



Bedales Psychology Newsletter



Welcome

Hello and welcome to the second edition of the Psychology Newsletter! This is a newsletter made for anyone interested in studying the human mind and behaviour, not just psychology students.

In this issue we will be discussing the Nobel Prize research into internal body clocks, research into ethics behind IVF gene editing and research into false confessions. We hope you enjoy it!



Nobel Prize

Jeffrey C. Hall- geneticist and chronobiologist

Michael Morris Rosbash is an American geneticist and chronobiologist.

Michael Warren Young is an American biologist and geneticist.

On the 2nd of October, Jeffrey C. Hall, Michael Rosbash, and Michael Warren Young won the Nobel Prize in Physiology or Medicine. This was awarded to the three men who have dedicated the majority of their careers to help us understand the 'sleep-wake' cycle.

They pioneered the field, and have helped to establish a 'new', growing science of chronobiology. Before these men, scientists had speculated that we were controlled by our circadian rhythm; but had not got much further beyond that point. The three men worked together to refine our already present understanding of the circadian rhythm.

They worked on *Drosophila Melanogaster* (fruit flies) and found that their circadian rhythm is controlled by the period gene. This gene is found on the X chromosome. The gene essentially builds up during the night and degrades during the day. This gene allows the drosophila to remain in sync with the environmental 24-hour clock of the rotation of the Earth. When the gene was not present in the fruit flies, they lost the ability to self-regulate certain biological functions. Such as: blood pressure, heart rate, hormones.

It is not just fruit flies affected by this circadian rhythm and the period gene. When a study saw people removed from their regular sleep cycle by even just one hour each day the participants looked prediabetic.



Recent discoveries in DNA editing in human embryos pose practical and ethical problems

Just earlier this year, a genic research team at the Francis Crick Institute was the first in the UK to edit the genome of human embryos in vitro. They discovered a specific gene believed to be associated with miscarriages known as OCT4. To best study its effects, they deactivated it in a group of embryos (which were obtained from a surplus after IVF treatment) using a new tool called Crispr/Cas9 and observed its development over a period of two weeks. A healthy human fertilisation would normally begin to develop a blastocyst within this timeframe; a structure which comprises three cell types that will go on to be the embryo, the placenta and the yolk sac. As the research team witnessed, without the functioning OCT4 gene, the blastocyst imploded in on itself and failed to develop much further.

During standardised in vitro fertilisation, of 100 fertilised eggs, fewer than 50 reach the blastocyst stage, 25 implant into the womb and only 13 develop beyond three months. Scientists say this research is “providing us with a foundation of knowledge about early embryonic development” and could potentially “be used to improve IVF treatment and improve our understanding of how some pregnancies fail.”

On the other side of the globe, scientists are tackling the ethical nature of gene editing. A US-Korean team mended dangerous heart disease mutations in human embryos for the first time. This feat paves the way for “radical new treatments – and for humans to take control of their genetic destiny”. Although it could eradicate many genetic diseases known to man, it could spawn many more – insemination of genetically altered embryos is currently illegal in most countries and such research still remains in vitro. Even if legal barriers were lifted, Ian Sample, a science editor for the Guardian argues, “the conditions genome editing would help are rare, and our understanding of genes is still too poor for it to be widely used”. He carries on saying that an attempt to fix mutations in the embryo stage could cause *off-target effects* posing a cancer risk. Although this method could help in preventing more than 10,000 inherited diseases, in the majority of cases, people who know they carry a heritable disease, and who want genetically-related children, can go through IVF and have their embryos screened for harmful mutations already. Fertility doctors do this every day and select only the healthiest embryos to implant in prospective mothers.

Regarding ethical implications, Professor Robin Lovell Badge, from London’s Francis Crick Institute, fears the spread of rogue clinics which may already be offering gene editing to the highest bidder. What’s more, he warns of doctors performing unregulated and dangerous procedures, if offered enough cash, which could produce undesired results. Experts say that it is likely that clinics are already working on ‘designer babies’ even though such ethically dubious experiments remain illegal in the UK. British scientists were among 150 experts who, two years ago, called for a worldwide ban on genetic editing of embryos claiming the practice could open the door to irrevocably alter the human species.

