The Impact of *bespoke* Mindfulness Practice sessions on Bioscience undergraduate students with Acute Anxiety

Dr Elisabeth Curling and Lorraine Millard

UELT Presentation 3/4/2018
Mindfulness been proven to be effective in reducing anxiety \textit{and} improves cognitive performance and flexibility

- In a recent 2016 YouGov article (1) \textit{one in four} students suffer from mental health problems, of which 74\% are anxiety related.
- Mindfulness has been scientifically shown in many trials to improve cognitive flexibility, working memory capacity, and leads to a measurable reduction in levels of anxiety and symptoms of depression.
- For example, a research paper (December 2017) described the results of a robust, large randomised controlled trial (Cambridge) looking at the effectiveness of Mindfulness in building resilience to stress, and lowering distress scores, \textit{especially at exam time} (2)

1. https://yougov.co.uk/news/2016/08/09/quarter-britains-students-are-afflicted-mental-hea/
What happens in the brain during the learning process?

- The **hippocampus**, near the **amygdala** in the mid-brain, is our central organ for learning. This structure enables us to convert the content of ‘working memory’—new information held briefly in the prefrontal cortex—into long-term form for storage.

- This neural act is the heart of learning. Once our mind connects this information with what we already know, we will be able to bring the new understanding to mind weeks or years later (such as for a test or exam!)
What happens during a stressful episode?

• Stress hormones such as cortisol can affect the brain (amygdala) which really impairs the ability to recall facts.
• As we experience a stressful event, the amygdala, an area of the brain that contributes to emotional processing, sends distress signals to the hypothalamus.
• The hypothalamus functions like a central command centre, communicating (via the pituitary gland) with the rest of the body through the nervous system and hormone release so that the person has the energy to fight or flee incoming danger!
What happens during *chronic* anxiety?

- If the amygdala of the brain continues to perceive something as dangerous or stressful for a *long* period, the hypothalamus releases corticotrophin-releasing hormone (CRH), which travels to the pituitary gland in the brain.
- This triggers the release of adrenocorticotrophic hormone (ACTH). This hormone travels to the adrenal glands, prompting them to release *cortisol* continuously.
- The body thus stays *revved up* and on high alert, until the threat passes, which then allows cortisol levels to fall.
Why is cortisol bad for learning?

- The **hippocampus** in the brain is especially vulnerable to ongoing emotional distress, because of the damaging effects of cortisol.
- When the body endures ongoing stress, cortisol affects the rate at which neurons are either **added or subtracted** from the hippocampus. This can be a **tremendous** assault on taking in ("learning") new information.
- When the neurons are continually attacked by cortisol, the hippocampus **loses neurons** and becomes reduced in size.
- Cortisol overstimulates the amygdala, forcing our attention onto the **emotions** we are feeling, while restricting our ability to take in AND recall new information!
So how can Mindfulness help with anxiety?

• The concept of mindfulness involves focusing on your present situation and state of mind.
• This can mean awareness of your surroundings, emotions and breathing—or, more simply, enjoying each bite of a really good meal.
• Research in recent decades has linked mindfulness practice to a staggering collection of health benefits.
• Tuning into the world around you and not your negative thoughts provides a sense of well-being, an array of studies claim.
• Multiple reports link regular mindfulness practice with improved cognitive functioning.
• One study even suggests it may preserve the tips of our chromosomes (our telomeres), which gradually wither away as we age!
How do we provide guided Mindfulness sessions for our Bioscience students at the University of Kent?
How was Mindfulness training delivered to our undergraduate Bioscience students?

• We have so far delivered 4 x five week (5 x 90 minute) *bespoke* extracurricular Mindfulness courses with a neurological slant (with follow up sessions for second years) for stage 2 and stage 3 undergraduates (12 maximum) taking Bioscience BSc degree programmes.

• We have also provided drop in sessions for postgraduate students over the summer (2017).

• We get excellent attendance and extremely positive comments from exit questionnaires and emails sent from students who have attended the sessions.

• A final year student who took my 5 week course in the Spring of 2018 was able to present her dissertation work (in front of students and two academic markers) as a 10 minute oral presentation this March, which (according to her academic advisor) would have been impossible for her to do (due to anxiety) before she had done the Mindfulness course.
How was Mindfulness training delivered to our postgraduate Bioscience students?

