

Life and work of edward lee thorndike philosophy essay



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Edward Lee Thorndike was an iconic American psychologist that strived during the latter years of the 1800's into the mid 1900's. Edward Thorndike was not just a psychologist but an influential educator, lexicographer and striving educational researcher (State University, 2010). He is often referred to as the founder of educational psychology. Edward Thorndike was born on August 31, 1874 in a small town in Williamsburg, Massachusetts (Joncich, 1968). He was the son of a clergyman Edward Roberts Thorndike and Abigail Brewster Ladd. Thorndike was a successor of a family line that resided in New England since the 1630's (Joncich, 1968). Edward Thorndike was part of a bloodline from a very notable family. A family that consisted of accomplished pioneers that strived for excellence and superiority.

As would be anticipated from growing up in a household of a minister, Thorndike was expected to strive for excellence. With having an estimated IQ of nearly 200, Thorndike had no problems succeeding academically (State University, 2010). He was nothing short of a perfect model for the congregation. Scholarships were awarded to Thorndike due to his outstanding grades and academic achievements. Scholarships are what made college possible for him during this uneasy time.

In 1891, Thorndike graduated from The Roxbury Latin School which was located in West Roxbury, Massachusetts. Following his graduation from The Roxbury Latin School, he attended Wesleyan University where he would begin his college career. He graduated from Wesleyan University in the fall of 1895 with a Bachelor of Science. Soon following his completion of his undergraduate work, he attended Harvard University. During his time at Harvard he worked to achieve yet another undergraduate degree as well as <https://assignbuster.com/life-and-work-of-edward-lee-thorndike-philosophy-essay/>

his Masters in Psychology. He graduated with his Masters in Psychology in 1897. It wasn't much time after that he attended Columbia University where he would complete his Doctoral work in Psychology. He completed his doctoral work in Psychology in 1898, merely a year after his completion of his Master Degree from Harvard. (" Joncich, 1968")

During his time at Columbia University he met a very influential and respectable person know as James Mckeen Cattell. As the next several years progressed, Cattell served as a very influential mentor for Thorndike. With the support of Cattell, Thorndike wrote his 1898 doctoral thesis Animal Intelligence: An Experimental Study of the Associative Processes in Animals (Thorndike, 1898). This groundbreaking thesis is thought to be the foundation of animal behavior but would not be the last of the other many works yet to come by Edward Thorndike.

After his graduation from Columbia University in 1898, Thorndike taught at the College for Women of Case Western Reserve in Cleveland, Ohio (Joncich, 1968). This teaching job did not suit him because he was soon back at Colombia University teaching psychology. This would be the university where Thorndike would remain for the rest of his career and essentially conduct his other famous works in Psychology.

Before passing away on August 9, 1949 at the age of 74, Thorndike's achieved many notable accomplishments. " During his 55-year career, he published about 500 books and articles on diverse as learning in fish, methods of statistical analysis and the elements of aesthetic quality in urban life." As his continuous research was unfolding he was the President of the

American Psychological Association, 2nd President of Psychometric Society and President of American Association for the Advancement of Science. In brief, his notable work includes the study of animal intelligence (“cats in the puzzle box regarding Trial and Error”), applied animal to human educational experience followed by a constructed scale to measure children’s handwriting and a table of word-frequency in English. (“Indiana University, 2007”)

It is important to note that in order for Edward Thorndike to pursue the field of psychology as well as be successful in this field, he had to go against that of the teachings of the church. It is ironic because as the son of a minister, it would be expected that he would have conformed to that of the congregation. However, he chose to lead his own life and strive for excellence in a field of work that stuck him as interesting. In order for Thorndike to succeed in the field of psychology, he had to break the realm of religion and turn his focus to the laboratory and science. For that time, it was something that was frowned upon especially from the standpoint of a minister. Regardless, Thorndike said that science was, “the only sure foundation for social progress” (State University, 2010). With that being said and looking back on history, it could easily be perceived how and why his thinking was correct.

