

# UROP Proposal

## **Title of Proposal**

Play and Language Development in Toddlers At Risk For Autism Spectrum Disorder

## **Problem/Topic of Research or Creative Work**

Play is a tool that allows infants and toddlers to explore their new world, as well as develop skills that will help make them successful as they grow. Play has been found to act as an entry point for children in learning communicative turn taking, learning how to effectively communicate with others, and other social communication skills (McDuffie et al., 2015). Play develops across the first years of life, with a developmental progression from object exploration (manipulation of toys/objects), to functional play (playing with objects according to their intended function), and then to symbolic play, which is a broad term that refers to a range of pretend play behaviors (Theimann-Bourque, Johnson & Brady 2019). The development of young children's play is linked with several critical developmental areas such as cognition, social communication, and language (Orr & Geva 2015; Thiemann-Bourque, Brady & Fleming, 2012). While there has been much research examining the play of preschoolers with developmental delays, including autism spectrum disorder (ASD), less is known about play in younger children (toddlers) with or at-risk for developmental delays. In fact to date, no studies have specifically examined the play of toddlers with significant delays in expressive and receptive language. The purpose of this project is to explore how play is associated with language development in toddlers with expressive and receptive language delays compared to their typically developing (TD) peers.

## **Relevant Background/Literature Review**

Research has suggested that preschool-age children with developmental delays show impairments in play compared to their TD peers (e.g., Williams, Reddy & Costall, 2001). The primary components of play that have been examined in these young children with delays include the number of different toys with which a child plays and the complexity with which the child plays. However, there is debate in which specific aspects of play may be affected in children with developmental delays. While several studies have reported impairments in a variety of aspects of play in children with developmental delays compared to TD groups (Hobson, P., Lee & Hobson, J., 2008; McDuffie et al., 2015), findings from a recent study indicate some potential areas of strength in the play of some children with developmental delays. Specifically, Theimann-Bourque et al. (2019) examined the play skills of children with ASD (mean age = 74 months) compared to children with TD matched on language and cognitive skills. Results indicated that while preschoolers with ASD engaged in significantly less symbolic play compared with the TD group, the two groups showed similarities in exploratory and functional play. In contrast to this study, other researchers have found that children with ASD have a deficit in all aspects of play, including playing with fewer toys overall and playing with those toys repetitively rather than functionally, which may lead to restraints in other areas of development (Buckner & Yoder, 2007). Deficits in play have the potential to affect other areas of development, including language. Several studies have examined the relationship between play and early language and social communication (Baranek et al., 2005; Orr & Geva 2015; Smith & Jones, 2011; Williams et al., 2001). In the toddler years, when first words are beginning to emerge, the diversity of ways a child plays with objects has been found to predict spoken vocabulary one year later (Yoder, 2006). This association between play and the later development of language has

implications for early identification and early intervention for children with language delays. Specifically, the earlier deficits in play are identified, the earlier intervention can be provided to specifically target play skills, which may in turn impact the development of language. Given the lack of research examining play in toddlers with significant language delays, as well as the documented association between play and language development in preschool-age children, additional research is needed to examine play in the toddler years to further our understanding of how play affects the development of language and social communication over time.

### **Specific Activities to be Undertaken and Timeframe for Each Activity**

For this research project, I will be using data from an ongoing longitudinal study being conducted by my faculty mentor, Dr. [REDACTED]. This study includes two groups of toddlers: one group with expressive and receptive language delays, and the other group with typical development. All toddlers completed an evaluation at 18, 24, and 36 months of age. As part of the evaluation, toddlers and their parent engaged in a 15-minute parent-child interaction (PCI) that involved the parent and child playing together with a standard set of toys. The PCI was video recorded for later coding. To date, the 18-month PCIs have been coded. My research project involves coding the 24-month PCIs as well as preparing and finalizing the coded data from both the 18- and 24-month samples in order to examine play over time (from 18 to 24 months). During spring 2018, I had the opportunity to train as a volunteer research assistant in the [REDACTED] Lab under the mentorship of Dr. [REDACTED]. After completing several trainings (e.g., CITI training), I began assisting with a project aimed at coding parent responses to children's gestures during the PCI. This semester (spring 2019) I have been learning a new coding scheme related to the children's play. I have met the initial reliability standards for coding play in the PCIs and am proposing to oversee the play coding for my research project. As described, this will include finalizing the 18-month play sample data that have previously been coded, as well as taking the lead role on coding the 24-month play samples. To complete my project in a timely manner, I plan on working 10 hours a week, with time allotted to coding play, calculating and tracking reliability, and data entry and management. The timeline for my proposed research project is shown in Appendix A (attached).

