The GraceKennedy Foundation Lecture
2017

HUMOUR, LAUGHTER AND LIFE

Michael Abrahams

GraceKennedy Foundation

Published in February 2017
by the GraceKennedy Foundation
73 Harbour Street, Kingston
Jamaica, West Indies
Telephone: (876) 922-3440-9 Ext. 3540/1

ISBN 978-976-8041-37-1 (E-book)

Original cartoons by Sean Tyrell

Printed in Jamaica by
The Phoenix Printery Limited

Contents

The Lecture

The GraceKennedy Foundation and GraceKennedy Foundation Lectures

The GraceKennedy Foundation was established in 1982, in celebration of the company's 60th anniversary. The Foundation provides assistance in two main areas: education and the environment. This is accomplished primarily through the provision of grants, tertiary scholarships, Diaspora activities through the GraceKennedy Jamaican Birthright Programme, the funding of two Professorial Chairs at The University of the West Indies, and the Annual Lecture Series.

Since 1989, GraceKennedy Foundation has used its lecture series to engage the Jamaican public, both locally and in the Diaspora, to promote discussion and debate on relevant topics affecting Jamaican society. The lecture is streamed live via the Foundation's YouTube channel: GraceKennedy Cares. In addition, copies of the lecture book are distributed to schools and public libraries across the island, and the e-book is available online at www.gracekennedy.com in the hope that the lecture's reach will extend beyond those present at its delivery.

This year's lecturer, renowned comedian, columnist and gynaecologist, Dr. Michael Abrahams, will present on the topic "Humour, Laughter and Life." This is by no means a frivolous topic. The 2009 World Happiness Index ranked Jamaica the third happiest country in the world. Just seven years later, the ranking moved to 73. Dr. Abrahams' presentation will show that humour and laughter positively impact the quality, health and happiness of one's life and the nation as a whole.

We are confident that this lecture will continue in the tradition of previous lectures and become an invaluable resource for all who seek a deeper understanding of significant, national issues. The Foundation, as always, welcomes and looks forward to your comments.

Caroline Mahfood
Secretary/Executive Director

GraceKennedy Foundation

Directors

Professor Elsa Leo-Rhynie – Chairman
Mr. Philip Alexander
Mr. Noel Greenland
Ms. Cathrine Kennedy
Mr. Fred Kennedy
Mrs. Fay McIntosh
Mr. James Moss-Solomon
Mr. Radley Reid
Professor Elizabeth Thomas-Hope
Mrs. Hilary Wehby

Secretary / Executive Director

Mrs. Caroline Mahfood

The GraceKennedy Foundation Lecture Series

1989 **G. Arthur Brown**
Patterns of Development and Attendant Choices and Consequences for Jamaica and the Caribbean

1990 **M. Alister McIntyre**
Human Resources Development: Its Relevance to Jamaica and the Caribbean

1991 **Don Mills**
The New Europe, the New World Order, Jamaica and the Caribbean

1992 **Burchell Taylor**
Free for All? – A Question of Morality and Community

1993 **Elsa Leo-Rhynie**
The Jamaican Family – Continuity & Change

1994 **Keith S. Panton**
Leadership and Citizenship in Post-Independence Jamaica – Whither the Partnership?

1995 **Lucien Jones**
The Jamaican Society – Options for Renewal

1996 **Elizabeth Thomas-Hope**
The Environmental Dilemma in Caribbean Context

1997 **Gladstone Mills**
Westminster Style Democracy: The Jamaican Experience

1998 **Don Robotham**
Vision & Voluntarism – Reviving Voluntarism in Jamaica

1999 **Barry Chevannes**
What We Sow and What We Reap: The Cultivation of Male Identity in Jamaica

2000 **Patrick Bryan**
Inside Out & Outside In: Factors in the Creation of Contemporary Jamaica

2001 **Errol Miller**
Jamaica in the 21st Century: Contending Choices

2002 **Lloyd Goodleigh, Anthony Irons, Neville Ying**
Changing with Change: Workplace Dynamics Today and Tomorrow

2003 **Pauline Milbourn Lynch**
Wellness – A National Challenge

2004 **Dennis Morrison**
The Citizen and the Law: Perspectives Old and New

2005 **Marjorie Whylie**
Our Musical Heritage: The Power of the Beat

2006 **Maureen Samms-Vaughan**
Children Caught in the Crossfire

2007 **Kenneth Sylvester**
Information and Communication Technology: Shaping Our Lives

2008 **Richard L. Bernal**
Globalization: Everything but Alms – The EPA and Economic Development

2009 **Anthony Harriott**
Controlling Violent Crime: Models and Policy Options

2010 **Delano Franklyn**
Sport in Jamaica: A Local and International Perspective

2011 **Frances Madden**
"It's Not About Me": Working with Communities: Process and Challenges – The Grace & Staff Community Development Foundation's Experience

2012 **James Moss-Solomon**
Jamaica and GraceKennedy: Dreams Converging, Roads Diverging

2013 **Anna Kasafi Perkins**
Moral Dis-ease Making Jamaica Ill? Re-engaging the Conversation on Morality

2014 **Fritz H. Pinnock and Ibrahim A. Ajagunna**
From Piracy to Transshipment: Jamaica's Journey to Becoming a Global Logistics Hub

2015 **Michael A. Taylor**
Why Climate Demands Change

2016 **Marvin Reid**
Overfed and Undernourished: Dietary Choices in Modern Jamaica

Copies of the Lectures are available online at www.gracekennedy.com or from the GraceKennedy Foundation, 64 Harbour Street, Kingston.

Foreword
GraceKennedy Lecture 2017
Humour, Laughter and Life

"These days if we don't laugh, we will cry!"

This comment from a friend reflects the way many of us feel as local happenings and world events leave us shaking our heads in despair and wondering, "What next?" One prescription for the apprehension and tension we are experiencing was framed in a *Gleaner* column of April 2015 entitled, "Laughter is the best medicine". As the author was both a medical doctor and a popular comedian, the well-known phrase seemed to be worth exploring.

The 2017 GraceKennedy Lecture is pleased to have that medical doctor and comedian, obstetrician/gynaecologist (OB/GYN) Dr. Michael Abrahams as its lecturer – engaging the audience in a consideration of "Humour, Laughter and Life".

Dr. Abrahams graduated from The UWI in 1989 with the Bachelor of Medicine and Bachelor of Surgery (MBBS) degrees and with the Doctor of Medicine (DM) in obstetrics and gynaecology in 1997. In that year, also, he became a member of the Royal College of Obstetricians and Gynaecologists (MRCOG). His passion for a career as a medical practitioner had not wavered since his days at St. Hugh's Preparatory and The Priory schools. His choice of being an OB/GYN, made during medical school, has opened his eyes to the ways in which women's lives are fraught with challenges, many of which result in their experience of emotional as well as physical problems. In addition to the more expected areas of pregnancy, menopause and feminine ailments, his patients present with socio-emotional issues such as physical and sexual abuse, child abuse, puberty-related challenges, sexual harassment, gender discrimination and relationship challenges. The range of concerns

makes Dr. Abrahams admit that he has become "even more sensitive to the needs of women and has come to appreciate them much more".

A Board member of the Jamaica Cancer Society, Dr. Abrahams has been a volunteer physician there for the past 20 years. In 1997, also, he founded a group called HOPE – Helping Others Progress Emotionally – for women who experience miscarriages, stillbirths and neonatal death. This group was dormant for a while but resumed activities in 2016. His recognition of the scourge of child abuse led him to start a children's rights advocacy group – Protect our Children – in 2015. In 2016 J-Flag (Jamaica Forum of Lesbians, All-Sexuals and Gays) named him Ally of the Year.

Over the past decade or more, Dr. Abrahams has become a serious social commentator and poet, using comedy as a vehicle for reaching his audience. He started doing comedy around 2005, when Joan Andrea Hutchinson asked him to do a talk about comedy and health at the launch of a comedy show; in 2006, "Blakka" Ellis asked him to do the same thing and, later that year, he made his first appearance on stage in a stand-up comedy show.

An avid *Saturday Night Live* fan, he says he records his thoughts on his phone while he waits in traffic or when he has rare moments to reflect. His friends will admit that his thoughts often elicit laughter: Dr. Abrahams has a very keen wit and an expressive face so his success as a stand-up comedian is not a surprise to them. His appearances on stage, along with other comedians such as Ity and Fancy Cat, his participation in *The Vibe* talk show, in *See it Deh*, comedy sketch, as well as some of his satirical YouTube videos and television appearances, keep us laughing uncontrollably.

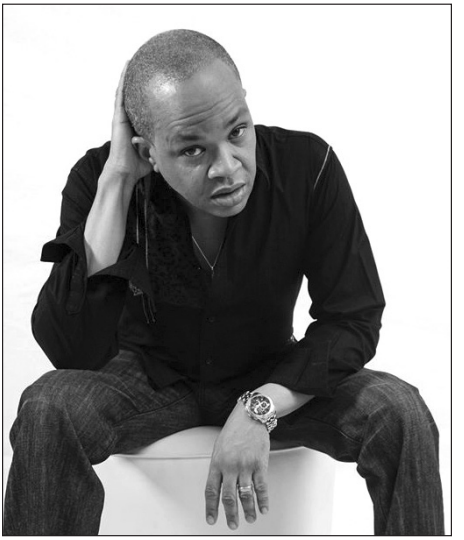
In 2016, when Jamaica was facing widespread infection from the mosquito borne Zika virus resulting in ZIK-V disease and its complications, Dr. Abrahams wrote a song entitled, "We nuh want ZIK-V". The song advised people to "mash up all mosquito breeding site" and warned pregnant women to protect themselves and their babies against the bite of the Zika-carrying mosquito. This creative,

musical warning and an interview with him were featured on BBC *Newsday*. He has taken his social commentary to another level – online, through his weekly column in the *Gleaner*, and in 2016 he was awarded a Certificate of Merit for Opinion Journalism by the newspaper.

First and foremost, however, Dr. Abrahams is a family man – family gets priority every time: he describes his wife Gail as his "biggest source of support", along with his three children: 17 year-old Aliyah, 11 year-old Zachary and 6 year-old Zane. This year, he says, is a big year for him as he is doing GSAT in March and CXC CAPE in May!!!

We are very happy that this OB/GYN and comedian who stresses that "Love is my religion" accepted our invitation to share his thoughts on humour, laughter and life with us, and we look forward to an enlightening and entertaining lecture.

Elsa Leo-Rhynie
January 2017



Michael Abrahams

THE LECTURE

Introduction

Humour, Laughter and Life

Having a good sense of humour and the ability to laugh heartily are valuable in assisting us to navigate our way through life. The word "humour" derives from the humoral medicine of the ancient Greeks, which taught that the balance of fluids in the human body, known as "humours" (Latin: *humor*, "body fluid"), controlled human health and emotion. What we know today is that humour and laughter do not necessarily control health and emotion but they exert a powerful influence on them.

