A Note from the Editors

Firstly, thank you to all our contributors for their wonderful articles and thank you to the school of psychology and especially Professor Keith Sillar for their support. Maze is still growing and we are grateful for any and all the support. On that note, we are always looking for submissions from students and staff alike, so please get in touch with all your psychology related writing.

Now a few words about this issue. The two main fields covered concern child psychology and career advice. We hope this will be helpful to the first and second years in particular, who can assess what to do next summer. The child psychology section addresses question of sport psychology and auditory processing disorder, which may be particularly interesting to the aspiring developmental psychologists among you.

Finally, we hope you enjoy the issue and please let us know if you have any comments or feedback, Maze strives to provide learning experience for its writers so positive critique is always welcome.

Natalia Fedorova and Sarune Savickaite

THE TEAM

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“You just don’t listen!” It’s the timeless rhetorical question exasperated schoolteachers everywhere ask their oblivious students. For most of us, listening is easy. We can distinguish sounds and syllables, filter out background noise, and actively keep up in a conversation where words are exchanged and processed rapidly. Our incapability to listen during a boring lecture is less an inability and more of a stubborn unwillingness.

However, some children, it turns out, actually cannot listen. Though their hearing is intact, the neural processing of sounds has malfunctioned, often because of an injury or a genetic defect. Auditory processing disorder (APD) may affect as many as 1 in 10 school aged children. These children appear to not listen because they struggle to understand normal conversations that occur in average social settings. APD makes differentiating between similar sounds difficult, causing sufferers of the disorder to mishear words and lose the meaning of the phrase. Similarly, children with APD often get distracted by background noise because their brain cannot filter out the excess sounds and syllables. Their brain is unable to distinguish the teacher’s voice from the background noise, and actively keep up in a conversation where words are exchanged and processed rapidly. Our incapability to listen during a boring lecture is less an inability and more of a stubborn unwillingness.

Actively listening is crucial for acquiring language skills. Children quickly pick up the basics of language from their environment. First sounds, syllables, and fragments of phrases, then eventually full sentences and complex dialogue. Children who suffer from APD often get distracted by background noise. They may also implement alternative strategies to interact with the student. Simple changes like speaking slowly and clearly, avoiding complicated phrases, and using lesson plans that put less emphasis on auditory instructions can help children with APD succeed in the classroom.

At home, parents may sound proof rooms to minimize distracting background noise. Teachers and speech therapists who conduct exercises that train children to distinguish sounds, ignore unimportant sounds, and manage conversations may also implement alternative strategies to help children with APD succeed in the classroom.

The severity and consequences of the disorder vary greatly to children, and treatment options are tailored to the individual. Therapy is a team process involving dedicated schoolteachers, parents, and psychologists who conduct exercises that train children to distinguish sounds, ignore unimportant sounds, and manage conversations.

APD is a complex neurological deficit that renders children unable to process the plethora of auditory stimuli they encounter everyday. As a result, children with the disorder struggle to cope academically and socially, often getting lost in conversations. On going research is still working to understand the mechanisms behind the disorder and to develop effective treatment options. Treatment options may include speech therapy, hearing aids, and other strategies to help children with APD succeed in the classroom and in daily social contact.

Increasing public awareness of APD is critical for correctly diagnosing and treating the disorder. Schools, parents, and psychologists should strive to work with each individual so he may receive a proper education and excel in every aspect of daily social contact.

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However, some children, it turns out, actually cannot listen. Though their hearing is intact, the neural processing of sounds has malfunctioned, often because of an injury or a genetic defect. Auditory processing disorder (APD) may affect as many as 1 in 10 school aged children. These children appear to not listen because they struggle to understand normal conversations that occur in average social settings. APD makes differentiating between similar sounds difficult, causing sufferers of the disorder to mishear words and lose the meaning of the phrase. Similarly, children with APD often get distracted by background noise because their brain cannot filter out the excess sounds and syllables. Their brain is unable to distinguish the teacher’s voice from the background noise, and actively keep up in a conversation where words are exchanged and processed rapidly. Our incapability to listen during a boring lecture is less an inability and more of a stubborn unwillingness.

Actively listening is crucial for acquiring language skills. Children quickly pick up the basics of language from their environment. First sounds, syllables, and fragments of phrases, then eventually full sentences and complex dialogue. This development centers on the ability to differentiate sounds and process spoken language. As a result, children who suffer from APD often have insufficient reading and verbal skills, poor academic performance, and social and behavioral problems. These children are often misdiagnosed with ADHD, autism, or a form of deafness. APD is not a well-known problem, and many of the symptoms overlap with other attention and developmental disorders like ADHD and autism. This ambiguity makes correctly diagnosing and treating the disorder a complicated process.

Increasing public awareness of APD is critical for correctly diagnosing and treating children. Schools, parents, and psychologists should strive to work with each individual so he may receive a proper education and excel in every aspect of daily social contact.
Developmental psychology is a growing field in psychology, not only because it involves work with cute toddlers. Luckily, it is a field that is well represented at St Andrews and Dr. Amanda Seed, a

**What sparked your interest in developmental psychology?**

My PhD focussed on comparative psychology: I was motivated to get into science to try to understand how minds evolved, especially the human mind and its baffling complexity. During my postgraduate studies I realised human development is a powerful window onto the nature of complex minds, where we have a chance of teasing apart the effects of biological inheritance and cultural input. So I have been hooked ever since – and was lucky to work as a post-doc in one of the most productive developmental labs in Europe: Mike Tomasello’s group at the Max Planck Institute for Evolutionary Anthropology in Leipzig. A great department and a fantastic city! Now that I have my own baby my research has taken on even more significance in the quest to raise a perfect child. I also have my own captive subject. Poor, poor Dylan 😊

**At University were you part of any societies?**

Ha – good question. I will try to bury the embarrassing part of this answer in a list. I was part of the following societies at Clare College, Cambridge, where I did both my undergraduate and PhD: badminton, jiu jitsu, the lobsters drinking society, and latin dancing. Did it work?

