

The Functions of Observational Learning in the Learning Processes

--Take Two Experiments of Modeling Learning as Examples

Xu Humeijia^{1,*}

¹*Zhejiang International Studies University, Hangzhou, Zhejiang 310023, China*

**Corresponding author. Email: XHMJANITA@163.com*

ABSTRACT

With the increasing demand of high quality education and stress of students from the more and more competitive learning environment, it is significant to figure out the effective and efficient ways of how to learn. This paper contains perspectives of various scholars about observational learning and several relevant experiments which are conducted by researchers for analysis. The research displays that how students learn through imitation efficiently and functions and positive outcomes of observational learning. Learning through imitation focuses on processes of observational learning, being extended from Social Learning Theory which is proposed by Bandura. In addition, this paper illustrates several conceptions in modeling learning, including Reinforcement, Response Consequences, and four component processes of observational learning. After analysis of theory of observational learning, several practical suggestion will be put forward in this paper from aspects of learners and teachers in order to assist learners to learn more efficiently and teachers to find the best way to help their students in learning.

Keywords: *Modeling, Reinforcement, Social Learning Theory, Observational learning, Imitation*

1. BACKGROUND

Apart from Elementary Reflexes, Human must learn repertoires of behavior which are not innate in order to learn new knowledge, and these can be possessed by direct experience or through observing and be influenced by physiological factors [1]. For instance, when children are born, they have a set of fundamental sounds which are inherent before they eventually manage to learn the methods of how to combine these into a great variety words and sentences. In addition, the way of the combination of these simple words into complete and complicated sentences is acquired by imitation. As a result, from this we can realize that figuring out the imitation process is extremely essential for human beings to learn new things efficiently.

People learn through observation of behavior from others and it is also called observational learning. Through repetition, people can reinforcement their new skills or knowledge which are learned by imitation. In addition, through the process of reinforcement, people will select the successful forms of behavior and discard

ineffectual ones and, at the same time, responses are shaped unconsciously by their instant consequences which have three functions [1]. Firstly, Informative function. When people observe the different outcomes of their behavior which serve as a guide for future actions, they will development hypothesis about which responses are most proper. Secondly, Motivational function. Humans are motivated to behave appropriately through their anticipatory capacities by the valued benefits, brought by the prospective consequences and expectations of certain actions. Thirdly, Reinforcement function. As long as people are aware of the reinforcement contingency, reinforcing consequences are ineffective in modifying behavior. In addition, it serves as a significant role of contributing to regulate behaviors that have already been understood by observers. And whether the new behaviors or activates which were partially acquired through observing have already been created by reinforcement or not is difficult to determine, since the occurrence of reinforcement influences is related with numerous behavioral examples to drawn up [1]. As a result of these functions, we need to know the

feasible and practical method of how to render responses consequences positive and how to make it functions well.

With the improvement of the standard of employment and the requirement of the learning skills, people are forced to behave well and learn more effectively from their school time. For instance, many schools have already required teachers to attend some lectures or meetings in order to enhance the awareness of the importance of observational learning in the teaching process. At the same time, teachers need to help students to learn by observational in a more effective way with consciousness. Therefore, modeling is crucial and imitation is essential for students in the learning process.

Based on the importance of imitation. This paper will study the concrete process of imitation and analysis the effects and functions of the observational learning. In addition, data and researches which are collected in the website will be used to support the functions of observational learning.

2. LITERATURE REVIEW

In Social learning theory, imitation is a fundamental and essential procedure in the observational learning. Social learning theory is a theory of learning process and social behavior which signifies that people can learn new behavior through observing and mimicking others [1]. Different scholars have already issued their own perspective of observational learning. Bandura supposes that human beings can learn through observation of other's actions and the outcomes of the behavior and observational learning can be a rather effective learning process which contains four crucial elements: paying attention, retaining information or impressions, producing behaviors, and being motivated to repeat the behaviors [1]. Attention includes selective attention which means accurate cues and information and continuous attention which means staying concentrated. And retention can be enhanced through mental rehearsal or through actual practice [1]. For example, generally, people have to memorize each step aiming at mimicking the behavior of a model and a great deal of feedback, training, and instructing about subtle points are required to render the behavior more expert and smoother on production. Motivation and reinforcement can be incentives to maintain the perseverance and persistence in the learning process [1].