Laughter is everywhere. No matter which geographic area, country or culture you find yourself in, you are guaranteed to encounter it. Babies as young as 17 days old, and those born blind and deaf, have been observed laughing.

Research has helped us to understand more about humour and laughter and the roles they play in our lives.

What Are Humour and Laughter?

Humour is the tendency of particular cognitive experiences of humans to provoke laughter and provide amusement. Personal taste, however, dictates what a person finds humorous, in addition to factors such as geographic location, culture, maturity, level of education, intelligence and context.

Laughter is a physical reaction in humans and some other species of primate, consisting of two components: a set of gestures and the production of a sound, "utilizing rhythmic, vocalized, expiratory and involuntary actions."[1] This contagious release of energy is an adjunct to communication and bonding and it makes us feel good. It comes as a response to sensations, thoughts and social cues.

Although humour and laughter are often linked, they exist independently; humour is not necessary for laughter to occur. In

their book *Inside Jokes: Using Humor to Reverse-Engineer the Mind*, Hurley, Dennett and Adams assert that laughter sometimes "expresses the detection of humour".[2] The Harvard Mahoney Neuroscience Institute explains that, "Humor is an evoked response to storytelling and shifting expectations. Laughter is a social signal among humans. It's like a punctuation mark;"[3] this is because it comes usually at the end of a phrase or during a pause.

The study of humour and laughter and their psychological and physiological effects on the human body is called gelotology.

Notes

1 *Laughter for All*, accessed January 15, 2017, www.laughterworldmaster.com.

2 Matthew M. Hurley, Daniel C. Dennett and Reginald B. Adams, Jr., *Inside Jokes: Using Humor to Reverse-Engineer the Mind* (Cambridge, MA: MIT Press, 2011).

3 "Humor, Laughter and those Aha Moments," *On the Brain*. The Harvard Mahoney Neuroscience Institute Letter 16, no. 2 (2010): 1.

Chapter 1: Humour

What Is Funny?

Personal taste dictates what an individual finds humorous, in addition to several other determinants. Culture and geographic location, for example, influence our interpretation of humour. While conducting an experiment to decide "the world's funniest joke", psychologist, Dr. Richard Wiseman, from the University of Hertfordshire, made some interesting observations.[1] The experiment took the form of a global competition and Wiseman found differences in cultural and geographic appreciation of humour as well as differences in what people found to be funny.

Germans, he noted, found just about everything funny. They did not express a strong preference for any type of joke. People in other European countries, such as France, Denmark and Belgium, displayed a preference for off-beat surreal humour such as this:

> *An Alsatian went to a telegram office, took out a blank form and wrote: 'Woof. Woof. Woof. Woof. Woof. Woof. Woof. Woof.' The clerk examined the paper and politely told the dog: 'There are only nine words here. You could send another Woof for the same price.' 'But', the dog replied, 'that would make no sense at all.'*

Europeans, according to Wiseman, also enjoyed jokes that involved making light of topics that create anxiety such as death, illness and marriage. People from the Republic of Ireland, the UK, Australia and New Zealand most enjoyed jokes involving word play. For example, this exchange:

> *Patient: "Doctor, I've got a strawberry stuck up my bum."*
> *Doctor: "I've got some cream for that!"*

Americans and Canadians tended to favour jokes where there was a strong sense of superiority, either because a character looks stupid or is made to look stupid by someone else. An example of American humour:

> *Texan: "Where are you from?"*
> *Harvard graduate: "I come from a place where we do not end our sentences with prepositions."*
> *Texan: "OK, where are you from, Jackass?"*[2]

Race may also play a role in the interpretation and appreciation of humour. For example, the American television sitcom *Friends* was a huge hit but not among African Americans.

Intelligence and level of education will obviously determine if people "get" certain jokes as well. *The Big Bang Theory* is a sitcom which centres on the lives of four academically brilliant but socially awkward science geeks. In one episode, one of the main characters, Sheldon (Jim Parsons), gives the following joke:

> *A neutron walks into a bar and asks how much for a drink.*
> *The bartender replies, 'For you, no charge.'*

If you did not do science in high school, or idled in class, the joke would likely be totally lost on you.

Age and maturity are also factors. When I was a child, my father owned a large record collection. (For millennials reading this, records are vinyl discs with grooves; in the old days, we would put them on devices called turntables. The discs would spin, and we would put a needles on them, and sound would come out of the connected speakers and we would hear music and stuff.) Anyway, included in the collection were many records by the Mighty Sparrow, one of the greatest calypsonians ever (For millennials, calypso was the Trinidadian music genre that preceded soca.). One of my favourite songs was "Peace and Love". In the song, about a woman he loves, the Mighty Sparrow sings:

Bernice …
When ah say a love you, gimme peace
If ah say I love you, I want peace

The lines were followed by mischievous laughter for several bars. When the song was released, the Vietnam War was in full swing, as was the peace movement which began in the 1960s in the USA in opposition to American involvement in the war. The slogan "peace and love" was very common and as a very young child, I related to the sentiments in the song. Or so I thought. My eureka moment came many years later after puberty kicked in and I heard the song and realized that I had totally missed the double entendre that Sparrow skillfully interjected, where the word "peace" obviously meant "piece", common slang for sex.

We also have to consider context when interpreting humour. Stephen D. Boyd, Professor Emeritus of Speech Communication, College of Informatics, Northern Kentucky University, gave an example of context relating to humour.[3] He had embarked on a Caribbean cruise for three days and on the last day, as part of final instructions for disembarking, the cruise entertainment director recounted the great experiences on the cruise over the preceding days, including questions he had received during the week from some of the vacationers. With each question, the audience of several hundred laughed loudly. One of the questions was, "Does this elevator go to the front of the ship?" While this may not seem to be a very funny question to those of us who were not on the cruise, the context of it explains why it was funny. One of the constant challenges for all 2000 guests had been finding their way around on board the ship, which was quite large. Each time passengers left their cabins they ran the risk of getting lost, so everyone could relate to the question and the sentiment expressed therein, although they knew that elevators moved vertically and not horizontally.

In 2015, researchers at Oxford University published a study examining the relationship between the complexity of jokes and

cognitive constraints. They found, not surprisingly, that more complex jokes tend to be funnier but only up to a point, and that jokes that are too complicated tend to lose the audience. In the study, 65 jokes were chosen from an online compilation claiming to be the "101 Funniest Jokes of All Time", and the reactions of 55 undergraduates from the London School of Economics to the jokes were analysed. The research team found that the funniest jokes were those that involved two characters and up to five back-and-forth levels of intentionality between the joke teller and the audience.[4] These findings are not surprising. What is interesting, however, is what was most popular among the participants in the study and what was most popular when the list of the top 10 jokes was published on a website online, and visitors to the site, worldwide, were asked to vote for their favourite.[5] The economics undergraduates chose the following joke:

> *A young boy enters a barber shop and the barber whispers to his customer. 'This is the dumbest kid in the world. Watch while I prove it you.' The barber puts a dollar bill in one hand and two quarters in the other, then calls the boy over and asks, 'Which do you want, son?' The boy takes the quarters and leaves. 'What did I tell you?' said the barber. 'That kid never learns!' Later, when the customer leaves, he sees the same young boy coming out of the ice cream store. 'Hey, son! May I ask you a question? Why did you take the quarters instead of the dollar bill?' The boy licked his cone and replied, 'Because the day I take the dollar, the game is over!'*

Online readers picked this one:

> *A guy is sitting at home when he hears a knock at the door. He opens the door and sees a snail on the porch. He picks up the snail and throws it as far as he can. Three years later there's a knock on the door. He opens it and sees the same snail. The snail says: 'What the hell was that all about?'*

Eight months after the jokes were posted, 21 percent of online readers chose the joke about the snail. The joke about the boy and the barber, which was favoured by the participants in the study, was third in popularity, garnering only 15 percent of the votes. The sample size in the study was small, and the educational levels, socialization and other characteristics of the subjects were likely similar. Also, although the online voters were international, it is not known how many nationalities were involved, or how many people actually voted.

So, humour and its interpretation and appreciation are subjective, and influenced by many factors. But there may be certain common components regarding the structure of jokes and scenarios that we consider to be humorous.

In 2002 this was judged the world's funniest joke in a global online competition:

> *Two hunters are out in the woods when one of them collapses. He doesn't seem to be breathing and his eyes are glazed. The other guy whips out his phone and calls the emergency services. He gasps: 'My friend is dead! What can I do?' The operator says: 'Calm down, I can help. First, let's make sure he's dead.' There is a silence, then a shot is heard. Back on the phone, the guy says: 'OK, now what?'*

The competition was part of the study conducted by Dr. Wiseman from the University of Hertfordshire.[6] The study was conducted over a one-year period and attracted more than 40,000 jokes from 70 countries, with the winner being decided by votes submitted on an Internet site. People logged onto the website, LaughLab, and were invited to rate jokes using a "Giggleometer" which had a five-point scale ranging from "not very funny" to "very funny". The award was given to a 31 year-old psychiatrist from Manchester, England, after over two million votes were tallied.

Humour Theories

Although humour is subjective and influenced by a multitude of contributing factors, the popularity of "the world's funniest joke" among persons of diverse geographic locations and cultures suggests that there are some universal elements involved in the science of comedy. But how do our brains determine what is humorous? Several theories attempt to explain this.

The Superiority Theory

This theory suggests that laughter is an expression of our feelings of superiority over others or over a former state of ourselves. So we laugh at people who do stupid things that we would not find ourselves doing, or at the misfortunes of others, like someone slipping on a banana peel.[7]

An example of the superiority theory is the following classic putdown:

> *A woman goes into a cafe with a duck. She puts the duck on a stool and sits next to it. The waiter comes over and says: 'Hey! That's the ugliest pig that I have ever seen.' The woman says: 'It's a duck, not a pig.' And the waiter says: 'I was talking to the duck.'* [8]

But the theory cannot account for all jokes and sources of humour, as some jokes do not evoke any feelings of superiority. For example:

> *Police were called to a day care, where a three year old was resisting a rest.*[9]

The Relief Theory

This theory suggests that laughter is a homeostatic mechanism, affecting the nervous system in the way a pressure-relief affects a steam boiler. Humour may facilitate relief of the tension caused by one's fears and the result of the release of nervous energy is laughter.

An example of this is the poem entitled "Waste" by Harry Graham (2009):

I had written to Aunt Maud,
Who was on a trip abroad,
When I heard she'd died of cramp,
Just too late to save the stamp.[10]

While reading the first three lines, we might feel pity for the writer until we realize during the last line that he is stingy and insensitive, and the nervous energy used in empathizing with the nephew is transformed into laughter.