If you were stuck on a desert island which item would you bring with you? Some sort of book written by Bear Grylls or Ray Mears so I could survive and find all the good stuff. That or a volleyball for a friend. Actually it might as well be a proper mannequin. But I would still call it Wilson.

**Do you prefer sweet or savoury snacks?**

Snacks?! Sorry what was the question? Ah yes. Either. Both.

**What advice would you give to students thinking of a career in developmental psychology?**

Get some experience working in a lab to see if it is the right thing for you. My first choice of research career was medical biochemistry. It turns out I am too clumsy and impatient to work with little pots of invisible stuff all day. You may be fascinated by the academic question but to get a career off the ground you
need to be able to put in the hours, and that is so much easier if you find it enjoyable. They tell you not to work with animals or children for a reason: being outsmarted by a 3-year-old is not for everyone.

Did you think ‘the dress’ was ‘black and blue’ or ‘white and gold?’
White and gold. Weird that anyone thinks otherwise. Cool example of why we should not generalise from our own experience too readily. Which is nice as it keeps experimental psychologists in work.

Do you have a favourite psychologist, and if so why?
This is a great question. For breaking new ground in an area that I am fascinated by: Wolfgang Koehler. I have had some great mentors too: Josep Call, and Nicky Clayton - they are both really inspiring scientists. Annette Karmiloff-Smith is someone I admire a lot too. I’m not good at picking favourites.

Have there been any funny moments whilst conducting research?
Ha – yes, one or two. I completely failed to run a test on orang-utans as they broke every version of the apparatus I made. Wasn’t funny at the time but it is orang-utans 1 – me 0 for now. And on my first day working with 2 year-olds I got them so excited about feeding coins to a hungry crow during warm up that I had to be asked to wait outside by the teacher and she would bring me my participants. They were just jumping up and down and screaming. I also once had a baby jackdaw try to ‘bill-twine’ with me and he wouldn’t let go of my nose. An experience that had faded into the recesses of my memory until Dylan did almost the exact same thing the other day.

If you could be on any reality TV show what would it be?
I have to admit I don’t really watch them – my TV weakness is watching series like Breaking Bad or Game of Thrones. I would be in Game of Thrones. I would train up those dragons – so much wasted potential.
How young is too young?

Katherine Fraser

Daron Bryden, a 12 year old from the states, is no ordinary kid. He has recently been profiled on the site Rivals.com as an American Football star in the making, which has subsequently re-sparked huge debates about children and professional sports. The sixth grader has been compared to the professional Tom Brady, and already has his future mapped out for him, providing he is successful. His parents state that this is his choice, and that he wants to work hard to achieve his dream of being an NFL quarter-back player, but what damage is this pressure putting onto young children and at that age can we really say it’s their dream?

The world of youth sports is open to a plethora of interpretations, with valid arguments and opinions stretching across a wide-ranging spectrum. Some view it as a community that promotes and encourages aggressiveness, cheating and disrespect amongst children, which develops from bully coaches and competitive parents. However others feel this is only the small minority that the media publicise and that really most children have fun and learn new skills whilst under caring mentors. Most likely there are elements of both.

Being a child professional isn’t just about early mornings and long training hours. On top of the intense training they are put under immense amounts of stress and pressure to perform their best at all times. We see the effects of this on adult athletes, who feel so driven by winning or consumed by pressure that they turn to steroids, or do harmful things to relieve their stress. Trent Petri, director of the University of North Texas centre for Sport Psychology and Performance Excellence says that exposing children to this extremely competitive environment communicates the wrong message at that age, to the parents as well as the child. A study by the Minnesota Amateur Sports Commission reported in Engh (1999) that 45% of children surveyed reported that adults had called them names, yelled at them and insulted them whilst participating in sports. More concerning is that 17% said they’d received hitting, kicking and slapping from an adult whilst doing sports.

A recent study looked at the behaviour of youths, parents and coaches as well as sporting attitudes and
prosocial sport behaviour within a youth sports environment. These were some of the more worrying results: 1/10 youths acknowledged cheating; 1/3 coaches create hostile psychological climates; 4% of coaches engage in physical abuse with children, which (if the sample is representative of the larger population) means 2 million children a year are being hit, kicked or slapped by their coach.

With regards to physical, psychological and cognitive development a child should be at least 6 before participating in organised team sports, and for more competitive branches of sports the child should be assessed for their readiness to compete. This may seem extreme and somewhat contradictory to the promotion of health and well being, but remember this is competitive sport we are talking about, not kicking a ball in a park. Children who are intensely involved in sports at a very young age are more likely to deviate away from it as they grow up, with 70-80% of young children being unengaged in sports by the age of 15. Of concern is the apparent discord between what parents want out of sport and what children want: children want to have fun and learn, parents want to win. The contrasting expectations puts unnecessary strain on children to perform well at all times, and failing becomes something ‘bad’ as they fear disappointment from their parents.

