

The Relationship Between Emotional State and Doodle Complexity

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ABSTRACT

Do students' emotional states correlate with complexity of their doodles? Emotional state can interfere with students' ability to concentrate on course content; likewise it is thought that doodling can interfere with students' ability to concentrate on course content. To examine the potential relationship between emotional state and doodling, we administered surveys to five general education classes and collected students' doodles on their notes for that class session. Doodles were coded according to size, complexity, mood, theme, and content. The coded information from the doodles was correlated with students' survey responses. Based on research by Burkitt and Barnett (2006), we anticipated a correlation between doodle complexity and emotional state. Specifically, we expected a direct relationship between negativity of students' emotions and size and complexity of the doodles. We predicted that mood, theme (e.g., happy, sad), and content (e.g., positive, negative) portrayed in the doodles corresponded to students' moods identified in the survey. Results did not support the hypothesis; there was no relationship between mood and doodle score. Implications of this research for students' educational experiences and limitations of this study are explored.

INTRODUCTION

Doodles are a universal method of expression. They are normally more pronounced when an individual is bored and according to Burns (1990), each picture may mean something. As Burns stated, "even the most innocent doodle may carry messages from the unconscious" (p. 2). For example, trees are commonly-drawn as doodles. Trees represent growth and life. A full, leafy tree with a wide trunk suggests vitality, energy, and a strong will to live. Very narrow trees with leafless branches often appear in the drawings of older individuals that are also frail, indicating that their spirit, their will to live, may be waning.

Carl Jung, who pioneered the investigation of symbols as archetypal attributes of the collective unconscious, theorized that the universe projects itself symbolically to our unconscious minds, using imagery to transmit ideas that language cannot. Jung and Sigmund Freud are considered the founders of doodle-ology, which is the study of doodling.

Goldschmidt (2003) indicated that before the age of three children scribble and are unable to give any predetermined meaning to their scribbles: When meaning is attributed to their drawing it arises from properties of what the object is supposed to look like or objects that preoccupy the child. As children grow older they produce drawings that are pre-planned and have attached meaning. These drawings may be purely representational objects, but depending on the skill level of the child the drawings may depict favorable objects, which children draw repeatedly.

One reason adults draw is to simplify abstract concepts through the use of pictures, symbols, and patterns (Goldschmidt, 2003). The freehand doodling that occurs in the margins of class notes may help students understand abstract concepts discussed in class; it also could relieve the tension associated with learning difficult, abstract concepts. Spontaneous hand drawing of this type can reflect what the doodler may think or feel. And, if a certain emotion dominates a particular doodle or sketch, then the doodler experiences an outlet for the emotion.

There is some support for a relationship between mood and doodle content in the drawings of children. Burkitt and Barnett (2006) studied whether emotional state affects participants' drawings. The authors hypothesized that both brief and elaborate mood induction would affect the size and quality of the drawings done by small children ($n = 80$, mean age 6 years 1 month). Burkitt and Barnett found that brief mood inductions had a slight effect on the size of children's drawings. Working with an older juvenile sample (4- to 12-years of age), Jolley et al. (2004) compared groups of drawings from children who were directed to draw either happy or sad expressive pictures. Jolley et al. correlated expressionism and realism in the children's drawings and found a weak correlation between the two subjects.

Kapsch (2006) explored how intensive drama therapy affects the outcome of drawings produced by minors. Kapsch asked children to draw pictures of happy, sad and angry trees. Half of the students returned for a normal day of

classes (control group) while the other half participated in a 10-hour drama intervention. Kapsch hypothesized that children who participated in the drama group, as compared to the children in the control group, would create more vivid images and use a higher level of drawing strategies when both groups were asked to re-draw their original pictures. This hypothesis was supported by the results. Kapsch concluded that environment had an impact on the content of drawings. The current study measured the environment of the classroom, in so far as the course instructor affects the environment, in which the students made their doodles.

Given the subjective nature of interpreting doodles establishing *a priori*, a replicable coding method, is important. For example, Greenburg (2006) discussed content of presidential doodles. While the author admits that the content of presidential doodles act as a personal window into the lives of the various commanders-in-chief, he also attempted interpretation about the content of the doodles. However, Greenburg used no rating scale when assessing the doodles, which makes replication of his interpretations difficult. To facilitate replication, we used a doodle art coding sheet to measure the content of doodles for a comparative analysis. The rating scale was similar to that used by Jolley et al. (2004) and expanded upon the expressive content of the drawings for correlation with emotional state.

