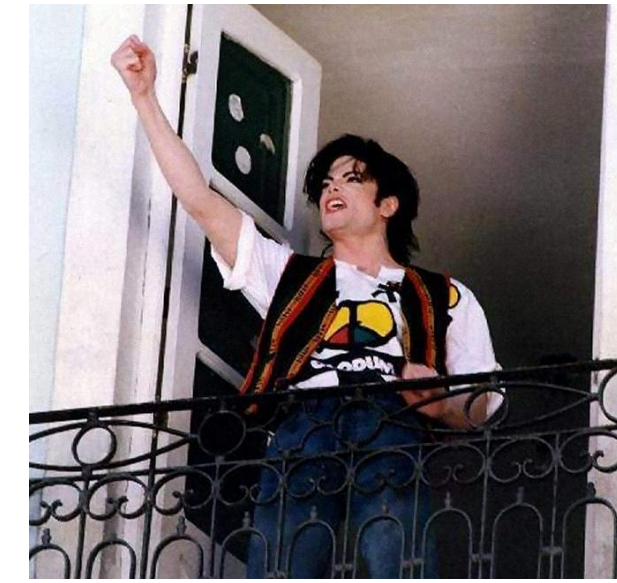


Remembering Michael Jackson: Effect of Clicker Feedback on Memory

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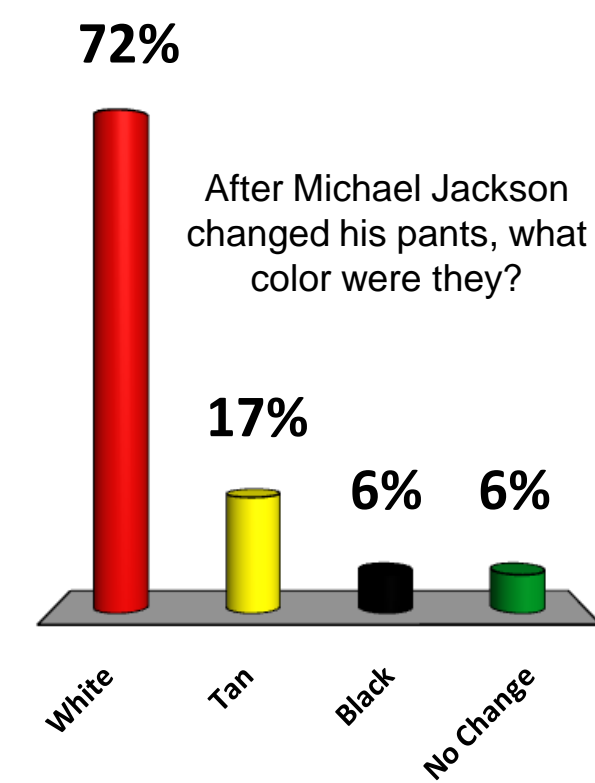


Abstract

Numerous studies have demonstrated the powerful effects of social pressure on conformity. We examined whether students changed their answers on a quiz when they perceived an obvious incorrect response was given by the majority. Participants responded to a memory test of a music video using clickers. Slides showing the responses provided immediate feedback with two slides containing false feedback. Participants were asked to retake the quiz due to an “error”. Results showed that participants conformed to the incorrect feedback. The implications of this study for clicker use in classrooms were discussed.



Numerous studies have demonstrated the powerful effects of social pressure on conformity. In particular, research has focused on the effect of social conformity and the ability to influence individuals’ memories. For example, Dalton and Daneman (2006) found that when participants viewed a media clip and discussed it afterwards with a confederate who presented misinformation, their memories of the clip changed. Further, Gabber, Memon, Allan and Wright (2004) found that misinformation provided socially, through discussion with another confederate, resulted in more memory errors than misinformation which came from a non-social source such as a written narrative.