Involvement of children in competitive and professional sports doesn’t receive the same backlash that other child events such as beauty pageants does. There is outrage that parents would dress their children up, make them perform on a stage and be put up against others to be judged. But isn’t the same happening with sports? The parents of young beauty queens say it’s what their child wants, and that they want to show off the skills they have, so why is this viewed as worse than young sports stars? A child who is unable to perform at the expected levels of parents and coaches may lose confidence in themselves as well as feel guilty for not winning—this is not a healthy mind-set for anyone, let alone a child to be experiencing. At the extreme end of child athletes, the training conditions of the Chinese Olympic training in schools such as Fuzhou sports school is reported as amongst the most gruelling, with training starting as young as four years old and coaches regularly using physical contact as a means of punishment for failure. Children have barely learned to count and yet their bodies and mental wellbeing are being pushed to the limits. Whilst its undeniable that China do produce some of the best and youngest athletes in the world, the importance of winning versus the individuals quality of life
Youth sports has been painted in a very negative light here, but it’s not all bad. Many important lessons can be learned from sport such as respect and hard work, and amongst athletes the rates of teenage pregnancy, smoking, drug use and suicide decreases with participation in sports (Merkel, 2013). With the current high rates of child obesity, sports and exercise should be encouraged, as its widely known that exercise can help reduce stress and improve happiness because of the release of endorphins. However it seems the duty of society to change the philosophy of youth sports from a negative and intensely competitive to one where children can thrive and benefit from their sport. Suggestions for improving the situation include implementing models that teach and improve moral character, and improving guidelines for coaches to follow to ensure safe training, both physically and psychologically.

References

Mental Illness: Needed like a Hole in the Head

Kate McIntosh

Most of us would like to think that we have come a long way in understanding mental health problems since the days of drilling holes in sufferers’ heads to release evil spirits, or prescribing laxatives to rebalance their “bodily humours”, and it’s true – we have. However, the fight to fully destigmatise mental ill health is far from over. From supporting those seeking help to maintaining good health in those recovering, there is a lot that could be improved upon.

The battle to beat mental illness is hard enough without having to fight for access to treatment. The first hurdle that must be overcome in recovering from a mental health problem is seeking help. Many sufferers are reluctant to do so, and it’s not hard to understand why – according to a recent survey, 19% of
people believed that people with mental health difficulties are often dangerous, and 5% believed that sufferers are largely to blame for their own conditions. Additionally, for those most severely affected, leaving the house may seem to be an insurmountable obstacle.

If sufferers do manage to get a referral to their local mental health service, they often face a long wait before being seen by a specifically trained professional. In a document published in August 2012, the Scottish Government stated an aim to ensure that every person who needs it gets access to psychological therapy (or Child and Adolescent Mental Health Services, in the case of young people) within 18 weeks of referral. Though it is commendable that an effort is being made, the Patient Rights (Scotland) Act stated three years ago a guarantee to bring waiting times down to twelve weeks – but excluded mental health from the agenda. Such a separation between physical and mental illness is seen by some as arbitrary – detractors argue that physical and mental health should be viewed as two systems interacting with one another. Recently there has been an unsettling increase in stories regarding the number of people with mental health problems having to spend time in jail as a result of bed shortages in hospitals – a practice that is only supposed to be carried out in an emergency.

Taking steps to achieve better mental health in general could make us, as a population, more resilient to mental illnesses. The Scottish Association for Mental Health (SAMH) suggests simple actions such as phoning a friend rather than texting, going for a walk in your lunch hour, and volunteering for a cause that’s important to you. However, mental health problems may need more intense, professional treatment.

In terms of supporting people you know who are struggling with their mental health, SAMH recommends asking how they are – but without trying to diagnose the problem – listening to what they have to say, and supporting them in seeking professional help. If you have immediate reason to be concerned for someone’s life try to get him or her to a hospital if possible, otherwise call 999, who can send an ambulance to help the person or the police to check that he or she is not in danger.

Mental illness is a serious issue, and it must be viewed as such.

For more information, visit the SAMH website (samh.org.uk), or Attitudes to Mental Health in Scotland: Scottish Social Attitudes Survey 2013.
Seizing New Opportunities for Epilepsy Treatment

Emma Ritson

Why are new approaches to treatment needed?
Epilepsy refers to a collection of neurological disorders which all share epileptic seizures. These seizures are the result of irregular cortical nerve cell activity within the brain, often recur and can produce prolonged periods of intense shaking. Traditionally, seizures can be managed pharmacologically but these methods are only effective in 70% of cases and lack target specificity in terms of temporal location, regional location and cell-type (Eadie, 2012). Furthermore, these treatments often create a wide variety of debilitating side effects ranging from nausea to cognitive impairment, and can sometimes be non-effective at controlling seizures. When seizures cannot be controlled pharmaceutically, brain areas thought to be associated with seizure activity can be surgically removed, but this is a non-reversible form of treatment that again lacks desired specificity and may produce negative side effects. Therefore, the current model of treatment for epilepsy is in need of refinement in terms of temporal, regional and cell-type specificity in order to improve the effectiveness of treatment and a decrease in the amount of side effects. With further knowledge of the neurological basis of the condition, treatments can be tailored to the individuals and reflect that variation within epilepsy as a condition.

A new approach – Optogenetics
Optogenetics is a technique that utilises light-sensitive proteins called opsins. As detailed by Krook-Magnuson and Soltesz (2015) these opsins can be expressed in specific cells, and light can be directed at chosen areas, allowing the control of select neuronal populations. For the expression of these opsins, gene therapy is necessary and this generally utilises viral vectors or transgenic animals. The targeting of specific cells can be achieved through the use of different viral serotypes,
enhancers, or cell type-specific promoters (Krook-Magnuson & Soltesz, 2015).

Optogenetics could be utilised in conjunction with seizure detection in order to provide quick and specific treatment (Krook-Magnuson & Soltesz, 2015). Furthermore, optogenetics allows the direct control of modulation, meaning that either excitation or inhibition can be chosen. Optogenetics could also one day allow physicians to alter neuronal activity with unsurpassed specificity, accounting for temporal, spatial, cell-type, and direction-of-modulation factors (Krook-Magnuson & Soltesz, 2015). This newfound specificity could provide the backbone for a new understanding of the underlying causes of epilepsy, which would ultimately lead to refined treatments with few side effects that would be effective for far more patients.

