



# Ψ **PSYCHOUT**

ISSUE 19

FEATURE THEME

*Nature vs. Nurture*

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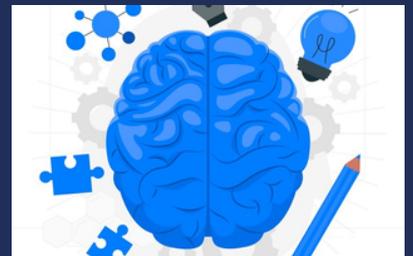
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# Meet the team

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# EDITOR'S NOTE



This issue covers the infamous debate 'Nature vs Nurture', and whether our genetics or environment are responsible for our actions and abilities.

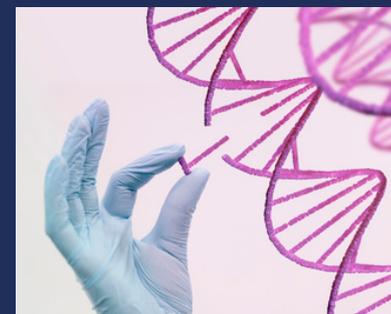
We would like to thank everybody who wrote feature articles, both Bailey House and Elizabeth Meins for taking the time to partake in interviews, and our staff supervisor Alex Reid for supporting us.

We hope you enjoy this issue, and stay tuned for future publications! Please note, an accessible version of this issue (along with previous publications) is available online.

**Content warning:** the following issue contains discussions on potentially sensitive topics, reader discretion is advised. Articles touch on topics such as political ideology, mental health, parenting, criminal activity, and adverse childhood experiences.

**KATHERINE JONES & ANYA KENNEDY**

**PsychOut Co-Editors**



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# The scientific debate: how is one's mental health developed?

BY SOFIA REGINA PALAY CO

The topic of mental health has risen since the past decade, proving it to be a highly prominent issue of discussion. This has allowed an increase of debate within the field of psychology. Therefore, much research has been done in order to determine whether biological or social factors are what play a role towards an individual being more susceptible to mental disorders, such as Major Depressive Disorder (MDD). And if so, to what extent?

An argumentative explanation towards the influence of sociocultural factors of MDD can be seen in the Brown and Harris study. Brown et al. (1975) follows the theory the following researcher had conducted, also named as the Vulnerability model. The model states that when one has more risk factors in their environment, such as lack of financial stability and relationships, they are more likely to develop MDD. Hence, the London-based correlational study explored the impact of social factors towards the likelihood of women demonstrating MDD symptoms. The researchers specifically targeted the specific life events, in addition to the various difficulties they encounter on a daily basis. The results demonstrated that 90% of these women had experienced an adverse life event, such as being a victim of sexual abuse and having lost a loved one. Furthermore, social class was shown to be highly prevalent as working-class women with children were 4 times more likely to develop MDD symptoms than that of middle class women with children. This overall demonstrated how the impact of protective factors, such as a higher status, may be indicative of one's likelihood to be more vulnerable in developing MDD.

The revolutionary study of Caspi et al. explores the biological aspect of this argument. Caspi et al. (2003) aimed to explore the influence of an individual's specific genetic disposition towards their likelihood of demonstrating Major Depressive Disorder (MDD). The specific gene that was observed is the serotonin transporter gene, also referred to as the 5-HTT gene. The 1087 participants from New Zealand were all assessed for stressful-life events every 2 years since the age of 3. They were split into three conditions according to the length of their 5-HTT gene: 2 short alleles, 1 long and short allele, and 2 long alleles. They underwent a stressful life-events questionnaire, which asked questions regarding their financial stability, family relationships, and job stability. The results demonstrated that individuals with both short 5-HTT alleles were the most susceptible to developing MDD symptoms, with the ones with both long alleles being the most protected. Ultimately, this portrays that one's predisposition of biological making may determine one's likelihood in developing MDD.

Overall, it is portrayed that there is a correlation between having more protective factors and a decrease in likelihood of developing MDD. In addition to portraying a supportive argument, studies such as Brown and Harris offer insight on the influence of factors such as social class on mental health and provide awareness on its impact. However, there are arguably still limitations towards study overall which may impact the findings of this study. One would be the fact that the study is based on self-reported data. Within the field of psychology, the influence of this type of data collection (Benítez-Silva et al., 2004). Especially in terms of rating feelings of depression, there may be a tendency for the participants to rate their experiences at different scales, some potentially exaggerating or minimising symptoms. This could potentially lead to misdiagnosis or an inability to accurately show a correlation in the study, questioning its validity in relationship. These factors would overall make up the extent to which sociocultural factors would have an impact on MDD.



Overall, this correlation further introduces the argument that individuals with certain biological characteristics may lead to predispositions in one's mental health. One of the main supporting factors of this study would be that it includes a more holistic approach due to its testing for both the sociocultural and biological influences on MDD. As a correlation was demonstrated for both arguments observed in a single study, this would provide evidence that both social and biological factors in conjunction with one another could be of major influence in developing MDD, rather than a single factor. However, a limitation could be that the correlation demonstrated in the study does not necessarily deem a causal relationship.

This is especially relevant as the results of the study saw how some participants still demonstrated MDD symptoms despite not having the susceptible gene. These limitations may question whether other factors served to influence the results which were not observed in the study.

All in all, both the sociocultural and biological argument towards MDD make excellent points and progress towards understanding how one's mental health can be determined. It can be insinuated, especially demonstrated in Caspi et al.'s study, that both biological and social factors may coincide to both influence an individual's mental well-being. However, it is evident that much research is yet to be conducted as to what determines one's mental health. Furthermore, this topic remains to be a highly relevant and impactful topic within society, reigning its importance to be researched to help those suffering from mental health.





# CAN PERFECT PITCH BE LEARNED?

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By Amelie Magotte

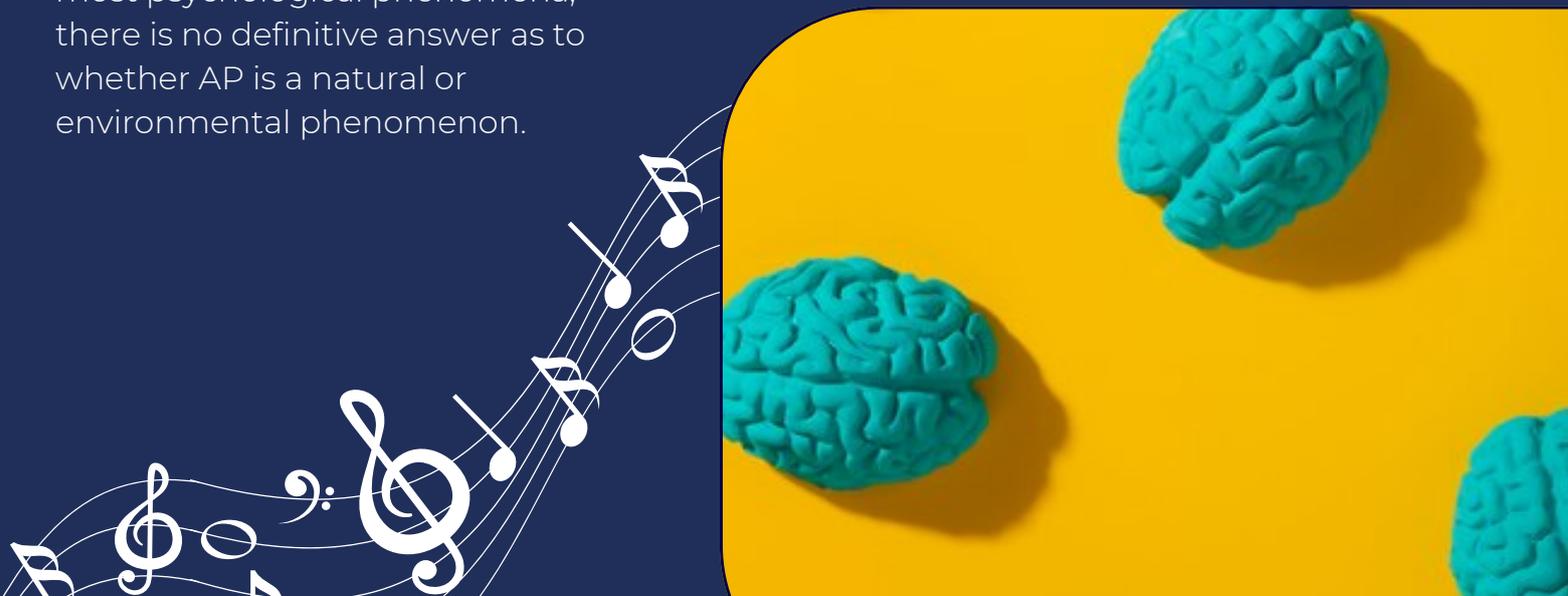
Music is one of the few things in life that can be universally appreciated, and is an integral part of my life, as I'm sure it is for many other people. Musical talent is something that everyone can value. From classical orchestral music to modern day pop singers, whatever type of music you like to listen to will have been written and performed by a group of very talented individuals. But what does it take to obtain musical talent? Is it something you are born with, or can pure hard work lead to musical ability?

