
**The First Side-Effect: Kindness Makes Us Happier**

1. For the study where volunteers performed 5 acts of kindness a week for 6 weeks, see: S. Lyubomirsky, C. Tkach and K.M. Sheldon, ‘Pursuing sustained happiness through random acts of kindness and counting one’s blessings: tests of two six-week interventions’, Department of Psychology, University of California, Riverside, unpublished data, 2004

   *see also* https://positivepsychologyprogram.com/random-acts-kindness/

2. For the study of 500 people doing kindness for others, the world, or themselves, see: S.K. Nelson, K. Layous, S.W. Cole and S. Lyubomirsky, ‘Do unto others or treat yourself? The effects of prosocial and self-focused behavior on psychological flourishing’, *Emotion*, 2016, 16(6), 850-861


4. For the 632-person study where volunteers kept a note of how they spent their money, see: E.W. Dunn, L.B. Aknin and M.I. Norton, ‘Spending money on others promotes happiness’, *Science* 2008, 319, 1,687–8

5. For the study that showed children were happier when they gave treats to a puppet, see: L.B. Aknin, J.K. Hamlin and E.W. Dunn, ‘Giving leads to happiness in young children’, *PLoS ONE* 2012, 7(6), e39,211

6. For the study where kindness was shown to reduce social anxiety, see: L.E. Alder and J.L. Trew, ‘If it makes you happy: engaging in kind acts increases positive effect in socially anxious individuals’, *Emotion* 2013, 13(1), 64–75

7. On Patch Adams’s website, he writes, ‘The Gesundheit! Institute, a non-profit healthcare organization, is a project in holistic medical care based on the belief that one cannot separate the health of the individual from the health of the family, the community, the society, and the world. Our mission is to reframe and reclaim the concept of “hospital”.’

8. The study of 3,296 people asked about their volunteering habits can be found in: Allan Luks, *The Healing Power of Doing Good*, iUniverse.com, Lincoln, NE, 1991

9. For information on moral treatment as a historical treatment for depression, see T. Taubes, ‘Healthy avenues of the mind: psychological theory building and the influence of religion during the era of moral treatment’, *American Journal of Psychiatry* 1998, 155, 1,001–8

11. For the study of 3,617 people that found less depression in people aged over 65 who volunteered, see: M.A. Musick and J. Wilson, ‘Volunteering and depression: the role of psychological and social resources in different age groups’, Social Science and Medicine 2003, 56(2), 259–69

12. For the 373-person study of people aged between 65 and 74, showing less depression in people who volunteered, see: E.A. Greenfield and N.F. Marks, ‘Formal volunteering as a protective factor for older adults’ psychological well-being’, Journal of Gerontology Series B: Psychological Sciences and Social Sciences 2004, 59(5), S258–64


14. For the study that showed that older people who volunteered had a stronger will to live, see: K.I. Hunter and M.W. Linn, ‘Psychosocial differences between elderly volunteers and non-volunteers’, International Journal of Aging and Human Development, 1980–81, 12(3), 205–13

15. The story of the Tibetan Buddhist’s brain activity being off the chart was found in: Dacher Keltner, Born to Be Good: The Science of a Meaningful Life (Norton, 2009). Keltner describes how professor Richie Davidson’s measurement of frontal lobe activation in a Tibetan Buddhist was ‘off the scale’.

16. For the study that found an increase in positive emotion from 0.06 units to 0.17 units through practicing the Loving-Kindness Meditation, see: B. Fredrickson, M. Cohn, K.A. Coffey, J. Pek and S.M. Finkel, ‘Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources’, Journal of Personality and Social Psychology 2008, 95(5), 1,045–62

17. For the York University study that showed that compassionate action increased happiness, see: M. Mongrain, J.M. Chin and L.B. Shapira, ‘Practicing compassion increases happiness and self-esteem’, Journal of Happiness Studies 2011, 12, 963–81

18. For the ‘blessings vs burdens’ study, see: R.A. Emmons and M.E. McCullough, ‘Counting blessings versus burdens: an experimental investigation of gratitude and subjective well-being in daily life’, Journal of Personality and Social Psychology 2003, 84(2), 377–89. This paper also contained the two-week study.

