The Effects of Nonverbal Reinforcement on Questionnaire Responses

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The present study was designed to examine whether nonverbal reinforcement through nodding and smiling could alter or cause people to change their answers in an interviewed questionnaire. It also examined whether this effect would be stronger for males than females. The study involved twenty undergraduate university students attending Huron College at the University of Western Ontario. Ten were males and ten were female. The participants were interviewed with a questionnaire containing 25 yes or no answer questions related to study habits and attitudes towards school. For example, questions like "Do you feel you are generally a good student." Participants were also informed that the experimenter might be attempting to influence their answers. Each interview was administered to the participants individually. Results did not support the original hypothesis. There was no significant difference between the control and experimental group. Males were also not affected any more than females. Limitations as well as ideas for further research are discussed.

Reinforcers are present all around us in our everyday lives. They can give students incentives to work harder, they can help teach lessons to young children, or they can even do something as simple as make someone feel better about themselves. A reinforcer is defined as "A stimulus that strengthens behaviour if it is delivered after the behaviour occurs." (Mazur, 2006). There are a wide variety of environmental reinforcers which have been shown to influence behaviour. A number of influential researchers have put forward important theories related to these environmental factors. One example of such a researcher is Ivan Pavlov, who discovered the principles of classical conditioning. (Mazur, 2006). Classical conditioning is "the procedure of repeatedly pairing an initially neutral stimulus and an unconditioned stimulus, through which the conditioned stimulus develops the capacity to elicit conditioned responses." (Mazur, 2006). Classical
Effects of Nonverbal Reinforcement

Conditioning has shown that something as simple as a bell can soon come to elicit the same response to a dog as a piece of food would. This illustrates how one can perpetuate further behaviour by changing certain environmental factors.

Another influential figure was American Edward Thorndike, who discovered what he termed the “law of effect” (Mazur, 2006). This law states that responses that are closely followed by satisfying consequences become connected with the situation, and are more likely to recur when the situation is consequently encountered (Mazur, 2006). Thorndike was also the first to look at another type of conditioning known as operant conditioning, which he studied by observing cats trying to escape from home-made puzzle boxes (Throndike, 1898). When first constrained in the boxes, the cats took a long time to escape. With familiarity, unpromising responses occurred less frequently and successful responses occurred more habitually, allowing the cats to escape in less time. (Mazur, 2006) In his law of effect, Thorndike theorized that successful responses occurred more repeatedly. Unsuccessful responses, those producing negative consequences, occurred less repeatedly. (Mazur, 2006).

Skinner built upon Thorndike’s ideas to construct a more detailed theory of operant conditioning based on reinforcement, punishment, and extinction (Mazur, 2006). His theory deals with the adjustment of intentional behavior through the employment of rewards and penalties. Skinner classified four types of reinforcement and punishment. Positive reinforcement occurs when a behavior is followed by a rewarding stimulus.
Effects of Nonverbal Reinforcement

Negative reinforcement occurs when a behavior is followed by the subtraction of an aversive incentive, escalating that behavior's occurrence. An example of negative reinforcement would be an organism pressing a lever, upon which a loud noise is removed. Positive punishment occurs when a behavior is followed by an aversive incentive, such as introducing a shock, ensuing in a decrease in that behavior. Negative punishment occurs when a behavior is followed by the removal of a favorable stimulus, such as taking away a child's allowance, resulting in a diminishment in that behavior.

(Mazur, 2006)

How successful a reinforcer can be at modifying a reaction will depend on various factors. An example of this is how quickly a reinforcer/punisher occurs after a response, how immediately a consequence is felt can determine the efficiency of the outcome. (Mazur, 2006) More immediate feedback will be more effective than less immediate feedback (Mazur, 2006). Another factor is size. If the size, or amount, of the consequence is large enough to be worth the effort, the consequence will be more effective upon the behavior (Mazur, 2006).

Research has also shown that social reinforcers can alter behaviour. Albert Bandura a Canadian psychologist produced the idea of social learning theory (Mazur, 2006). He is famous for his bobo doll studies (Bandura, 1965), which showed that young children can learn certain behaviors from viewing them on TV, and will also imitate those actions to get a favorable outcome. Through his research Bandura established that there were four steps involved in the modeling process. The first step is attention,
Effects of Nonverbal Reinforcement

meaning that if you are going to learn anything, you have to be paying attention. (Mazur, 2006) The second is retention, which means you must be able to retain what you have paid attention to. (Mazur, 2006) There is then reproduction, meaning you have to translate the images or descriptions into actual behavior. The final step is motivation, meaning you’re not going to do anything unless you are motivated to imitate the behaviour or you have some reason for doing it (Mazur, 2006).