Through the remainder of this paper, it is essential that we go into greater detail on specific accomplishments that Edward Thorndike achieved.

Specifically we will look at connectionism, adult learning and Thorndike’s view on education. Although these are only three of the many

accomplishments Thorndike had achieved in his time, they are the more
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influential and greatest impacting on psychology. Essentially, it's part of the true legacy of contributions that Edward Thorndike left upon the field of psychology and will continue to leave for many years to come.

As mentioned previously Thorndike was a very influential person to the field of psychology which leads me into my first area of concentration which is connectionism. According to a definition provided by the Stanford Encyclopedia of Philosophy, connectionism is "...a movement in cognitive science which hopes to explain human intellectual abilities using artificial neural networks (also known as 'neural networks' or 'neural nets'). Neural networks are simplified models of the brain composed of large numbers of units (the analogs of neurons) together with weights that measure the strength of connections between the units. These weights model the effects of the synapses that link one neuron to another. Experiments on models of this kind have demonstrated an ability to learn such skills as face recognition, reading, and the detection of simple grammatical structure." According to information compiled through research, Thorndike viewed connectionism as "through experience neural bonds or connections were formed between perceived stimuli and emitted responses; therefore, intellect facilitated the formation of the neural bonds" (Indiana University, 2007).

When looking at connectionism in regards to Thorndike's research, it is relatively still a broad topic. To get a better idea of what connectionism and Thorndike's notable contributions are to the field of Psychology, it is essential to focus on his cat puzzle box studies. The puzzle box studies with cats dealt primarily with the ideology behind how cats learned to escape. <https://assignbuster.com/life-and-work-of-edward-lee-thorndike-philosophy-essay/>

The cat's ability of learning to escape the puzzle box that Thorndike would structure and create a psychological concept known as the law of effect. From the law of effect would later come law of recency and law of exercise which will both be discussed later in greater detail.

First it is important to understand the law of effect which is essentially the foundation for the formulation of his other two laws. The law of effect states that "responses to a situation that are followed by satisfaction are strengthened; and responses that are followed by discomfort are weakened" (Indiana University, 2007). What this definition is saying is that when a situation is presented and is followed by an outcome that is satisfying then that event will be positively associated with that response. This would also lead to believe that this event will later occur again. The effect also works in the opposite sense where if a situation is followed by a non satisfying outcome then the link between the event and the outcome is weakened. This would consequently lead Thorndike to believe that the association was weakened and will most likely not occur in the same degree as an event with a satisfying outcome.

In correlation to Thorndike's law of effect arose his law of recency. The law of recency states that a response that happens most recent will act as a model for future events of similar nature. For example if I go to buy a soda at a soda machine located in the building of Old Main and the soda machine fails to vend my drink, I will most likely not return to that soda machine due to my recent experience I had with it. The effect also works the same way in the opposite manner as if I would have received the soda. In essence, I focus my future experiences on my most recent experiences.

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The final law that Thorndike specified was known as the law of exercise. According to the University of Indiana, the law of exercise states that “stimulus-response connections that are repeated are strengthened, and stimulus-response connections that are not used are weakened. In other words, the more you continually use the stimulus-response relations the more likely the connection between the two will be strengthened. A simple example of this would be studying for a test. I study for the test for a half hour every night and when I took the initial test I got an A. Every time after I followed the same routine and received an A therefore I will continue to study in that same manner. The stimulus, knowing I have a test that I need to study for and actually studying in that specified manner that got me the A before, and the response getting the A once again, strengthens.