19. Information on the study where Alzheimer’s carers who used gratitude journals reported greater wellbeing can be found in: Robert A. Emmons, Thanks: How the New Science of Gratitude Can Make You Happier (Houghton Mifflin Harcourt, 2007)
2. For general information on oxytocin, see: https://en.wikipedia.org/wiki/Oxytocin

3. For studies on how oxytocin helps us understand emotions, see: C. Crockford, T. Deschner, T.E. Ziegler and R.M. Wittig, ‘Endogenous peripheral oxytocin measures can give insight into the dynamics of social relationships: a review’, Frontiers in Behavioural Neuroscience 2014, 8(68), 1–14

4. For research showing that oxytocin is produced in the heart, see:
-M. Jankowski, T.L. Broderick and J. Gutkowska, ‘Oxytocin and cardioprotection in diabetes and obesity’, BMC Endocrine Disorders 2016, 16, 34 and,

5. For oxytocin leading to nitric oxide production, see:
-M. Jankowski, T.L. Broderick and J. Gutkowska, ‘Oxytocin and cardioprotection in diabetes and obesity’, BMC Endocrine Disorders 2016, 16, 34 and,


8. For a good video summary of nitric oxide and how it works by Dr Louis Ignarro, see the video: https://youtu.be/3PiJmAwxS4Q

9. For information on the role of nitric oxide in cardiovascular health, see: Dr. Louis Ignarro and Dr Andrew Myers, The New Heart Health (Healthwell Ventures, 2013)

10. The typical responses to ‘What makes you feel elevated, inspired?’ were obtained from attendees at some of my workshops.

11. For Jonathan Haidt’s research on how elevation increased nursing behavior, see: J.A. Silvers and J. Haidt, ‘Moral elevation can induce nursing’, Emotion 2008, 8(2), 291–5


14. For the study showing that partner support increases oxytocin, see: K.M. Grewen, S.S.

15. The following review paper lists several different ways of producing oxytocin (shown in a table as well as individual discussions): C. Crockford, T. Deschner, T.E. Ziegler and R.M. Wittig, ‘Endogenous peripheral oxytocin measures can give insight into the dynamics of social relationships: a review’, *Frontiers in Behavioural Neuroscience* 2014, 8(68), 1–14

16. For studies linking hostility with coronary artery calcification, see:


17. For information on free radicals and oxidative stress, see: R. Singh *et al.*, ‘Role of free radical in atherosclerosis, diabetes and dyslipidaemia: larger-than-life’, *Diabetes Metabolism Research and Reviews*. 2015, 31(2), 113–26


21. The study showing a 400% lower likelihood of another heart attack people who had a dog is: E. Friedmann and S.A. Thomas, ‘Pet ownership, social support, and one-year survival after acute myocardial infarction in the Cardiac Arrhythmia Suppression Trial (CAST)’, *American Journal of Cardiology* 1995, 76, 1,213–17

22. For the study on oxytocin increases in dog owners who had good relationships with their dogs, see: E. Callaway, ‘Pet dogs rival humans for emotional satisfaction’, *New Scientist*, 14 January 2009

23. For the study showing how stress decreases as kindness increases, see: E.B. Raposal, H.B. Laws and E.B. Ansell, ‘Prosocial behavior mitigates the negative effects of stress in everyday life’, *Clinical Psychological Science* 2016, 4(4), 691–8


25. For the study linking gratitude with reduced likelihood of another heart attack, see: G.

26. The study linking social support with reduced coronary blockage, was cited in Mimi Guarneri, *The Heart Speaks* (Simon & Schuster, 2006)

27. For the study linking hugs with oxytocin production, see: K.C. Light, K.M. Grewen and J.A. Amico, ‘More frequent partner hugs and higher oxytocin levels are linked to lower blood pressure and heart rate in premenopausal women’, *Biological Psychology* 2005, 69, 5–21

**The Third Side-Effect: Kindness Slows Ageing**

1. That most people assume ageing is all in our genes: I’ve conducted a straw poll a few times at talks where I’ve asked for a show of hands of who believes that their diet and lifestyle impact their health. Everyone puts their hand up. But when I’ve asked who believes that their rate of ageing is all in their genes, more than half (sometimes many more) put their hand up, hence I conclude that ‘most’ people assume…

2. For the study showing how oxytocin is vital for muscle regeneration, see: C. Elabd, W. Cousin, P. Upadhyayula, Ro. Y. Chen, M.S. Chooljian, J. Li, S. Kung, K.P. Jiang and I.M. Conboy, ‘Oxytocin is an age-specific circulating hormone that is necessary for muscle maintenance and regeneration’, *Nature Communications* 2014, 5, 4,082

3. For the research showing how oxytocin is vital for the production of heart muscle cells, see:


   and,

   - M. Jankowski, A. Gonzalez-Reyes, N. Noiseux and J. Gutkowska, ‘Oxytocin in the heart regeneration’, *Recent Patents on Cardiovascular Drug Discovery* 2012, 7, 81–7


