Genuine Smiles and Hand Mimicry:

A limited experiment

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Author Note:

John W. Lee is a first-year graduate student in the Master of Science in I/O Psychology program.

This paper is a requirement to conduct an experiment in which 10 smiles are conducted.

INTRODUCTION

Human interactions are made up of a complex exchange of information. Within short amounts of time, Human beings trade information at rapid rates. This information is often the source of future decisions. If we have positive interactions with other people at the onset of a conversation or social exchange, it is likely that we will be more cooperative friendly, and kind. Conversely, most people would agree that negative interactions at the onset of a social exchange will likely lead to less cooperativity, friendliness, or kindness. These cues help us determine a spectrum of decisions from safety, to sex. Heery and Crossley (2012) point to reciprocity of social interactions, and the likelihood that we often trade certain non-verbal information in similar fashions, where positive interactions or cues from the sender are answered with similar positive interactions or cues from the receiver. Specifically, smiles have been observed to show this effect. Through the manipulation of different forms of smiles, such as a genuine smile vs. a polite smile, the results often yield a matched genuine or polite smile from the receiver. This has been established by a number of researchers, and is alluded to in the study by Heery & Crossley (2012), who conducted research that found significance in the difference between polite and genuine smiles as they relate to mimicking responses. Wesselmann et al. (2011) found through social experimentation that smiling related to feelings of inclusion in a sample population of university students. Both of these studies regarding some of the impacts of smiling, as it relates to mimicked behavior, and intrinsic emotion, have taken one fundamental human behavior found in many social interactions, and developed support of it's relationship with other aspects of human behavior. Where Heery & Crossley (2012), and Wesselmann et a. (2011) limited their studies to the

reciprocity of a smile by a receiver, and the intrinsic impact of a smile on the receiver, Butler, Ward, and Ramsey (2016) take the research one step further by assessing smiling's impact on future mimicking behaviors in the receiver. Specifically the study found that perceived smiling from a message sender regulates imitation of other behaviors, like hand movement, in the receiver. Combining all of the above studies provides the basis to further explore the relationship between a quantifiably substantive smile, as determined by prior research, and the mimicking of other unrelated and un-affected behaviors as a possible measure of inclusive desire by the receiver. This short study hypothesizes that if a brief and spontaneous interaction is initiated with a genuine smile then a subsequent hand or body gesture will be mimicked during the exchange.

METHODS

The participants in this short study were cashiers from fast food restaurants who happened to be the servicing cashier when the researcher approached the counter. The study was not disclosed to the cashiers, nor was there any interaction with the cashiers beyond that required by the experiment, which was non-invasive, required no additional interactions by the cashier outside of a normal food sale transaction, it considered ethical impacts of non-disclosure and methods. 5 Restaurants were chosen, and they were each visited two times, over the course of three days. Times of day to visit each restaurant was randomly selected in order to reduce the probability of having the same participant twice in the study, and control for confounding effects of time of day. In order to randomly select times and dates to visit each restaurant, a list of possible times to visit each restaurant was developed, with a total of 10 visits over two days, at times ranging from 9am to 6pm. Each of the restaurants was assigned one number per visit, totaling 10

numbers. These numbers were then randomized using RAND in excel. (table 1) The chronological schedule containing 10 visit times, was then superimposed over the random list of 10 numbers representing 2 visits to each of the five restaurants. If the researcher entered the restaurant, and it appeared that a participant whom had already been involved in the study, the researcher left and came back at another time. No participants were replicated, a total of 10 participants (*N=10)* were observed, and the schedule developed through random assignment was upheld. No other confounding aspects of participants were controlled for, such as gender, race, age, etc. instead infusing randomization through the selection of time and day of visit.

PROCEDURE AND DESIGN

A single researcher carried out this experiment, myself a 5'10, 36 year old, Male with dark brown hair, green eyes, no corrective lenses or glasses, an athletic build, short haircut, and groomed appearance, of European, African, and Native American Decent, lacking regional dialect, and naturally speaking with mastery of English language, and knowledge of social norms, having a tan complexion, symmetrical face, no facial hair, and normally colored and arranged teeth, visible during a genuine smile. All interactions were carried out in casual clothes, consisting of a T-shirt, jeans, boots, no hat or head cover, piercings, wearing a silver watch, and a silver wedding ring on left ring finger. The weather throughout the experiment was mild and sunny, with a high of 76 and a low of 57, variable to light winds, and no forecasted or observed precipitation. When the experimenter approached the counter, he immediately displayed a genuine smile (Figure X) in the smile condition (*n=5)*, and a neutral expression in the neutral condition (*n=5)*. (Figure X). The smile was held for 3 seconds, as tracked by silent counting by the