The recent utilisation of optogenetic techniques provides a platform from which to research the specific networks, cells and conditions associated with producing, sustaining, propagating and ending seizures. Additionally, optogenetics along with other specific therapeutic methods have the potential to provide individualisation of seizure treatment. Epilepsy can have a number of triggers, and so effective treatment must reflect this. These technologies have shown promise in an array of epilepsy models, and so treatments could reflect the specific form of epilepsy along with the patient being treated (Krook-Magnuson & Soltesz, 2015).

References

Highlighting the Cognitive Ethology Approach to Students

Andrew Mackenzie, PhD Candidate

You’re studying psychology. You’re writing essays, conducting dissertation research and studying for exams. But have you recently asked yourself why you are studying Psychology and what you want to do with your degree? I suspect many will say “... I want to study Clinical Psychology”. On the other hand, some might say “...I don’t want to be studying Psychology”. But I suspect the answer for many is “...no I haven’t thought about it”. But that’s okay, because there’s often little time to sit back and reflect on the reasons why you’re studying and
where you’re going. Hold on to this thought.

In psychology, much like any other scientific field (and yes, psychology is a science), it begins with an idea. This idea is researched and then an experiment is conducted to test this idea. But usually, the experiment is a reduced take on what happens in the real world. It’s often difficult to see how showing a number of shapes, pictures etc. for a few seconds on a small display screen relates to the cognitive processes in real life. And perhaps it’s this difficulty in being able to relate experimental paradigms and theories to a real world context that puts many people off thinking about a non-health related Psychology career.

I’d therefore like to highlight the ‘Cognitive Ethology’ approach. With this approach, the study of Psychology, and particularly Cognitive Psychology, does not necessarily have to be reduced or does not need to be something you can’t relate to in the real world. In one page, I can only offer a very small excerpt, so I’d like to highlight an article by Kingstone, Smilek & Eastwood (2008), entitled “Cognitive Ethology: A new approach for studying human cognition”.

Cognitive processes are highly situational, and as such, the brain processes involved in a simple photograph viewing paradigm are likely not the same as when we view the natural environment. With a cognitive ethology approach however, you investigate behaviour in a more natural and every-day context, where the task of the experimenter is to simply observe and measure behaviour as it is experienced in the real world. This occurs before you take the research into the laboratory. In this way, you can tap into the processes that occur during everyday situations. If you want to study how people pay attention when they drive... why not study people when they drive? If you want to investigate football goal-keeping strategies... measure them when a goal-keeper is making saves. Why take it into a laboratory and get people to look at photographs or videos?

Of course, the research still starts with hypotheses derived from the literature. And once you measure the behaviour in it’s entirety, then yes, take your findings into a lab and maybe try to tease apart some of the findings through a series of smaller, reduced experiments. For me, this makes more sense: understanding behaviour in its natural context first and then trying to understand how. Not the other way round.

This is what attracted me to psychological research. And I’m sure this type of approach would appeal to many currently studying psychology. However, it’s not an approach that is widely utilised in many departments – despite increasing emphasis on high impact research. To be honest, experimenting in the real world is fun too. And this is what I want to highlight. Studying cognition in a natural context is, for me anyway, more fun. If you think you want to carry on studying psychology, and feel you’d enjoy getting away from simple stimuli and
display screen experiments, then give the cognitive ethology approach a try. This article’s purpose was to merely highlight the existence of such an approach in Psychology. So if you are at all interested, then I strongly urge you to have a look at the article previously mentioned.

References

Making the most of the summer to work out your career options

Shona Mach, Deputy Director and Careers Advisor for Psychology

As a Psychology student you are developing a great portfolio of skills which are very attractive to a wide range of employers and which suit a wide range of roles. As positive as that is, it can be a challenge to work out which career options are best for you. The summer vacation gives you a great opportunity to take some steps which can help, and the Career Options section of the Careers Centre website (www.st-andrews.ac.uk/careers) is an excellent starting point.

- Get some ideas by finding out what other Psychology graduates have gone on to do. The Psychology - using your degree page links to a number of UK, US and St Andrews-specific resources.

- Take some online assessments to help you work out what career areas might suit you. The aptly-named Unsure what to do next? page gives you access to questionnaires which provide insights into your personality and the sorts of activities you would excel at and enjoy in the work place.

- Research some career options. The Careers A-Z pages provide detailed information about nearly 60 popular career areas for University of St Andrews
graduates. Psychology students often start with Psychologist, Academia, Civil Service, Not-for Profit, Marketing & Sales, Market Research and HR, to name but a few. Read about the nature of the sector and roles, how to gain experience/internships, relevant postgraduate study and how to get a graduate job.

- Contact people who are in roles of interest to you to find out more about what their work involves. Each of the Careers A-Z pages links to the University of St Andrews LinkedIn tool, where over 31,000 St Andrews graduates and some students have been brought together and are searchable by criteria such as what they studied, where they live and where they work. A second platform, Saint Connect, exclusively links St Andrews students and graduates for discussion and mentorship. The careers advisers in the Careers Centre can help you connect with graduates who you’ve identified that you’d like to get in touch with.

- Arrange some work experience. Employers value lots of different kinds of work experience and it is important to be able to articulate the skills you’ve gained and what you’ve learned. Aside from making you more employable, work experience is also invaluable in allowing you to find out which kinds of roles, employers and working cultures suit you best. The Careers A-Z pages, described above, have links to hundreds of work experience suggestions. If you are considering a future psychologist role, starting as soon as possible to build up a portfolio of work experience with the types of people who might be future ‘clients’ is important. First and second year students, in particular, might find that volunteering is a realistic starting point and the Careers A-Z: Psychologist page has helpful resources. If you have an interest, for example, in working with people suffering from drug or alcohol addiction in the Manchester area, an internet search will bring up a number of national and local charities and other organisations. A quick telephone call will let you find out about volunteering/work shadowing opportunities during the summer months. Balanced alongside a typical paid student job, this will give you an insight into the work of professionals in that area, and be a very useful addition to your CV. However, don’t just record what you’ve been doing and seeing, make yourself stand out from the crowd by analysing how you can apply psychological principles to what you’ve experienced!