A common musical ability that can be trained and developed is relative pitch – the ability to identify a note when given a reference note, or identify the pitch interval between notes.

Relative pitch is something that all musicians are taught, and examined on – for example, the Associated Board of the Royal Schools for Music (ABRSM) (a prominent exam board for music exams) will test students on their relative pitch in their grade exams, by asking them to identify certain intervals played. Conversely, a much rarer ability within musicians is the phenomenon of perfect pitch, more commonly known in the academic world as absolute pitch (AP). It is defined as the ability to identify or produce the correct pitch of a note without needing a reference note (Moulton, 2014). This is a very desirable ability for musicians as it makes life much easier – as a musician with perfect pitch myself, I cannot count how many times it has been invaluable to know exactly which notes are being played, be able to precisely replicate music by ear without having to read music, and to be able to tune my instruments without a tuner. Although it is highly desirable, AP is very rare – only about 0.01% of the general population possess this ability (Witynski, 2021). There has been much debate between psychologists and musicians as to whether AP is an innate talent, or whether it is something that can be trained and learnt: and, as with most psychological phenomena, there is no definitive answer as to whether AP is a natural or environmental phenomenon.

Research supporting the nature side of the debate suggests that AP is something that individuals are born with, and it has a significant genetic background. Research has suggested that people with AP are four times more likely than people without AP to have someone else in their family with AP. Additionally, there is a high sibling recurrence rate of about 8-15%. This is a similar recurrence rate to schizophrenia (which possesses about a 9% recurrence rate), which is widely thought to have a genetic component (Zatorre, 2003).

Furthermore, support for the nature side of the debate can be shown using brain imaging. fMRI scans have shown a neural difference between those with and those without AP. Zatorre et al. (1998) found fMRI scans showed an area of the right inferior frontal cortex being more active in control participants than participants with AP. This area of the brain is thought to be important for pitch information in working memory, which suggests that the representation of pitch in people with AP is fixed and doesn't need to be maintained continuously, which people without AP need to do in order to have a mental representation of pitch.



Support for the nurture side of the debate highlights the idea of a critical period in order to develop AP. Research by Baharloo et al. (1998), found that 40% of musicians who began training under the age of 4 had AP, compared to only 3% of those who began training over the age of 9. This indicates the significance of a critical period in developing AP. Furthermore, it has been suggested that early musical training in childhood is necessary for AP to develop, especially since AP is rendered ineffective if it cannot be used in a musical setting – if you do not know note names or how to play an instrument, you wouldn't even know that you had AP, and you wouldn't be able to make the most of your ability. However, early musical training in itself is not sufficient to develop AP otherwise all musicians would be able to develop this skill.

As with most psychological phenomena, AP cannot be reduced to either fully nature or fully nurture. Therefore, an interactionist approach seems to be the best approach to take when researching AP. An experiment I found fascinating suggests that adults who take valproate, a HDAC inhibitor usually used to treat bipolar disorder or epilepsy, learned significantly more accurately to identify the pitch of a note compared to controls who took a placebo (Gervain et al., 2013), indicating that this drug can almost reopen the critical period for learning AP! It is thought that the drug induced brain plasticity, and even reopened plasticity for acoustic preference in mice. This highlights the interactivity between the critical period, plasticity, the brain, and the environment, and further emphasises the interaction between nature and nurture in AP.



# Interview Exclusive

WITH BAILEY HOUSE

Interview exclusive  
discussing topics such  
as:

- Prosociality & behaviour
- Developmental psychology
- The impacts of cultural diversity
- Research culture



## ACADEMIC & CAREER BACKGROUND

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## DEVELOPMENTAL PSYCHOLOGY

The challenges and rewards  
of developmental psychology

## INTERVIEW EXCLUSIVE

**“YOU NEED TO BE LOOKING FOR THAT DIVERSITY. AND IF IT'S NOT THERE, THEN YOU MAY WELL BE DOING SOMETHING WRONG; YOU MAY JUST BE MISSING IT.”**

Katherine Jones interviews Lecturer Bailey House - University of York.

**Do you want to start by speaking a little bit about your position here at the university and what you teach and research?**

My position is as a lecturer in psychology, but most specifically in developmental psychology whether that's in the title, that's kind of where I would fall within the kind of the general landscape of the department, sort of within the discipline.

A lot of the work that I did before was on prosociality, and prosociality, both in primates and in humans, and in children and in adults, and it centred on kind of how children become adults.

And a lot of that has to do as much with cultural learning as it does with something that's a part of us as and who we are.

And the interesting thing about that, is that it drew me to what is called social norms. Social norms are these rules that we learn that tell us how we're supposed to behave. And that led me to thinking about how powerful those norms are for changing behaviour.





**In your research you often talk about prosociality; Can you tell us a bit about what exactly that is? And then what role prosocial behaviour plays in decision making or behaviour?**

More than anything else, prosocial behaviour is a really interesting example of a really difficult behaviour to try and understand.

Because prosocial behaviour is just doing something that's nice for other people, and you might think "Okay, well, that's no big deal"; But why do you do it?

And particularly, because it's very rare that anything that you could do for someone else doesn't involve some kind of a cost to you; and it may not be big, but oftentimes it is. And then there are these cases where you do things which seem immediately costly to you, and the benefit is to society, or strangers who you'll never meet. You can think of something as simple as getting vaccinated during the pandemic.

A lot of the people who we needed to get vaccinated as a society were younger people who didn't probably really need it, they were likely going to be fine, it was going to be a bad cold. But if they didn't get vaccinated, then a lot of people that they never knew or never met, maybe had no reason to care about, might be at serious health risk or risk of death.

So these are key situations, which are why prosocial behaviour is really important, but also really hard to understand. Because it's a situation, where all else being equal, you should not care. So why do you care? And why do you do it? That's kind of what drew me to prosocial behaviour, not necessarily because I just want to study sharing or why people are nice to each other; but because it's actually really difficult behaviour to understand when you think about it.

**Nature versus nurture is an age-old debate, do you think either of these (nature or nurture) underscores behaviour more than the other?**

It is a completely age-old debate, and in a sense, some people might say "It's been settled. It's both" but that's both an answer and a non-answer. On any given point, it's useful to think about the contributions of different factors, because it helps you to understand the system better. So I do think it's potentially both, but really what it is depends more on what you're thinking about. When you say prosocial behaviour, as I mentioned before, we're actually talking about the outcome in a sentence [the outcome of behaviours], but the motivations can be quite different.