In learning process, reinforcement as an incentive, it makes a big difference in the observational learning, but mainly as an antecedent instead of a consequent effect and the difference between the theory of modeling is mainly to strengthen the way that influences observation learning, rather than whether it plays a role in acquisition process [1]. When responses corresponding to the behavior of model are positively enhanced, the behavior of others serves as a clue for matching reactions [1]. And

it may be vicarious reinforcement rather than be direct and the self-reinforcement is the final form of reinforcement which is fundamental for both teacher and student. In addition, since the things that people attend to can be influenced by factors other than response consequences, reinforcement is regarded as a facilitative instead of a necessary condition. In addition, Bandura thinks that instead of serving as a mechanical response strengthener, reinforcement serves mainly as an informative and motivational operation. Bandura also believes that though reinforcement provides an efficient method to regulate behaviors that have already been learned, it is still relatively inefficient to create them. Since the occurrence of reinforcement influences is related with numerous behavioral instances that can be used for reference, it is hard to figure out whether reinforcement creates the new behavior or activates what was already partially learned through observing [1].

With this process of reinforcement, people tend to select the successful forms of behavior and discard ineffectual ones and during this process, responses are shaped unconsciously by their instant consequences [1]. Responses consequences have three functions which are informative function, motivational function, and reinforcement function [1]. Firstly, informative function manifests that people develop hypothesis about which responses are most proper in which settings by observing the different outcomes of their actions which serve as a guide for future actions [1]. Secondly, motivational function displays that prospective consequences and expectations that certain actions can bring valued benefits motivate humans to behave appropriately through their anticipatory capacities [1]. Thirdly, reinforcement function illustrate that reinforcing consequences are effective in modifying behavior as people are aware of the reinforcement contingency [2].

Several scientists have their assumption of the roles of imitative responses. For example, from the perspective of Piaget, only when the model repeats the children's immediate reactions can these reactions be aroused in children, and they can't imitate the good reactions that they haven't had before [4]. Kaye hypothesized that infants can acquire new skills through observation and transfer them to different fields. According to the reinforcement oriented-theory, in order to learn, matching must strengthen the response [11].

In observational learning, different species have different responses by modeling through symbolic processes. With regard to this, the role of symbolic processes is evaluated by comparative studies, using different species in various studies can have suggestive value. For instance, lower species can learn simple behavior through modeling while higher species can attain complicated sequences of responses by watching without performing them [1]. In addition, behavior is

learned symbolically through central response information processes before it is performed [1] .

After referring to those factors that play crucial roles in observational learning, the functions of it should be emphasized as well. In order to demonstrate the practical functions of observational learning, people have done several experiments. For example, Taylor has done a research on improving narrative writing skills through observation among Swedish fifth graders. And the results illustrate that the average discourse quality has been significantly improved, which is moderated by reading and language comprehension [5] . In addition, in China, Ma Fengling with several scholars have done an experiment of 5-year-old children about whether the honesty of children can be promoted by requiring them to observe the display of honest behavior of their peers. The results demonstrate that their behavior can be guided by young children's observations of the social consequences resulted from others' behavior [6] .

Through discussing the factors and functions of observational learning, it is significant to figure out how modeled events transform into matching performances. According to Bandura this transformation can be achieved through four processes which are attentional process, retention process, motor reproduction processes, and motivational processes, governing observational learning. Firstly, attentional processes mean that people can learn much by observation when they attend to learn and perceive accurately the essential features of modeled behavior [1]. In addition, there are various attentional determinants and the mainly essential one is associational patterns [1]. Secondly, with regard to retention processes, when people do not remember the modeled behavior, they cannot be much effected by observation. Therefore, in order to make people profit from the behavior of models, the response patterns must be represented in memory in symbolic form [1]. And it has two types of symbolic form which are imaginal and verbal in the representational system. And after modeled activities have been transformed into images and verbal symbols, these memory codes can be guides for performance [1] . In addition to these two types, Bandura thinks that rehearsal can also assist people to memorize modeled behavior. Thirdly, the another essential component of modeling is motor reproduction processes which involves transforming symbolic representations into appropriate behavior. In order to achieve behavioral reproduction, people are required to organize their response spatially in accordance with the modeled pattern. In addition, for purposes of analysis, behavioral enactment can be divided into cognitive organization of responses, their initiation, monitoring, and refinement on the basis of informative feedback [1]. Fourthly, the last component of modeling is motivational processes which means that the observed consequences can be the incentive for people to adopt modeled behavior. In addition, due to observational learning is influenced by

numerous factors, the provision of models will not create similar behavior in others [1] .