5. For the study where children with highest vagal tone were more likely to take homework to other children in hospital, see: N. Eisenberg, R.A. Fabes, P.A. Miller, J. Fultz, R. Shell, R.M. Mathy and R.R. Reno, ‘Relation of sympathy and personal distress to prosocial behaviour: a multimethod study’, *Journal of Personality and Social Psychology* 1989, 57(1), 55–66;

See also,: N. Eisenberg, M. Schaller, R.A Fabes, D. Bustamante, R.M. Mathy, R. Shell and K. Rhodes, ‘Differentiation of personal distress and sympathy in children and adults’, *Developmental Psychology* 1988, 24, 766–75

6. For the study showing that people who were most compassionate had highest vagal tone, see: J.E. Stellar, ‘Vagal reactivity and compassionate response to the suffering of others’, Dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Psychology, University of California at Berkeley, 2013
7. For the study showing that vagal tone increased with Loving-Kindness Meditation practice, see: B.E. Kok, K.A. Coffey, M.A. Cohn, L.I. Catalino, T. Vacharkulksemsuk, S.B. Algoe, M. Brantley and B. Fredrickson, ‘How positive emotions build physical health: perceived positive social connections account for the upward spiral between positive emotions and vagal tone’, *Psychological Science* 2013, 24(7), 1,123–32

8. A good inflammaging review is C. Francheschi and J. Capisi, ‘Chronic inflammation (inflammaging) and its potential contribution to age-related diseases’, *Journal of Gerontology A, Biological Sciences and Medical Sciences* 2014, 69(S1), S4–S9


10. For how high vagal tone helps reduce inflammation, see: H.L. Lujan and S.E. DiCarlo, ‘Physical activity, by enhancing parasympathetic tone and activating the cholinergic anti-inflammatory pathway, is a therapeutic strategy to restrain chronic inflammation and prevent many chronic diseases’, *Medical Hypotheses* 2013, 80(5), 548–52. The paper suggests exercise reduces low-grade inflammation by increasing vagal tone.


12. For the research showing how free radicals reduce in skin cells when oxytocin increases, see: V. Deing, D. Roggenkamp, J. Kühnl, A. Gruschka, F. Stäb, H. Wenck, A. Bürkle and G. Neufang, ‘Oxytocin modulates proliferation and stress responses of human skin cells: implications for atopic dermatitis’, *Experimental Dermatology* 2013, 22(6), 399–405

13. For general information on nitric oxide, see the website of Nobel Laureate, Dr Louis Ignarro: http://www.drignarro.com

14. For info on how nitric oxide is associated with diseases of ageing, see: A.L. Sverdlov, D.T.M. Ngo, W.P.A. Chan, Y.Y. Chircov and J.D. Horowitz, ‘Aging of the nitric oxide system: are we as old as our NO?’, *Journal of the American Heart Association* 2014, 3, e000973

15. For researching indicating that nitric oxide may help reduce amyloid plaque formation, see: S.A. Austin, A.V. Santhanam and Z.S. Katusic, ‘Endothelial nitric oxide modulates expression and processing of amyloid precursor protein’, *Circulation Research* 2010, 107, 1,498–502.

See also https://drnibber.com/nitric-oxide-alzheimers-disease/.

16. For the study where a session of the Loving-Kindness Meditation increased nitric oxide levels, see: K.J. Kempler, D. Powell, C.C. Helms and D.B. Kin-Shapiro, ‘Loving-kindness meditation’s effects on nitric oxide and perceived well-being: a pilot study in experienced and inexperienced meditators’, *Explore* 2015, 11(1), 32–9. The paper measures increases in nitrate and nitrite levels, which are indicative of increased nitric oxide levels.

17. For research suggesting that nitric oxide may prolong lifespan, see: I. Gusarov, L.

18. For the Adults in the Making (AIM) study, see: G.H. Brody, T. Yu, S.R.H. Beach and R.A. Philbert, ‘Prevention effects ameliorate the prospective association between nonsupportive parenting and diminished telomere length’, Prevention Science 2015, 16(2), 171–80


21. For the study where care and compassion increased s-IgA levels, see: G. Rein, M. Atkinson, and R. McCraty, ‘The Physiological and Psychological Effects of Compassion and Anger’, Journal of Advancement in Medicine, 1995, 8(2), 87-105

22. For the study where doctor empathy was correlated with patients’ immune function and recovery rate from the common cold, see:

-D.P. Rakel, T.J. Hoeft, B.P. Barrett, B.A. Chewning, L. Marchland and M. Niu, ‘Perception of empathy in the therapeutic encounter: effects on the common cold’, Patient Education and Counselling 2011, 85, 390–97 and