Reysen (2005) showed that individuals conform to the expressed opinion of the perceived majority group in computerized interactions with virtual confederates. Because students experience the feedback responses provided by clicker technology as a representation of the responses of their peers (Hoekstra, 2008), these students identify with these results in much the same way as they would to the verbal opinions of the classroom community. Although anonymous, these virtual responses provide information from their peers in the same way a social interaction would. Trees and Jackson (2007) surveyed over 1500 undergraduates enrolled in several large ‘clicker courses’ and found that one of the main factors contributing to students’ positive evaluation of clickers was valuing feedback. Although students in ‘clicker courses’ are provided with immediate feedback on course material, if a large percentage of students click an incorrect response and that feedback slide pops up, it is possible that some students may remember the incorrect answer with the largest percentage rather than the correct one. In this way, misinformation could be implanted into memory and the added social pressure to conform might cause students to be uncertain whether their answer is indeed correct.



The present study seeks to determine whether the obvious incorrect response when perceived to be given by the majority of students through histogram visualization in the Turning Technologies system, will influence students to conform to the majority and change their answers when given the questions a second time. It was hypothesized that when students took a quiz for the second time they would respond using the incorrectly skewed answers that had previously appeared as the perceived majority response, rather than their original response.

Method

Participants

Participants consisted of 76 students (33 men and 42 women, 1 undisclosed, $M_{age} = 18$ years) attending a small liberal arts college in northern California. Ethnic make-up of participants included the following: 27 Caucasians (36%), 13 Latinos (17%), 10 Asians (13%), 10 Asian Americans (13%), 9 African Americans (12%), 3 Mixed Ethnicity (4%) and 1 Native American (1%).

Materials

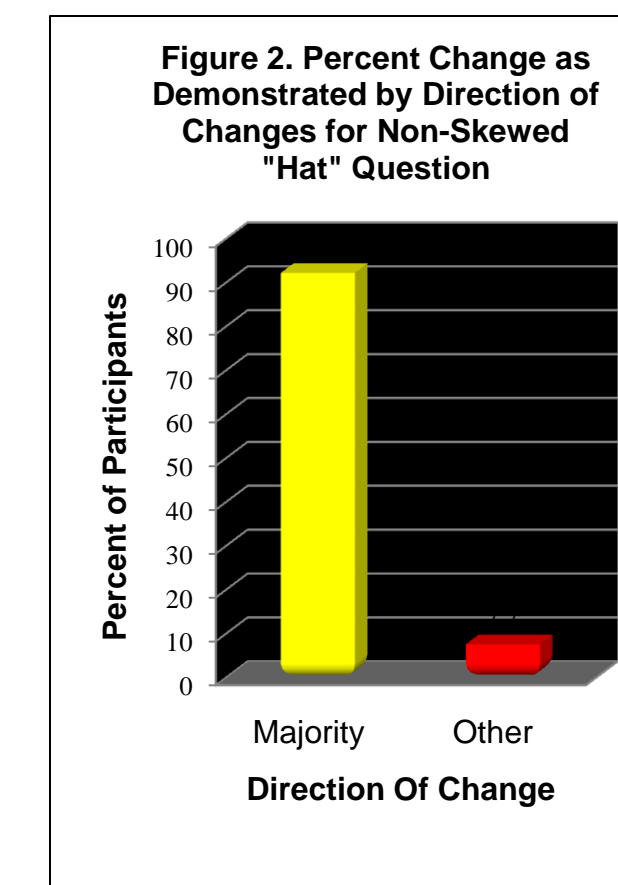
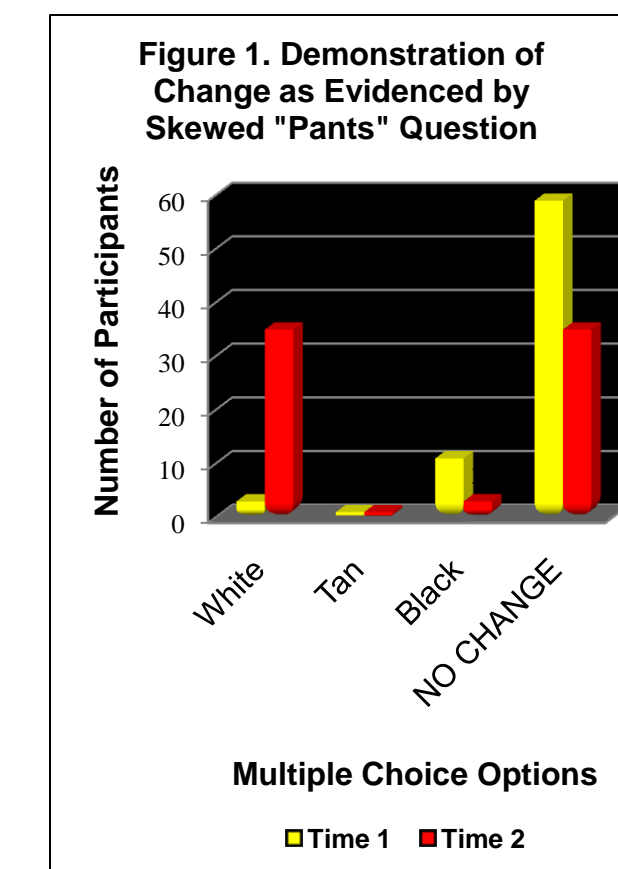
Two music video clips (no longer than 5 minutes in length) were used in this study. The first clip, Michael Jackson’s “They Don’t Care About Us” (2009, October 2), was shown to participants and used for a memory recall test. This music video depicted Michael Jackson with hundreds of extras performing in the streets of Brazil. The second clip, “This Too Shall Pass”, by OK Go (2010, March 1), was shown primarily to allow time to pass before the retest, and consisted of the four members of the band OK Go singing while an elaborate Rube Goldberg chain reaction occurred. TurningPoint Response clickers were used to take the test. The PowerPoint survey included: (1) participant demographic items, (2) memory recall questions over both video clips, and (3) falsely skewed results on two of the questions.

