trace the rough r.” Materials for this activity were arranged in a binder. These cards were designed to promote both sound-letter awareness and letter identification. Some of the red and green cards read EVERYBODY at the top in colorful letters. This indicated that the action was intended to be performed by all of the children playing the game. An example of an “everybody” card included a kinesthetic card that read, “Hand begins with h. Use your hands to give each other high fives.” Refer to Appendix B for examples of each card type.

A child’s turn consisted of spinning the spinner and moving forward the number of spaces indicated. The color of the space landed on corresponded to the color card they were to draw. The caregiver then read the card to the child and the child proceeded with the activity indicated by the card. When the child was finished with the activity, the next child’s turn began. To win the game, the child must be the first to reach the end; however, the game was not finished until every player reached the end. Extending the game until all players have finished allowed for as much practice with letter-sound awareness and letter identification as possible.

### **Participants**

To be included in this study, child participants had to meet the following criteria: (1) be between the ages of 30 and 84 months, (2) have no documented disabilities as reported by the

parent, and (3) speak English as the primary language of the home. Five children and four caregivers participated in this study. The children were the ages of 39, 43, 66, 71, and 84 months. Three male and two female children participated. Participants were recruited via Facebook.

### **Procedures**

The study was completed at Grand Valley State University in two hour-long sessions. Caregivers were asked to provide written consent for themselves and their child to participate. After a brief warm-up period to allow the children to acclimate to the environment, the children were asked to play the game and the rules and procedures were explained. The game was played one time and then the children and caregivers were asked to complete a short survey. The child survey was completed with the assistance of the caregiver. It consisted of verbally stated ‘yes/no’ questions about the game. The child was asked to color in a shape or figure corresponding to his or her answer. The child survey is located in Appendix C. The caregiver survey consisted of ‘agree/disagree’ questions regarding the caregivers’ perceptions of the game. They were also asked to estimate their time spent on educational activities at home during the week. The caregiver survey is located in Appendix D.

### **Results**

In response to the child survey, 100% of children indicated that they had fun playing the game and would want to play the game again. Additionally, 80% of children indicated that they would play the game at home with their family or friends and that they think playing games is a fun way to practice letters. The participants were also asked what they thought should be different about the game. Two participants responded with “nothing,” and one responded with “that you can bump people off the board.” A summary of these responses is located in Table 1.

*Table 1- Summary of Child Survey Responses*

| Question   | Responded Yes  |            | Responded No |            |
|--|--|------------|--------------|------------|
|  | Count  | Percentage | Count        | Percentage |
| Did you have fun playing the game?   | 5  | 100%       | 0            | 0%         |
| Would you want to play this game again?                                    | 5  | 100%       | 0            | 0%         |
| Would you play this game at home with your family or friends?              | 4  | 80%        | 1            | 20%        |
| Do you think playing games like this one is a fun way to practice letters? | 4  | 80%        | 1            | 20%        |
| What do you think should be different about the game?                      | <ul style="list-style-type: none"> <li>• Nothing</li> <li>• Nothing</li> <li>• “If I could win”</li> <li>• “That you can bump people off the board”</li> <li>• “The arrow should point the other way”</li> </ul> |            |              |            |

During the caregiver survey, caregivers were asked to respond with strongly agree, agree, disagree, or strongly disagree to a series of statements regarding the game. All caregivers indicated that they strongly agreed that their child appeared to enjoy playing the game, that the game was appropriate given their child’s age, and that they understood the instructions of the game. Seventy-five percent responded that they strongly agreed that they would play the game at home with their child. All of the caregivers either strongly agreed or agreed that the game was a practical way to practice letter-sound relationships with their child. Seventy-five percent of caregivers strongly disagreed in response to the statements, “My child appeared to lose interest while playing the game” and “It was difficult to participate in the game with my child.” The caregivers were also asked to provide suggestions for improvement of the game. Suggestions included improving the spinner and adding more spaces on the game mat to lengthen the game. A summary of these results is located in Table 2.

