Background color cues do not facilitate attention to AAC symbols by individuals with and without Down Syndrome

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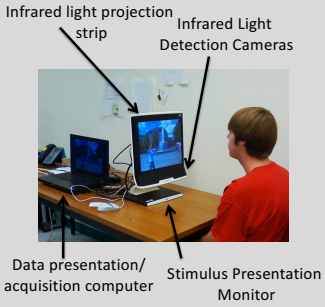
Goal of Research

This poster presents research on the use of background color of symbols on an Augmentative and Alternative Communication (AAC) display. Eye-tracking technology was used to evaluate whether color influenced visual search (where participants looked while searching for a symbol), by individuals with and without Down syndrome.

Grid-based AAC designs are a common display used for communication. Color has been proven to be an integral role in cognition and perception, and previous studies have shown that internal symbol color (a red apple) offers a cue when present during a visual search task.

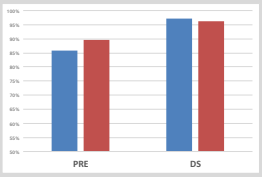


A visual search task can be used to answer questions about the perceptual processes that influence symbol selection. The task is presented on a Tobii T-60 monitor, which records their eye tracking data through infrared sensors. Data is collected and analyzed on a Dell laptop.

Single Symbol Selection Results

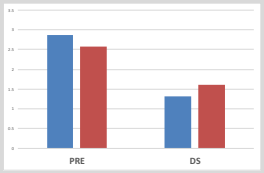
Accuracy

The background color cue did not influence accuracy of target selection in either the preschool children or the individuals children with Down syndrome.



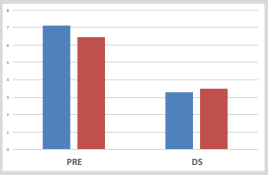
Latency to Fixate

Background color did not result in more rapid fixations on the target symbol in either group.

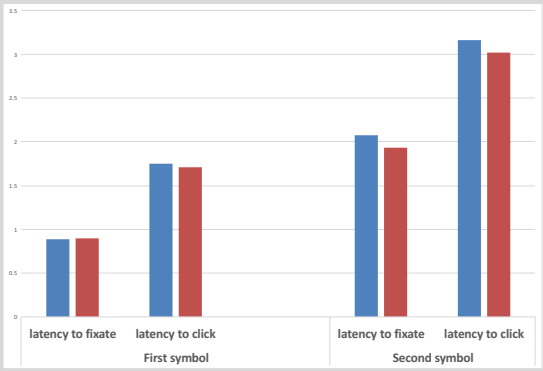


Latency to Click

Background color did not improve the time to mouse click on the target in either group.

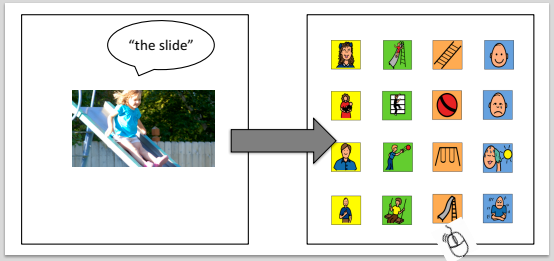


Multi Symbol Selection Results



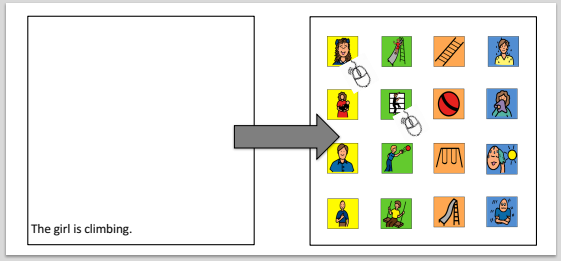
Background color did not influence either latency to fixation or latency to click either for the first symbol or the second symbol in multi-symbol message preparation.

Search for a Single Symbol



Task A picture is presented along with audio of the target symbol. Next, a grid is presented where participants find the target symbol an select with their mouse. On half the trials, there was background color cuing (pictured above). On the other half of the trials, the symbols were on white backgrounds. Participants were 12 children with Down syndrome and 12 typically developing preschool children, age-equivalent matched

Search for Two-Symbol Messages



A second study examined if background color helps in symbol selection for multi-symbol messages. Again, half of the trials included background color and the other half had white backgrounds.

Participants read a sentence and clicked on it to advance to the 16-symbol grid. Then they selected the two symbol that matched the message they just read. Participants were 40 college-aged students.

Discussion

Clinical Implications

Thistle & Wilkinson (2015) discovered from a survey of 112 SLPs, all participants use background color on AAC displays "sometimes". The findings of these studies reveal this variable has little impact on accuracy and efficiency of target symbol selection, in any of the samples studied.

Further Research

Ongoing studies are being done to research whether background color influences symbol selection in larger grid arrays. Ongoing research by Thistle suggests that color may assist in symbol selection in larger arrays for typically developing adults.

References

Thistle, J.J. & Wilkinson, K.M. (2015). Building evidence-based practice in AAC display design for young children: Current practices and future directions. Augmentative and Alternative Communication, 31(2), 124-136.