The Fourth Side-Effect: Kindness Improves Relationships

1. For the study of the 10,000 young people asked what they’d most prefer in a mate, see: D.M. Buss, ‘Sex differences in human mate preference: evolutionary hypothesis tested in 37 countries’, Behavioral and Brain Sciences 1989, 12, 1–49; see also Dacher Keltner, Born to Be Good: The Science of a Meaningful Life, Norton, 2009


3. For the age of the oxytocin gene, see: https://en.wikipedia.org/wiki/Oxytocin and http://physrev.physiology.org/content/81/2/629.long

4. For the study that analyzed how partners responded to ‘bids’, see: J. M. Gottman, What Predicts Divorce? The Relationship between Marital Processes and Marital Outcomes, Psychology Press, 1993

See also http://www.theatlantic.com/health/archive/2014/06/happily-ever-after/372573/
5. For the study of four kinds of responses to the sharing of good news, see: S.L. Gable, H.T. Reis, E.A. Impett and E.R. Asher, ‘What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events’, *Journal of Personality and Social Psychology* 2004, 87(2), 228–45

6. The above paper (5) also covers the research extended to friends, siblings, parents and college roommates.


**The Fifth Side-Effect: Kindness is Contagious**

1. For the research where students witnessed or received an act of kindness, see: S.B. Algoe and J. Haidt, ‘Witnessing excellence in action: the other-praising emotions of elevation, gratitude, and admiration’, *Journal of Positive Psychology* 2009, 4(2), 105–27


3. For the study where volunteers watched a video of Joel Sonnenberg and his parents addressing Mr Dort, see: D. Freeman, K. Aquino and B. McFerran, ‘Overcoming beneficiary race as an impediment to charitable donations: social dominance orientation, the experience of moral elevation, and donation behaviour’, *Personality and Social Psychology Bulletin* 2009, 35, 72–94

4. The study that used the Oprah Winfrey clip and studied people’s behavior after watching it, see: S. Schnall, J. Roper and D.M. Fessler, ‘Elevation leads to altruistic behaviour’, *Psychological Science* 2010, 21(3), 315–20

5. For the study that found that people who watched the Oprah Winfrey clip spent twice as long helping with a task afterwards, see: S. Schnall, J. Roper and D.M. Fessler, ‘Elevation leads to altruistic behaviour’, *Psychological Science* 2010, 21(3), 315–20

6. For the study where people doing the loving-kindness meditation were more likely to donate money afterwards, see: J. Galante, M.J. Bekkers, C. Mitchell and J. Gallacher, ‘Loving-kindness meditation effects on well-being and altruism: a mixed-method online RCT’, *Applied Psychological Health and Wellbeing* 2016, 8(3), 322-350

7. For the study where 18-month-old infants were primed with different arrangements of dolls that affected their helping behavior, see: H. Over and M. Carpenter, ‘Eighteen-month-old infants show increased helping following priming with affiliation’, *Psychological Science*, 2009, 20(10), 1,189–93

8. The bowling video study where more likely to give their certificates away if they say that happening in the video was cited in: Dacher Keltner, *Born to Be Good: The Science of a Meaningful Life*, Norton, 2009

9. The study where children were shown Lassie’s puppies being rescued was cited in: Dacher Keltner, *Born to Be Good: The Science of a Meaningful Life*, Norton, 2009


12. For the Joseph Chancellor study where kindness spread in the workplace, see Joseph A. Chancellor, ‘Ripples of generosity in the workplace: the benefits of giving, getting, and glimpsing’, PhD dissertation, University of California, Riverside, December 2013


16. For the 34 consecutive person kidney donor-chain, see: http://www.uwhealth.org/news/longest-kidney-chain-ever-completed-wraps-up-at-uw-hospital-and-clinics/45549 (last accessed 30 July 2016);

see also http://abcnews.go.com/Health/donating-kidney-complete-stranger-order-save-loved/story?id=30288400 (last accessed 30 July 2016)

17. The link for the National Kidney Registry is: http://www.kidneyregistry.org

18. For information on Howard Kelly, including the ‘glass of milk’ account, see A.D. Davis, Dr Kelly of Hopkins, The John Hopkins Press, 1959

19. The charity my friends and I set up is Spirit Aid Foundation. The well-known actor David Hayman has been there from the very beginning and is still doing a stellar job as head of operations, dividing his time between family life, acting, filmmaking and volunteering with Spirit Aid. See www.spiritaid.org.

20. Ems’ story comes from a Facebook page she runs called ‘The Delight of Kindness’. If you want to read more stories of everyday acts of kindness, go to www.facebook.com/thedelightofkindness.
Closing Thoughts