For a tailored summer plan pop into the Careers Centre to talk through your thoughts with a careers adviser.
Beyond the Brain: Work Experience and Careers Advice for Neuroscience Students

Amy Byrne

In the months leading up to starting university, I am sure many of you were told, perhaps even on multiple occasions, how fast your undergraduate years will fly by. ‘Four years, that’s not a lot you know!’ they said, ‘It’ll be over before you know it!’ Apart, maybe, from when I graduate, these words come back to me most often when I think of one topic in particular: internships. One minute you’re a first year, hitting the Lizard a healthy three times a week, the next you’re a third year with a sparse looking CV and zero job prospects. So you take it upon yourself to visit the careers centre. As if studying neuroscience wasn’t complex enough, it turns out there is no neuroscience advisor. Instead, biology and/or psychology advisors have to try their best to give you guidance. Although helpful, I cannot help but feel somewhat neglected. Figuring out the world of internships, work experience, summer research and career paths is stressful. In order to try and lessen this burden for others studying neuroscience, I have taken it upon myself to find answers to the questions that you may have to tackle. Thankfully, the department’s much-loved Dr Gareth Miles was willing to help.

How essential is work experience? This depends on your future plans. However, many of us have not meticulously planned out our futures. We are all aware of how important work experience is; many would now go as far as to say it is essential to a prosperous future after an undergraduate degree. Is it really as necessary as it’s made out to be though? Dr Miles gives us some comforting advice. He reminds us that as neuroscience students at St Andrews, we benefit from doing a year-long, 60 credit research project. This is a substantial piece of research, giving us an advantage over other universities that may have shorter and less novel projects available. The small size of our neuroscience department is an asset to us—we are all guaranteed great research experience because of it. Assuming we put the work in!

How essential is work experience for the 4th year project? Don’t panic. It is not. It is undoubtedly helpful, but not at all essential. Dr Miles highlights that it is very unlikely you will use the same techniques in both internship and honours project. This is a substantial piece of research, giving us an advantage over other universities that may have shorter and less novel projects available. The small size of our neuroscience department is an asset to us—we are all guaranteed great research experience because of it. Assuming we put the work in!
heavily reliant on equipment and money does not help. No one can deny that work experience is beneficial, but do not fret for your 4th year project if you are without any.

**What work experience opportunities does St Andrews offer?**
The main method by which neuroscience students get work experience in St Andrews seems to be by contacting individuals directly. You really enjoy someone’s lectures? Investigate their research—past and present. Let them know you are interested in what they do. Ask them about opportunities in their lab. They are used to this. Do not be scared. Another route to work experience is the university’s Laidlaw programme. This is an 8-10 week summer internship programme, whereby students design, pursue and report on a research question of their own, with the aid of an academic. It also offers a generous £400 per week (yes, I did mean to type week).

**Are there opportunities outside of St Andrews?**
Unfortunately there are no obvious internship programmes for undergraduate neuroscience students outside of St Andrews. Nevertheless, that does not mean we are restricted to one town. Look at labs in areas that you would like to spend time in. Contact researchers whose papers you’ve read and enjoyed. Be open to travelling. Dr Miles gave a great piece of advice for anyone considering working in a lab they haven’t visited: find out about the environment you’re going into by contacting people already working in that lab. If they reply with ‘it’s 1am and I’m just leaving the lab’ then you may want to reconsider a job there.

**When should I start searching for opportunities?**
This depends on what you want to do and where you want to do it, but a helpful tip is to start BEFORE Christmas.

**Where do I get funding?**
Voluntary work is happening more and more often. A lot of the time labs cannot afford to pay undergraduate students to work with them over the summer, so it is crucial that students know there are other sources of funding that exist. A good place to start is the school of Psychology and Neuroscience website. There is a page within this site titled ‘Vacation scholarship funding opportunities’, which boasts a current total of 15 different schemes. If this isn’t enough, there are always disease charities that usually possess specific pots of money for the types of research we, as undergraduate students, would undertake.

**After a bachelor’s degree, what options are there other than research?**
It is extremely common for holders of neuroscience undergraduate degrees to go into further study and research. This bleak lack of variety can be worrying for those of us who do not see their future in a lab. When faced with this question, Dr Miles was confident in discussing the valuable skills that neuroscience students gain, which are applicable beyond being in a lab. Medicine, industry, teaching, project managing, patent law, science journalism and administrative jobs are but a few options that are not lab-based.
However, the skills and mind-set that a neuroscience student gains can be relevant to many other careers.

**Lastly, Dr Miles describes life as a researcher in 5 words**
As I said, it is highly common for neuroscience undergraduates to end up in research. So for those of us who are interested in such a future, Dr Miles shines a light on what it holds by describing life as a researcher in only 5 words: fun, frustrating, exciting, challenging and hard-work. It should be noted that halfway through this list he remarked, jokingly, “it just sounds actually really lame”. This sentence is the only point with which I disagree with Dr Miles, for these words describe exactly how my three years studying neuroscience have been so far. If going into research is anything like my studies thus far, then I am truly excited for the future.

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**PUZZLES**

Can you move just one match to leave a square?

![Matchstick Puzzle](image)

How many triangles are located in the image below?