To focus back once again on connectionism and Thorndike’s cat studies, it is important to note the results he obtained. He hypothesized that if a cat was showing insight he would see an abrupt drop in the learning curve and if the cat was using trial and error it would show gradual curves. Thorndike found that cats did use trial and error learning because his results concluded gradual curves. He supported this by saying that the reasoning is due to the fact that cats made connections between the puzzle box and the ways of escaping. This supported his idea of stimulus-response relationships, more so, all of the ideology behind his three laws. The law of effect would state that the cat escaped in a certain way thus creating a satisfying reward. The cat would then use this same method of escape, the law of recency. By doing this time and time again the cat strengthened the stimulus-response connection therefore showing the law of exercise. Interestingly B. F. Skinner

would reformulate Thorndike's methodology and ideology in order to create what he called operant conditioning. Essentially, Thorndike created a concept that was not only reflected his theories but proved to be fundamentally important to gain insight into other areas of psychology.

The next area of significant contribution by Edward Thorndike in the field of psychology was adult learning. Thorndike was interested in constructing a system in which he could measure intelligence among adults. Shortly after his research began in this area, in the year of 1903, Thorndike, accompanied by his student, were able to successfully measure intelligence. From this they were able to expand into more detailed oriented techniques that would set the stage for the modern intelligence tests which we use today.

During World War I, Thorndike worked hand in hand with the United States Army in order to develop of system that would establish qualifications of new recruits. These tests would be known as Alpha and Beta, the true precursor to the modern day ASVAB tests. During World War I, Alpha tests were administered to those who the Army believed knew how to read while Beta tests were administered to those who lack literacy. These test used primarily pictures accompanied with graphs, both of which could be easily assessed. ("Indiana University, 2007")

Based off Thorndike's original tests, he created for the United States Army, came his greater detailed and directed intelligence tests of the 1920's.

Thorndike was quoted as saying " Instruction should pursue specified, socially useful goals." (Joncich, 1968). In addition to that being said he also believed that learning didn't start to diminish until the age of 35 and from

that only at a rate of 1 percent per year, which by looking at it well into adulthood. Therefore this would explain his reasoning behind why he would choose to study adult learning. Referring back to Thorndike's intelligence tests of the 1920's, came directive tests, similar to what those he was referring to in the above referenced quote. This test is known as CAVD which stands for completion, arithmetic, vocabulary, and directions test. Additionally, latter research had shown the speed and accuracy of which an individual is capable of learning declines not the actual ability to learn, as Thorndike thought. ("Thorndike, 1928")

In furthering the discussion on intelligence tests, Thorndike went another step further to state that there are three types of intelligence functioning. This would include abstract intelligence, mechanical intelligence and social intelligence. Abstract intelligence is encompassed with 4 sub-areas which are altitude, width, area and speed. According to the University of Indiana, altitude is "the complexity or difficulty of tasks one can perform", width is referred to as "the variety of tasks of a given difficulty", area as "a function of width and altitude" and speed as "the number of tasks one can complete in a given time." All of which, when looked at as a whole, make up one of the 4 sub-areas of intelligence.

On the other hand mechanical intelligence is knowing the relationship an object has to its environment and how it operates in that environment. Finally, social intelligence is more straightforward by stating that the individual has the capability of performing well in its surroundings on an interpersonal level.

As a whole, Thorndike's in-depth approach that included his many classes of intelligence was what actually created an opposition to his work. An <https://assignbuster.com/life-and-work-of-edward-lee-thorndike-philosophy-essay/>

opposing view to his intelligence theory was illustrated another well-known psychologist, Charles Spearman. Spearman sparked a debate that intelligence is not made up of many factors but rather on one. He referred to this one-dimensional factor as "g".

In addition to adult learning, it is also important to look at Thorndike's other attributions to learning. An influential approach that Thorndike took to learning was his theory of rewards and punishments. Thorndike's laws of learning, that were mentioned and explained earlier, are very closely correlated with how Thorndike describes rewards and punishments. Thorndike's early views look at stimulus and responses in the manner that one strengthens connections while the other diminishes connections. However, Thorndike's later understandings showed that this was actually incorrect. He then reasoned that punishments do not get weaker as reward connections get stronger. Even stranger, Thorndike mentioned that punishing response will actually increase the chance that an undesired response will reoccur at another point in time. This is completely contradictory of his previous thoughts on stimulus and response and a perfect example of how the field of psychology rapidly changes.