But some jokes involve no tension at all, such as this one-liner from comedian Steven Wright:

A conclusion is the place where you got tired of thinking.[11]

The Incongruity-Resolution Theory

According to this school of thought, humour is perceived when logic and familiarity are replaced by things that don't normally go together; in other words, at the moment of realization of incongruity, when we expect a certain outcome but a radically different outcome is presented.[12] Initially, based on our own experiences, we rationally expect a certain outcome, only for the joke to take a totally different direction, causing us to experience two sets of incompatible thoughts and emotions simultaneously. This sequence of events is perceived as humour and we laugh at the unexpected absurdity of it all.

Because many agree that it is in fact the realization and the congruous resolution of the apparent incongruity that gives rise to humour, the theory is also known as the incongruity-resolution theory. The following is an example of humour resulting from incongruity:

I said to the Gym instructor: 'Can you teach me to do the splits?'
He said: 'How flexible are you?' I said: 'I can't make Tuesdays.'[13]

However, there's a lot of non-sequitur humour that does not involve resolution:

> *A man at the dinner table dipped his hands in the mayonnaise and then ran them through his hair. When his neighbour looked astonished, the man apologized: 'I'm so sorry. I thought it was spinach.'*

And then, there are jokes which satisfy two or more of the theories. The "world's funniest joke" contains elements integral to all three theories. We feel superior to the stupid hunter, realise the incongruity of him misunderstanding the operator and the joke also helps us to laugh about our concerns about our own mortality, usually a sombre topic.

Types and Forms of Humour

There are many types of humour; any type may appeal to one person but not to another, and we may enjoy these in alternation or in combination, according to Mark Nichol, who described more than 20 "varieties of comic expression", which are described below:[14]

Anecdotal: From the word *anecdote* (from a Greek phrase meaning "things unpublished"), this refers to stories, often personal, that are delivered to make a point and evoke laughter. These stories are often true but may be exaggerated to reinforce their impact. Anecdotes make stories more personal and interesting.

Blue: Also called off-colour, or risqué (French, "to risk"), or ribald, usually includes sexual and/or scatological (bathroom) content, often delivered with the use of foul language. This is usually considered to be "adult" humour and would not be appropriate for children or a gathering of church folk.

Burlesque: Literary, dramatic or musical work intended to cause laughter by caricaturization or exaggerated characterization. The word is derived from the Italian *burlesco* which, in turn, is derived from the Italian *burla*, which means a joke, ridicule or mockery.

Dark/Gallows/Morbid: Grim or depressing humour dealing with death or misfortune such as disease, injury, or being a victim of crime.

Deadpan/Dry: This is humour delivered with an impassive, emotionless, expressionless, matter-of-fact presentation. The facial expressions, body language and tone are usually in stark contrast to the hilarious material or punchlines being delivered. Stephen Wright has been described as the "king of deadpan comedy". He delivers hilarious lines in a monotone and with an absolutely straight face.

Double entendre: A type of word play in which a word or phrase is open to two interpretations, one of which is usually risqué. In the Caribbean, especially in the Eastern Caribbean, this is a feature of some calypso and soca songs, which are humorous and evoke laughter. The music of the Mighty Sparrow is well known for double entendre.

Droll: Humour that elicits laughs through amusingly odd and eccentric behaviour or speech.

Epigrammatic: This type of humour emphasizes brevity, expressed in one- or two-liners, often disguised as a philosophical observation. An example is, "Too many people run out of ideas long before they run out of words." Benjamin Franklin, a polymath and one of the founding fathers of the United States of America, and Oscar Wilde, an Irish playwright, novelist and poet, excelled at this.

Farcical: Comedy based on improbable coincidences and with satirical elements, punctuated at times with overwrought, frantic action. Movies and plays featuring the Marx Brothers are examples, as well as the silent movies of Charlie Chaplin.

High/Highbrow: Humour pertaining to cultured, sophisticated themes.

Hyperbolic: Comic presentation marked by extravagant

exaggeration and outsized characterization. In other words, taking something to a ridiculous extreme.

Innuendo: Humour that indirectly hints at something unmentionable.

Ironic: Humour involving incongruity and discordance with norms, in which the intended meaning is opposite, or nearly opposite, to the literal meaning.

Juvenile/Sophomoric: Humour involving childish themes such as pranks, name-calling, and other immature behaviour. *Jackass*, a television reality show, is a great example of this. *Jackass: The Movie*, which was based on the show, is just as ridiculous.

Mordant: Caustic or biting humour (the word mordant stems from a Latin word meaning "to bite").

Parodic: Deliberate humorous exaggerations of original, fictional works or characters, often intended to ridicule an author, an artistic endeavour, or a genre. Weird Al Yankovik made songs and music videos which hilariously parodied songs by established singers.

Puns/Paranomasia: A form of word play. Two or more meanings are suggested by exploiting multiple meanings of words, or similar-sounding words, for an intended humorous or rhetorical effect. It overlaps with dry humour. An example: "Why don't some couples go to the gym? Because some relationships don't work out."

Satirical: Similar to parody, but making fun of actual events, human nature or aspects of society.

Screwball: Akin to farce in that it deals with unlikely situations and responses to those situations; distinguished, like farcical humour, by exaggerated characterizations and episodes of fast-paced action.

Self-deprecating: Humour in which performers target themselves and their foibles or misfortunes for comic effect. Stand-up comedian

Rodney Dangerfield was a practitioner of self-deprecating humour. His catchphrase was, "I don't get no respect!"

Situational: This comes out of everyday situations. This type of humour is the basis of sitcoms, or situation comedies. Situational comedies employ elements of farce, screwball, slapstick, and other types of humour. *I Love Lucy* and *Seinfeld* are two enormously successful situational comedies which utilize markedly different comedic styles.

Slapstick: Comedy in which mock, cartoonish violence and simulated bodily harm are staged for comic effect; also called physical comedy. The name is derived from a prop consisting of a stick with an attached piece of wood that slapped loudly against it when one comedian struck another with it, enhancing the effect. The Three Stooges were renowned proponents of slapstick comedy. Carol Burnett is a practitioner of this type of comedy.

Stand-up: A form of comedy delivery in which a comic entertains an audience with jokes and humorous stories. A stand-up comedian may employ one or more of the types of humour described here. For example, Richard Pryor was a great stand-up comic who would deliver anecdotal tales often in a blue format. In the Caribbean, Paul Keens-Douglas is a popular stand-up comedian.

Tongue-in-cheek: Sustained jokes which are subtle enough not to stand out at first. The expression comes from keeping one's tongue against one's cheek to keep from laughing. Overlaps with sarcasm and deadpan humour.

Comedy, Cartoons and Social Commentary

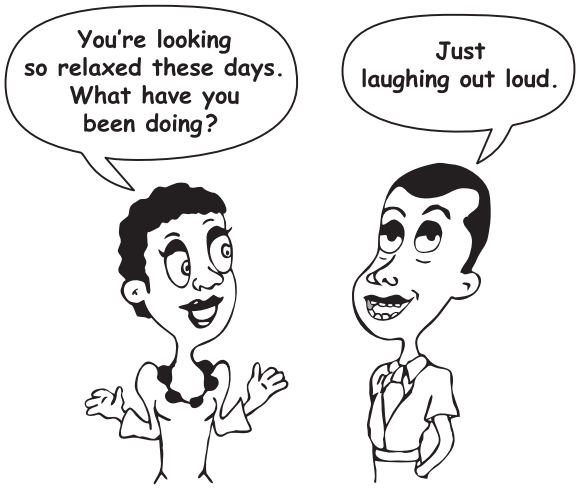
The varieties of comic expression identified above may appear in a range of media. Comedy shows, as live stand-up, are popular across the world. Comedy shows are also carried on television and, more and more today, via social media channels such as YouTube. Jamaican comedians Ity and Fancy Cat currently enjoy popularity as

they use comedy to poke fun at high-profile personalities and day-to-day social situations.

Comedy can be a serious thing, however. It can be a powerful tool for social commentary and social change. It can combine the humorous with the not-so-funny to make statements on the social and political realities of a society. Some have credited comedy with "shifting social norms on social and civic issues through campaigns, charity efforts, and TV portrayals."[15] *All In the Family*, *The Jeffersons*, *Golden Girls* and *Modern Family* come to mind as they all dealt with serious social issues in humorous ways yet led people to think about their personal beliefs on some issues. The American comedy show *Saturday Night Live* often uses comedy as a vehicle for social commentary in its lampooning of American politics and politicians. Current host of *The Daily Show*, Trevor Noah, is a master of political satire.

In the print media, cartoons play a significant role in social commentary as cartoonists draw attention to political and social situations, often using irony to highlight inconsistent positions of leaders yet evoking a smile or laughter from readers because of the portrayal of the characters.

Social commentary and humour often go hand in hand with music in Jamaica as in other Caribbean countries. We think of the songs of calypsonians and soca artistes, as well as reggae and dancehall artistes, who make trenchant comments on society in humorous ways. Jamaicans will remember Lloyd Lovindeer's "Wild Gilbert", which humorously recounted the experience of hurricane Gilbert while pointing out the behaviour of some Jamaicans as the hurricane progressed. In the Jamaican context, the tendency is to "Tek kin teet kibba heart bu'n" even while recognising that "A nuh ebry kin teet a laaf".



Notes

1 John von Radowitz, "Revealed: The Funniest Joke in the World," *Guardian* (Manchester), October 3, 2002, https://www.theguardian.com/uk/2002/oct/03/3.

2 Radowitz, "Revealed."

3 Stephen Boyd, "Context and Humor," *Public Speaking Tips*, December 14, 2011, http://www.speaking-tips.com/Articles/Context-and-Humor.aspx.

4 R.I.M. Dunbar, Jacques Launay and Oliver Curry, "The Complexity of Jokes Is Limited by Cognitive Constraints on Mentalizing," *Human Nature* 27, issue 2 (June 2016): 130–40.

5 Oliver Wheaton, "The Ten Funniest Jokes Ever (According to Science)," November 26, 2015, http://metro.co.uk/2015/11/26/the-ten-funniest-jokes-ever-according-to-science-5527698/.

6 Radowitz, "Revealed."

7 John Morreall, "Philosophy of Humor," *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition), Edward N. Zalta (ed.), <https://plato.stanford.edu/archives/win2016/entries/humor/>.

8 *LaughLab.co.uk*, accessed February 17, 2017, http://www.richardwiseman.com/LaughLab/home.html.

9 Nina Rastogi, "5 Leading Theories for Why We Laugh – and the Jokes that prove them wrong," *Browbeat: Slate's Culture Blog*, May 13 2011, http://www.slate.com/blogs/browbeat/2011/05/13/5_leading_theories_for_why_we_laugh_and_the_jokes_that_prove_them_wrong.html.