*Table 2 – Summary of Caregiver Survey Regarding Game*

| Statement  | Strongly agree |      | Agree |     | Disagree |     | Strongly disagree |     |
|--|----------------|------|-------|-----|----------|-----|-------------------|-----|
|  |                |      |       |     |          |     |                   |     |
| My child appeared to enjoy playing the game.                                       | 4              | 100% |       |     |          |     |                   |     |
| The game was appropriate given my child's age.                                     | 4              | 100% |       |     |          |     |                   |     |
| I would play this game at home with my child.                                      | 3              | 75%  | 1     | 25% |          |     |                   |     |
| This game is a practical way to practice letter-sound relationships with my child. | 2              | 50%  | 2     | 50% |          |     |                   |     |
| I understood the instructions of the game.   | 4              | 100% |       |     |          |     |                   |     |
| I learned a new way to practice letters with my child.                             | 2              | 50%  | 2     | 50% |          |     |                   |     |
| My child appeared to lose interest while playing the game.                         |                |      | 1     | 25% |          |     | 3                 | 75% |
| It was difficult to participate in the game with my child.                         |                |      |       |     | 1        | 25% | 3                 | 75% |

Caregivers were also asked to indicate how frequently they play games, practice letters, and read to their child during the week. All caregivers indicated that they play games with their child at least once per week. Responses varied regarding how frequently caregivers practice letters with their child; however, all caregivers indicated that they practice letters at least once each week. In regards to reading to their child, all caregivers reported that they read to their child at least seven times per week. Lastly, caregivers were asked to identify how much time their child spends interacting with educational television, apps, or computer games each week. All of the caregivers indicated that their child watches educational television for at least one hour per week. In addition, 75% of caregivers indicated that their child spends 1-2 hours each week playing educational apps or computer games. A summary of these results is located in Table 3.

*Table 3 – Summary of Caregiver Survey Regarding Educational Activities at Home*

|   | 1-2 times per week        |     | 3-4 times per week |     | 5-6 times per week |     | 7+ times per week |      |
|---|---------------------------|-----|--------------------|-----|--------------------|-----|-------------------|------|
| I play games with my child.                             | 2                         | 50% | 2                  | 50% |                    |     |                   |      |
| I practice letters with my child.                       | 1                         | 25% | 1                  | 25% | 2                  | 50% |                   |      |
| I read to my child.                                     |                           |     |                    |     |                    |     | 4                 | 100% |
|   | Less than 1 hour per week |     | 1-2 hours per week |     | 3-4 hours per week |     | 5+ hours per week |      |
| My child watches educational television.                |                           |     | 2                  | 50% | 2                  | 50% |                   |      |
| My child plays with educational apps or computer games. | 1                         | 25% | 3                  | 75% |                    |     |                   |      |

### Discussion

The overall opinion of the child and caregiver participants appeared to be favorable. The child participants indicated that they enjoyed playing the game and would want to play the game again. Caregivers reported that their child appeared to enjoy that game and that the game was an age-appropriate and practical way to practice letter-sound relationships. It was also reported that the caregivers regularly spend time playing games, practicing letters, and reading to their children each week. All of the caregivers reported that they read to their child at least seven times per week. This may be considered above average according to a national survey of parents which found that only 47.9% of parents read to their children on a daily basis (Child and Adolescent Health Measurement Initiative, 2011/12).

Although the game was received positively overall, the participants and researchers noted some potential modifications for further improvement upon the game design. The first suggested improvement was a better spinner. The spinner designed for the game contained three large sections labeled “1,” “2,” and “3.” The arrow landed most frequently on section “1.” The children appeared to express disappointment about frequently moving only one space forward. It

also prolonged the game which could potentially pose a challenge for younger children with naturally shorter attention spans. To improve the design of this spinner, it is suggested that it be divided into five sections so that the odds of landing on any particular section are decreased. The spinner would then consist of five smaller sections labeled one through five.

Other suggestions for improvement include modifying the verbal/auditory cards. During play, it was observed that instead of modeling the sound represented by the letter, the parents repeated the letter. The cards should be either modified to reduce confusion or completely altered to incorporate a different verbal/auditory activity. It is also recommended that the kinesthetic cards be modified to include only gross motor skills. Fine motor skills, such as twitching the nose like a rabbit, were observed to be difficult for children in this age group. Lastly, the visual activity could be modified to better incorporate more practice in letter identification. This could include using pictures of objects that form the shape of the letter with which it begins or hiding a letter within the object so that the child is first required to find the object and then find the letter within the object.

The overall response to the game was positive; however, this perception should be interpreted with caution for several reasons. One limitation of the study design has been identified in the format of the child survey. It is possible that the children chose their responses based on the shape or figure that they preferred to color instead of their true responses. This could affect the validity of the results. An additional limitation includes the limited sample size. The researchers originally intended to analyze the relationships between the perceptions of the game and the literacy-promoting activities already occurring within the home. The limited number of participants prevented the researchers from being able to perform these analyses.