experimenter. In both conditions, at 2 seconds into the smile, the experimenter then moved his right hand, and a natural pace over to his left shoulder, at which time he quickly pinched his shirt, with his right thumb and forefinger, without lifting it from his body, and began to tap with his right index finger on his left lower shoulder at a medium pace, easily described as a nervous tapping. At the completion of the 3rd second, the smile in the smile condition was ended, and a neutral to slightly positive expression remained. At a natural instant, the experimenter would begin to place his order, usually occurring at the completion of the smile, speaking only after index finger tapping had begun. Tapping would continue for up to 5 seconds, unless an observation was made before the 5 second time expired. Observations would be made beginning with the smile mimicry of the smile by the cashier, and the level of hand movement following the initiation of the right hand's movement from the right side of the experimenter's body to the left shoulder. Mimicry of the smile was defined as, cashier immediately smiled back following smile, or cashier did not smile back and that the cashier displayed similar movement of the hand or fingers immediately following the experimenter's gestures. The window of detection for all observable reactions was within 5 seconds of the initiation of the experimenter's smile and hand gesture, totaling a seven second total detection window from onset. Time was kept through repetition of the Smile, and initiation of the hand gesture at 2 seconds, and continued hand movement for 5 additional seconds using a timer set to alarm at 2 seconds and 7 seconds, by the experimenter in preparation to conducting the experiment. Approximately 21 successful practice attempts were conducted in the mirror by the experimenter within one hour of conducting each interaction. Immediately following the initial facial expression. Observations were made by quickly typing a brief description of

the cashiers actions into the experimenters cell phone after handing the cashier the credit card for payment. This allowed for better recall of the information observed. Descriptions were written into a android galaxy 9S smart phone utilizing the notes app, opened prior to initiating the observation. Notes were included at the top of the note regarding the condition of the experiment (smile or neutral) time of day, restaurant name, any additional information. The entry made following the observations, and during the transaction at the counter would simply state smile, movement. If no smile or no movement was recorded, null would be entered for the respective observation, resulting in a possibility of 2x2x2 outcomes, for smile, no smile, movement, no movement. Following the entire interaction, additional notes were added if necessary, and the note was then sent to the experimenters email. To help minimize the effects of experimenter influence of the results, these emails were sent immediately after being drafted, and were not opened again until all of the 10 interactions were successfully completed.

ANALYSIS METHOD

For both the control group and the experimental group, a score was assigned for both the Smile condition and the Movement Condition. If a smile was observed immediately following the polite or genuine smile, a score of 1 was assigned to the respective category, 1 for smile, 1 for movement. Conversely, if no smile or movement was observed, a score of 0 was assigned, 0 for no smile, 0 for no movement. Four mean scores were developed. One for Smile and one for movement in the Control, and One for smile and one for movement in the experimental group. Basic statistical analysis was then used to compare the experimental and control group by mean, standard deviation, and margin of error.

RESULTS

The results compared the mean, standard deviation, confidence interval, and margin of error for both the experimental and control groups. For the variable smile, both the control and the experimental results were null, with the exact same number of smiles in both experimental and control conditions. For movement, the Control group showed a mean of .6 (n=5), standard deviation of .5477, and a confidence interval of .015 at 95%. The margin of error for the control group was .490. The experimental group had a mean of .8(n=5), standard deviation of .4472, and a confidence interval of .013. The margin of error for the experimental group was .400. Using basic statistical analysis, an apparent difference exists between the control and experimental groups. Because of the extremely low sample size, a .2 difference is significant given at the .01 level.

DISCUSSION

The hypothesis is supported by these results, showing a significantly larger amount of movement following a genuine smile as opposed to a polite smile.