10 Morreall, "Philosophy of Humor."

11 Rastogi, "5 Leading Theories."

12 M.P. Mulder and A. Nijholt, "Humour Research: State of the Art," University of Twente, Center of Telematics and Information Technology, Technical Report CTIT-02-34 (2002).

13 Morreall, "Philosophy of Humor."

14 Mark Nichol, "20 Types and Forms of Humor," *Daily Writing Tips*, http://www.dailywritingtips.com/20-types-and-forms-of-humor/.

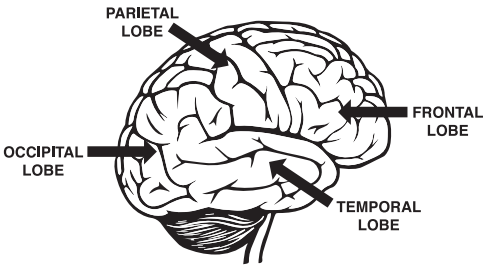
15 Caty Borum Chattoo, "The Laughter Effect: The [Serious] Role of Comedy in Social Change," Center for Media and Social Impact, School of Communication, American University, February 2017, http://cmsimpact.org/report/laughtereffect/.

Chapter 2: Laughter

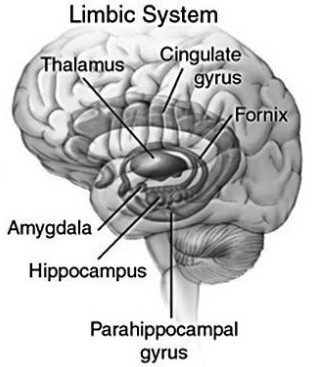
The Mechanism of Laughter

We know that various stimuli trigger laughter and its associated responses but the relationship between laughter and the brain is not fully understood. The neuroscience of laughter is complex but research has helped us to understand what takes place in our heads. One study in humour research looked at the electrical activity that occurs in the brain while we laugh. Electroencephalograms (EEGs) were used to examine brain activity in subjects responding to humorous material and researchers found that about four-tenths of a second after the punch line of a joke is heard but before laughter occurs, a wave of electricity sweeps through the entire cerebral cortex.[1] The extent of cortical involvement strongly suggests that all or most of our higher brain may play a role in laughter. The following areas have been evaluated and are thought to be involved in specific processes:

- Left hemisphere of the cortex – Analyzes words and the structures of jokes.
- Right hemisphere of the cortex – Intellectual analysis required to "get the joke" occurs here.
- Frontal lobe – Located at the front of each cerebral hemisphere, is involved in processing social emotional responses.



- Broca's area – Region in the frontal lobe of the dominant hemisphere (usually the left) of the brain, with functions linked to speech production and language control. Important for processing puns and similar material involving word play.
- Sensory processing area of the occipital lobe – Contains cells that process visual signals.
- Motor sections – Evoke physical responses to a joke.
- The amygdala, hippocampus, thalamus, and hypothalamus – A network of structures located beneath the cerebral cortex that plays a role in motivation and emotional behaviours. The median part of the hypothalamus has been identified as a major contributor to the production of loud, uncontrollable laughter.



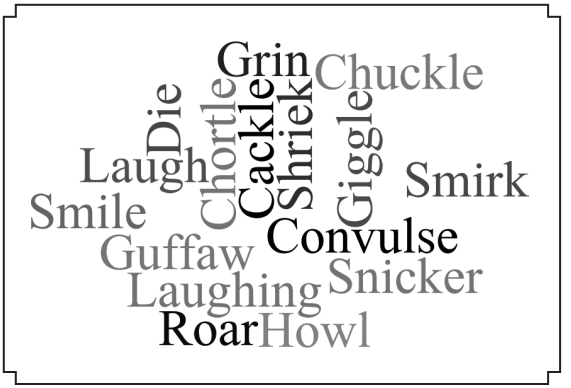
The physical responses take place after the stimuli have been processed by the brain. During laughter, facial muscles contract, including the zygomatic major muscle, which pulls the upper lip upward and outward, and this is accompanied by narrowing of the eyes. The sound we make is produced by the lungs and the larynx, as we exhale through partially open vocal cords, while our respiratory muscles intermittently contract and relax, producing the characteristic rhythmic sound of laughter. It is not uncommon for the eyes to moisten during laughter as the tear glands reflexly release their secretions.

The pattern of sounds in a normal laugh is "ha-ha-ha" or "ho-ho-ho." It is unnatural to have a spontaneous laugh structure of "ha-ho-ha-ho." Variations that do occur, most often take place in the first or final note in a sequence – therefore, "ho-ha-ha" or "ha-ha-ho" laughs are possible.[2]

Sometimes, during laughter, other body parts get totally out of control. Which brings me to a very important issue. If you visit the cinema to watch a comedy and see me there, take note of where I am and sit very, very, very far from me. I have a tendency to do really weird stuff when I get a joke. While watching an Austin Powers movie, featuring Mike Myers, I fell off my seat and onto the ground in a contorted, convulsing mess, and while watching Ace Ventura: Pet Detective, starring Jim Carrey, I laughed so hard at a joke that I flung my head forward and struck the back of the head of the guy sitting in front of me with my forehead. It was very embarrassing. I apologized multiple times and at the end of the movie, while he was walking out, he was still rubbing the back of his head. People sitting beside me have also been slapped and grabbed. So, if you see me at the movies, be afraid. Be very afraid.

The Stages of Laughter

Researchers have attempted to identify the stages of laughter and there are different suggestions as to how many can be elucidated. Berk, in 2001, presented Kuhn's (1994) "surgical dissection" of laughter in the following 15 stages, which basically describe the evolution of a laugh:



1. **Smirk:** Slight, often fleeting upturning of the corners of the mouth, completely voluntary and controllable

2. **Smile:** Silent, voluntary and controllable, more perceptible than a smirk; begins to release endorphins

3. **Grin:** Silent, controllable, but uses more facial muscles (for example, the eyes begin to narrow)

4. **Snicker:** First emergence of sound with facial muscles, but still controllable (if you hold in a snicker, it builds up gas)

5. **Giggle:** Has a 50 per cent chance of reversal to avoid a full laugh; sound of giggling is amusing; efforts to suppress it tend to increase its strength

6. **Chuckle:** Involves chest muscles with deeper pitch

7. **Chortle:** Originates even deeper in the chest and involves muscles of torso; usually provokes laughter in others

8. **Laugh:** Involves facial and thoracic muscles as well as abdomen and extremities; sound of barking or snorting

9. **Cackle:** First involuntary stage; pitch is higher and body begins to rock, spine extends and flexes, with an upturning of head

10. **Guffaw:** Full body response; feet stomp, arms wave, thighs

slapped, torso rocks, sound is deep and loud; may result in free flowing of tears, increased heart rate, and breathlessness; strongest solitary laughter experience

11. **Howl:** Volume and pitch rise higher and higher and body becomes more animated
12. **Shriek:** Greater intensity than howl; sense of helplessness and vulnerability

13. **Roar:** Lose individuality; that is, the audience roars!

14. **Convulse:** Body is completely out of control in a fit of laughter resembling a seizure; extremities flail aimlessly, balance is lost, gasp for breath, collapse or fall off chair

15. **Die laughing:** An instance of total helplessness; a brief, physically intense, transcendent experience; having died, we thereafter report a refreshing moment of breathlessness and exhaustion with colours more vivid and everything sparkling; everything is renewed.[3] This is what is referred to in texting lingo as "dwl".

People have literally died laughing, though. One of the most famous cases was that of Zeuxis, a 5th-century BC Greek painter. An elderly woman commissioned him to paint a portrait of the Aphrodite, the goddess of love, beauty and sexuality. The problem was that the woman was apparently not beautiful or sexy, and when Zeuxis did the painting he died laughing at the humorous way in which the woman was depicted.[4]

What Makes Us Laugh?

Laughter may accompany or occur in response to a variety of emotions. The association of laughter with mirth, joy and happiness are well known. We often laugh when we feel good, and associate the word "laughter" with humour and jokes.

But humour may have an even more common association. In his book, *Laughing: A Scientific Investigation*, Robert R. Provine, professor of psychology and neuroscience at the University of Maryland, Baltimore, described a study about laughter. Provine and some graduate students listened in on normal conversations at local malls, and found that out of 1,200 "laugh episodes", only about 10 percent were generated by a joke. "Laughter really has a bonding function between individuals in a group", says Provine.[5] If we stop to think about it, we experience this in our own lives. For example, if we go shopping or attend an event and we unexpectedly encounter relatives, friends or acquaintances, we often laugh when we make eye contact and greet them.

After studying people laughing during shared conversations, Provine concluded that laughter has more to do with social relationships than humour. He found that people will laugh 30 times more when there are other people around than when alone. According to Provine, eliminate all the social components and laughter dies down too.

So, generally, laughter accompanies good feeling. But laughter can accompany feelings of relief, embarrassment and confusion and even anger as well, while nervous and courtesy laughter may occur in tense or awkward situations.

Drugs such as laughing gas (nitrous oxide), and recreational drugs can also provoke laughter. In the song "Pimper's Paradise", Bob Marley sings of a woman who snorts cocaine and will be "laughing when there ain't no joke". I have a female friend who related a story to me about her rather unorthodox childhood. When she was about to do her Common Entrance exam, an exam that children used to sit in grade 6 to gain admission to high school, her

father, a Rastafarian, had a great idea. The morning of the exam he gave her ganja (marijuana) tea to drink to help her to focus. She drank the tea, went to the exam, and did indeed focus ... on dancing, singing and laughing at the invigilators. She failed. Luckily, she re-sat the exam the next year and passed but had hot chocolate before, instead.

Laughter can also be pathological and is usually secondary to neurological or neuropsychiatric conditions. Paradoxical laughter is an example in which exaggerated responses occur, which are unwarranted by external events. One of the most bizarre examples of pathological laughter (PL) occurred in the town of Kashasha in what was then known as Tanganyika (which later combined with Zanzibar to form Tanzania) in 1962,[6] many, many, many years before I was born.

Three schoolgirls began laughing at a joke, and the laughter spread uncontrollably, affecting 95 of the 159 pupils, aged 12 to 18 years. Symptoms lasted from a few hours to 16 days in the afflicted children. Teachers were initially spared the agony but reported that the students were unable to concentrate due to the peals of laughter. The school was sued and was eventually forced to close down. The epidemic also spread to the village of Nshamba, where several of the girls lived. Episodes of uncontrollable laughter continued intermittently in these and nearby villages for one and a half years and during this time, a total of 14 schools were shut down and 1,000 people were affected.