So some of our motivations for helping others, may well be to some degree, within our biology.

It's not the same as saying you're born doing X or Y, but we might more naturally gravitate towards doing certain kinds of things across a wide range of developmental experiences. In a sense, you are much more likely to end up in certain places than across a wide range of personal circumstances. And that might suggest that it is more a part of our biology, it's not guaranteed, but it's more likely.

**Across social environments and with age, people's values and social understandings can change drastically, how do you think this differs across cultures?**

A big part of the research that I've done is interested in that process - how do kids become adults in the sense? What's the process of becoming interested or concerned about what other people do and find appropriate, starting to conform to that, then that just becoming what you do? Sort of internalising it, and by that point, you're more or less an adult? But what's that process?

At some point between five, six, seven years-old, and adolescence, we start to do things not because we have to, but because that's just the right thing to do.

So at some point, you go through this process of learning what someone else would say, and that the right thing to do is start to care about that, and start behaving accordingly. And that is basically studying how we develop a psychology for social norms. And that's been a big part of what I've done is trying to figure out that developmental process. A big part of that process is about paying attention to what you should do. And what you should do differs from place to place and from culture to culture.

To answer that question properly, how does the psychology for paying attention to social norms develop, it would be wrong to do it only within one society, because then you wouldn't realise how much of it is about social norms and culture, and how much of it is about something else?

So what you really want to do is see how kids attention to different features of social norms and different social pressures. And look at how does that develop in different societies? And that's the kind of comparative or cross-cultural studies that I've done. And largely, it seems like a lot of it is relatively similar across different societies.

So the basic idea is that the underlying psychology for paying attention to social norms, is mostly similar across different societies. I won't say completely similar, there's going to be differences. But generally speaking, the timeline is fairly similar. And things that kids do are mostly similar in different places. It's just that in different places, the 'right' thing to do is different.

**To talk a bit more about your research specifically - what has been your favourite study to work on or your most interesting finding?**

I think the thing that was my most formative in a sense was my Masters; and that project was looking at the very early development of prosocial behaviour. And I was looking at kids between about three to seven years-old, which before that I'd been working with infants, so they seemed a little bit old to me. And I was expecting the most interesting results I was going to find, was that they're going to be present by five, six, or seven years-old. And actually, I was finding these weird things with these tasks, where kids seemed like they were doing less prosocial behaviour as they got older.



I was still seeing some differences across experimental conditions, but it was different. It looked like kids were doing less of it [prosociality] as they got older; and I thought that was weird.

But then the next project that I did ended up adopting that same design to do a big cross-cultural project. I got the opportunity to collect data in a bunch of different societies, and collaborated with a bunch of great researchers. Because in some places we were looking at very small scale societies, we thought that looking at three to seven year olds there's not going to be enough kids.

So we ended up looking at three to nearly fourteen year-olds. And actually, what we saw was that across all of those places, kids who were getting in with these methods are getting much more selfish in the early age range. And they were very similar across the different societies within that early range, three to seven or so. So in some ways, it was very similar to what I'd done before. But kids were quite similar across the different societies, which was kind of curious. And it was only after that age, that you started to see different societies start to spread apart, and kids start to behave differently in different places, and to behave like they do as adults. So the early period was one of greater increasing rationality; kids were understanding the task, and they were being more strategic. It was only after that, above the age at which I thought anything interesting was going to happen, that you found that cultural differences started to emerge.

So basically my guesses were way off. If I hadn't collected that wider age range, I never would have seen it, I never would have seen cultural differences at all. And I likely wouldn't have pursued cross-cultural research, because I wouldn't necessarily have thought that it was something that would add benefit to my research program in general.

So this almost accidental result, seen over age seven, was really critical for my understanding of cultural differences, and was really quite formative for me. It made me realise that you need to consider things like cultural diversity, age diversity, and you really need to be looking for it. You need to be looking for that diversity.

And if it's not there, then you may well be doing something wrong; you may just be missing it, because it is there, you just need to look for it. And if you're not finding that diversity, then you're probably not asking the right questions.

And so it made me really realise that if what you really want to do is understand, you engage with the fact that humans are cultural beings, and that culture is important to us. You should be finding something even if what you find is culture isn't relevant; you should still be finding it somehow, just to know that you're actually able to measure it.



# THE NATURE OF OUR PERSONALITY TRAITS AND HEALTH OUTCOMES.

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by Gemma Sarigu

Our fascination with personality dates back to Ancient Greek philosophers like Hippocrates trying to understand people's temperament differences. Today, personality still dominates pop culture with popular online tests like 16 personalities and the introvert/extrovert scales (Extroverts are better!). As for academia, personality has come a long way from Hippocrates's idea of 4 humours to standardised measurements of personality factors (e.g. HEXICO) becoming the norm in research. This has allowed for the association of personality with many elements and behaviours. However, there is conflicting literature on where personality sits on the nature-nurture spectrum, with some viewing personality traits as highly fixed. In contrast, others consider these dynamic characteristics that change with experience. This article will focus on the role of personality traits in health behaviours and outcomes.

Health behaviour and outcomes are some factors associated with personality; this has gained popularity in the literature due to its potential for intervention features to improve health outcomes. Methodological difficulties have meant that research is highly associational, e.g. low agreeableness and conscientiousness being linked to smoking (Kim 2022). In contrast, neuroticism has been associated with an increased risk of cardiovascular disease (Hong and Paunonen 2009). However, while association highlights a potential link, it fails to show the causality and direction of the relationship and limits our understanding of a possible process for this relationship.

A 40-year longitudinal study by Hampson et al. 2006 explored the relationship, placing personality on the natural side of the scale. Nine hundred sixty-three primary school children in Hawaii, US, were assessed on personality traits by teaching staff, with observations later standardised to childhood personality scores for each Big 5. The Big 5 are five key dimensions of personality: agreeableness- hostility, conscientiousness- unconscientious, emotional stability- neuroticism, open to experiences/not, and extraversion- introversion. Importantly, 40 years later, the participants were followed up and completed a variety of health measures, e.g. BMI, smoking status, alcohol use and self-reported health. The results showed that childhood conscientiousness traits were rated with smoking, BMI and self-rated health. Additionally, lower childhood conscientiousness predicted poorer self-rated health and has unsurprisingly been linked to mortality in this sample. Therefore, this study supports life-span health behaviour and a nature-based influence on health outcomes.

Notably, there is the potential for changes in personality traits midlife, as a follow-up study showed with the Hawaii cohort, e.g. increased conscientiousness, openness, and agreeableness led to improved self-reported health measures (Letzring et al. 2014). The midlife occurrence of these changes is arguably concerning, as many prior health behaviours, e.g., smoking, may continue to affect health outcomes, regardless of differences in traits. Further contrasting research suggests that any naturally occurring changes in personality traits over time are only weakly associated with changes in health behaviours (Jokela et al. 2018). This means personality traits related to health outcomes are still on this debate's nature side.

Now, the above literature presents a bleak story suggesting that health behaviours linked to personality traits at a young age could persist into adulthood, leading to increased disease.

However, the awareness of the potential stability of personality traits related to health allows for individual prevention strategies to improve health outcomes. For example, health consciousness, arguably a subtype of the general consciousness factor in the Big 5, involves healthy lifestyle factors such as good diet, exercise and sleep.

Some research has found this can be improved with increased medical knowledge; however, this is undergraduate degree-based knowledge (Inoue et al. 2021) and, therefore, not a feasible strategy for the whole population. Therefore, a different approach involves assessing different ways to deliver health information to individuals with high and low health consciousness. For example, individuals presenting healthy food in a picture format rather than text for low health consciousness increases consumption intentions (Buhrau and Ozturk 2018).