### **Relationship of the Proposed Work to the Expertise of the Faculty Mentor**

My research advisor is Dr. [REDACTED] who is an assistant professor in the Department of Communication Sciences and Disorders at the University of Utah. She leads the [REDACTED] Lab, conducting research focused on identifying toddlers at risk for ASD based on having a significant delay in expressive and receptive language. A primary goal of the research is to improve early identification and intervention for children with language delays. Dr. [REDACTED] is interested in examining the relationship between gesture use, social communication, and the relationship between language development and play of typically developing children and children with language delays. Thus, my project directly relates to the expertise of Dr. [REDACTED].

### **Relationship of the Proposed Work to Student's Future Goals**

My goal is to pursue a graduate degree in speech-language pathology in order to become a certified clinician and work in public schools and other clinical settings to gain critical experience. Once I have the necessary experience, I want to pursue a PhD to contribute to the research literature that affects what we know and how we are able to treat individuals with different disorders and delays as speech-language pathologists. I have a specific interest in ASD and early intervention due to having

a younger brother with ASD who was not diagnosed until 4 years of age. This prevented him from receiving earlier intervention, leaving him completely non-verbal and dependent on others for everyday care and activities. I want to be engaged in research that focuses on how we can better catch language delays at earlier ages, which can lead to earlier intervention. This project will help me gain experience in the research field, helping me understand more about what it takes to do research, what the processes are like and allow me to grow as an undergraduate student. Participating in UROP would also allow me to gain better critical thinking skills, help me learn how to write and present scientific work, and help me be a better candidate for graduate school, scholarships, and employment.

## References

- Baranek, G.T., Barnett, C.R., Adams, E.M., Wolcott, N.A., Watson, L.R., & Crais, E.R. (2005). Object Play in Infants With Autism: Methodological Issues in Retrospective Video Analysis, *American Journal of Occupational Therapy*, 59, 20-30.
- Bruckner, C.T., & Yoder, P. (2007). Restricted object use in young children with autism, *Autism*, 11, 161-171. DOI: 10.1177/1362361307075709
- Hobson, P., Lee, A., & Hobson, J. (2008). Qualities of Symbolic Play Among Children with Autism: A Social-Developmental Perspective, *J Autism Dev Disord*, 39, 12-22. DOI:10.1007/s10803-008-0589-z
- McDuffie, A., Oakes, A., Machalicek, W., Thurman, A., Summers, S., Stewart, A., & Abbeduto, L. (2015). Play with objects in young males with fragile X syndrome: A preliminary study, *Journal of Communication Disorders*, 51, 17-29. <http://dx.doi.org/10.1016/j.jcomdis.2014.10.002>
- Orr, E., & Geva, R. (2015). Symbolic play and language development, *Infant Behavior & Development*, 38, 147-161. <http://dx.doi.org/10.1016/j.infbeh.2015.01.002>
- Smith, L.B., & Jones, S.S. (2011). Symbolic Play Connects to Language through Visual Object Recognition, *Developmental Science*, 14, 1142-1149. doi:10.1111/j.1467-7687.2011.01065.x.
- Thiemann-Bourque, K.S., Brady, N.C., & Fleming, K.K. (2012). Symbolic Play of Preschoolers with Severe Communication Impairments with Autism and Other Developmental Delays: More Similarities than Differences, *J Autism Dev Disord*, 42, 863-873. DOI 10.1007/s10803-011-1317-7.
- Thiemann-Bourque, K.S., Johnson, L.K., & Brady, N.C. (2019). Similarities in Functional Play and Differences in Symbolic Play of Children With Autism Spectrum Disorder, *American Journal on Intellectual and Developmental Disabilities*, 124, 77-91. DOI: 10.1352/1944-7558-124.1.77
- Williams, E., Reddy, V., & Costall, A. (2001). Taking a Closer Look at Functional Play in Children with Autism, *Journal of Autism and Developmental Disorders*, 31, 67-77.
- Yoder, P.J. (2006). Predicting Lexical Density Growth Rate in Young Children With Autism Spectrum Disorders, *American Journal of Speech-Language Pathology*, 15, 378-388