In addition to being focused on theories of learning, Thorndike was also very concerned with the ways statistics were measured and recorded. It was the inspiration for his book called *An Introduction to the Theory of Mental and Social Measurements*. In addition to this book, Thorndike started the first course at a higher education school to offer educational measurement. To Thorndike, everything could be measured, very similar to how a

mathematician would look at math problems. From his course and his book, <https://assignbuster.com/life-and-work-of-edward-lee-thorndike-philosophy-essay/>

Thorndike pioneered the use of description and numbers in psychology which later means of measurement would follow and expand upon. Fundamentally this work is yet another one of Thorndike's major evolutionary contributions to the field of psychology.

In addition to Thorndike's movement on learning came his approach to human differences. He concluded that although humans may seem alike, they are different in basically every aspect. He was quoted saying " It is useless to recount the traits in which men have been found to differ, for there is not trait in which they do not differ" (Thorndike, 1911). Psychology essentially needs to go in the direction of individualism, specifically looking at each person's mind not the mind as a whole. Thorndike even went further with this school of thought to explain it in a rationale on how it relates to universal learning. " The practical consequences of the fact of individual differences is that every general law of teaching has to be applied with consideration of the particular person...the responses of children to any stimulus will not be invariable like the responses of atoms of hydrogen or the filings of iron, but will vary with their individual capacities, interests, and previous experience" (Thorndike, 1906). Basically it all boils down to genetics and the inequalities that humans face.

Along with Edward Thorndike's key theoretical beliefs come his everlasting impressions through the vast number of books he wrote, especially the books that referenced his view of learning. Thorndike is noted with writing three different books which would aid educational facilitators in their classroom. These books go on to illustrate the uses of words and the reasons words are used in the English language. He felt that his list of words need to <https://assignbuster.com/life-and-work-of-edward-lee-thorndike-philosophy-essay/>

be stored and are essential while other only need to be understood temporarily, then forgotten.

In addition to his three educational books for teachers there are also several other books that appeared earlier and are still an influential part of psychology today. Even though each of these works were mentioned earlier in this paper, it is still vital to mention them from a reference standpoint.

Thorndike's other books include Educational Psychology (1903), Introduction to the Theory of Mental and Social Measurements (1904), The Elements of Psychology (1905), and Animal Intelligence (1911). Although this is not a full comprehensive list of all of Thorndike's works, it is a list that references his more influential works on the field of psychology.

As touched upon throughout this paper, Edward Thorndike has a legacy that will continue to live on in the field of psychology many years to come.

Looking at his influence in learning alone is enough to see how influential he was and still is. A great example is how his stimulus response relationship, in regards to the law of effect, would be used as a language for other influential psychologists of their time such as Clark Hull and B. F. Skinner. They evolved his theory of the law of effect and essentially fused it into what they refer to as a reinforcement theory of learning. Even when looking at the broader scope of connectionism, his major contribution to psychology, which merely remained unchanged throughout his career.

Edward Thorndike is an individual that is sometimes hard to fit historically into one distinct area of psychology. His initial animal research study's practiced characteristics which essentially lead to Watsonian behaviorism.

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He is an individual that influenced a wide range of other prominent psychologist that later followed in time. In addition it could be clearly seen that through Thorndike's animal studies and his findings on associations and connectionism, how later Psychologist such as Watson would pioneer behaviorism. However, Thorndike will remain to be considered as a comparative psychologist because of his contributions when looked at in a wider scope, (intelligence tests, learning, education and animal studies).