In conclusion, this article argues for the importance of nature in our personality traits, with these seemingly stable for 40 years, and more importantly, how they can negatively affect our health behaviours. While there is some benefit in attempting to alter these traits, there are also great conceptual and practical difficulties. Therefore, a more immediate practical application in public health would be to target interventions based on and tailored to the stability of these traits.



# The interplay of nature and nurture in shaping intelligence.

BY  
BHOOMI  
DHARIWAL

The psychological notion of intelligence is quite different from its common sensical notion. One of the first psychologists to define intelligence was Alfred Binet, he described it as "the ability to judge well, understand well and reason well" (NCERT, 2006). Over the years there have been several psychologists who have given different definitions of intelligence, proposed different models of it and put forward different types of intelligence. Human intelligence, like many cognitive facets, is a complex trait, shaped by both genetic predispositions and environmental influences. But what plays the primary role in shaping one's intelligence? Nature or nurture? Since it is difficult to separate the genetic and environmental factors of intelligence, studies conducted on intelligence are extremely complicated. Many of these studies focus on twins, adoptees, and families. Twin and adoption studies concluded that cognitive abilities are among the most heritable behavioural traits. These studies have demonstrated that identical twins tend to have more similar IQ scores than fraternal twins. Similarly, siblings reared together and apart also showed differences in their IQ scores.

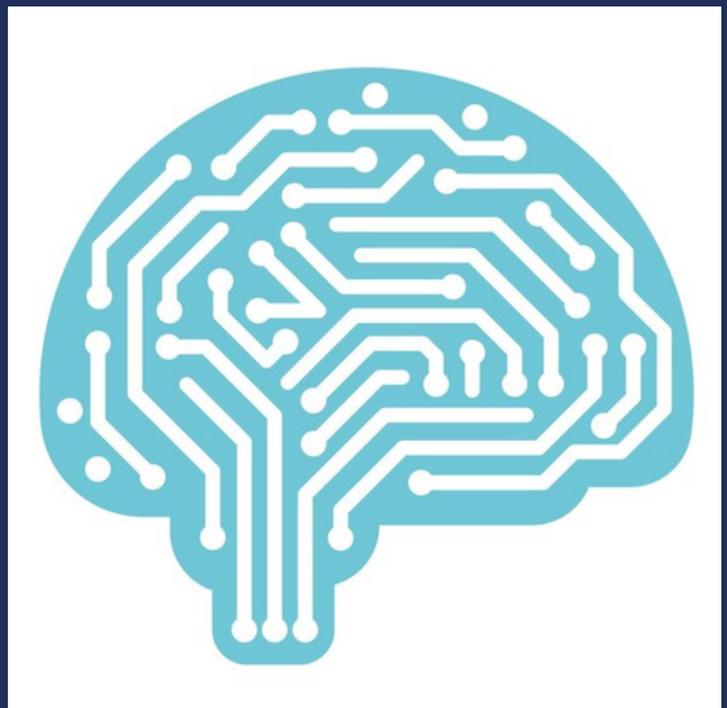
However, it was also found that Identical twins reared together showed more similarity than them reared apart (NCERT, 2006). Developmental comparisons have found that for general cognitive ability, heritability increases from infancy (20%) to childhoods (40%) to adolescence (50%) to adulthood (60%), disproving the previous assumptions that environmental influences increase throughout the lifespan (McClearn et al, 1997).

Various studies haven't been able to conclusively identify any single gene that plays a major role in shaping one's intelligence. Thus, it is likely that intelligence is a polygenic trait, where different genes that each make only a small contribution towards an individual's intelligence exist rather than just one single gene being solely responsible for one's intelligence (MedlinePlus, 2020).

However, it is crucial to recognize that genes do not operate in isolation, rather, they interact with the environmental factors shaping the trajectory of cognitive development. The environment encompasses a myriad of elements, including family dynamic, socio-economic status, and cultural influences. Adoption studies offer a unique perspective by presenting an opportunity of examining the intellectual similarities between the adopted children and their biological and adoptive families. If intelligence was primarily affected by genetics, we would expect adopted children to show greater resemblance to their biological parents. Instead, we noticed that while genetic influences were evident, environmental factors like the quality of the adoptive home and educational opportunities available played a crucial role in shaping intellectual outcomes. Children from disadvantaged homes adopted into families with higher socio-economic status showed a significant increase in their IQ scores (NCERT, 2006).

It requires an appreciation of the intricate interplay between genetic predisposition and environmental influences, acknowledging the unique contribution of each factor to the rich tapestry of human intelligence. The addition of perspectives from behavioural genetics, developmental psychology, epigenetics, and neurobiology has deepened our understanding of the interplay between nature and nurture. Though the question of what affects intelligence more cannot be answered in favour of either nature or nurture.

In conclusion, nature sets the range within which an individual's development is shaped by the opportunities available in their environment.





# MAO-A: WHAT WE KNOW SO FAR ABOUT A POTENTIAL 'CRIMINAL GENE'

*By Caoimhe Mackin-Lau*



The influence of “nature vs. nurture” on behaviour has always been a topic of discussion. We know that the experiences we have across our lifetime can influence our view of the world and how we interact with other people. We also know that behaviour can be explained by differences in our biology, such as different medical conditions, levels of hormones, neurotransmitters, or injuries to the brain. Just look at Phineas Gage. A freak railroad accident that leaves most of your frontal lobe destroyed will undoubtedly change you as a person- but have you considered how much of who you are is due to what's in your genes?

In the case of Phineas Gage, it's easy to see how he appeared to turn into a different person overnight. It's harder to believe the possibility that our genetics may have already decided what kind of people we're going to be before we can even talk. However, when it comes down to it, the centre of our consciousness (and thus all our thoughts, feelings, and actions) is the brain. Anything that can influence the brain can influence our behaviour, and indeed, research has suggested that personality is anywhere from 30-60% heritable, due to over 700 genes that can interact to influence personality and behaviour on a molecular level (Sanchez-Roige, 2017; Zwir, 2018).



Talking about genetic influences on behaviour becomes particularly contentious when it comes to negative behaviours associated with crime and violence. This is understandable because instinctually, we don't want to believe that people behave violently or engage in criminal activity simply because they want to. It is easier to accept that events like this happen if we know there's some kind of reason behind it. One gene that has attracted attention in the wider debate is the MAO-A gene, also known as the "warrior" gene due to its link to aggressive behaviour. This gene codes for monoamine oxidase A: an enzyme which is involved in regulating neurotransmitters such as serotonin, dopamine, and norepinephrine. The effects of MAO-A on aggression in humans were first identified by Brunner in 1993, who found that five male members of a Dutch family all exhibited no MAO-A function, and coincidentally were prone to impulsivity, violent outbursts, and engaging in criminal acts such as arson (Levitt, n.d.).

But how exactly does this impact our behaviour? Studies on mice have shown that MAO-A deficiency impairs brain function by altering the metabolism of neurotransmitters. This then affects how they degrade in the brain, which impacts neural pathways involved with mood regulation, reward, fight-or-flight reactions, and impulse control. People with the "warrior" gene are thought to be hypersensitive to negative events and struggle with regulating their emotions, making them prone to aggressive and anti-social behaviour as a result.