Although laughter is usually associated with an overall feeling of well-being, unpleasant accompanying symptoms, including pain, fainting, flatulence, respiratory problems, rashes, attacks of crying, and random screaming were reported during the epidemic.[7]

The explanation given for this strange phenomenon is that it was a severe manifestation of mass psychogenic illness (MPI), a condition in which the signs and symptoms of illness spread rapidly

throughout a cohesive group. The phenomenon originates from a nervous system disturbance involving excitation, loss, or alteration of function, whereby physical complaints that are exhibited unconsciously have no corresponding organic cause.[8] Charles F. Hempelmann of Purdue University theorized that the episode was stress-induced. In 1962 Tanganyika had just won its independence and students had reported feeling stressed because of higher expectations by teachers and parents. Hempelmann explained that MPI usually occurs in people without a lot of power and is a last resort for people of a low status, adding that "It's an easy way for them to express that something is wrong."[9]

Pathological laughter can also result from physical lesions. Gelastic seizures, which are seizures accompanied by outburts of energy, most commonly laughter, are usually caused by brain tumours. Trigeminal neuromas, a type of benign brain tumour, have been reported to cause pathological laughter as well. They do this by causing compression of the pons (a part of the brain) and other neural structures that affect laughter.[10]

My heart goes out to people suffering from these maladies. They have no control and may burst out in uncontrollable laughter, which may be inappropriate at the times of the outbursts. Can you imagine a virginal bride on her wedding night, being intimate with her brand new husband and, as he takes off his underpants, she collapses in a convulsion of cacophonous laughter? In this case, the laughter would probably act as birth control too, as there would most likely be no nookie for that night.

Tickling can also provoke laughter, not just in humans but in gorillas and rats as well. Scientists at the University of Tuebingen, investigated the laughter response to tickling. Using 30 volunteers and hooking them up to MRI (magnetic resonance imaging) scanners, the researchers' original goal was to work out why tickling elicits laughter and to determine if it is the same as laughing at a joke or a funny situation. The participants were asked to laugh at something they found funny and then were stimulated on their feet – while their brains were monitored.

Both tickling and laughing activated the part of the brain called the Rolandic operculum, which controls facial movements and vocal and emotional reactions. However, tickling was also found to stimulate the hypothalamus, a part of the brain that controls body temperature, hunger, tiredness and sexual behaviour, in addition to instinctive reactions to situations, such as fight or flight. Tickling has also been found to stimulate the same nerve fibres that interpret pain.

It is theorized that laughter may be a sign of submission and that laughter from being tickled is part of a defence mechanism to signal submissiveness, explaining why some people even start to laugh before being tickled. The researchers believe that our responses to tickling date back to the earliest human evolution and the development of self-awareness. This also explains why you cannot tickle yourself, as in this case your brain is aware that there is no need to produce a response to the action.[11]

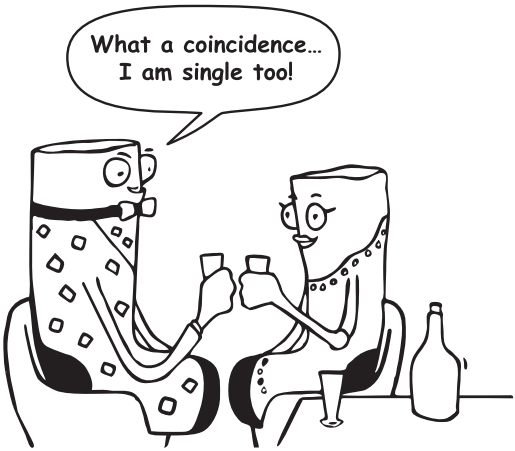
On the other end of the spectrum is aphonogelia, a very rare neurological condition in which the sufferer is unable to laugh out loud.

Laughter, Humour and Relationships

The English comedian, John Cleese, said, "I'm struck by how laughter connects you with people. It's almost impossible to maintain any kind of distance, any sense of social hierarchy when you are just howling with laughter. Laughter is a force for democracy."[12]

Provine convincingly elucidated the role of laughter in bonding and social relationships, so it should come as no surprise that humour and laughter are of significance in sexual attraction and romantic relationships as well. The results of a study conducted by Greengross and Miller indicated that general and verbal intelligence both predict humour production ability, which in turn predicts mating success, such as lifetime number of sexual partners. The researchers also found that males showed higher average humour production ability than females and suggest that the human sense

of humour evolved at least partly through sexual selection as an intelligence-indicator.[13] The study was conducted among 400 university students (200 men and 200 women) who completed measures of abstract reasoning, verbal intelligence, humour production ability, and mating success.



Humour is involved in attraction but one study argues that men and women find different traits desirable. Two researchers conducted a study in which they asked more than 200 male and female college students to examine photos of members of the opposite sex.[14] Some had funny quotes printed beneath them, such as: "My high school was so rough we had our own coroner." Others had bland ones, like: "I'd rather walk to school than take the bus." The women in the study ranked the humorous men as better potential partners and perceived them to be funnier, friendlier and more popular. However, men's view of women appeared to be uninfluenced by their sense of humour. The findings of the study indicated that humour does play a significant role in relationships but that there is a gender difference regarding what the different sexes look for in a mate. Women apparently value a sense of humour in men, while men desire the affirmation of a potential mate finding them to be funny. For both sexes, however, humorous individuals were seen as less intelligent and trustworthy than their nonhumorous counterparts, but as more socially adept.

In a subsequent study, Bressler, and his colleagues asked nearly 130 students to imagine two people of the opposite sex. One person was funny, while the other appreciated another person's humour. The students were then asked which they would choose for a relationship. Again, women were generally drawn to men who were funny, while men went for women who found them funny – at least in North America.

Humour and Intelligence

People with a good sense of humour (defined as those who are able to find humour in things that are not necessarily funny) are often extroverted and able to function in society more successfully. The ability to say something funny and provoke laughter requires a certain level of intelligence. In a 1972 study involving 80 elementary school children, Hauck and Thomas examined the possible link between humour and intelligence.[15] The students were asked to complete an intentional and an incidental associative learning task, and the results indicated that intelligence, creativity, and sense of humour were significantly correlated.

Biologist A. Michael Johnson published a study in *Perceptual and Motor Skills* that correlated sense of humour with problem-solving skills.[16] Sixty-five male and 65 female subjects rated 32 jokes for funniness and solved 14 visually displayed mental rotation problems. Subjects with faster mental rotation times tended to rate the jokes as funnier, suggesting that the right hemisphere of the brain, associated with problem solving ability, plays an important part in humour comprehension. These findings were consistent with previous studies of patients with right-brain lesions, who struggled to distinguish between punchlines and non sequiturs when selecting joke endings in a multiple-choice task.

Many theories suggest that the key concept of humour is understanding incongruity, and this involves a mental process similar to problem solving. Based on this premise, Holt examined the relationship between humour and giftedness in students.[17] The

results of his research confirmed his suspicions, as gifted students recognised and produced more jokes that relied on word play and resolving incongruity.

A Math Genius is Born …A Right-Angle Triangle

American evolutionary psychologist, Geoffrey Miller, theorized that intentional humour evolved as an indicator of intelligence.[18] Based on this theory, a 2008 paper published in the journal *Evolutionary Psychology* examined humour "as a mental fitness indicator."[19] The researchers tested the relationships among rater-judged humour, general intelligence, and the Big Five personality traits (extraversion, agreeableness, openness, conscientiousness and neuroticism) in a sample of 185 college-age students (115 women, 70 men). They found that general intelligence positively predicted rater-judged humour, independent of the Big Five personality traits. Extraversion also predicted rater-judged humour, although to a lesser extent than general intelligence. General intelligence did not interact with the sex of the participant in predicting rating scores on the humour production tasks. The authors concluded that their study supported the prediction that "effective humor production acts as an honest indicator of intelligence in humans."

If there is a correlation between humour and intelligence, then professional comedians should, generally, be quite smart. To investigate the possibility that comedians just might be intelligent, almost 40 years ago Samuel Janus conducted two studies that

measured the intelligence of nationally famous comedians in America, who had worked as full time comedians for at least 5 years.[20] The Wechsler test, also known as an IQ test, the most widely used measure of intelligence, was administered to the participants.[21] The first study, which included a sample of 55 male comedians, found they had well above average IQs, ranging from 115 to 160, with an average of 138. In a subsequent study with 14 female comedians, IQ scores were also high, ranging from 112 to 144, with an average of 126.[22] The results really ought not to be surprising. Being a good comedian is not just about saying something funny. There are many facets involved in mastering this art. It involves timing, the ability to say something funny at the right time and to the right people. Humour is largely an interpersonal activity that requires a high level of emotional and social intelligence. Comedians have to be able to read their audiences and sometimes even change material during their acts if they are not getting the required responses.

One of the greatest skills that good comedians possess is the ability to find humour in serious, even painful, personal situations. A friend of mine is one of the most talented comediennes to come from my country. A few years ago, on hearing of her mother's death, I called her to express my condolences. But instead of engaging in a sombre conversation, I ended up being on the phone with her for half an hour laughing to the point of tears as she regaled me with hilarious anecdotes about growing up with her mother, a stern schoolteacher. At the funeral, as I was leaving the church to go to the cemetery, I walked past her sitting in the passenger seat of the hearse. I asked her what she was doing and she responded, with a smile on her face, "I'm rolling with Mummy". My friend later developed SLE (systemic lupus erythematosus), a disorder that can be associated with significant morbidity. Rather than mope about her situation, she named her disorder "Lupie", and refers to her like an acquaintance who is a pain in the ass.

Humour and Learning

Using humour is an effective way of getting people's attention in a classroom or lecture, as it can improve learning and enhance retention.[23] A Pew Research poll showed that viewers of humorous news shows such as The *Daily Show* and The *Colbert Report* exhibited higher retention of news facts than those who got their news from newspapers, CNN, Fox News, or network stations.[24] Neuroscience research shows that humour systematically activates the brain's dopamine reward system,[25] and cognitive studies show that dopamine is important for both goal-oriented motivation and long-term memory.[26]

Educational research indicates that, correctly used, humour can be effective in improving retention in students at all levels of the education system.[27] In one study, researchers asked nearly 400 college students to document their teachers' appropriate or inappropriate use of humour, their effectiveness as teachers, and how they perceived the humour.[28] The results showed that related, appropriate humour resulted in increased retention while inappropriate, cruel, or unrelated humour did not. The study also found that humour can be perceived and appreciated without improving retention. In other words, a student can think that a teacher is "funny" but not show an improvement in retention. So, just being silly may get your students' attention but may not lead to better retention. These researchers concluded that for improved retention, appropriate, topic-related instructional humour is most effective.

In another study, college students listened to statistics lectures with and without content-related humour.[29] They were then tested on the material and completed surveys regarding their enjoyment of the lectures. The test and survey results showed that retention was strongest in the lectures with content-related humour, and that students reported enjoying the experiences more.