Procedure

Participants were shown the first video and then asked to answer ten recall questions. Immediate feedback was given in the form of a graph showing the percentage of votes that each choice elicited. For two of the questions, percentages were skewed to make it seem as though the majority of the participants voted for the incorrect answer. As a distraction mechanism, the second video was shown to participants and another series of recall questions soon followed. Upon completion, participants provided demographic information and were told that due to a technical problem the data for the first video had been lost and they would be required to input their answers again. This survey did not include skewed slides and all feedback polls were true reflections of participants’ answers.

Results

As hypothesized, when students were quizzed the second time on a question for which the feedback answers were incorrectly skewed, a significant change in their



responses was noted (Figure 1). A McNemar-Bowker test demonstrated that participants changed their response on time two from the correct response to the incorrect one based on the feedback prompt $\chi^2(3, N = 74) = 34.00, p < .001$. Further support of this change was demonstrated by One-Sample Chi Square $\chi^2(1, N = 34) = 26.47, p < .001$ and Binomial tests. A comparison of the direction of change revealed that changes to the majority responses were statistically more probable than changes to non-majority responses $2P(Y \geq 33 | N = 34, p = .5) < .01$ based on z approximation. Unexpectedly, the results from some of the non-skewed questions demonstrated a change in response as well. The results from the question “What color were the policemen’s hats?” revealed that participants changed their answers toward the majority response, $\chi^2(4, N = 68) = 13.00, p = 0.011$ (Figure 2).

Discussion

As predicted, for the skewed slide, students changed their initial response toward the response they believed to be presented by the majority even when it was obvious that this answer was incorrect. Peer influence affected the memories of students who were using clicker technology designed to allow anonymity of response and candid reporting. Despite the beneficial use of clicker technology, it is apparent from this study that memories can be contaminated by social influence after viewing peer responses, as seen by changes in responses even on non-skewed questions. Although students benefit from immediate feedback to help facilitate learning and memory in the classroom, the nature of the feedback should include emphasizing the correct answer especially when the majority response is incorrect.

Should this study be replicated, the skewed and non-skewed slides should be of equal difficulty. Additionally, implementing a set time of exposure for each slide would control for the possibility that participants were more influenced by results which they viewed longer.

Despite the limitations of this study, it is clear that the desire to conform and the power of influence can change the opinions and memories of individuals. Because conformity and social influence have been found to be pervasive in the classroom, students and teachers should be cautioned when utilizing clicker technology. Through immediate presentation of the correct answer these negative effects can be counteracted.