Research from Kolla and Bortolato (2020) supports this and suggests that this could predict one's propensity for behaviours such as juvenile delinquency, gang membership and alcohol abuse. Tiihonen et al. (2015) found the low-activity MAO-A variant was one of two genes to be associated with extremely violent behaviour in Finnish prisoners, and even suggested that up to 10% of all severe crimes in Finland could be attributed to these variations in genotype. MAO-A's reputation as a "criminal gene" is further supported by the increasing citation of genetic research in court cases defending accused criminals. In one case from Italy, a man who stabbed another man to death for allegedly insulting him had his sentence reduced by a year on appeal after evidence was produced showing he possessed the MAO-A variant. The fact that a prison sentence could be mitigated based on a genetic variant alone is a testament to its perceived power. It also implicitly helps reinforce the idea that someone who engages in bad behaviour could just be "born that way".



Hearing all this information at once can be shocking; luckily, findings like these don't mean that anyone with a dysfunctional MAO-A gene is instantly destined for a life of crime. A lot of the research has found that while "warrior" gene carriers can demonstrate more aggressive behaviour, this behaviour is situational and typically a response to some kind of provocation or stress. And as it turns out, expression of the gene itself is also situational: a study done by Caspi et al. (2002) found that 85% of men with the low-activity MAO-A variant and who experienced some form of childhood maltreatment developed some form of anti-social behaviour in adulthood. In contrast, those who had not been mistreated in childhood were less likely to develop anti-social behaviour and were found to be less aggressive overall. Furthermore, research by Guo et al. (2008) into 2500 adolescent boys found that stressors such as family issues, low popularity, and academic struggles significantly interacted with variants of the gene to contribute to violent delinquency, compared to just having the variant alone.

If behaviour was solely dependent on genes alone, surely everyone with the same exact variants would be behaving in the same exact way. But this isn't the case: in fact, the "warrior" gene linked to aggression in men has actually been significantly linked to increased happiness in women- even after accounting for the potential effects of factors such as race, physical and mental health, abuse history, negative life events and quality of relationships (Chen et al., 2013). It doesn't make sense to claim a single gene is fully responsible for bad behaviour- or any behaviour, for that matter- because of the sheer complexity of human behaviour. There will be a lot of people in the world that were born with the "warrior" gene but will never break the law or act violently. What is it that's stopping them? There are also hundreds of thousands of violent criminals who don't have any mutations or variations in their genes whatsoever. If the "criminal gene" didn't play a part in their actions, then what did?

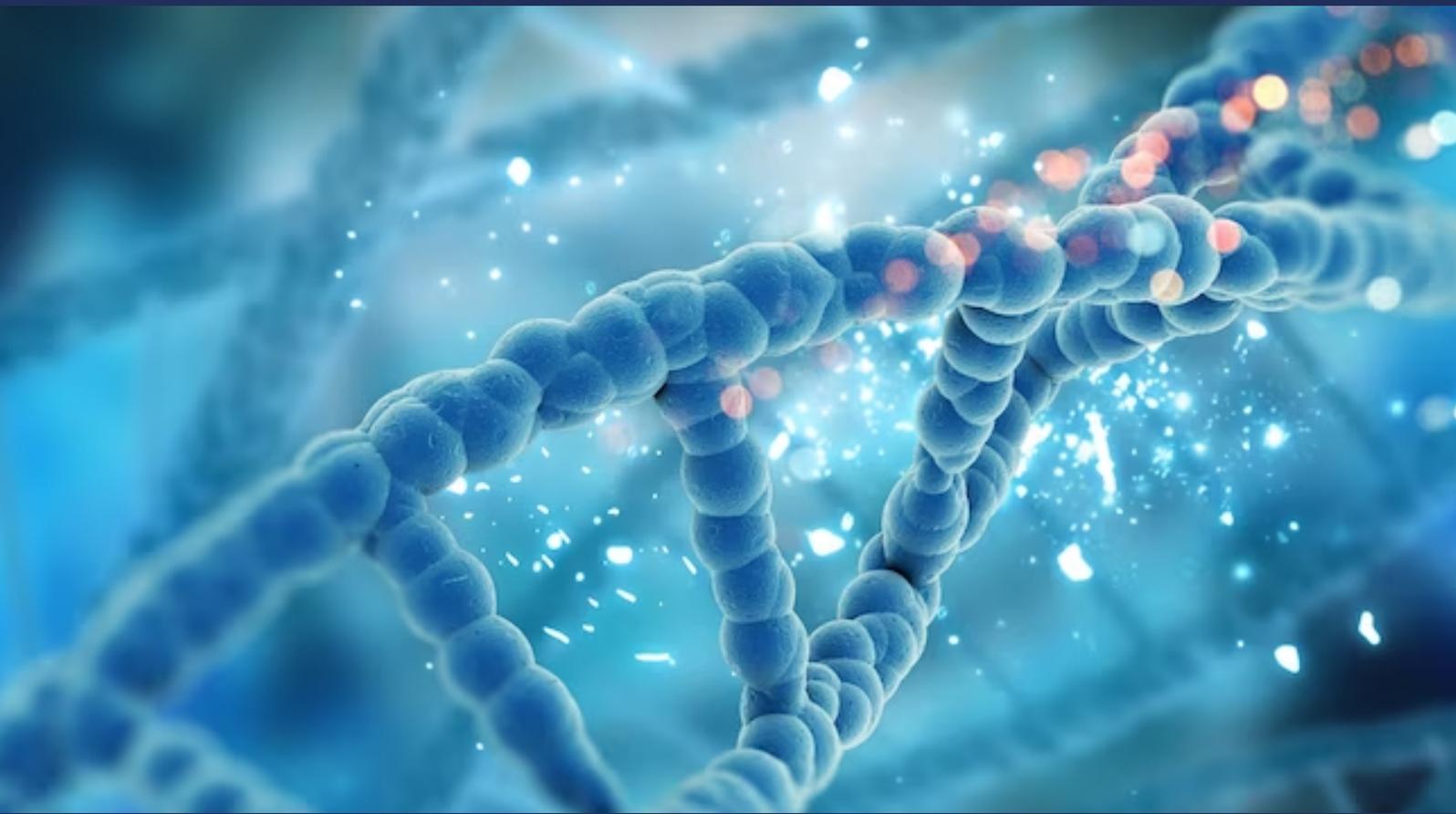


Ultimately, the process through which our personalities fully develop is much more complex than simple inheritance of a gene. What the research has demonstrated so far is that the existence of the gene alone may not be significant, but the interaction it has with the external environment is. Aggression in all its forms can't be fully attributed to nature OR nurture: some form of interaction between them must be responsible. It is also important to state that in the context of criminal behaviour, genetics can never provide an excuse. What it can provide is more clarity on how these behaviours develop and interact with other behavioural factors, which can inform individual and societal responses to these behaviours within wider sociocultural contexts.

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**the significance of the gene alone may not be significant, but the interaction it has with the external environment...**

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# Psychology in Action

ISSUE 19

## Primary school, or undercover psychology lab?

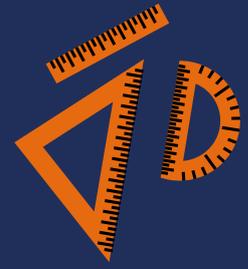
*Author Yazmin Walden explores their time spent volunteering with a primary school and the valuable psychology work experience.*



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# PRIMARY SCHOOL VOLUNTEERING



Written by  
**Yazmin Walden.**

Work experience in psychology; such a broad topic, with so many areas to focus on. Initially, when looking for work experience at the beginning of sixth form, I thought the only type of work experience I could get was literally sitting in a psychologists' office, or a psychology lab, taking in all the details I needed to become a psychologist when I grew up. However, the work experience I ended up completing was completely different, but such a brilliant experience.

The struggle to find psychology-related work experience was very real; frantically emailing any company I could, to be told that I couldn't join them due to privacy, confidentiality, COVID...Until my friend's mum came in with an offer that, unbeknownst to me at the time, would have been ridiculous to refuse.

I spent three days with her reception class.