- We advertised three 60 minute lunchtime “drop-in” sessions for our postgraduate (mainly PhD) students in August and September 2017, after a PhD student rep approached me after he had heard how successful the Spring term undergraduate sessions had been.
What makes this course so special?

• The mindfulness course content was tailored specifically to our students’ **bioscience and neurobiology** knowledge by highlighting the neurochemical nature of stress and anxiety and its long term negative effects on brain cognition, brain flexibility and working memory capacity.

• Guided mindfulness, body scans and breathing exercises featured in each session, with the content of the course based on a shortened version of the 8 week Mindfulness course developed by Jon-Kabatt-Zinn (also a biochemist!).
Student testimonial (stage 2 student) 2017

• “I just wanted to thank both you and Lorraine again for the mindfulness sessions. I am actually retaking this year as a part time student due to the inability to sit some of my exams, because of anxiety and panic attacks.

• I’ve been looking for coping mechanisms for this for the last 7+ years, and I haven’t found anything to be anywhere near as helpful as I found these sessions.

• The MCQ exam last week was the first exam since I started uni, that I didn’t have a panic attack during or before.

• I never expected to experience calmness during exams, and I can’t describe the confidence (and control back over my life) it has given me.

• I am definitely going to continue using all you’ve taught me”.

University of Kent
Responses from exit questionnaire (1)

• **Q: What did you like most about this mindfulness course?**
  
  • I loved the instructor, she had a sense of openness and friendliness about her and didn’t make anyone feel bad for turning up late.
  
  • **Talking and sharing stories/experiences. A place to take 1.5 hours of my day to relax.**
  
  • **Very good teaching. I went home each time really happy and knowing I had learnt a lot.**
  
  • **The calming, open atmosphere. Friendly.**
  
  • I thoroughly enjoyed every aspect of the course. My favourite section was the guided meditations as they were very useful in teaching the process of meditation. Furthermore, I felt the readings (in almost parable style) were particularly useful as I felt they often applied very much to my situation. Talking through issues as a group was very useful and I also think the group size was ideal.
Medical Schools and Mindfulness?
Mindfulness in Medical Schools in Australia and the US

• Professor Craig Hassed (Professor of General Practice, Monash University, Melbourne) has embedded Mindfulness training into 16 of their medical degree programmes.

• He suggests the four “F’s” when planning mindfulness workshops: Faithful to the Philosophy but flexible with the form.

• Dr Ron Epstein (University of Rochester US) also teaches medical students and qualified doctors a range of mindfulness practices which leads to much less clinical error and much happier doctors!
Mindfulness in the UK HE Sector

- The UK GMC (General Medical Council) is now recommending that Mindfulness should be on the **UK medical school curriculum**, so should be imbedded within the new Canterbury based medical school provision, as it is in the US and Australia.

- Lorraine and I will continue to run courses for students in Biosciences and she has run a course within the School of Arts and we hope that other Schools will also offer Mindfulness courses.

- To this end, Lorraine and I met with Lucy Foley (Head of SSW) in February to discuss how other Schools may be able to put on Mindfulness courses by “Training the Trainers”.

- Lucy Foley and others are looking at releasing some of Lorraine's time in the counselling service to train more people to put on 5 week or drop in Mindfulness sessions for students across the university.
• “In conclusion, our study suggests that offering openly accessible mindfulness interventions aimed at the student population, separate from specific mental health services, is a useful addition to robust clinical interventions delivered by university counselling services.

• The 8 week mindfulness course adapted for university students tested in this trial is an acceptable, feasible, and effective component of wider student mental health strategies.

• Public health increasingly favours interventions to promote mental wellbeing placed in settings such as educational institutions”
Acknowledgements

• I would like to give special thanks to Lorraine Millard, a great mindfulness practitioner, Psychotherapist and counsellor, without whom this work would not have been possible.

• I would also like to thank the members of staff that have done the 8 week Mindfulness course in 2015 (led by Lorraine) at the University of Kent, many of whom are now pushing hard to provide for more Mindfulness training for both staff and students throughout the University of Kent.

• Finally, I would like to thank the 50+ Bioscience students who took time out of their busy lives to come to our mindfulness sessions over the last two years and from whom we have learnt so much!