

NSF Funds Study on Young Children's Mathematical Understanding

01/09/2023



A child's early ability to count, recognize symbols, and read numerals all predict later math achievement.

Backed by a grant from the National Science Foundation, associate professor Dr. Kerry Jordan of the Psychology department at Utah State University is researching how to help young children from diverse socioeconomic backgrounds enter school ready for math achievement.

A child's early ability to recognize symbols, read numerals, count, and discriminate among various quantities all predict later mathematics achievement. Dr. Jordan's research seeks to identify how to impact these early numerical abilities and to determine which students may benefit most from early learning experiences.

The study will use a series of computer-based laboratory experiments to determine whether providing preschool children with multisensory information about numbers improves their ability to construct accurate numerical representations. While playing a number matching game on a touchscreen, preschoolers will either see a number of items or hear a number of tones (unisensory experiences), or they will see and hear both (a multisensory experience). They will then be asked to identify the number of things they saw or heard by touching the numerically matching array of squares or written numeral. The study will also examine whether multisensory information influences children's ability to perform addition and subtraction.

A major focus of the study is whether multisensory input enhances numerical ability in preschoolers from diverse

socioeconomic status (SES) categories. The numerical performance of preschoolers with a lower SES often falls below that of their higher SES peers upon kindergarten entry. Helping these children achieve better numerical ability could positively impact their later mathematical achievement.

According to Jordan, the ultimate goal of her research is to provide more effective numerical learning experiences for all children prior to formal, school-based learning.

"In order to build a STEM-competent society," she said, "it is important that all children enter school ready for math achievement. My research team thus aims to help all children start kindergarten proficient in math."