![Triangle Puzzle](image)
Communication style and language of an individual is not just limited to transmitting semantic information. Certain linguistic patterns can be the indicators of a number of psychological disorders, including psychopathy. Psychopaths are believed to constitute about 1% of the general population. Such individuals are characterized by diminished emotionality, lack of remorse, selfishness, and the instrumental view of the world around them - the qualities that allow them to perform manipulations through emotional pressures and language for achieving personal goals.

This hypothesis was tested in the study by Hancock, Woodworth, and Porter (2011), which investigated the language of psychopaths and the descriptions of their crimes. The sample included 52 detainees from a Canadian prison, who were arrested for murder, with average age of 28.9 years old. Usage of specialized tests revealed 14 of the participants were psychopaths, and 38 - non-psychopaths. The data was collected by asking the detainees of both groups to describe their crimes in as much detail as possible. The results showed, that psychopaths were on average using less words, than non-psychopaths (2,201 vs. 2,554), and that the sentences they produced contained more subordinate conjunctions, such as “because”, “so that”, “since”, “as”, than of those spoken by the non-psychopaths. These differences can possibly be attributed to psychopaths’ description of actions during the murder in terms of causal relationships. Moreover, when describing their crimes, psychopaths appeared to use on average twice as many words symbolizing physiological needs (food, drink, sex), whereas controls used more words connected with social needs, such as family, spiritual development, and religion. Lastly, the language of psychopaths was characterized by the frequent usage of past tenses, as compared to controls, suggesting their detachment from the act of crime not only in terms of emotions, but also time. The analysis, however, showed no significant differences between the groups in pleasantness, intensity, and strong imagery of their language.

Generally, the research provided support for the assumption that the language of psychopaths does differ from the language of other criminals, indicating a solid connection between the mind and thoughts of an individual, and their unconscious expression through language. Thus, language can be seen as an invaluable source of information for psychological disorder diagnosis, and, more broadly, understanding one’s personality.
Summer research internship: a personal experience

Polina Arbuzova

Last summer I had the great opportunity to do a research internship in Berlin, Germany. It was organised by the DAAD – German Academic Exchange Service, under the DAAD RISE programme, which stands for ‘Research Internship in Science and Engineering’. I applied there after a recommendation from my friend who did his research internship under the same programme a year earlier.

I was always aware of the fact that science and technology in Germany are on a very high level, especially in the natural sciences, medicine and engineering. Although I also knew that experimental psychology has its roots in Germany and specifically, The Father of vision research, Hermann von Helmholtz, worked in Germany, before coming to Berlin I had an impression that most of the work on vision nowadays is done in UK or North America. I was happy to learn my anglocentric view was wrong, and actually there is a lot of psychology and neuroscience cutting-edge research going on in Germany these days.

I worked at the Bernstein Center for Computational Neuroscience (BCCN), which is home to research groups from many institutions, including Charité hospital, Free University of Berlin, Humboldt-University, Max-Delbrueck-Centrum, Technical University of Berlin and the University of Potsdam. I think such a cross-institutional environment is great for neuroscience research because it fits it’s highly interdisciplinary nature.

My hosting lab was affiliated to the Humboldt-University and it was located in its central campus, in the very heart of the city and at the same time in a quiet and green area with nice old buildings. I really enjoyed the atmosphere in the lab. We normally went for lunch together – it was a great chance to chat to everyone informally.

I also had a chance to see the University of Heidelberg during a meeting of all the DAAD RISE students. It reminded me of the University of St Andrews – the University of Heidelberg is basically a German St Andrews, it’s also the oldest university in the country.

The project I was working on was about feature-based attention and visual short term memory. For that, I was designing a psychophysics experiment. The most challenging part for me was to program my experiment in MATLAB. Before coming to Berlin, I only had a vague idea of how MATLAB works, so I spent a good amount of time learning it by watching and reading online tutorials. Then, I was working on the code in MATLAB. I was learning by trial and error: googling a lot, along the lines of ‘how to do …
in MATLAB’, and then trying to do it. Sometimes we would just sit down side by side with my supervisor and fix the bugs together. I was surprised by how long it took to get a first working version of the experiment, and by the end of the internship we only managed to pilot the experiment a couple of times.

Every week there were seminars or guest lectures, and I tried to go to as many as I could. One of the highlights was a talk by Professor Marisa Carrasco, a world-leading researcher in the field of visual attention. After the talk we went out for a dinner with her and there I saw how important informal meetings are for science, where people just chat with each other, talking about what they do and where the ideas for future collaborations are born.

Being in Berlin during the football world cup and not being into football was quite funny. Everyone was talking about football. The night after the final game (Germany won, if you did not follow football) was just like a New Year celebration, people were in the streets celebrating and launching fireworks. I enjoyed the classical music scene of Berlin more, which is undoubtedly one of the best in the world.

Overall, two months in Berlin were great both in terms of research and personal experience. Although I did not get any results of my experiment, I broadened my horizons and had an invaluable experience. I would cordially recommend it to everyone who considers a career in research to do a summer internship, and doing it abroad is challenging, but rewarding.
An Interview with the new School President Deborah Moffett

After all the turmoil of elections, MAZE sat down with the new School President Deborah Moffett to talk about her policies and ask her a few silly questions.

What made you choose to apply to School president?
I've been class rep this year, and so got to sit on the Staff Student Consultative Committee, the school president chairs this meeting and even has gavel! So that was the first thing to draw me in, hah. But then as the year went on and I got to hear all the issues students throughout the school have I started to feel very passionate about them and really wanted to work towards finding a solution for them.

What are key tasks for School president?
Being a mediator between students and staff to make sure both understand what the other wants; represent the school to the union and other school presidents; being a support for class reps, providing help and any experience possible.

What are the top 3 skills for School president?
Being approachable organized and determined.