Although initially that doesn't particularly sound very psychology related, let me assure you, I learnt more there than I thought I ever could.



Before we dive in, let me tell you a brief overview of the school I spent time with.

Like any primary school, this one focused on their students first; their wellbeing, what made them tick, and how to make sure they were all making the most of their time there, happy, safe, and secure. At the time that I was offered to spend some time with this school, I was confused as to how it related to psychology; I wasn't in a lab, or an office, so surely it's not 'real' work experience, right?

Let me tell you; the three days I spent at this school, I learnt more about psychology than I thought ever possible. During this time, I was also studying psychology A-Level; we'd just begun our 'attachment' unit, focussing on caregiver-infant interactions, attachment types, and how early relationships can have a prominent effect on the child for the rest of their lives. Working with the reception class, I learnt how integral and vital the treatment of children from this very young age was, as they would take everything with them, consciously or subconsciously, thus shaping their lives.



The activities I engaged in were really fun - I happened to be in on the week where everything was winding down for the summer holidays, so we did forest school, I read to the children, we made pictures and played and made up dances outside. But not only was it a genuinely fun, rewarding experience, it showed me how children interact with one another and adults, and demonstrated how every second of every day, they are developing and shaping their futures.

A particularly amusing moment for me was monitoring their breaktime with a teacher, and being asked to choose my favourite student out of the two based on their dance moves. This one moment of validation meant everything to them, and I could see that whoever wasn't chosen was going to be heartbroken; when you're five, being told your dance is the best is all that matters, right? I told both of them their dances were equally amazing, but for different reasons. Later on that day, I heard the girls tell their teacher that they were both equally amazing, but for different reasons. Hearing that genuinely warmed my heart; they didn't feel the need to compete, but recognised their differences instead.

Something I found incredibly interesting was from the moment I walked into the reception class, they all noticed me. One or two of them sidled up to me, asking my name, whilst others flung themselves and demanded I read to them.

Aside from making me feel incredibly wanted and warm, I found it intriguing how from such a young age children will demonstrate this indiscriminate attachment; I was a complete stranger to them all, yet on the last day of my work experience, they were really pulling at my heartstrings, asking me to stay and getting upset when I said I was leaving. This type of behaviour really highlighted to me that above all, at this young, loving age, children just want to be cared for, have their hand held, be listened to. No matter who is listening to them.

Overall, the work experience really showed me even more so than before how psychology is all around us, dictating every single one of our actions. My favourite part was seeing how happy the young people were in the smallest of moments; spinning around, blowing bubbles or running after each other, as though nothing else was important. It was rewarding to watch them improve their spelling after testing them, but above all of that, it was so fascinating to gain an in-depth experience as to how these children act towards each other.

Volunteering at a primary school is incredibly easy; emailing the teacher of the class you're interested in and giving your availability and intentions (how long you want to volunteer for, short or long term). I personally had to have a DBS check, which I had from other employment, and safeguarding training. It's a very simple process, and I would entirely recommend spending a few days in a primary school, volunteering; it's a real eye-opening experience, and not to mention wholesome!

# IS LOVE A SOCIAL CONSTRUCT?

BY HOPE BROOKS-SIMPSON

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There are some people who would never have fallen in love if they had not heard of such a thing. ”



Romantic love is deemed such a powerful force that can upturn or wreak havoc in people's lives in an instance; an emotion so ancient and instinctual it precedes civilisation's concrete structure. But how true is this? Love includes a large set of behaviours, feelings, and attitudes such as intimacy and commitment. While these features of love served a purpose which contributed to the survival of the species, have these characteristics always defined love? Will they continue to do so in the future? François de La Rochefoucauld said "there are some people who would never have fallen in love if they had not heard of such a thing." In that case, we should wonder how much of our experience with love is truly this unfathomable feeling as opposed to a social construct.

Love appears to have many adaptive functions for social creatures like humans. From initiating actions that lead to reproduction to offspring and mate guarding, 'love' began to make its place in the human world (Buss, 2018). This was possible due to the neurobiological processes that incite such an emotion. Love supposedly creates an exhilarating feeling left indescribable which activates areas of the brain related to rewards; just like for addictions, dopamine emerges to be the main instigator. Dopamine is a neurotransmitter associated with feeling good, and while not directly causing said pleasure or being directly linked to love, it does play a role in motivation and reinforcement which may have allowed the concept of love to persist all these centuries.

Fisher hypothesised that when people make choices regarding their partner, this is due to areas such as the ventral tegmental area and caudate nucleus, regions involved in reward and motivation that are working together. This supposedly allows humans to focus their energy on specific partners and forms some of the physiological symptoms associated with 'being in love' like increased heartbeat and sweating palms. Oxytocin is implicated in romantic love as well causing deep attachment between a couple. This may cause behaviour that might be deemed to be due to jealousy or obsession like "mate guarding", or courtship behaviours, characteristics spawned from motivation to win over the partner of choice.

From this evidence, Fisher suggests that love is a pure biological reaction experienced universally (Fisher et al., 2005). With its evolutionary and neurochemical origins, it can be quickly concluded that love is a feeling experienced by all in a similar fashion. However, love does not serve the same purpose it did back when survival was more of a luxury than a right. As societies have grown to become more complex, so have our conceptualisations of love and its meaning in our lives.



**AS SOCIETIES HAVE GROWN TO BECOME MORE COMPLEX, SO HAVE OUR CONCEPTUALISATIONS OF LOVE AND ITS MEANING IN OUR LIVES...**



The definitions of love and romantic expression always seem to be incomplete; they do not quite capture how love serves in others' lives in addition to our own. If love is a function in our lives as evolution and neurobiology suggests, then does the meaning of love not differ between cultures and across time? Social constructionists argue that love has conceptualised in different ways for the individual which is majorly influenced by culture. Instead of thinking the meaning of love and the experience is ubiquitous, the emotional experience is determined by society.

This perspective is led by the idea that humans do not solely let the events of the world happen to them, they decide on what is correct and incorrect; what is moral vs immoral. For example, the majority view of loving someone of a different race or gender was seen as wrong and not 'true love'. Why? Because such love did not have a place or purpose in society at the time. The difference between what is declared as love from those times to now, is not the neurotransmitters released into our bloodstream, but the cultural norms we have created (Beall & Sternberg, 1995).



Different time periods have also defined love differently due to its sexual component. Whereas love in the modern era often requires a sexual element, love between women and men were mostly asexual during the Victorian times. This is because the function of sex only served use for procreation causing a dissociation between love and sexuality that would not be found today. Through a cultural lens, love and sex were unrelated. However, this type of thinking today would lead an individual to conclude that it was not romantic love they felt, but platonic. As people, culture, and time change, the role of love differs, suggesting the definition of love is flexible and fluid. It has transformed to fit the objective of the culture it is in, rather than a purely biological nature.



Nonetheless, we cannot construct everything about love. Breakups causing physical problems such as broken heart syndrome, where the heart can mimic heart attacks, cannot be wished away just because we so choose it. And we cannot socially construct people to fall out of love or to suddenly stop feeling love for particular people whenever we decide. Overall, our neurobiological makeup works together with our environment to create these unique experiences with love and relationships, whether we have them or not.

# ON FORMING IDEOLOGIES: NATURE OR NURTURE?

BY CONNOR FRANKS

Different scholars have suggested many ways to define a political ideology (Jost et al., 2009); so it might not be surprising that there is also debate around how people develop their own ideologies. Commonly, a political ideology can be defined as a set of beliefs that allow for an interpretation of the environment and how it should be structured (Jost et al., 2009). The idea of being disposed to a certain political viewpoint can seem like a ridiculous idea, as, generally, we are presented with environmental influences (Alford et al., 2005). There is, however, emerging research in favour of the nature side of this debate..