Research also suggests that adolescents tend to release more dopamine and have more dopamine receptors than adults. Because

of their hyper-responsive dopamine reward system, adolescents may be uniquely primed to react positively to educational humour and this type of approach may be of great assistance to them.[30] As regards younger children, researchers in another study chose *Sesame Street* episodes to test the impact of humour on retention and engagement in young children. Seventy kindergarten and first grade students watched either a humorous or non-humorous *Sesame Street* segment. When tested, the children who watched the humorous segments scored higher and showed better engagement than the control group. Their engagement transferred even to the non-humorous portions of the lessons, resulting in improved retention throughout.[31]

A meta-analysis of 40 years of educational humour research indicated that "humour increases the strength of human connections and that non-aggressive, relevant, appropriate humour appears to be a helpful learning tool."[32] In addition, it appeared to be useful to position humour between instruction and repetition. In using humour in educational settings, the developmental differences among children should also be considered, as younger students may find irony, sarcasm and exaggeration difficult to grasp.

I can absolutely relate to the humour and learning correlation. When I was in medical school, for some reason, what I tended to remember most was what I had learnt with the assistance of humour, which was usually of the risqué kind. For example, while studying anatomy, we were required to learn the twelve cranial nerves, the nerves that emerge directly from the brain. The nerves are as follows:

1. Olfactory nerve
2. Optic Nerve
3. Oculomotor nerve
4. Trochlear nerve
5. Trigeminal nerve
6. Abducens nerve
7. Facial nerve

8. Vestibulocochlear nerve
9. Glossopharyngeal nerve
10. Vagus nerve
11. Accessory nerve nerve
12. Hypoglossal nerve

The trigeminal nerve is responsible for sensation in the face and, more important, motor functions such as biting and chewing. In other words, it is essential for eating. A young lady in my class had a very healthy appetite, and earned the nickname 'Trigeminal'.

Anyway, many of us used mnemonics to remember the nerves. The one that I used was:

Oh
Oh
Oh
To
Touch
And
Feel
A
Girl's
Vagina
And
Hymen

It was kind of naughty and juvenile, I admit, but I never forgot the cranial nerves after that.

My more respectable colleagues memorized a more decent mnemonic:

On
Old
Olympus
Towering
Top ...
I never learnt anything past "Top". It was way too boring.

Similarly, I learnt better from teachers who were humorous and often very rude. My favourite consultant surgeon was a good example. He was outlandish, crass, crude and vulgar but I hung on to every word that escaped his filthy mouth. I clearly recall an episode in the surgery outpatient clinic. We had finished attending to patients and he decided to give my group of medical students a tutorial on conditions of the anus and, based on the anatomical location, I prepared myself for an avalanche of nastiness. He did not disappoint.

He sat at the desk, summoned us to stand around him and drew two parallel vertical lines on a sheet of white paper. "This," he loudly announced, "is a drawing of the ass!" Things went rapidly downhill from there. He went on to deliver an impromptu lecture on anal conditions and their management. When he reached anal fissures, extremely painful lesions, he described managing them via a particular procedure. In describing it he told us that it entailed putting fingers in the anus and stretching it, and that it was called maximal dilation, also known as 'MAD'. He told us that we should remember it, because if someone "shoved their hand up your ass, you would go mad!" He asked us if we knew the alternative name for the procedure. We were clueless. He then turned to "Trigeminal", who was probably eating a patty at the time, and asked, "What would you do if someone slammed a car door on your hand, apart from yell Jesus H. Christ?" "I don't know, sir", she replied. He looked her in the eyes and said, "You would bawl out 'Lord!' And that is the name of the procedure, Lord's procedure, named after the person who developed it." Later in life, I was unfortunate enough to develop an anal fissure myself. Did I let someone stretch out my anus? Hell no! I am MAD enough already!

Laughter and Health

"Your body cannot heal without play.
Your mind cannot heal without laughter.
Your soul cannot heal without joy."
– Catherine Rippenger Fenwick

The connection between laughter, humour and health is undeniable. The adage "laughter is the best medicine" is well known. There are definitely health benefits that are associated with laughter but the mechanism by which it benefits us may be complex and multifactorial, with a good sense of humour, a positive attitude, and the support of friends and family playing important roles.

Pain

Think about it. Imagine you were told that you just won the Lotto and will never have to work another day in your life. Standing beside you is someone who just looked at his or her ticket and realized that he or she just won a chance to buy another ticket because that ticket had not even one winning number. Now, someone comes up from behind and applies a clothespin to the right ear of each of you. Who do you think will perceive the stimulus as being more painful? If you said the other person, who won only another chance, that would be a logical answer. Laughter and happiness make us feel pain less.

One of the most famous documentations of laughter impacting health was not provided by a doctor but by a patient. Norman Cousins was an American political journalist, author, professor, and world peace advocate. In his book *Anatomy of an Illness as Perceived by the Patient*, Cousins described how laughter helped him to recover from a debilitating illness. In 1964, after returning home from a stressful trip to Russia, he was diagnosed with ankylosing spondylitis (a degenerative disease causing the breakdown of collagen), which caused severe pain. His doctor told him that he would die within a few months. Cousins, who was known to be an optimist, disagreed and reasoned that if stress had somehow contributed to his illness, as he was not sick before the trip to Russia, then positive emotions should help him feel better. With his doctor's consent, he checked himself out of the hospital and into a hotel across the street and began taking extremely high doses of vitamin C while exposing himself to a continuous stream of humorous films and similar "laughing matter". "I made the joyous discovery that ten minutes of

genuine belly laughter had an anesthetic effect and would give me at least two hours of pain-free sleep," he reported. "When the pain-killing effect of the laughter wore off, [Ellen and I] would switch on the motion picture projector again and not infrequently, it would lead to another pain-free interval."[33] His claim was remarkable, as prior to the institution of his therapeutic regime, no drugs, not even morphine, would alleviate his pain. His condition steadily improved and within six months he was back on his feet and returned to his full-time job at the *Saturday Review* in two years. Told that he had little chance of surviving, Cousins developed his own recovery programme. His positive attitude was not new to him, however. He had always been an optimist, known for his kindness to others and his robust love of life itself.

Although Cousins' report was anecdotal, research suggests that genuine laughter releases endorphins in the brain. These are chemicals that activate the same receptors as drugs like heroin, to produce pain-killing and euphoria-producing effects.[34]

Several studies have shown laughter decreasing pain thresholds. In a study published in 2016, 90 patients who were to undergo surgery were randomized.[35] Half of them were exposed to comedy videos which were played at their bedside, after admission to one day after surgery. The study involved exposing half the subjects to comedy videos on admission and through to the day after surgery, giving them pain-killers immediately after surgery and as needed thereafter, while the control group watched no comedy videos and got pain-killers on a timed dosage schedule. On analysis of the findings at the end of the study, it was found that playing humour videos had a significant effect in post-operative pain management. This was evidenced by the reduction in analgesic requirements by 50 per cent in those who watched the funny videos. So, laughter increases the pain threshold. But the study did not demonstrate whether it was laughter itself or positive emotions that were responsible for pain relief.

In a series of experiments, researchers investigated the effects of laughter on people's ability to withstand pain, compared with

just positive emotions. Led by Oxford University's Robin Dunbar, the researchers worked both in the lab and at the Edinburgh Fringe Festival. They tested pain tolerance through various methods including a tightening blood pressure cuff, a frozen wine-chilling sleeve placed around the arm, or strenuous exercise in which participants had to hold themselves against a wall with their legs bent at a 90-degree angle, as if sitting on a chair. The participants in the lab were subjected to the painful stimuli both before and after exposing them to episodes of comedy, including video clips of shows like *South Park*, the *Simpsons* and *Friends* or clips of stand-up by performers like Eddie Izzard. At the comedy festival, the experiment involved people who had either watched or acted in comic performances.

The researchers found that viewing or participating in comedy led to higher pain tolerance, and that there was a dose-related response to laughter. In other words, people who laughed more felt less pain. In another experiment, researchers compared the effect of watching funny videos with watching feel-good ones, such as a nature video from the series *Planet Earth*.[36] They discovered that it was the laughter, not the positive emotion, that relieved pain. Laughing along with other people – social laughter – was also better at relieving pain than laughing alone.

Stress relief

One of the best known benefits of laughter is that it relieves stress. This is one of the reasons why some presenters begin their presentations with a joke. It helps to relieve tension and break the ice, facilitating bonding with the audience in addition to getting their attention.

Research validates the effects of laughter on stress. Lee Berk, a preventive care specialist and psychoneuroimmunologist of Loma Linda University found, in 2006, that just the expectation of a mirthful laughter experience raised levels of beta-endorphins by 27 per cent and human growth hormone by 87 per cent.[37] The hormone

levels were maintained from just prior to the beginning of watching a funny video, throughout the hour of viewing and afterwards. Human growth hormone stimulates growth, cell reproduction, and cell regeneration, while beta-endorphins counteract stress and pain.

"We believe the results suggest that the anticipation of a humor/laughter eustress (positive stress) event initiates changes in neuroendocrine response prior to the onset of the event itself," according to Berk. "From our prior studies, this modulation appears to be concomitant with mood state changes, and taken together, these would appear to carry important, positive implications for wellness, disease-prevention and most certainly stress-reduction," he also noted.

It is known that chronic stress is correlated with increases in the stress hormones cortisol and catecholamines. In a follow-up study, Berk found decreased levels of these hormones in response to the anticipation of a humour/laughter experience.[38]

Cardiovascular Function

William Fry, a pioneer in laughter research, claimed it took ten minutes on a rowing machine for his heart rate to reach the level it would after just one minute of hearty laughter. Although this finding

may not apply to everyone, laughter does give your cardiovascular system a jolt. As a matter of fact, it was found that when people with light complexions laugh heartily, it is not uncommon for their faces to become red, as their faces become congested, indicating significant cardiovascular activity.

Researchers at the University of Maryland School of Medicine in Baltimore conducted a study in 2005 to determine the effect of emotions and laughter on cardiovascular health.[39] The study included a group of 20 non-smoking, healthy volunteers, an equal number of men and women, of average age 33 and with normal blood pressure, cholesterol and blood glucose levels. Each volunteer was shown part of two movies at the extreme ends of the emotional spectrum. The volunteers watched 15-minute segments of two movies at the extreme ends of the emotional spectrum while lying down in a temperature-controlled room. They were randomized to first watch either a movie that would cause mental stress (such as "Saving Private Ryan"), or a segment of a movie that would cause laughter (such as "King Pin"). A minimum of 48 hours later, they were shown a movie intended to produce the opposite emotional extreme. An ultrasound device was used to measure blood flow in the brachial artery in the arm following the viewings.

Striking contrasts in blood flow were noted after the movies were seen. Brachial artery flow was reduced in 14 of the 20 volunteers following the movie clips that caused mental stress, while beneficial blood vessel relaxation (vasodilation) was increased in 19 of the 20 volunteers after they watched the movie segments that provoked laughter. Overall, average blood flow increased 22 percent during laughter and decreased 35 percent during mental stress, with changes in blood vessel reactivity lasting for at least 30 to 45 minutes.