3. RESEARCH CONTENT

3.1 Modeling Processes

Before displaying modeling processes, it is worthwhile to mention social learning theory which is the elementary knowledge of modeling processes. According to an eminent scholar Bandura, social learning theory is a theory of learning process and social behavior which proposes that human being can acquire new behaviors through observing and imitating others. Based on this theory, we can conclude that modeling is an essential way for people to learn new things. Therefore, figuring out modeling processes is meaningful which contributes to more efficient learning. People can transform modeled events into matching performances through four component processes of observational learning including Attentional processes, Retention processes, Motor Reproduction processes, and Motivational processes. Firstly, through Attentional processes, people need to observe and perceive significant features of behaviors of their targets accurately in order to assure that they can learn much and effectively. Secondly, after having access to these modeled behaviors, people should transfer behaviors from others to their own behaviors and enhance memories of these behaviors. Through Retention processes, observers can profit from the behavior of models and maintain their transitory modeling experiences in permanent memory by the medium of symbols. In addition, imaginal and verbal systems are two crucial representational systems of observational learning which means that people can learn much of their behavior by observation through the advanced capacity for symbolization and strengthen their memories of behaviors of targets. Thirdly, through Motor Reproduction processes, people tend to convert symbolic representations into appropriate actions before memorizing these symbols of behaviors of others. In addition, ideas are rarely transformed into correct actions without error on first tempt and discrepancies between the symbolic represent [1]. Fourthly, after managing to convert ideas to actual actions, people need incentives to motivate them to perform better that contributes to positive outcomes and valuable observed consequences represent these incentives. Therefore, people tend to adopt modeled behavior if it results in outcomes they value than if it has unrewarding or punishing effects [1]. Last but not least, after experiencing these four elementary processes of modeling accurately, people can manage to learn or obtain new behaviors through imitation. Therefore, if people can understand and use the processes well, it will help them to learn new behaviors more efficiently. In addition, from my perspective, in order to render outcomes more positive, the combination of modeled behaviors and their conditions including

external factors and personal situations functions better than just imitation without personal ideas.

3.2 Several crucial conceptions in modeling learning

After understanding how the entire modeling processes works, several relevant elementary notions cannot be neglected and the significance of these conception should be emphasized.

Firstly, we will discuss the reinforcement in observational learning. In behavioral psychology, future behavior of people will be enhanced by reinforcement which is a consequence whenever that behavior is preceded by a specific antecedent stimulus [3]. In addition, there are two types of reinforcement which are positive reinforcement and negative reinforcement. Specifically, when positive outcomes are produced by modeled behavior, these will serve as incentives and people tend to be motivated to follow this correct behavior and enlarge the valuable results consciously. However, if the outcomes of modeled behavior are negative, people will be inclined to avoid noxious stimulus, remove this sort of noxious stimulus from their following correct behaviors, and make their efforts to eliminate negative influences [8]. Furthermore, sometimes positive reinforcement and negative reinforcement can be hard to be differentiated and distinguishing them may not be essential. And concentrating on which stimulus is being taken away or involved and the nature of reinforcement will be determined by the way of how it is being removed or added, so this focus can be more crucial than just distinguishing both of them. Therefore, reinforcement in the observational learning world is significant in prompting productivity and efficiency. Learners are continuously motivated by the ability to receive a positive stimulus, such as a promotion or a scholarship [7]. At the same time, learners are also driven by negative reinforcement. Although negative reinforcement can produce a positive effect in the short term, positive reinforcement is more crucial in the long term which can motivate learners and enhance ability of learners to act in a creative and positive way [10]. Everyone will learn to follow instructions by a combination of positive and negative reinforcement in order to render their own behaviors excellent.

Secondly, regardless of our positive or negative opinion, events will occur after our behaviors which is called consequences. In the reinforcement, response consequences play an significant role. Consequences strategies are to make appropriate response to the behavior, including to respond to the concerned behavior when the behavior occurs, and to respond to the expected behavior to make it more likely to happen again [10]. In addition, coping with consequences plays a crucial role in the prevention and anticipation. Therefore, it is essential

in imitation learning processes. For example, when students engage in the problem behavior, response consequences can redirect or prompt the students to use the alternative behavior and help learners to extinguish problem behavior in order to minimize the negative influences [9]. Piaget supposes that imitative responses can be aroused in children only by having the model repeat the child's instant preceding responses and they do not have the ability to mimic responses that have not been executed before [4] and Kaye assumes that infants can acquire new skills by observational consequences and transfer them to different situation.