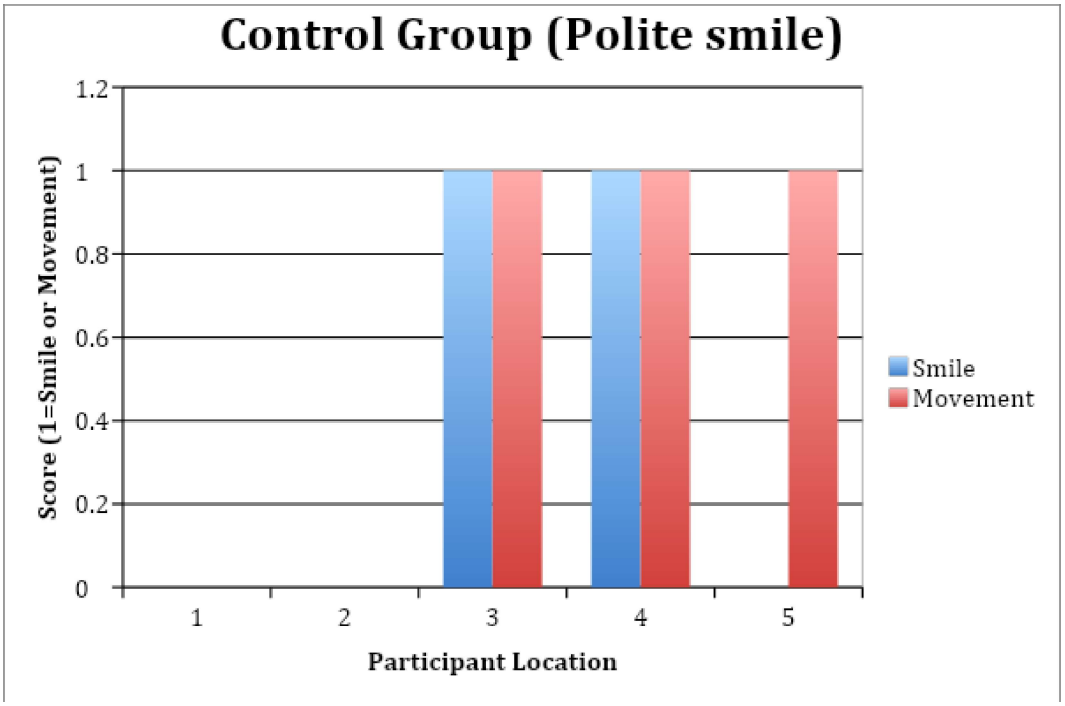
Control Group (Figure 1)

Column1	Null Group	Smile	Movement
1	Taco 1	0	0
2	Subway 1	0	0
3	Subway 2	1	1
4	starbucks 2	1	1
5	Mcdonalds 2	0	1

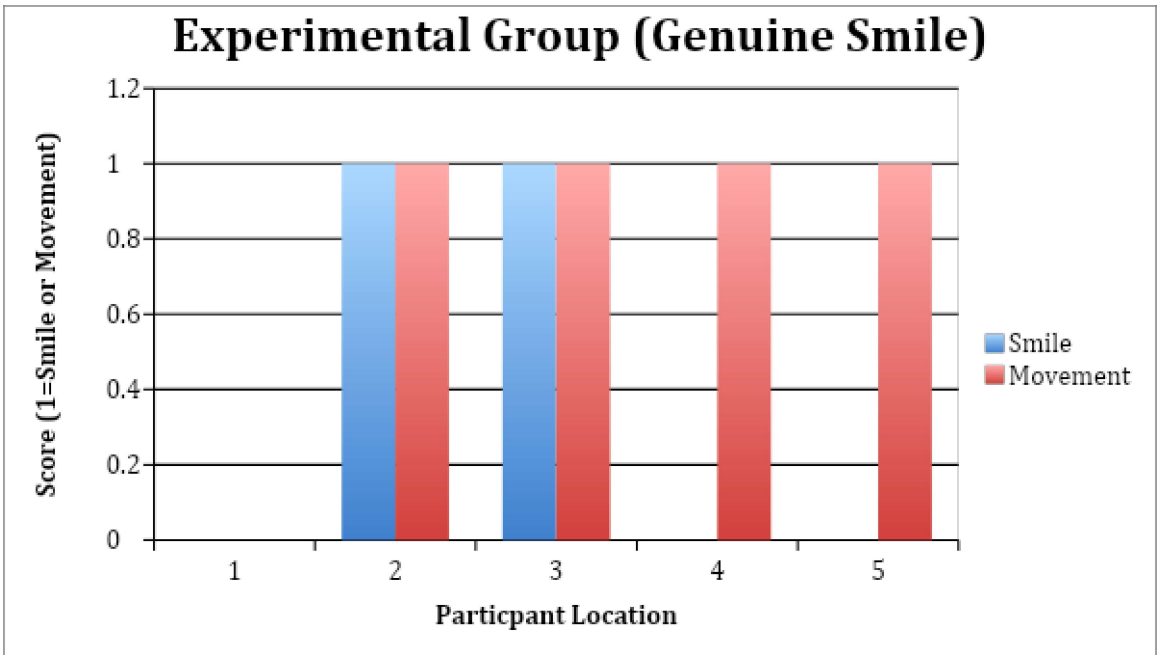
Experimental Group (Figure 2)