The results indicate that laughter is linked to healthy function of blood vessels. It appears to do so by causing the tissue that forms the inner lining of blood vessels, the endothelium, to dilate or expand in order to increase blood flow. Dr. Michael Miller, the principal investigator, claimed that the magnitude of change seen

in the endothelium was similar to the benefits seen with aerobic activity but without the aches, pains and muscle tension associated with exercise. Miller added, "We don't recommend that you laugh and not exercise, but we do recommend that you try to laugh on a regular basis. Thirty minutes of exercise three times a week, and 15 minutes of laughter on a daily basis is probably good for the vascular system."

Miller admitted that the study was not able to determine the source of laughter's benefit, whether it was from physical actions such as movement of the diaphragm muscles, or from the release of chemicals such as endorphins or nitric oxide.

This study built on earlier research Miller conducted on the potential benefits of laughter, reported in 2000, which suggested that laughter may be beneficial for the heart. He theorized that laughter, along with an active sense of humour, may be protective against a heart attack. According to Miller, "We don't know yet why laughing protects the heart, but we know that mental stress is associated with impairment of the endothelium, the protective barrier lining our blood vessels. This can cause a series of inflammatory reactions that lead to fat and cholesterol build-up in the coronary arteries and ultimately to a heart attack."

In that study, the researchers found that people with heart disease were found to be less likely to recognize humour or use it to get out of uncomfortable situations. They also laughed less, even in positive situations, and displayed more anger and hostility. Overall, the researchers found that people with heart disease were 40 percent less likely to laugh in a variety of situations, compared to people of the same age without heart disease. "We know that exercising, not smoking and eating foods low in saturated fat, will reduce the risk of heart disease. Perhaps regular, hearty laughter should be added to the list," said Miller. He also suggested that, "The recommendation for a healthy heart may one day be: exercise, eat right and laugh a few times a day." He also admitted that it may be that people who have already had a coronary event are not as

laughter-prone as those who do not have heart disease, hence the 2005 study mentioned above with all healthy volunteers.

I fully support Dr. Miller's recommendation. When we think about the prevention of heart disease we think about diet, exercise and smoking but not so much about humour and laughing. While reviewing this study I remembered a conversation that I had with an older female colleague a few years ago whose husband had a heart attack. Luckily he survived but his wife was wondering why he was so unfortunate. "I just don't understand it," she said. "He is not overweight, and he eats healthily, exercises and does not smoke." I nodded empathetically while she spoke, while quietly acknowledging the fact that after knowing this man for over 20 years, I had never seen him even smile. He always looked sour, like he had a fecal pessary up one of his nostrils and a cactus up his behind. A little laughter may do him some good. Maybe I should show these comments to him. Then again, with his vestigial sense of humour, he might have another heart attack.

Diabetes

Diabetes mellitus, commonly referred to as diabetes, is a metabolic disease in which blood sugar levels are chronically elevated, and is one of many conditions adversely affected by stress. Negative emotions such as anxiety, fear and sorrow are factors known to

elevate blood glucose levels.[40] Conversely, positive emotions such as laughter would be expected to have the opposite effect. A two-day experiment was performed in 19 patients with Type 2 diabetes not receiving insulin therapy to investigate the effects of laughter on glucose levels.[41] On the first day, they attended a monotonous lecture (40 minutes) without humorous content. On the second day, as part of an audience of 1,000 people attending MANZAI (a Japanese cross-talk comedy) (40 minutes) in a civic hall, the subjects laughed. When glucose levels were tested, levels were lower in the participants who laughed.

The researchers posited that the favourable effect of laughter may include the acceleration of glucose utilization by the muscle motion during laughter, but also considered the possibility that positive emotions may act on the neuroendocrine system and suppress the elevation of blood glucose levels. They also recommended daily opportunities for laughter in patients with diabetes.

But diabetes is not just about elevated blood sugar. Diabetics are also at risk for cardiovascular complications. Catecholamines have been implicated in causing arrhythmias, hypertension and myocardial infarction (MI), and mediate the production of inflammatory cytokines, which are small proteins that are important in cell signalling but which also promote systemic inflammation.[42] Berk and his colleagues hypothesized that mirthful laughter, by diminishing catecholamine production in diabetics, can reduce inflammatory cytokines, and provide cardiovascular protection. In the study, 20 high-risk diabetic patients with hypertension and elevated cholesterol were divided into two groups and monitored for one year.[43]

The experimental group was asked to view self-selected humour for 30 minutes daily as an adjunct to standard diabetes, hypertension and high cholesterol therapies. Levels of catecholamines, inflammatory cytokines, cholesterol and C-reactive protein (CRP), a protein found in blood plasma, whose levels rise in response to

inflammation, were measured every two months. Patients in this group had lower catecholamine, inflammatory cytokine and CRP levels, and a lower incidence of MI. Interestingly, they also had elevated levels of "good" cholesterol, which protects against heart attack and stroke. The researchers concluded that the addition of mirthful laughter may be an effective cardiovascular preventive adjunct in diabetes mellitus and may also contribute to lower MI occurrence.

Immunity

It has been argued that, by decreasing stress, humour may have a beneficial effect on the immune system. In order to investigate this, researchers examined the effect of laughter on self-reported stress and natural killer (NK) cell activity. NK cells are white blood cells that bind to certain tumour cells and virus-infected cells and kill them. These cells are a critical component of the immune system. Experimental subjects in the distraction group viewed a humorous video while subjects in the distraction control group viewed a tourism video. Self-reported stress and arousal, mirthful laughter and immune function (NK cell activity) were measured. The researchers, not surprisingly, found stress to be decreased for subjects in the humour group, compared with those in the distraction group. Also, subjects who scored highly on the humour response scale had increased immune function. The conclusion was that laughter may reduce stress and improve NK cell activity. As low NK cell activity is linked to decreased disease resistance and increased morbidity in persons with cancer and human immunodeficiency virus (HIV) disease, it was suggested that laughter may be a useful cognitive-behavioural intervention.[44]

Energy Expenditure

Anatomical and physiological changes occur throughout our bodies when we laugh. Muscles, especially facial and upper body muscles, are stretched; the pulse rate and blood pressure become elevated,

accompanied by faster breathing. All these changes facilitate the transport of oxygen to our tissues and its utilization, not unlike a workout. With all these anatomical and physiological changes, it is not surprising that laughter burns calories too. Maciej Buchowski, a researcher from Vanderbilt University, conducted a small study in which he measured energy expenditure during laughing, and found that 10–15 minutes of laughter burned 50 calories.[45]

Fertility

Fertility can be an extremely stressful matter especially for women who, unlike men, have biological clocks and are under more pressure from society to produce children. The funny thing is, the stress of having a difficult time conceiving can negatively affect fertility. Knowing that laughter relieves stress, researchers in Israel conducted a study to see if laughter would influence the success of in-vitro fertilization (IVF).[46] In the trial, a professional medical clown, who was dressed as a chef and performed the same routine each time, visited one group of patients during the half hour after embryo transfer, when women typically stay lying down and allow the embryos to settle. The other group lay in a quiet room with no entertainment. It was found that being entertained by a clown for 15 minutes immediately after placement of embryos in the uterus increased the chance of pregnancy to 36 per cent, compared with 20 per cent for women whose embryo transfer was comedy-free. After controlling for factors such as the women's age, the nature and duration of their infertility, the number of embryos used and the day on which they were transferred into the uterus, researchers found an even greater effect of laughter: the women who were entertained by a clown were 2.67 times more likely to get pregnant than those in the control group.

Humour in Practice…

I absolutely love my job but visits to the gynaecologist's office are not women's favourite road trips. Gynaecological examinations are

invasive and not particularly comfortable. One day, after work, I lay flat on my back on the examination table, opened my legs wide, and placed my feet in the stirrups. I said to myself "DAMN!" It was a strange feeling of vulnerability and I imagined that being probed and prodded "down there" must not be fun.

I empathize with my patients and therefore do my best to make them as comfortable as possible. In doing so, I have found humour to be a valuable tool. I make my own appointments and one of the reasons for this is that during the initial telephone conversation, I use the opportunity to bond with patients, often utilizing humour. Once in my office, humour is used as an adjunct to patient management, to ease tension during history taking. For example, I will ask if they have ever had a Pap smear and if the answer is "No", I sometimes reply, "Neither have I."

The pelvic examination can be a source of much apprehension and humour is an excellent adjunct here. I constructed a mobile with origami birds of different colours and hung it above my examination bed. When patients enquire about it, I tell them that it is a distraction tool, used to distract women while I look at their vaginas. I confidently declare to them that it only works for highly intelligent and classy women but not for idiots and "skettels" (viragos). I then ask them if it is working for them.

Sometimes I will inflate a glove and draw a funny face on it with a marker. Just prior to the pelvic examination, I hand it to my patient and say, "Say hello to Mr. Funny Face Vagina Guy". While they hold it I proceed with the examination, continuing the conversation with comments like, "Look at the quality of the craftsmanship and the attention to detail" when, to be honest, it is rather crudely drawn, kind of like a kindergarten art project.

I have found, also, that the combination of music and humour can be extremely potent. While looking after a very apprehensive patient a few years ago, I hit upon a great idea (I think). She was to undergo a minor procedure and was absolutely terrified. A few days prior to the procedure, I visited a pharmacy and purchased a

disco ball with multiple colours that would be projected onto the walls and ceiling while it spun. When the patient turned up for her appointment she was tearful, a nervous wreck. I told her not to worry, excused myself, set up the disco ball in the operating room and turned off the lights. I have an iPod with over 16,000 songs of different genres that I always have with me (I am a rabid music lover) and which I attach to speakers at work. The iPod was also sitting in the room. I asked the patient what type of music she liked and she indicated old school disco/dance. So, after returning to the room, I pumped up some good '70s disco stuff. Soon after, I went for the patient, took her by the hand and led her to the room.

As I approached the door I said, "Let's party!" When she entered the room, with blaring dance music and every colour of the spectrum being flashed onto the dark walls, she began laughing and continued to do so throughout the procedure, while grooving to the music. In those days, BlackBerry cell phones were very popular and later, when I checked my phone, I realised that for her status message she had written, "I enjoyed my surgery today." The disco ball is here to stay.

Notes

1 Peter Derks, Lynn S. Gillikin, Debbie S. Bartolome-Rull and Edward H. Bogart, "Laughter and Electroencephalographic Activity," *Humor: International Journal of Humor Research* 10, no. 3 (1997): 285–300, http://dx.doi.org/10.1515/humr.1997.10.3.285.

2 Robert Provine, "Laughter," *American Scientist* 841 (1996): 38–47, http://www.americanscientist.org/issues/pub/laughter.

3 Ronald A. Berk, "The Active Ingredients in Humour: Psychophysiological Benefits and Risks for Older Adults," *Educational Gerontology* 27 (2001): 323–39.