Last but not least, four crucial elements in learning process are valuable which are paying attention, retaining information or impressions, producing behaviors, and being motivated to repeat the behaviors [1]. These four factors are similar with the four sub-processes of modeling processes. Beginning from observing the actions of targets and then retaining and memorizing information and then producing their own behavior to the last being motivated to repeat the learned behaviors.

3.3 Relevant experiments.

In order to demonstrate the functions of modeling learning, there are two experiments which are conducted by several scientists support the positive outcomes of the imitation learning.

First of all, 55 fifth graders aged 10-12 years old in Sweden were observed in a series of peer-based five lesson interventions [5]. First, they watched videos with their peers. Each lesson was organized according to a theme, that is, readers' understanding of the text, the sequence of events, how to start a story, how to start and end a story, and how to edit a story text. Then, through observation, the students wrote four texts in the process of intervention. The quality of these texts is assessed by a rater who is trained by a team of experts. In addition, the ability of language, reading comprehension and working memory were examined as well. Eventually, the average text quality and narrative writing skills had significantly improved through observing their peers. Therefore, in learning processes, observational learning plays a crucial role and makes a difference.

Secondly, in China, Ma Fenglin and a group of scholars conducted an experiment which sought to examine whether honest can be promoted in children by allowing them to observe a peer's display of honest behavior [6]. Specifically, the aim of the study was to examine whether five-year-old children who peeked at cheating in a guessing game would plead guilty to it. The research is divided into two parts. In study 1, it displays that children who just watched their classmates admit to peeking did not improve their honesty. However, the children who watched their classmates peep admitted that they peeped and were praised, and a small prize from the

experimenter did make them more honest. In study 2, the effect was replicated by a weaker operation involving praise rather than reward for Frank peers, suggesting that verbal feedback alone was sufficient. These findings point out new strategies to promote children's honesty, and prove that children's observation of the social consequences of other people's social moral behavior can be used as a guide for their own behavior.

From these two experiments, the functions of observational learning can be illustrated clearly. Specifically, imitation not only improves the efficiency of learning of students, but also makes the use of models to lead students to perform correct behavior. Therefore, these demonstrate the significance of observational learning.

3.4 Practical suggestions for both learners and teachers in the actual modeling learning processes

There are various proposals for several specific situations and people.

As for teachers, firstly, they need to serve as a model as well as a guide. Specifically, they should show their enthusiasm for the subject they teach so that students' enthusiasm and inspiration can be aroused as well. Additionally, teachers should be willing to demonstrate both the mental and the physical tasks they expect the students to accomplish. Secondly, teachers are acquired to know how to use peers of students, especially class leaders, as models. As a result of it, students can learn from each other by imitation efficiently. After deciding the exact class model, they need to guarantee that when students witness the positive behaviors, it can lead to reinforcement for others. Thirdly, teachers can appoint several students as class leaders, with the help of them teachers can regulate performances of students for the whole class. It may function better that asking high-status students lead an activity when class cooperation is required or when students are likely to be reluctant at first since popular students can be the first to deal with the dissection procedures in class and connect with others well. Last but not least, several strategies can be formulated about the penalties and rewards for the behaviors of students. Therefore, learners can know exactly which behavior is worthwhile to mimic and which should be avoided.

As for learners, firstly, they should recognize which behavior is suitable, valuable, and makes the most positive effect for them and predict the outcomes of it. If the results are beneficial for them, they can make their efforts to mimic and perform it. However, if not, they should pay attention to it as well in case that they perform it by themselves unconsciously. Secondly, after discovering modeled behaviors, they need to learn several effective methods to imitate, consulting their teachers.

Additionally, behavior imitation requires trainees to deal with problems with correct behavior, and once they make mistakes, they are required to repeat exercises until they are correct. Therefore, the correct method and behavior are very significant and serve as a guide and direction. In this kind of training, trainees know what is the right way to deal with it at the beginning, and constantly imitate the correct behavior in practice. After constant enhancing, this behavior will naturally be reflected in the future work. Hence, observational learning is viable for those who can distinctly identify the correct and error and have standard operation procedures, simple and programmed behavior. Thirdly, when they manage to mimic the modeled behaviors and the outcomes are positive, they should find more ways to maintain this behaviors, such as awarding themselves, being immersed in the whole learning processes, and being motivated as well as keeping enthusiasm and try to alter and modify some of modeled behaviors based on their own conditions.