What are your goals for the next academic year as the School president?
Continuing to ensure consistencies across staff; improve the mentoring scheme; develop programs similar to International Relations’ staff student lunch scheme to improve relationships between staff and students while also encouraging social events/pub nights for the students.

What is your area of interest in psychology and neuroscience?
I hope to qualify some day as a clinical psychologist, so that would be my favourite area, however I’ve really enjoyed my perception and neuroscience modules this year.

What are your hopes for honours years?
Is this like a personal question? To be honest to pass and still keep my sanity/dignity.

What do you want to be doing in the next 5-10 years?
Fingers crossed I’ll have gotten onto a clinical doctorate program in 10 years, maybe settled down and married? I’m quite boring like that unfortunately.

Are you more of a hunter or a gatherer?
I think I’m probably more of a gatherer...I’m not a vegetarian but I feel I probably would struggle with the actual killing of an animal.
If you were on an island and could only bring 3 things, what would you bring?
Harry Potter books boxset, a duvet, lifetime supply of Doritos.

Do you believe in Big Foot?
...naahh...I do have a lot of hope for the existence of the loch ness monster however.

If you were 80 years old, what would you tell your children?
Don’t get too stressed/worried. Most things will sort themselves out and you’ll learn from any mistakes. Also try and be as honest as you can.

If there was a movie produced about your life, who would play you, and why?
Jennifer Anniston, because I love her.

What is the funniest thing that has happened to you recently?
On the train from Edinburgh to Glasgow following the 6 nations matches, a group of tipsy fans sat down beside me and just had the funniest chat for like an hour. They asked my opinion on something and a guy who disagreed with me said “no offence, but she’s not a flipping Oracle!” which made me laugh a lot.

Do you have a question for Thinky Pete?
What is the air-speed velocity of an unladen swallow?

Monkeying around: puzzling out the evolutionary origins of humour

Catherine Hobaiter

A few weeks ago I was asked to give a talk at a conference on humour. While other speakers were tackling questions on the neuroscience of laughter or the social impact of humour, the organisers asked me to give an evolutionary perspective. My first thought was that it was going to be a very short talk. I’ve spent most of my career studying wild chimpanzees and I’ve been lucky enough to see extraordinary behaviour – following as they hunt for monkeys, watching as they make and use tools to find food or water, being present as new babies are introduced, and, on the tougher days, watching them kill each other. At last count I’ve spent over 13,000 hours watching wild chimps, but I’ve
never seen them tell a joke, break into a funny walk, or share a giggle when the adults have eaten too much fruit and spend the afternoon farting like troopers. But the more I thought about it the more it intrigued me; after all some of the biggest questions in comparative psychology revolve around whether or not there are aspects of our behaviour that make us unique as a species, what if this was one of those things? When people ask about uniqueness what they sometimes mean is, what makes us better or more evolved than all the non-human animals out there? Those people are not scientists and we’re going to ignore them from now on. But there are good scientific questions that focus on where our extraordinary success as a species has come from, and whether it is based on some fundamentally – as opposed to only quantitatively – different capacity.

To a comparative researcher even a cursory look at humour in humans screams biologically inherited capacity. The signals of laughing and smiling are human universals, present irrespective of your age, gender, cultural or social background. They develop along a relatively rigid framework: starting with stimulus-driven smiling and laughter, before becoming more abstract and influenced by social context. But while we can look at how humour develops in human infants relatively easily, how can we go back in time to ask when or how humour developed in our evolutionary past? Jokes, even the really old ones, don’t make good fossils. Here, at least, I was on familiar ground – language, my main field of study, doesn’t fossilize well either. Instead we have to look across modern species, usually starting with our closest primate relatives, comparing and contrasting their behaviour to interpret whether or not the patterns of shared traits present today can most plausibly be explained by a shared ancestral genetic origin. We can tackle the question of the evolution of humour in much the same way: break it down into its component parts and then examine whether or not they are present in the behaviour of other species. That is no small job; but there are hints in what we know already that might tell us whether we are on to something. First off, a simple question – what do you need to tell a joke?

Funny signals: The first thing is that you need to be able to let others know that what you’re doing is supposed to be funny – whether you do it during the joke or after (depending on how much offense you’re willing to risk!). We use signals such as smiling or laughing not only in response to finding something funny (stimulus-driven humour) but also as a social manipulation to inform or share a moment with others. In terms of stimulus-driven smiles and laughter we’re on safe ground with other species – even rats apparently have a ‘laughter’ signal (although we don’t know what it might mean to them); and the great apes
certainly have both. Young chimpanzees use their ‘play-face’ signal to explore behaviour that might otherwise get them into trouble: from begging to fighting to sex, doing it with a play-face lets everyone else know that you’re ‘not serious’. And a good wrestling or chasing session is often accompanied by a very recognisable dry chimp chuckle. Both of these signals seem stimulus-driven in apes, signals of play that can’t be inhibited even when it would be helpful. A gorilla at the San Francisco zoo couldn’t control producing a play-face, but would cover it up with her hand to avoid the other gorilla spotting her intention to (playfully) pounce on him!

Communication: You also have to be able to communicate your joke; whether that’s through language (spoken, signed, or written) or through some other medium; silent films by Charlie Chaplin are great examples of how rich and funny non-verbal communication can be. We don’t have to go far to know that many animals have complex systems of communication: the array of bird songs outside the window is a good start. (And for some spectacular examples of non-verbal communication google ‘peacock spider dance’ or ‘red-capped manakin’.) But what is also key in joke-telling is that we tell it to some-one, and this is where things get trickier. Many monkey species have complex systems of alarm calls – they produce different sounds in the presence of different predators, which inform others in the group not only that there is danger but what sort it is (eagle vs leopard) allowing them to take the best escape route (down vs up). But there is little evidence that these signallers mean to tell others about the danger, with the same calls often produced even when on their own. They may be produced longer and louder when others are around, but they are not intended to inform a specific recipient in the way that most human language is. Here, however, we are not alone – the other great apes share this intentional capacity with us. They communicate to a specific other and they do so with a specific goal in mind (Come here! I want that!). This intentional communication leads us nicely onto capacity number three.