4 Julianna Bark, "The Spectacular Self: Jean-Etienne Liotard's Self-Portrait Laughing," *Inferno* XII, Article 5 (2007–8): 1–6.

5 Robert Provine, *Laughter: A Scientific Investigation* (Harmondsworth: Penguin Books), 2001.

6 A.M. Rankin and P.J. Philip, "An Epidemic of Laughing in the Bukoba District of Tanganyika," *Central African Journal of Medicine* 9 (1963): 167–170.

7 Simone Sebastian, "Examining 1962's 'Laughter Epidemic,'" *Chicago Tribune*, July 29, 2003.

8 Robert Bartholomew and Simon Wessely, "Protean Nature of Mass Sociogenic Illness," *British Journal of Psychiatry* 180 (2002): 300–6.

9 Sebastian, "Examining 1962's 'Laughter Epidemic.'"

10 Mohinish G. Bhatjiwale, Trimurti D. Nadkarni, Ketan I. Desai and Atul Goel, "Case Reports, Pathological Laughter as a Presenting Symptom of Massive Trigeminal Neuromas: Report of Four Cases," *Neurosurgery* 47, issue 2 (August 2000): 469–72.

11 Dirk Wildgruber, Diana P. Szameitat, Thomas Ethofer, Carolin Brück, et al., "Different Types of Laughter Modulate Connectivity

within Distinct Parts of the Laughter Perception Network," *PLOS*, May 8, 2013, http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0063441

12 *The Human Face*, BBC Television (2001).

13 Gil Greengross and Geoffrey Miller, "Humor Ability Reveals Intelligence, Predicts Mating Success, and Is Higher in Males," *Intelligence* 39, issue 4 (July–August 2011): 188–92.

14 Eric R. Bressler and Sigal Balshine, "The Influence of Humor on Desirability," *Evolution and Human Behavior* 27, issue 1 (January 2006): 29–39.

15 William E. Hauck and John W. Thomas, "The Relationship of Humor to Intelligence, Creativity, and Intentional and Incidental Learning," *Journal of Experimental Education* 40, no. 4 (Summer 1972): 52–5.

16 A. Michael Johnson, "A Study of Humor and the Right Hemisphere," *Perceptual and Motor Skills* 70 (3 Pt 1) (July 1990): 995–1002, doi:10.2466/pms.1990.70.3.995.

17 Dan G. Holt and Colleen Willard-Holt, "An Exploration of the Relationship between Humor and Giftedness in Students," *Humor: International Journal of Humor Research* 8, no. 3 (1995): 257–71, http://dx.doi.org/10.1515/humr.1995.8.3.257.

18 G. Miller, *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature* (London: Heineman, 2000).

19 Daniel P. Howrigan and Kevin B. MacDonald, "Humor as a Mental Fitness Indicator," *Evolutionary Psychology* 6, issue 4 (2008): 652–66.

20 Samuel S. Janus, "The Great Comedians: Personality and Other Factors," *American Journal of Psychoanalysis* 35, issue 2 (June 1975): 169–74, doi:10.1007/BF01358189.

21 The Wechsler Test contains verbal, reasoning, perceptual and memory components, among others, that together give a measure of general intelligence. It gives a numeric score where an average intelligence measures at 100 exactly, mental retardation scores are 70 and below, and above 130 places you are in the top 2 per cent of the population, making you eligible to join Mensa, the largest and oldest IQ society in the world. (In case you are wondering, the word mensa means "table" in Latin, and has nothing to do with a woman's reproductive cycle.)

22 Samuel S. Janus, Barbara E. Bess and Beth R. Janus, "The Great Comediennes: Personality and Other Factors," *The American Journal of Psychoanalysis* 38, issue 4 (December 1978): 367–72, doi:10.1007/BF01253595.

23 Sarah Henderson, "Laughter and Learning: Humor Boosts Retention," *Edutopia*, March 31, 2015, https://www.edutopia.org/blog/laughter-learning-humor-boosts-retention-sarah-henderson.

24 Pew Research Center, "Public Knowledge of Current Affairs Little Changed by News and Information Revolutions, What Americans Know: 1989–2007," April 15, 2007, http://www.people-press.org/2007/04/15/public-knowledge-, of-current-affairs-little-changed-by-news-and-information-revolutions/.

25 Vinod Goel and Raymond J. Dolan, "The Functional Anatomy of Humor: Segregating Cognitive and Affective Components," *Nature Neuroscience* 4 (2001): 237–38, doi:10.1038/85076.

26 Roy A. Wise, "Dopamine, Learning and Motivation," *Nature Reviews Neuroscience* 5 (June 2004): 483-94, doi:10.1038/nrn1406.

27 John A. Banas, Norah Dunbar, Dariela Rodriguez and Shr-Jie Liu, "A Review of Humor in Educational Settings: Four Decades of Research," *Communication Education* 60, 1 (2011) 115-44, http://dx.doi.org/10.1080/03634523.2010.496867.

28 Melissa B. Wanzer, Ann B. Frymier and Jeffrey Irwin, "An

Explanation of the Relationship between Instructor Humor and Student Learning: Instructional Humor Processing Theory," *Communication Education* 59, issue 1 (2010): 1–18, http://dx.doi.org/10.1080/03634520903367238.

29 R.L. Garner, "Humor in Pedagogy: How Ha-Ha Can Lead to Aha!," *College Teaching* 54, issue 1 (2006): 177–80, http://www.tandfonline.com/doi/abs/10.3200/CTCH.54.1.177-180.

30 Adriana Galvan, "Adolescent Development of the Reward System," *Frontiers in Human Neuroscience*, February 12, 2010, http://journal.frontiersin.org/article/10.3389/neuro.09.006.2010/full.

31 Dolf Zillmann, Brien R. Williams, Jennings Bryant, Kathleen R. Boynton, et al., "Acquisition of Information from Educational Television Programs as a Function of Differently Paced Humorous Inserts," *Journal of Educational Psychology* 72, no. 2 (April 1980): 170–80, http://dx.doi.org/10.1037/0022-0663.72.2.170.

32 Banas, et al., "A Review of Humor."

33 Norman Cousins, *Anatomy of an Illness as Perceived by the Patient* (New York: W.W. Norton, 1979).

34 Lee S. Berk and Stanley A. Tan, "[beta]-Endorphin and HGH Increase Are Associated with Both the Anticipation and Experience of Mirthful Laughter," *FASEB Journal* 20 (2006): A382, http://www.fasebj.org/cgi/content/meeting_abstract/20/4/A382-b.

35 T. Srinivasan and M. Muralidharan, "The Effect of Comedy Videos in Alleviating Post Operative Pain," *IOSR Journal of Nursing and Health Science* 5, issue 5, ver. III (Sep.–Oct. 2016): 06-09, doi:10.9790/1959-0505030609.

36 R.I.M. Dunbar, Rebecca Baron, Anna Frangou, Eiluned Pearce, et al., "Social Laughter Is Correlated with an Elevated Pain Threshold," Proceedings of the Royal Society B, September 14, 2011, doi:10.1098/rspb.2011.1373.

37 Berk and Tan, "[beta]-Endorphin and HGH."

38 Lee S. Berk, Stanley A. Tan and Dottie Berk, "Cortisol and Catecholamine Stress Hormone Decrease Is Associated with the Behavior of Perceptual Anticipation of Mirthful Laughter," *FASEB Journal* 22 (2008): 946.11, http://www.fasebj.org/cgi/content/meeting_abstract/22/1_MeetingAbstracts/946.11.

39 "University of Maryland Medical Center, School of Medicine Study Shows Laughter Helps Blood Vessels Function Better," *ScienceDaily*, March 19, 2005, https://www.sciencedaily.com/releases/2005/03/050309111444.htm.

40 R.S. Surwit and M.S. Schneider, "Role of Stress in the Etiology and Treatment of Diabetes Mellitus," *Psychosom Med* 55 (1993): 380–93.

41 Keiko Hayashi, Takashi Hayashi, Shizuko Iwanaga, Koichi Kawai, et al., "Laughter Lowered the Increase in Postprandial Blood Glucose," *Diabetes Care* 26, 5 (2003): 1651–52, https://doi.org/10.2337/diacare.26.5.1651.

42 J.D. Johnson, J. Campisi, C.M. Sharkey, S.L. Kennedy, et al., "Catecholamines Mediate Stress-induced Increases in Peripheral and Central Inflammatory Cytokines," *Neuroscience* 135, 4 (2005): 1295–307, https://www.ncbi.nlm.nih.gov/pubmed/16165282.

43 Lee S. Berk, Linda Tan and Stanley Tan, "Mirthful Laughter, as Adjunct Therapy in Diabetic Care, Attenuates Catecholamines, Inflammatory Cytokines, C-RP, and Myocardial Infarction Occurrence," *FASEB Journal* 22 (2008): 1226.2, http://www.fasebj.org/cgi/content/meeting_abstract/22/1_MeetingAbstracts/1226.2.

44 Mary P. Bennett, Janice M. Zeller, Lisa Rosenberg, Judith McCann, "The Effect of Mirthful Laughter on Stress and Natural Killer Cell Activity," *Alternative Therapies in Health and Medicine* 9, no. 2 (March–April 2003): 38-45, https://www.ncbi.nlm.nih.gov/pubmed/12652882.

45 M.S. Buchowski, K.M. Majchrzak, K. Blomquist, K.Y. Chen, et al., "Energy Expenditure of Genuine Laughter," *International Journal of Obesity* 1 (2007): 131–7.

46 Shevach Friedler, Saralee Glasser, Liat Azani and Laurence S. Freedman, "The Effect of Medical Clowning on Pregnancy Rates after In Vitro Fertilization and Embryo Transfer," *Fertility and Sterility* 95, issue 6 (2011): 2127–30, http://www.fertstert.org/article/S0015-0282(10)02958-4/abstract.

Chapter 3: Laugh Out Loud

If you have been reading this book you must realize by now that I am a big fan of laughter. I laugh a lot and my laughter is not very refined either. When I was a child, my grandmother told me that my laughter was "raucous and vulgar". As a matter of fact, I think that those were the first words that I learnt. I like to think of it as "healthy and hearty".

Personally, having a sense of humour, as warped as it is, and laughing "healthily and heartily" have helped me to maintain the little sanity that I have and, apparently, I am not alone. The combination of humour and laughter has helped us to bond, to learn and to live healthier and happier lives. Laughter is like a potent psychoactive drug with minimal adverse side effects (although people have died doing it ... but not that many ... I think).

As more research is conducted, we will have an even better understanding of why we laugh and be better able to elucidate more detailed mechanisms regarding how humour and laughter benefit our brains and the rest of our bodies. In the meantime, it would be in our best interest to develop and strengthen our sense of humour and ability to laugh, especially at ourselves.

So, laugh nuh!