Future research should examine the relationship between the amount of literacy-promoting activities utilized in the home and the perceptions of the game. The game should also

be evaluated using a larger sample size in order to complete these analyses. A larger sample size would also be useful for obtaining a broader scope of opinions. Furthermore, the teaching effectiveness of the game should be examined. In order for the game to be valued as a tool for teaching phonics, it is necessary to determine the particular skills that children learn from playing the game. Efficacy of the game should be evaluated with children of typical development as well as with those with communication disorders and those whose primary language is not English.

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Appendix B  
Examples of Card Types

*Example of Red Kinesthetic Card*

**Uu**

**U**p begins with **U**.

Stand up and  
reach up as high  
as you can!

*Example of Green Verbal/Auditory Card*

**Aa**

**A**lligator begins  
with **a**.

Repeat after me:  
**a a alligator**  
What sound does  
alligator begin with?

*Example of Yellow Visual Card*

**Cc**

**C**at begins with **C**.

Can you find the cat  
in the seek and find?



*Example of Blue Tactile Card*

**Rr**

**R**ough begins  
with **r**.

Trace the rough  
**R**.

*Example of an "Everybody" Card*

**EVERYBODY**

**Hh**

Hand begins with h

Use your hands to  
give each other  
high fives!

Appendix C  
Child Survey

Evaluation of Evidence-Based Phonics Game  
Post-play Child Survey

1. Did you have fun playing the game? If you did have fun, please color in the smiley face. If you did not have fun, please color in the sad face.
2. Would you want to play this game again? If you do want to play this game again, please color in the circle. If you do not want to play this game again, please color in the triangle.
3. Would you play this game at home with your family or friends? If you would play the game at home, please color in the diamond. If you would not play the game at home, please color in the heart.
4. Do you think that playing games like this one is a fun way to practice letters? If you do think that games are a fun way to practice letters, please color in the star. If you do not think that games are fun way to practice letters, please color in the arrow.
5. What do you think should be different about the game? Caregivers, please assist your child by writing down his or her answer.

*Child Survey Response Form*



5.

Appendix D  
Caregiver Survey

**Evaluation of Evidence-Based Phonics Game**  
Post-play Caregiver Survey

**Please respond to following statements by circling whether you strongly agree, agree, disagree, or strongly disagree.**

1. My child appeared to enjoy playing the game.

Strongly agree                      Agree                      Disagree                      Strongly disagree

2. The game was appropriate given my child's age.

Strongly agree                      Agree                      Disagree                      Strongly disagree

3. I would play this game at home with my child.

Strongly agree                      Agree                      Disagree                      Strongly disagree

4. This game is a practical way to practice letter-sound relationships with my child.

Strongly agree                      Agree                      Disagree                      Strongly disagree

5. I understood the instructions of the game.

Strongly agree                      Agree                      Disagree                      Strongly disagree

6. I learned a new way to practice letters with my child.

Strongly agree                      Agree                      Disagree                      Strongly disagree

7. My child appeared to lose interest while playing the game.

Strongly agree                      Agree                      Disagree                      Strongly disagree

8. It was difficult to participate in the game with my child.

Strongly agree                      Agree                      Disagree                      Strongly disagree

**Please respond to the following statements with *yes* if you or your child does the activity or *no* if you or your child does not do the activity. If you answer yes, please circle the choice that best describes the amount of time that you or your child spend doing that activity each week.**

9. I play games with my child.

Yes                  No

If you answered yes, how often do you play games with your child?

1-2 times per week  
3-4 times per week  
5-6 times per week  
7+ times per week

10. I practice letters with my child.

Yes                  No

If you answered yes, how often do you practice letters with your child?

1-2 times per week  
3-4 times per week  
5-6 times per week  
7+ times per week

11. I read to my child.

Yes                  No

If you answered yes, how often do you read to your child?

1-2 times per week  
3-4 times per week  
5-6 times per week  
7+ times per week

12. My child watches educational television.

Yes                  No

If you answered yes, how much time does your child spend watching educational television each week?

Less than 1 hour per week  
1-2 hours per week  
3-4 hours per week  
5+ hours per week

13. My child plays with educational apps or computer games.

Yes                  No

If you answered yes, how much time does your child spend playing with educational apps or computer games?

Less than 1 hour per week  
1-2 hours per week  
3-4 hours per week  
5+ hours per week

**Please provide a written response to the following question.**

14. What changes would you suggest to improve the game?