Theory of mind: We might hum, shout, or swear to ourselves, but we don’t often tell ourselves jokes. We tell them to someone – even if that is a group of people – we consider our specific audience: whether they are attending, and what they do and don’t already know. Many jokes are only funny, or at least funnier, the first time you hear them, so ideally you tell someone who hasn’t heard it before. To do this you need what is called a Theory of Mind. In essence that means that you know that other people have their own individual perspectives and states of knowledge. So that unlike the puppy, or toddler, who thinks that they’ve hidden themselves by sticking their head under the bed so that they can’t see you, you know that other individuals out there can see or know differently to you. Within this theory of mind are stages that get increasingly more complex: do you know that there are others whose behaviour you can change? Or others who know something differently to you? Or others who know something about what you
know? Again, great apes – at least – are on the first step with us, they can produce actions with the intention of changing another individual’s behaviour. And, there is evidence that they know something about what others know – captive orang-utans changed their behaviour in a different way depending on whether or not their keeper appeared to completely or only partially understand them.

Flexibility and mental time travel: There are probably a few other capacities needed out there: a sense of timing and structure (the punch line should probably come after the set up), symbolic representation (it helps to be able to talk about things that are not in front of you). But what may turn out to be a very significant feature of joke-telling from the comparative perspective is the capacity to mentally project yourself away from the current environment (and stimuli) and to think back over the past or imagine the future. It is very hard to imagine how you would tell a joke that didn’t require remembering information about things that were no longer in the room with you when you were telling it. Similarly, jokes are often not perfect retellings of something that really happened, but creative re-imaginings of events that have been smoothed out, or improved on, for comedic effect. Skilled comics are able to do this flexibly, improvising ‘off-the-cuff’, incorporating feedback from their audience or partners. Here we might be starting to touch on a capacity for which there is very little evidence outside of humans. At best we have only anecdotal reports of sign-language trained apes ‘recalling’ key events from their infancy (or lying about having eaten the potted plants in the testing room). It may be that this is a problem of absence of evidence rather than evidence of absence; we have only started to scratch the surface of ‘meaning’ in primate communication. Recent studies of wild west-African chimpanzees suggest that they may plan their next day’s travel and feeding routes. But in their social lives the evidence so far suggests that great apes live in the here and now - and perhaps one consequence of that is that we may be waiting a very long time to hear the first chimpanzee knock-knock joke.
THINKY PETE

Your favourite pooch in the whole School of Psychology and Neuroscience is back for a second edition of his advice column. With the help of his friends and human translator/typist, WillyPete will be giving advice on everything from psychology to haircare to cats. Now you can get even more Thinky Pete by submitting questions to the MAZE email, putting slips into his question box in the foyer, or even by following the new Thinky Pete Facebook page.

I was wondering if you could tell us how wonderful puppies like yourself and your other fluffy animal friends can help people with mental health problems? Thank you! (KB)

Many animals can be trained to help people dealing with mental health issues. Most of these service and therapy animals are dogs, but I have heard of miniature ponies and even pot-bellied pigs working as therapy animals. These animals often visit hospitals and care homes to give support to people dealing with problems stemming from medical conditions, and conditions like dementia. If you have a friendly, well trained, dog (or miniature pony, or pig) you can join a program to train them to provide this kind of therapy. Specialized service dogs help people with more serious mental health problems, such as returning soldiers with PTSD. Spending time with animals can also help people, particularly children, who have trouble with social interactions because they are friendly and non-judgmental. This is also why we make such wonderful life-advice columnists.

I like to curl up and have some time to myself quite regularly, but not everyone I know does. Do you need to curl up and have time to yourself, WillyPete? (LB)

I agree, having some time alone, or maybe with a nice bone or tennis ball, can be very relaxing. I’ve found that people, like dogs, need different amounts of alone time; and that’s ok! When I have a long day at the perception lab, I try to make myself a quiet space under Shaun’s desk to recharge and sleep. Mostly to sleep.

How can I improve my self-esteem?
Always remember that you are special and just as worthy as anyone else. It can be hard to remember, but with practice you’ll realize that it’s true. We all make mistakes and have minor setbacks; just keep putting one paw in front of the other and eventually you will come out of it ok. If you ever feel really down, or want to harm yourself, it’s worth speaking to a professional who can help you find a way to feel better.

Why does the black St Mary’s cat dislike you so much?
I’m not sure. I tried to say ‘hi’ once and he or she hissed at me. To be honest, I find the black cat to be a little scary! Maybe they’re scared too?

What are the psychological benefits of running?
Aerobic exercises, like running, can improve overall health which can help brain function through things like improved circulation. Long-term aerobic exercise may help decrease levels of depression and anxiety, but they’re not sure if it can really help individuals with clinical depression, anxiety, and eating disorders. Running can be a fulfilling, healthy habit, and if it makes you feel better, keep doing it! Just make sure you don’t over-do it and wear yourself out, like I do when I go on a long hike with Sean. I just get too excited and by the end I’m almost too tired to walk home!

Who is your favourite celebrity?
I’m not very up-to-date on what’s going on outside of the department, so it’s hard to think of someone. If I had to choose, I would have to go with Snoopy. I always wanted a bird friend like Woodstock. The quad crows have yet to accept my offer of friendship; maybe I would have better luck with the seagulls?
MORE PUZZLES

Using six contiguous straight lines, connect all of the sixteen circles shown below.

How many squares can you create in this figure by connecting any 4 dots (the corners of a square must lie upon a grid dot).