As with any influential person comes criticism and Edward Thorndike is no different. As mentioned by the New World Encyclopedia, Thorndike faced two major criticisms. The first is the fact that " Thorndike's approach restricted psychology by limiting behavior solely to the peripheral events of stimulus and response elements. In dismissing mental events, Thorndike also ignored the central mediation of stimulus and response bonds" (New World Encyclopedia Online, 2010). What this is saying is that Thorndike focused primarily on behavior in regards to events in the environment that are of little importance. He based his stimulus and response relationships off these minute events. In addition, he also failed to recognize how important those bonds can be. The second criticism according to New World Encyclopedia is in regards to his behaviorist theories, specifically the concern of reductionism. Reductionism is when " the nature of complex things is reduced to the nature of sums of simpler or more fundamental things (New World Encyclopedia Online, 2010). In correlation to Thorndike's theories of behaviorism, the mind, behavior, and stimuli in the environment are all interrelated.

Thorndike had also proposed many influential techniques and methods that would influence schools and universities till this day. Thorndike's continued efforts on the improvements of institutions, allowed them to fundamentally maximize the learning process. In addition to his recognition in academic institutions, he was also recognized with many prestigious honors and awards in the areas of American and international science and education. However, one of his more prestigious awards is the Butler Medal. This was an award issued by the university where he practiced and formulated his theories of great influence. This award was given " in recognition of his exceptionally significant contributions to the general problem of the measurement of human faculty and to the applications of such measurements to education" (Joncich, 1968). Simply that goes to show and summarizes perfectly what a historical and contributonal individual Edward Thorndike was to the field of Psychology.

Throughout this paper we focused on a wide range of ideas and theories that Edward Thorndike contributed to Psychology as a whole. Since this paper went into specific detail and elaborated on a wide range of topics, it is essential to go back and summarize the basic overview of Edward Thorndike's learning theories and contributions. In an effort to bring together what was talked about and to bridge the gaps of uncertainty and or confusion the reader may have.

As the paper progressed we looked at Thorndike's trial and error learning. How learning needs to occur in steps rather than all at once. This then lead us directly into several of Thorndike's laws which included the law of exercise, law of effect, and the law of readiness. The more you do something

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the more likely you will continue to do that behavior thus the law of effect and exercise. In order to enact on the previous two law the individual has to be ready to do so, thus, known as the law of readiness. We also went on to talk about a person as an individual and how people need to be looked at in an individualistic manner. This further correlated directly with how Thorndike proposed educational institutions should function. Finally, understanding the impact Thorndike has on some of the pioneering forms of intelligence testing both in the United States Army and in the classroom. Nevertheless, not forgetting the work Thorndike established in regards to the first ways to measure mental and social theories. A fundamental stepping stone that latter systems of measure would follow and build upon.

Hopefully now it could be clearly seen why Edward L. Thorndike was such a contributonal and influential individual to the field of psychology.

Throughout his 55 year career researching and studying psychology, Thorndike wrote over 500 books and articles. More so, he wrote in a diverse way which encompassed ideas such as learning in fish, systems for measurement of mental and social data, and even right down to the aesthetic quality of urban life. This was all in addition to his work with cats in a puzzle box regarding trail and error learning, his research pertaining to the development of his book called Educational Psychology, and educational experience as a whole.

To say the least, Edward Thorndike was far from a one dimensional person.

He was taught by the great William James and J. M. Cattell. He taught

scholars like Walter Bingham, R. L. Thorndike and L. S. Hollingsworth. Most

importantly made a lasting impression on individuals such as David Wechsler
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and R. B. Cattell as well as you and I. Now looking at some of those names and the life that Thorndike made for himself, it could be understood why he is known as one of the greatest psychologist of his time. More importantly, paving the way for a better understanding on how and why his work has influenced and is still a part of the modern field of psychology.

On August 9, 1949 Edward L. Thorndike passed away from old age. He left behind his widowed wife, Elizabeth Moulton who he wed in 1900 and his four children. This was not only a sad day for his family but for the field of psychology as well. They both knew that they lost a husband, a father and very significant scholar to the field of psychology. His legacy will never be forgotten and his contributions will continue to live on. Hopefully this paper has captured your understanding of his everlasting legacy.