The purpose of this study was to examine the relationship between current emotional state and doodling done by students. Goldschmidt (2003) examined sketching in order to see how it helped to generate or strengthen understanding of abstract ideas. We examined sketches, or doodles, to see how mood related to the complexity or frequency of doodles. Students responded to questions about whether the student enjoyed the class and the professor and also answered questions that measured the students' degree of sadness, anger, and happiness at the time of creating the doodles. These findings were correlated with aspects of the doodles created by students during class. We hypothesized that present emotional state during class correlates with the doodles that are done during that class time.

METHOD

Participants

Forty-two students attending Capital University, a small Lutheran liberal arts college in Columbus, Ohio, who were enrolled in the 5 selected required general education courses, participated in this study. Students volunteered to participate in this study knowing they would not receive incentives. They were informed that their doodles may be included in the final presentation of this study. Approval to collect data from human participants was obtained from the university's Institutional Review Board.

Materials

One questionnaire was used in this study. This was created by combining *The Mood Assessment Scale* (Stanford University, n.d.) and select questions from the *Individual Development and Education Assessment* (IDEA Center, n.d.). The *Mood Assessment Scale* was used to gauge the student's current mood and the select questions from the IDEA provided information about the student's feelings about the class and instructor.

The doodles were captured using digital cameras and pictures were taken at the standard length of 20 inches away from the doodles using digital cameras. Doodles were coded using a doodle art coding sheet. The coding sheet contained eight features (i.e., space, realism, detail, pressure, shading, central theme, implied energy, and focus) that were rated on a scale from -1 to +1. Values for each feature were summed in order to obtain a single doodle score. The coding sheet was developed by the researchers for this study; before collecting data we established inter-rater reliability of the scale using example doodles drawn by college professors.

Procedure

Prior to entering the classrooms we obtained permission from the course instructors. We went into the classrooms during the last 15 minutes of class, at which time the class instructor left the room. Students listened to the consent script and read and signed the consent form if they were willing to participate. Students who consented to participate completed the questionnaire. The questionnaire contained an identification number. After students filled out the surveys they were asked to put the corresponding number in the upper right corner of each doodle page. We went to each student and collected digital pictures of their doodles along with completed consent forms and questionnaires.

After all data were collected we scored the doodles. These scores, along with the scores from the mood assessment and items from the IDEA were used for statistics analysis.

RESULTS

Results revealed no significant correlations among emotional state, complexity of doodles, and course ratings. The following results were obtained by Pearson's product moment correlation: Mood and IDEA score, $r(41) = -0.04$, N.S.; IDEA score and Doodle, $r(41) = -0.02$, N.S.; and Mood and Doodle, $r(41) = -0.07$, N.S. Thus, there is no support for our hypothesis.

A point biserial correlation revealed the following relationships between the dependent variables and participant sex: Sex and Mood, $r(41) = -0.09$, N.S.; Sex and Doodle, $r(41) = -0.10$, N.S.; and Sex and IDEA score, $r(41) = 0.35$, $p \leq .05$. There was a significant difference between men and women for enjoyment of the course, with women scoring higher than men.

DISCUSSION

We hypothesized that present emotional state during class correlates with the doodles that are done during that class time. However, our results did not support our hypothesis, which may be due to several limitations. One of the initial limitations was the small sample size ($n = 42$). While this sample size meets the assumptions of the statistical test, it also provided a narrower representation of the population than initially planned. In the future, planning to visit more classrooms earlier in the data-gathering period can lead to a larger sample size. Asking professors to include extra credit points or using another incentive may also increase the number of participants.

The lack of variety of classes represented was an important limitation. Preferably, the sample would have included a greater number of sophomore, junior and senior level general education classes, which would increase the generalizability of the results. Greater communication with university professors can add variety to the types of classes sampled.

Construction of and objectivity with the rating scale could have been an issue. Further research into available, published rating scales

that have established reliability and validity can alleviate this limitation. Using some open-ended questions would allow participants to explain their doodles, which could facilitate doodle coding and provide evidence of the validity of the scale used to code the data.

The questionnaire needs to be modified. Survey items were about general feeling questions, like how participants felt about life overall – it measured a mood as a trait, it did not measure current mood state. Our hypothesis focused on current mood state, not mood as a state variable. Thus, it is likely that the level at which mood was measured lead to the lack of support for our hypothesis. In addition, the assumption of a linear relationship between mood and doodle content needs to be tested. It is possible that as mood strength (as opposed to type of mood) increases then doodling will change. The mood measure used was about type of mood (i.e., happy or sad) and not how strong the happiness or sadness was. Further research could examine intensity of mood state as it relates to doodling.

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