Computers in Human Behavior: Five days at outdoor education camp without screens improves preteenskills with nonverbal emotion cues

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Abstract

- How does technological screen-time effect preteens' skills with nonverbal emotional cues?
  - Fifty-one preteens spent five days at an overnight nature camp
  - No television, computers, and mobile phone were allowed
  - Pre- and Post-tests were administered to participants to infer emotional states from photographs and videotaped scenes
- Short-term effects of increased opportunities for social interaction improves a preteen's understanding of nonverbal emotional cues

Introduction

- 8-18 year olds spend an average of over 7.5 hours a day using media.
- 12-17 year olds report texting as their most used form of communication.
- Nonverbal communication is defined as communication without words including facial expressions, eye contact, tone of voice, and posture.
- Current research concentrates on interactions such as imitation, gaze following, joint attention and word learning. These studies have shown children learn better from live interaction than from screens
- Research question: “Does children’s frequent screen use - and the possibility that this extensive use replaces critical face-to-face communication - promote the development of emotional understanding to the same extent as in-person interactions?”
- Hypothesis: The skill of recognizing emotions from nonverbal cues would increase in children in an environment without screens.

Methods

Participants:

- 6th graders from one public school in Southern California
    - Experimental group: 51 students from the Spring 2012 class
    - Control group: 54 students from the Fall 2012 class
    - Averaging 4.5 hours a day of texting, television, and playing video games

Design:

- The experimental group attended Pali Institute, an overnight camp exposing them to cabin living, hiking, team building, and science education.
- The experimental and control group were both given the pre-test Monday morning and the post-test Friday afternoon.

Methods

Measures:

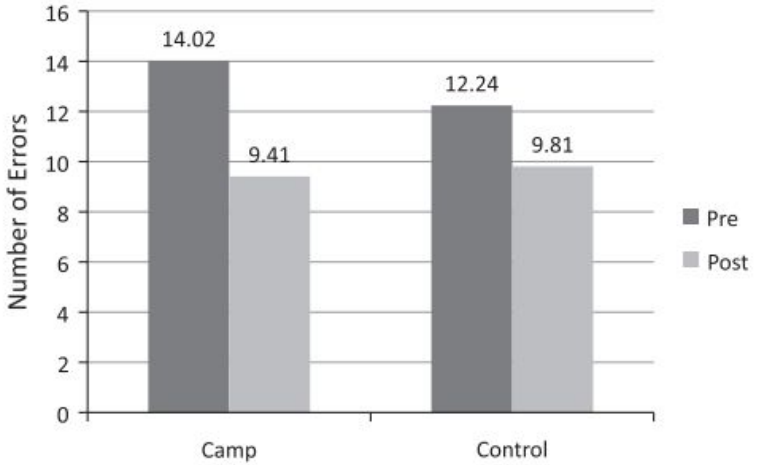
- A one-time media-use survey on computer, TV, video game, and cell phone use
- Face subtests of the second edition of the Diagnostic Analysis of Nonverbal Behavior (DANVA2): Subjects are shown 24 adult faces and 24 child faces expressing sad, happy, angry, and fearful expressions for 2 seconds in high and low intensity and then record the emotion.
- Child and Adolescent Social Perception Measure (CASP): 10 videos are shown without verbal content and the subjects make judgements of the emotions shown.
    - 5 videos were shown for the pre-test, 5 were shown during the post-test.
    - The CASP coding system scores 2 points for correct answers, 1 for partially correct, and 0 for incorrect. These scores were converted to percentages.

Analysis of Results

- DANVA 2
  - Scores were calculated by subtracting the pretest error scores by the posttest error scores
  - Ranged from -10 to 31
  - Positive numbers show error reduction
- CASP
  - Calculated by subtracting the total emotion percentage from the posttest by the total emotion percentage from the pretest
  - Ranged from -14% to 31%
  - Positive numbers show improvement in the total emotion percentage correct

Results

- Children that spent 5 days away from screens and engaged in face-to-face interactions with others improved significantly in reading facial emotion compared to the control group (DANVA 2)
- Experimental condition
  - Average of 14.02 errors in the Faces pretest
  - Average of 9.41 errors in the Faces posttest
  - Reduction of 4.61 errors
- Control group
  - Average of 12.24 errors in the Faces pretest
  - Average of 9.81 errors in the Faces posttest
  - Reduction of 2.43 errors
    - Attribute this change to a practice effect



Results

- A similar effect was found when using CASP (videotaped scenarios)
- There was a significantly greater ability to identify the emotion of actors correctly for those in the experimental condition than those in the control group
- Experimental Condition
  - Pretest: M = 26% correct
  - Posttest: M = 31% correct
  - Difference of 4% correct
- Control Group
  - Pretest: M = 28% correct
  - Posttest: M = 28% correct
  - No difference between results

Discussion

- The change in in-person interaction is responsible for the effect observed
- Evidence suggest that the increase of digital screen time reduces time used to develop skills for recognizing nonverbal cues of human emotion
  - There is a possibility that the effect is due to the nature activities throughout the study
  - An additional possibility suggests the group dynamic is responsible for the effect
- Further research is called for to determine the cause of the effect
- Findings are in line with
  - Developmental research
  - Neuroscience

References

- Uhls, Y. T., Michikyan, M., Morris, J., Garcia, D., Small, G. W., Zgourou, E., & Greenfield, P. M. (2014). Five days at outdoor education camp without screens improves preteen skills with nonverbal emotion cues. *Computers in Human Behavior, 39*, 387-392. doi:10.1016/j.chb.2014.05.036

- References used in the article had a variation of peer-reviewed articles, books and online journal sources such as Huffington Post.
- The article was published in 2014 and majority of articles included were within that decade. The oldest articles date back to 1988, 1995, 1991 and 1999
    - This indicates the information used throughout the article is relevant and current.

Ethics

- Study used living human subjects-
  - “a living individual about whom an investigator is conducting research: (i) Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or (ii) Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens.” (CITI Program)
  - Participants were preteens in sixth grade recruited from same public school in Southern California. This accounted for multiple demographic variables.
- If the study was federally funded or under an academic institution, the Common Rule- subpart D gives children additional protections
  - Parental consent likely collected
  - Minors likely provided “assent” rather than “consent.”

Ethics

- The Ethical Principles of the Belmont Report- Respect for persons, Justice and Beneficence- were followed
  - The school enrolled the whole sixth grade cohort to attend the outdoor educational camp; experimental group attended camp first & control group would attend later in Spring 2013. This ensured equality of the two groups.
- Type of IRB Review: Expedited
  - A limited group of IRB members will evaluate the study plan instead of the convened committee.
  - Qualifications: 1) No more than minimal risk was present throughout the field experiment. 2) Conducted work with a vulnerable population (children). 3) Potential for distress beyond what would be normal in everyday life.
  - UCLA's Institutional Review Board did approve this study.

Ethics

- Privacy
  - Some sensitive information such as age, race, gender, parents education was gathered
  - This information is called Indirect identifiers which does not directly identify the subjects however a combination of other data might reveal an individual's' identity.
- Deception
  - Not used