### Appendix A – Timeline for Proposed Project

<b>Date</b>	<b>Specific Activities and Hours Allotted (~10 hours per week)</b>
<b>May 2019</b>	Attend UROP orientation meeting Attend first UROP Undergraduate Research Education Series
5/13/19 – 5/17/19	<ul style="list-style-type: none"> <li>• Play coding 24-month PCI videos (7 hours)</li> <li>• Reliability calculations and discussion (2 hour)</li> <li>• Data entry for 18-month PCI videos (30 minutes)</li> <li>• Lab meeting (30 minutes)</li> </ul>
5/20/19 – 5/24/19	<ul style="list-style-type: none"> <li>• Play coding 24-month PCI videos (7 hours)</li> <li>• Reliability calculations and discussion (2 hour)</li> <li>• Data entry for 18-month PCI videos (1 hour)</li> </ul>
5/27/19 – 5/31/19	<ul style="list-style-type: none"> <li>• Play coding 24- month PCI videos (7 hours)</li> <li>• Reliability calculations and discussion (2 hour)</li> <li>• Data entry for 18-month PCI videos (30 minutes)</li> <li>• Lab meeting (30 minutes)</li> </ul>
<b>June 2019</b>	Attend second UROP Undergraduate Research Education Series
6/3/19 – 6/7/19	<ul style="list-style-type: none"> <li>• Play coding 24 – month PCI videos (7.5 hours)</li> <li>• Reliability calculations and discussion (2 hours)</li> <li>• Data entry for 18/24 – month PCI videos (30 minutes)</li> </ul>
6/10/19 – 6/14/19	<ul style="list-style-type: none"> <li>• Play coding 24 – month PCI videos (7 hours)</li> <li>• Reliability calculations and discussion (2 hours)</li> <li>• Data entry for 18/24 – month PCI videos (30 minutes)</li> <li>• Lab meeting (30 minutes)</li> </ul>
6/17/19 – 6/21/19	<ul style="list-style-type: none"> <li>• Play coding 24 – month PCI videos (7 hours)</li> <li>• Reliability calculations and discussion (2 hours)</li> <li>• Data entry for 18/24– month PCI videos (1 hour)</li> </ul>
6/24/19 – 6/28/19	<ul style="list-style-type: none"> <li>• Play coding 24 - month PCI videos (7 hours)</li> <li>• Reliability calculations and discussion (2 hours)</li> <li>• Data entry for 18/24 – month PCI videos (30 minutes)</li> <li>• Lab meeting (30 minutes)</li> </ul>
<b>July 2019</b>	
7/1/19 – 7/5/19	<ul style="list-style-type: none"> <li>• Play coding 24 – month PCI videos (7.5 hours)</li> <li>• Reliability calculations and discussion (2 hours)</li> <li>• Data entry for 18/24 – month PCI videos (30 minutes)</li> </ul>
7/8/19 – 7/12/19	<ul style="list-style-type: none"> <li>• Play coding 24 – month PCI videos (5 hours)</li> <li>• Reliability calculations and discussion (2 hours)</li> <li>• Data entry for 18/24 – month PCI videos (2.5 hours)</li> <li>• Lab meeting (30 minutes)</li> </ul>
7/15/19 – 7/19/19	<ul style="list-style-type: none"> <li>• Play coding 24 – month PCI videos (5.5 hours)</li> <li>• Reliability calculations and discussion (2 hours)</li> <li>• Data entry and collection for 18/24 – month PCI videos (2.5 hours)</li> </ul>
7/22/19 – 7/26/19	<ul style="list-style-type: none"> <li>• Data entry, collection and working on drafting UROP Final Report (9.5 hours)</li> <li>• Lab meeting (30 minutes)</li> </ul>
7/29/19 – 8/2/19	<ul style="list-style-type: none"> <li>• Collection of Data, working/finalizing UROP Final Report (10 hours)</li> </ul>

Note. Mentoring activities, while not listed in this timeline, will occur consistently throughout the project.