There have been a number of recent studies examining the topic of nonverbal reinforcement and its effect on response behaviors. Edinger and Patterson (1983) conducted a review of literature on nonverbal reinforcement such as the involvement of gaze, touch, and leaning in the interactive function of social control. This article defined social control as “attempting to influence or change the behaviour of another person”. (Edinger & Patterson, 1983). The paper attempted to review and analyze the link between various social control processes and nonverbal involvement. Some specific social processes in this article that are addressed are persuasion, reinforcement and deception. The article discussed a study done by Mehrabian and Williams (1969) which videotaped subjects as they presented three communications, with different degrees of intended persuasiveness. Across two experiments, judge’s perceptions of persuasiveness were correlated with speech volume, speech rate, facial activity, and eye contact. In a third experiment, videotaped recordings of a communicators nonverbal behaviour were presented to subjects who were asked to judge the degree to which they found each
Effects of Nonverbal Reinforcement

communication convincing. The overall findings of this experiment showed that a communicator's activity increases with her/his intention to persuade, and that the perceived persuasiveness of a message is correlated with the level of activity exhibited nonverbally by the communicator. (Edinger & Patterson, 1983) When it comes to the social control of reinforcement and feedback, this article looked at many studies including one by Washburn and Hakel (1973), where they found the effect of interviewer "enthusiasm" on observer perceptions of job applicant performance. A high level of interviewer enthusiasm was found to result in higher overall applicant performance, as judged by individuals observing videotapes of two simulated interviews. (Edinger & Patterson, 1983) This finding is interesting, because it shows that something as small as the interviewers enthusiasm level may alter the behaviour of individuals being interviewed. It can be reasonably assumed that interviewer enthusiasm also had an influence on the interviewees' responses. So, nonverbal reinforcement of responses has been shown to be influential in a wide variety of situations. Increased eye contact, smiling, and positive head nod appear to be most effective reinforcers (Edinger & Patterson, 1983). The results of the all the studies on reinforcement in this article suggest that positive nonverbal reinforcement results in improved learning and test performance and improved applicant performance in employee interviews (Edinger & Patterson, 1983).

A further experiment on nonverbal and verbal reinforcement by Lee and colleagues (1979), examined the effect of client reinforcement on counselor behaviour within an interview, as well as the way the counselors judged the client based on that
Effects of Nonverbal Reinforcement

Behaviour post interview. The study took thirty counselor-trainees recruited from an introductory counseling class at the University of Western Ontario. They ranged from 22-32 years of age. Following a 10-minute baseline period, the client reinforced the counselor’s reflection of feeling statements with a verbal response, a verbal plus nonverbal response or lastly a non-contingent verbal plus nonverbal response. Some of the nonverbal reinforcers were head nods, trunk leans and eye contact and verbal were words like “yea” and “mmhmm” (Lee et al., 1979). Counselors then completed a post interview questionnaire pertaining to attractiveness and the impression they have of the client they just spoke with. The results showed that counselors in verbal and verbal plus nonverbal conditions showed significant increases in RF statements while non-contingent controls showed no significant gains and differences in attraction to client were minimal. RF statements are counselor’s reflections of feeling. Any comment that seems like the counselor is reflecting an emotional fashion (Lee et al., 1979). This study showed that in the control group where no reinforcement is given, minimal change can be expected. However reinforcement of certain statements can affect another persons’ verbal behaviour, and opinions (Lee et al., 1979)

Another study by Wickes (1956) examined the effects of tactless verbal comments and nonverbal actions on test results on a projective test. The findings of the study suggest that such comments as 'good' or 'fine' and such actions as smiling and nodding by examiners have a decided effect upon test results. (Wickes, 1956). Thus it
Effects of Nonverbal Reinforcement

was indicated that examiners should be alert to the fact that even under presumably 'standardized' conditions, it is possible for their behavior to be reflected in test results (Wickes, 1956). The two hypotheses tested were that test results would be significantly modified by the perfunctory, verbal comments “good”, “fine” and “all right”. The second hypothesis was that nonverbal actions such as smiling and nodding the head, and leaning forward in the chair would be effective. (Wickes, 1956). Thirty-six male students ranging in age from 18-23 years of age were used in the study. These students were enrolled in introductory psychology classes at Purdue University. Test results in the experiments were defined as (M) movement responses. So, the subjects were presented with a set of 30 inkblot cards made by Wilkes and asked about them. For the first 15 cards the experimenter did not make any responses. However, for the last 15 in each experimental group movement responses were reinforced. In the first group with verbal communication the examiner made a comment after every motor response. The first comment was “fine”, the second was “good” and the third was “all right” (Wickes, 1956). In that same order after every motor response. No other comment was made and the examiner controlled his body movements except for tendering the card, recording the response and receiving each card. In another group of participants received nonverbal reinforcement. The experimenter modified his behaviour after every response judged to be a motor response. After the first motor response the examiner nodded his head three times, after the next one he smiled, and the third one he leaned forward in his chair (Wickes, 1956). These behaviour changes were repeated in that order after each motor response throughout the remainder of the series. In the control group, all 30 cards were
Effects of Nonverbal Reinforcement