To sum up, i believe that if teachers and students can make the use of the method of observational learning well and properly, teachers will instruct students more effectively and learners will learn more efficiently. Therefore, the education efficiency can be promoted and increased by the modeling effects. Fourthly, correct method of how to conduct the learning process of observational learning should be remembered and maintained for future learning procedures.

4. CONCLUSION

By using several scholars' perspectives and taking two experiments as examples, this paper analyzes the significance and functions of observational learning. The research showed the functions of observational learning, several detailed conceptions in modeling processes including reinforcement and response consequences, and four elementary processes which are Attentional processes, Retention processes, Motor Reproduction processes, and Motivational processes. In addition, every step has their highlights and crucial points. Therefore, following and complying the four processes well, it will make a big difference in learning processes. The results of two experiments demonstrate the functions and great influence of learning through imitation. Though the outcomes of modeled behaviors have negative and positive aspects, it can serve as a guide as well as prediction which means that it cannot only enlarge and maintain the positive outcomes but also prevent or eliminate the negative influences.

After discussing the entire processes and several essential notions of modeling learning, this essay displays several suggestions which are viable and practical for teachers and learners. As for teachers, they should be enthusiastic in instructing and know how to select and use the models well in classroom and make the great effect with them, serving as a guide for peers. As for learners,

they are acquired to recognize which modeled behavior is worthwhile for them. After confirming their target modeled behavior, they need to reproduce the observed behavior in the form of representation in consciousness, and master the special reactions in specific situations skillfully and firmly with the help of the thinking representation function of language symbol system. After managing to perform the modeled behavior, they should try to maintain the enthusiasm and inspiration of conducting this valuable modeled behaviors. In addition, the observational learning functions better when the gender, age and personality of the model and the observer are similar, because they are likely to be imitated. Imitation learning goes beyond simply copying the behavior of others and the functions of observational learning are worthwhile as well. Therefore, with the help of the understanding of the observational learning processes and the positive effects of modeling learning, the prospect of education will get better and the efficiency of learning in the classroom will be promoted a lot.

REFERENCES

- [1] Albert Bandura (1977), *Social Learning Theory*. Oxford, England: Prentice-Hall.
- [2] Spielberger, C. D., & De Nike, L. D. "Descriptive Behaviorism versus Cognitive Theory in Verbal Operant Conditioning." *Psychological Review*, 1966, 73:306-326.
- [3] Kennedy, T. D. "Reinforcement Frequency, Task Characteristics, and Interval of Awareness Assessment as Factors in Verbal Conditioning Without Awareness." *Journal of Experimental Psychology*, 1971, 88:103-112.
- [4] Piaget (1948), J. *The Moral Judgment of the Child*. Glencoe, Ill.: Free Press.
- [5] Grenner (2020), *Educational Review*. Volume 72, Issue 6.2020.PP 691-710.
- [6] Ma Fengling, Heyman Gail D; Jing Chunyan; Fu Ying; Compton Brian J; Xu Fen; Lee Kang (2017), *Journal of Experimental Child Psychology*. Volume 167, 2018. PP 234-245.
- [7] Schultz W (July 2015). "Neuronal Reward and Decision Signals: From Theories to Data". *Physiological Reviews*. 95 (3):853–951. doi:10.1152/physrev.00023.2014. PMC 4491543. PMID 26109341.
- [8] Mc Mondadori C, Waser PG, Huston JP (June 1977). "Time-dependent effects of post-trial reinforcement, punishment or ECS on passive avoidance learning". *Physiology & Behavior*. 18 (6): 1103–9. doi:10.1016/0031-9384(77)90018-X. PMID 928533. S2CID 21534363.
- [9] Cormack J, Arnold-Saritepe A, Elliffe D (June 2017). "The differential outcomes effect in children with autism". *Behavioral Interventions*. 32 (4): 357–369. doi:10.1002/bin.1489
- [10] Sutton, R. S., & Barto, A. G. (2018). *Reinforcement learning: An introduction*. MIT press.
- [11] Baer, D. M., & Sherman, J. A. "Reinforcement Control of Generalized Imitation in Young Children." *Journal of Experimental Child Psychology*, 1964, 1:37-49.