A key external influence on our beliefs is socialisation (the idea that we learn and internalise different beliefs from various sources) (Jacobsen, 2001). Most of us consume media daily and this can have a large impact on how we view national issues. The way news outlets frame different issues has been found to influence explanations of political issues. In particular, a study from Iyengar (1987) showed participants different news coverage of poverty, unemployment and terrorism. The way participants then explained these issues was related to the coverage watched, and this subsequently impacted their evaluation of the incumbent president. This demonstrates the importance of the media we consume in shaping our political views. This can also highlight the importance of reading more into the news stories that we read and not easily trusting the headlines and claims made by one source, particularly if they are so influential on our beliefs. However, media socialisation can be challenged as some research suggests that people easily believe news confirming their beliefs while headlines challenging our opinions receive much less of our attention (Moravec et al., 2018). Therefore, maybe when reading news stories, they don't influence our opinions so heavily as we already have the opinions prior to reading and merely want to confirm these opinions (confirmation bias). Thus, we would need to question what actually causes us to develop these beliefs – some credible suggestions could be socialisation from other factors or, perhaps, they are more innate.

significance of observation in A more interesting potential agent of socialisation might be higher education institutions. Jacobsen (2001) measured the political beliefs of students studying nursing, social work and teaching and compared this to those studying economics before they began studying and after three years of study. It was found that both student groups became more non-authoritarian. However, it's important to be tentative about relying too heavily on these conclusions as there was limited change in other political factors. Moreover, this was only one small sample in Norway with students from just one institution, therefore, has evident generalisability issues. It might be interesting though to consider the potential impact of higher education on our authoritarianism (an ideology characterised by obedience to authority and suppression of individual liberties) (Lindstaedt, 2023).

While the previous studies show some evidence for the nurture side of the debate, the nature side is just as important to consider. The idea of having some form of disposition isn't new. Aristotle's philosophy hinted at this idea when he suggested "man is by nature a political animal" (Hatemi & McDermott, 2012). Research interest in the nature debate has emerged more recently and is still in its infancy with more research needed. Classical twin design studies have been conducted and have indicated approximately a 40% heritability estimate (Dawes & Weinschenk, 2020). This suggests that 40% of the variation can be explained by genetic variation and the other 60% would be attributable to other environmental factors. Therefore, while this does suggest an innateness to ideology formation, the variation explained by genetic influences might seem relatively small compared to what is not explained by heritability. Despite this, there are limitations to using a twin study, most notably the equal environments assumption, which assumes that twins are exposed to similar environments to similar degrees (Dawes & Weinschenk, 2020). However, some studies have found heritability estimates as high as 60% (Inherited, n.d.). Thus, it seems sensible to take away that genetics play a somewhat important role.

To build on the general speculation from twin studies that suggest a genetic influence, some studies have attempted to pinpoint particular candidate genes. Hatemi and McDermott (2012) conducted a review to attempt to collate some of the research in the area. They demonstrate how genes such as the dopaminergic gene DBH or the GRIN1 gene, which is implicated in glutamate systems, have been suggested to play a role in political ideology. However, it is noted in Hatemi and McDermott's (2012) review that there is a lack of replication of the findings from the original studies. Moreover, finding conclusive evidence about candidate genes would be extremely difficult for researchers in the field. It's unlikely that a single, or even a small group, of genes would have a causal link to ideology. Instead, it's sensible to suggest that there would be a lot of genes throughout the genome which indirectly have small effects which cumulatively build our ideology. This would require very large samples to detect the small effects (Dawes & Weinschenk, 2020).

Overall, the most sensible conclusion would be that there are both environmental and genetic influences on our political ideologies. The interaction of these influences, in our personal context, would be the key to what builds our idiosyncratic beliefs. The influences outlined here are not exhaustive and there is definitely much more in our environment that would exert an impact. This is just a great start to highlight the importance of considering all of the different factors that can play a role in our beliefs. Having awareness of them would enable us to not let them unconsciously influence us in a negative way (for example media socialisation), permitting us to question things and form beliefs which seem just to us. Furthermore, it might be fascinating to see how further research into the nature view might emerge and how there may be more insightful discoveries into genetic influences.



# Interview Exclusive

WITH ELIZABETH MEINS

ISSUE 19



## CAREER AND RESEARCH HIGHLIGHTS

Discussing current research endeavors in developmental psychology & parenting research.



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## RESEARCH TECHNIQUES

The challenges and rewards of longitudinal research in psychology.



Katherine Jones interviews Lecturer Elizabeth Meins - University of York.

**Do you want to start off by talking a bit about your current position and what type of research you do here at the university?**

I'm a professor in the Psychology Department; I've been in York just over 10 years now, and I'm a developmental psychologist. So I do quite a lot of long term, longitudinal research. My other role in the department is as the departmental impact lead. So that means I'm responsible for helping support the impact of people's research outside of academia. So anything to deal with engagement with government policy, or with NHS or public engagement, and those sorts of things.

**This issue is focused on nature versus nurture, which is an age old, some may say outdated debate. Do you have any personal insights or opinions into how that plays into developmental psychology?**

Well, a lot of my recent stuff has been on intervention. So I suppose I'd suggest or I think that nurture has a significant role to play.

There's always kind of ways in which if you facilitate and scaffold people, you can help improve, but you know, I'm interested in parenting, so you can improve those sorts of things. But I think the sort of interactionist perspective now is pretty much what everybody starts off with.

So, as you might remember from your first few lectures, I'm a big fan of Lev Vygotsky. And you have these elements, mental functions, which are really the basic building blocks of interacting with other people and with your environment, and they're obviously hardwired.

But for me, the nurture part has always been more interesting. And adding the notion of resilience is fascinating. So you know, you could have two children who've had very similar kinds of either good or bad experience, but turn out in completely different ways.

So it's this kind of interplay between what the individual brings, and then what the environment brings; but then how they interact together in combination in this interaction between nature and nurture.

**You mentioned your research right now is a lot on interventions and things like that. What are you working on?**

I study mind-mindedness, which is essentially how aware parents are of what their children, or their babies, are thinking and feeling. And you get natural individual differences in how tuned in parents are to their babies.

And over the last however many decades, my research group, but also other research groups around the world, have found that mind mindedness seems to be a good thing for children's development. So it predicts more optimal outcomes, like secure attachment and better theory of mind abilities, and fewer difficulties, and all this kind of stuff. And some of those findings are over quite long term periods of time.

So we then thought after our original research, we had enough evidence to step in and say, can we teach parents how to become more mind-minded? We had sort of two ways of doing this. So we worked with mothers who had severe mental illness and were hospitalised in a mother and baby unit at the Bethlem Royal Hospital in South London. And we developed a video feedback intervention, so the mothers actually watch themselves in clips interacting with their babies, and we developed an intervention that was delivered by the psychologist on the unit to help them try to be in tune with their babies, and gauge their internal states more appropriately.

And that turned out to be really effective. And so when they were discharged, their levels of mind-mindedness were no different from mothers who were psychologically well and had never had any mental illness. Whereas the control group who had a video feedback intervention focused on following your baby's gaze, talking to your baby were still less mind-minded than the control group at discharge.

And then in this project I did when I first got to York, we actually developed a smartphone app to try to increase parents' mind-mindedness.

Video feedback is lovely, but it's incredibly labour intensive, so we wanted something that could be delivered at scale. We worked with an app developer, and we devised this app where you just basically get some psychoeducation about baby's development that's tailored to how old your baby is. So you have age appropriate expectations about what babies can and can't do, and their psychological development. And then also, they got sent an alert on a daily basis, just saying, what's on Emily's mind, or whatever the baby was called, prompting them (the parent/caregiver) to post a photo and a little caption or video clip, or even just an emoji to say how their baby was feeling.