My take on the articles: this may seem like a quantum leap in biomedical treatment and prevention of hereditary conditions and birth defects, but most of the scientific world acknowledges the fact that the introduction of gene-editing would only be a statistical push in the right direction; due to our lack of understanding of the human genome and the very nature of genetic mutations, eradication of hereditary disorders

is hardly possible in ways we might imagine it. What's more, if introduced, the procedure wouldn't affect the general population to a large degree. A more effective way to reduce genetic disease could be a national genetic testing program that identifies people who are carriers of harmful genes and at risk of passing them on. "Behavioural genetics is so complicated," says Ian Sample. "I'd say environment will be far more important than genetics for the foreseeable future. You can see from the current cabinet that it doesn't matter how intelligent you are, it matters what school you went to."



False Confessions

Research by Saul M. Kassin and Gisli H. Gudjonsson.

There is a long history of false confessions and many psychologists have always been curious as to why. People have a schema as to why people confess when they are innocent; they have something else that they are guilty of. In 1989 five men all confessed to raping and beating a jogger in New York City in Central Park. It was all reconsidered when an inmate took sole responsibility of the crime, he had been convicted of a similar crime. Throughout legal history, many cases revealed tragic miscarriages of justice involving innocent men and women who were prosecuted, wrongfully convicted, and sentenced to prison or death. In 1980-1985 it was found that there were 20 cases of miscarriages of justice in the USA alone. It was also found that people with a lower IQ were more likely to confess to a crime that they did not commit. In recent history there have been a higher number of high profile cases involving false confessions that got overturned due to DNA evidence.

The hypotheses of the study by Kassin and Gudjonsson are obscure but from reading the results I estimate that they are similar to: What is the procedure that causes a false confession in the modern day and in the past? Or there will be a common reason for false confessions throughout history. It is a non-directional hypothesis as there is not a common reason specified.

The researchers reviewed case studies, archival reports, correlational studies, lab and field experiments.

There were six main stages to the experiment and reviews;

1. Examining pre-interrogation interviews. In this stage a participant was observed or tapes were recorded and the behaviour of the interrogator and the suspect were reviewed. If particular steps were taken and if certain things were said that later caused a false confession.

2. Examining the Miranda warning and waiver. In this stage participant and suspects were reviewed or observed to see how many waved their Miranda rights, which is the right to stay silent and their right to a lawyer. This is a crucial step as the waiver of these rights causes a schema in the jury that they might be innocent or obnoxious as to being caught.

3. Examining a modern day police interrogation. This stage was to see what techniques that cause the innocent people to confess to a crime that they did not commit, the build up to the confession to see if there was anything in common.

4. Examining the confession itself. This is the tilting point, to see if people cracked and admitted to something that they did not do. What details they included and the cause of their confession.
5. Examination of the consequences of the confession. Did they retract their confession when they experienced jail or when they realised that they were going to jail? That the whole experience was real and that the fact that they were innocent did not matter anymore, when they realised that they confessed outright.
6. The role of psychologists as expert witnesses. On the defence to explain a false confession and why people confessed to something that they did not do. On the prosecution as to why and how they could want to commit the crimes that were being charged with.

Findings:

1. The mean for professional Lie Catchers is 54% accurate. They are not much more accurate than simple guess work and they have a bias to want to convict as they are police officers on the cases.
2. Juveniles under the age of 14 do not know or understand their rights or how to apply them. This is important as they do not know how to access a lawyer or why they are being charged for these crimes, making them very confused and therefore more susceptible to obedience as the police officers are authority figures.
3. 81% of innocent people signed a waiver of their rights whilst only 36% of guilty people signed a waiver. This should create a schema in the eyes of the police officers but there is still a significant chance that they are involved and signed a waiver, these people are obnoxious as they do not think that they will be caught and convicted for their crimes. The rate (speed) of the interview increases causes conformity to admit the crime increases, conformity also increases confession rate in eye witnesses.
4. Confession rates in the USA ranges from 42% to 55% whether guilty or innocent. This means that only half of people confess because they are tricked into confessing or because they are guilty and proud of their crimes. This means that the police have enough evidence to charge without a confession, making forensics hold more stakes in the courtroom and in the public eye.
5. False confessions that later plead not guilty have a 73% to 81% conviction rate. Meaning that jurors have a schema about the admission of guilt and how they rarely allow the victim of a false confession to retract their confession. They do not believe them when they plead innocent because they previously confessed.
6. It makes no difference to the juries. If a confession was made they tend to convict. They do not care about situational factors that the interrogation created a perfect environment for obedience. The theory was demonstrated by Milgram.

On the research provided I have a few questions about how to investigate false confessions further. Are there steps that are required to create a false confession that are different from a true confession? If so what are they? How many false confession victims are in prison? Is there a way that we can improve the system to lower the false confession rates? Or completely remove them? To do this I would review the tapes to see similarities and give suspects a questionnaire before they are interviewed and after they give a false confessions.