Column1	Experimental Group	Smile	Movement
1	Mcdonalds 1	0	0
2	Walmart Subway 1	1	1
3	Starbucks 1	1	1
4	Walmart Subway 2	0	1
5	Taco 2	0	1

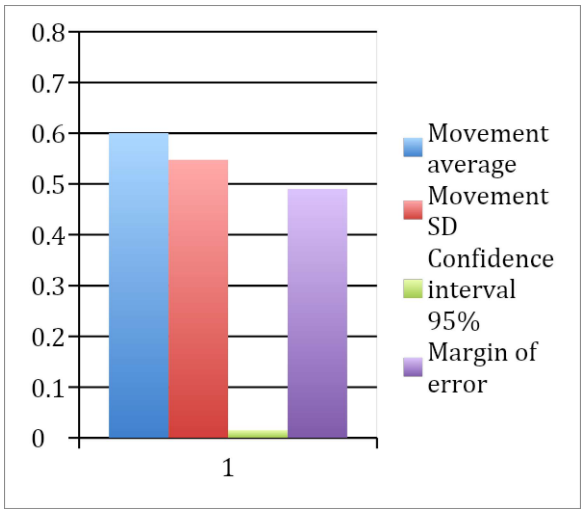
Control Group (Figure 3)



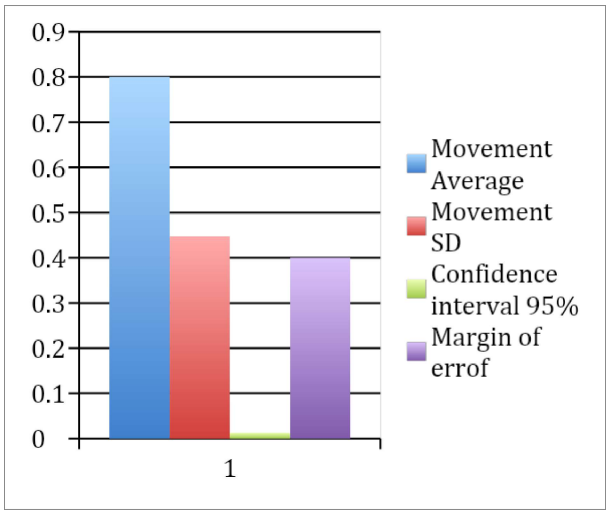
Experimental Group (Figure 4)



Control Stats (Figure 5)



Experimental Stats (Figure 6)



*Mimicry of initial smile results not displayed as results were null. Results above reflect mimicry of hand movement following either the polite smile (control condition) or genuine smile (experimental condition)

The significant difference in mean values, with larger hand mimicry in the genuine smile condition vs. the control aligns with previous research by Butler, Ward, and Ramsey (2016) in the mimicry of hand gestures, as well as shows support for the differences in smile types, between polite and genuine, found in the study by Heery and Crossley (2012). Due to the extremely low sample size, populations parameters are difficult to assume, as well as the resultant inferences to a larger population. When considering the population of relevance, this study chose to isolate one specific social interaction in order to control for the wide array of confounding variables present in most social interactions. By choosing a somewhat limited group of participants, in cashiers as fast food restaurants, this study has controlled for the type of social interaction being observed, cashier to customer. Although any conclusions regarding the effects of genuine smiles on hand or body mimicry would be limited to this specific social interaction, the amount of

eliminated confounds achieved in isolating one specific social interaction, should allow for broader generalization to larger populations, however this study does not begin that process, and recommends future research to determine the relationship. Replicating the above study, and expanding the sample size will likely lead to expanded understanding of the role of genuine smiles and their impact of social interactions. This study was limited to smiling at 10 people, no more no less, and in these constraints did not meet the required statistical sample size to achieve significant results. However, taken as an initial attempt to investigate the methods and results, this study provides support for the development of an expanded version of this design.

References

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