We viewed the posts in the research team and provided feedback to help scaffold their mind-mindedness. So if we thought they had cracked it, we would just give them positive feedback, or just respond as if we were the baby. Or if they didn't really mention the baby's internal states we would prompt them a bit more.

So the people who had the app were more mind-minded at follow up than people who had a control app, so literally, the randomised control trial paper that we published, has just come out showing lower mind-mindedness in the control group.

So that's really exciting that, when tested under robust RCT conditions, the app facilitates parents' mind-mindedness.

### **How do you think these concepts like mind-mindedness apply cross-culturally?**

Yeah, it's an interesting question. And actually, I have a South Korean collaborator, who was my PhD student, and then was my postdoc, and she looked at differences between South Korean and British mothers.

And there's previously been some research on other Asian cultures such as mainland China and Hong Kong, and Japan, suggesting that maybe the Asian cultures were less mind-minded than their British and Australian counterparts. But Korea has this fascinating construct called oneness. So particularly for mothers, there's a cultural expectation that really, the mother should be at one with her baby. So they don't even regard them as being 100% separate entities. So the idea is you should be kind of, you know, be completely expert on everything. So there are commonalities with other collectivistic cultures like Japan and China. But there's also this kind of unusual, unique aspect to Korean parenting and mothering.



So they might be even more focused on the desires and preferences of their babies than British mothers. So it'll be interesting to see those data.

**In all of your research, just in your personal opinion, what's been the most interesting finding you've come across? What have you enjoyed the most?**

We've got one really, really long term study where we've been following these children since they were eight months. And then now they are young adults, most recently following them up around age 19. So we obviously have this amazing data set.

We started with just over 200 participants. And in young adulthood, now, we've got just over 100, which is not bad. They are from a really socially diverse group, so we recruited them in the Tees Valley area as we started this study when I was at Durham University, and they had a satellite campus on Teesside. Recruiting from there, we managed to get families from really deprived areas, from some of the really disadvantaged council estates in Middlesbrough, but then we also had participants from Yarmouth, and North Yorkshire, more affluent backgrounds. So we have this really fascinating, very socially diverse group of kids.

So we hypothesised that maybe this would make Korean mothers both more attuned, but maybe also more non attuned, because oneness might make them project internal states onto the baby. And we also were interested more in the content of their mind-minded talk. So rather than just looking at whether or not it's appropriate, the kinds of internal states that they might talk about.

So we hypothesised that British mothers might focus more on preferences and desires in line with their individualistic culture, whereas the Korean mothers might focus more on, you know, cognitions, and emotions and those sorts of things. And our hypotheses were supported for the content. But interestingly, we found no cultural differences in attuned versus non attuned mind-mindedness. And so the Korean mothers were just as mind-minded as the British mothers, and therefore they're different from the Chinese norms.

So it's quite nice, because then we've argued that, you know, you can't just make quite global generalisations about the Eastern mind, Eastern cultures. And equally, you probably can't make generalisations about Western minds and Western parenting.

I'm also currently involved in a project where we also have a sample of Israeli mothers and babies, and a sample of German mothers and babies.

So we've then got a European comparison group. But we've also got a Western country like Israel, but it's argued that Israel is the least individualistic of Western societies. There's lots of you know, family oriented caregiving, and all of that kind of stuff. It will be interesting to see how the differences amongst different Western cultures come out. And there's interesting research on German mothers being very focused on autonomy and support.



Some of the most interesting things we've looked at are to see whether or not if you have an outcome where we know children from poor backgrounds do worse than children from affluent backgrounds, do you actually get a protective effect from mind-mindedness? And remarkably, you do. So we've found with the things, we've looked at, behavioural difficulties in the preschool years and also educational attainment in their national SATs tests at ages seven and eleven, mind-mindedness predicts better outcomes specifically for the disadvantaged kids.

**“ So for these kids, having a mother who was mind-minded when you were a baby, protects you against behavioural difficulties, and also predicts better educational outcomes, which kind of blew my mind. ”**

And so far, we're currently pre-registering the different studies for the early adulthood follow-up. So I haven't yet accessed all the data, but I have looked at some of the depression data. And it shows mind-mindedness actually predicting lower levels of depression in early adulthood, specifically in the kids from these disadvantaged backgrounds. So I was so happy when I ran those, admittedly at the moment, quick and dirty analyses, but it looks like mind-mindedness is having these really long term protective effects, which is fascinating.

# Beyond the dichotomy: Is it time for the Nature vs Nurture debate to end?

BY LIAM PARKER



In psychology, few debates have stirred as much discourse and discussion as the Nature vs Nurture debate. For decades, psychologists, researchers, and enthusiasts have grappled with the question of whether our behaviours, traits and development are predominantly shaped by genetics (nature) or by environmental influences and experiences (nurture) (Pinker, 2004). However, the evolution of scientific understanding has rendered this perspective outdated, calling for a more integrated approach to the complexities of human psychology.

Advancements in fields such as behavioural genetics have shed light on the heritability of certain traits. Twin and adoption studies (Sacerdote, 2011) have demonstrated that genetic factors undeniably contribute to various psychological attributes, from personality traits to mental health conditions. However, attributing these aspects solely to genetic determinism overlooks the profound influence of the environment.

Epigenetics, the study of how your behaviours and environment can cause changes (Jablonka & Lamb, 2002), has emerged as a pivotal area of study, revealing how environmental factors can modify gene expression without altering the genetic code itself. This process highlights the dynamic nature of gene-environment interactions, emphasising that our experiences and surroundings can significantly influence how our genes function and express themselves, further displaying the impact nurture, as well as nature, can have on a person.

The limitations of the Nature vs Nurture debate become more apparent when examining complex psychological phenomena. Take intelligence, for instance. While genetics undoubtedly play a role in an individual's cognitive abilities, environmental factors such as access to education, socio-economic background, and early life experiences significantly contribute to intellectual development (Leahy, 1961). It's not nature versus nurture but the intricate interplay of both.

In Psychology, the outdated nature of the Nature vs Nurture debate can have implications beyond a theoretical debate between researchers. It can impact therapeutic interventions and societal perceptions of human behaviour and development. Relying on a simplistic dichotomy can lead to ineffective treatment approaches and social stigmatisation (Bekoff, 1988), which in turn can hinder progress in mental health care and social welfare. Mental health disorders present a clear example where the oversimplified dichotomy falls short. Conditions like depression, anxiety, or schizophrenia are influenced by genetic vulnerabilities, but their onset and severity are intricately linked to environmental stressors, trauma, and social support systems. Understanding these disorders necessitates a holistic approach that integrates genetic predispositions with environmental triggers.

Another example of the simplification that comes with the nature vs nurture debate is in the realm of criminal behaviour. There's a tendency to attribute actions solely to genetic predispositions or environmental factors. However, human behaviour is multifaceted, influenced by a myriad of biological, psychological, and sociocultural factors (Fox, 2017). Crime, therefore, cannot be reduced to a simplistic nature or nurture explanation.

At its core, the Nature vs Nurture debate is a simplistic binary view that suggests our characteristics are either inherent or acquired. But as research across various disciplines has unfolded, it has become increasingly evident that this division fails to encapsulate the intricate links between genetic predispositions and environmental factors. Whilst the debate is historically significant, the limits of its explanatory power have been reached.

**“the Nature vs Nurture debate is a simplistic binary view...”**

The dichotomy is failing to capture a whole web of influences that shape a human. Embracing an integrated approach in the future that recognises the dynamic links between nature and nurture is essential in advancing our understanding of human behaviour and development. I believe it is time for this debate to end, and for both parties, whether you are on the side of nature or nurture, to agree that it's the integration of both that shape us as humans.



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