presented in a manner that was nearly identical. The findings of this study suggest that such comments as “good” and “fine” and such actions as smiling and nodding by examiners have a decided effect upon the test results. (Wickes, 1956). The results indicated there was no change in the control and there were significant increases in motor responses in the experimental groups for the last 15 cards presented to the subjects. In this study, nonverbal reinforcement was enough to elicit an increase in the desired responses. (Wickes, 1956).

With these studies in mind one can notice a very distinct pattern. Nonverbal and verbal reinforcement in situations like interviews and questionnaires have a strong impact on the interviewee, and even if presented subtly can produce many different responses behaviors. The hypothesis of this study is that nonverbal reinforcement through nodding and smiling for certain answers will alter or cause people to change their answers to receive more favorable recognition. Furthermore, it is believed that this effect will be stronger for males than females, because the interviewer is a female.

Participants

Twenty undergraduate university students attending Huron College at the University of Western Ontario were used in the study. Ten were males and ten were female. Students were recruited in the Huron College food court and the Huron College student activities center, during school hours by the experimenter. Although age was not measured it can be assumed that participants in this study were undergraduate students.
Effects of Nonverbal Reinforcement

that they would fall in the range of 17-25 years of age. It can also be safely assumed that they would be of relatively high socio-economic status.

Materials

A questionnaire on studying behaviour was used for the purposes of this study. The questionnaire contained twenty-five yes or no answer questions related to study habits and attitudes towards school. To see the full questionnaire, refer to appendix 1. Each participant was given a standard consent form, informing them that they would take part in a 10-minute study. The consent form indicated that the study was testing whether students are generally happy with their personal study behaviors. The consent form also informed participants that they could withdraw from participating at anytime they chose. Participants were also informed that the experimenter might be attempting to influence their answers. A debriefing form was also used which outlined the goals of the study and provided the experimenters contact information should the participant have any questions.

Procedure

Each participant was approached in either the Huron Cafeteria or The Huron Activities Center by the experimenter. Potential participants were asked whether they would be willing to take part in a short interviewed questionnaire for a research project for a psychology course. If they agreed to participate they were given a copy of the consent form and asked to read and sign it. Before beginning the questionnaire students were told that they could withdraw from this study at anytime if they felt uncomfortable.
Effects of Nonverbal Reinforcement

After reading and signing the consent form the experimenter then asked the participant the 25 questions related to study habits and attitudes towards school. For half the males and half the females anytime they answered “yes” the experimenter would offer a Nonverbal reinforcement by smiling and nodding at the participant. The other half of the participants were asked the same questions with no reinforcement being offered for any answer. After participants were asked the 25 questions they were given the debriefing form. The experimenter was also available to answer any questions the participants might have had about the study.

Results

A 2 X 2 between subjects ANOVA was carried out to see whether there was a main effect of reinforcement condition or gender, on questionnaire scores. Scores were also analyzed for an interaction effect. Results in all 4 conditions can be found graphed in Figure I. No main effect of reinforcement condition was found, the over-all mean for the reinforcement group was (M=12.4), and for the control group was (M=14.4), which did not differ significantly (F (1, 3) =1.937, n.s.). No main effect of sex was found, the over-all mean for males was (M=13.1), and for females was (M=13.7), which did not differ significantly (F(1, 3)=.174, n.s.). There was also no interaction effect, (F(1, 3)=.174, n.s.).

Discussion

The hypothesis of this study was that nonverbal reinforcement through nodding and smiling for certain answers would alter or cause people to change their answers to receive more favorable recognition. Furthermore, it was believed that this effect would
Figure 1. Questionnaire Scores for males and females with and without reinforcement
Effects of Nonverbal Reinforcement

be stronger for males than females, because the interviewer was a female. However, there were no significant effects, so the hypothesis wasn’t supported. The difference between the relevant group means was statistically insignificant. This study was interesting in that it did not find any of the results expected. In fact, the girls seemed to be effected more by nonverbal reinforcement then the boys and the control group which had no reinforcement at all had a higher group mean then the reinforcement group. It is possible that extraneous variables such as noise, lights, and smells may have played a role in altering participant’s attention to the interviewer’s actions.

In relation to the Lee et al. (1979), study which examined the effect of client reinforcement on counselor behaviour within an interview, as well as the way the counselors judged the client based on that behaviour post interview. This study was different because it was the interviewer deceiving the participant, and not the other way around. Another difference was the timing. In addition; this study did not have a rating scale where the participant rated the interviewer. These differences may account for why the outcomes of the two studies were so different from one another.

