Television program comprehensibility and distractibility in 6 to 24 month olds

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Background

Distractibility during television viewing has been an important topic for those interested in children’s attention development. It has been hypothesized that extended looking during television viewing is controlled by a mechanism called “attentional inertia”. If attention is engaged by the television program, there is an increasing cognitive engagement that holds fixation toward the television for extended periods. The comprehensibility of the television program is an important determinant of whether cognitive engagement occurs. The present study examined the effect of the television program language comprehensibility in 6 to 24 month old children with a distraction procedure.

Methods

Participants:
Infants of English-speaking parents at ages 6-, 12-, 18-, or 24 months of age

Stimuli and Procedure:
Children viewed Sesame Street, “Follow that Bird” movie on center monitor. The language track of the movie was English, Spanish, or backward speech.

Distractors (computer generated patterns, or another “Sesame Street” movie) were presented on an adjacent TV screen at irregular intervals for 5 s.

Distraction probability was the dependent variable.

The independent variables were the type of language (English, Spanish, Backward), the age, and the length of the look at the time of distractor onset.

Results

Distraction and Stimulus, Age

The overall distraction percentages were similar across the four ages for the English and Spanish versions. The backward speech version showed similar levels to the English/Spanish versions for the youngest infants, but distraction probability steadily increased over the four testing ages.

Distraction and Look Length

Prior studies have shown an increasing lack of distractibility as the duration of the look preceding the stimulus increases, interpreted as showing increasing attention engagement. This pattern was true for the English and Spanish language versions but not for the backward speech version. The conditional probabilities showed some effect for the backward speech version.

Signal Detection Analysis

Signal detection analysis computes the sensitivity of the viewer to the peripheral target (d’) and the response bias (C, bias to response). This evaluates the influence of the stimulus, age, and prior look length on sensory and perceptual processes (d’) and on later decision and response processes (C). The only effect on sensitivity was for the first look duration time. The English and Spanish versions showed a increasing bias against responding (decreasing C) over the different look durations, whereas the backward speech was relatively uniform. The older two ages showed this effect most strongly.

Conclusions

(1) Distraction by a peripheral stimulus is a measure of the engagement with the central stimulus. The English and Spanish language versions of the Sesame Street movie resulted in equal patterns of distractibility, but there was an increase from 6- to 24 months in responses to backward speech—indicating an increasing differentiation between the forward- and backward versions.

(2) The effect of prior look duration on distraction is mediated by response rather than perceptual processes, i.e., the increasing attention engagement described by “attentional inertia” affects the decision to respond to peripheral information rather than central sensory or perceptual processes. The increasing sensitivity to forward and backward speech over this age is demonstrated by a lack of attentional inertia to backward speech.