There are many limitations when it comes to looking at this study. The first is the sample of participants. There is no real sense of the nature of the sample. The sample was collected randomly so this means a wider range of people who are not necessarily representative of an adequate sample group may not have been represented. There were also vulnerabilities for the participants to lie or to not take the testing process seriously. For example, not answering the questions in accordance to how they really are as students. Another limitation is concentration levels. It is hard to tell whether or not the
Effects of Nonverbal Reinforcement

Participants were paying proper attention to the reinforcement. Some students had leeway to look down or look away. The interviewer did not actually force the participant to look at them during the testing process so it is hard to known whether the participants even knew they were receiving the reinforcement. A further important limitation was the fact that the interviewee’s were warned before the interview that they might be deceived. This may have made it more difficult for the interviewer’s reinforcement to have an influence on the participants, as they may have been awaiting deception of some kind.

The control in this study was very weak. The fact that it was administered in busy environments made the testing process very difficult. For example, the environment could have been too noisy or the lighting could have been too weak for the interviewee’s to pay attention to the reinforcement they were receiving. It is hard to have good control when recruiting people that one does not know, because you need to step into busy environments to make things at ease for the person being tested. Another thing could have been the time of day, whether or not the test was administered in the daytime or night and how much sleep the person had the night before, may have affected their ability to concentrate. There also may not have been enough interviews held for each group. So, environment, amount of sample, time of day, lighting etc. could all be the cause of insignificant results.

The forms of measurement were a twenty point measure scale for the questionnaire on study habits. Each participants scores were added by one point for each question they answered “yes” whether they were in the reinforced group or not. The scoring is not extremely reliable. However, scoring like this has been done consistently
Effects of Nonverbal Reinforcement

across Psychology literature. There was no overt effort to evaluate ways of measuring validity. However, the validity of the study was that we are measuring nonverbal reinforcement in

an interview situation. In addition, there were direct questions when it came to study habits and these kinds of questions are known to be reasonably valid

There are many improvements that can be done to this study. The first enhancement to this study could be increasing the size of the sample. There was not a sufficient amount of data and there was too small of a limit on who the test was being given to. Although, the range in this present study could have been wide enough, it is always safer to know exactly who is involved to make sure the sample is representative of the population one is interested in. It may have therefore been better to define the population that the study wanted to examine, before collecting the sample. A second possible way to alter the test could be, to not warn the participants about the deception being used, and see if the information made a huge difference on the results. Another augmentation could be shifting the time of the day, because maybe late afternoon the students have become restless and do not have full concentration levels up. Lastly, changing the control and making all the participants take the study alone in a room with just the tester, could help achieve full concentration and better focus, which may improve the results.

Even though this study had negative results, the idea of nonverbal reinforcement's effect, could be further applied, most significantly, in education. It can show which
Effects of Nonverbal Reinforcement

students are able to pick up on nonverbal cues from their teachers and which students tend to miss them. Students who are able to pick up cues probably pay attention in class more and have higher attention levels. This study was unable to show if the effects of nonverbal reinforcement would affect the participant’s answers on the questionnaire. However, it does relate in the sense that the participants that did pick up on nonverbal cues have good concentration levels, even in environments that are busy. In this case of this study, the Student Activities Center and the Cafeteria are very busy environments to concentrate in. This suggests that in class room setting’s these type of individuals do not let other students distract them, and they are able to fully concentrate and catch all clues that the teacher gives them.

Future studies could build on this study to achieve significant results. A study could be done testing people on first dates. The two daters can go out together for a meal and then the next day rate eachother on how much the other person is on attractiveness, intelligence and patience. You then can ask them if the other person used certain nonverbal behaviors like nodding and smiling. If there is a correlation between the level of attractiveness, intelligence and patience and to the amount of nonverbal behaviors then it can show the effectiveness of nonverbal reinforcement in dating. This is similar to this study because it shows how males and females react differently to nonverbal reinforcement and how some reinforcement works in certain situations and doesn’t in others. Thus, if nonverbal reinforcement does not work in certain environments it might be able to work in a dating situation.
Effects of Nonverbal Reinforcement

questionnaires do not necessarily work if the participant is unable to pick up on the reinforcement in certain environments and with certain interviewers. A second implication is that female interviewers do not necessarily have a bigger affect on male participants then female participant's. This suggests that it might be that society tends to think that males and females are easily distracted by the opposite sex when in fact it could be the opposite.

Overall, the study was able to give way to some helpful insights. However, measures need to be taken in order to obtain significant results and to correct the inaccuracy of the results pertaining to nonverbal reinforcement affects on people in interview situations.
References

*Psychological Bulletin, 93*, 30-56


References


