Future Directions in Compassion Science

A Joint Project of the Global Charter for Compassion and the Global Compassion Coalitions' - Science and Research Sectors

CHARTER FOR COMPASSION

GLOBAL COMPASSION COALITION

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Introduction

This report was written by the Science Coordinators of the Global Charter for Compassion and the Global Compassion Coalition. While it has held close to the rigours of research, it is not a research report per se - rather it is a series of scholarly conversations that in accurate ways seek to identify some of the future directions in the science of compassion.

In broad terms compassion science is an emerging field of knowledge that examines what motivates humans to care for one another. This evidence-based inquiry develops conceptual models and gathers evidence to explore the motivators, components, and inhibitors of compassion, including its neural and biophysiological correlates and effects; and studies the links between human well-being and compassion training interventions.

In recent years compassion science has grown substantially (with over 1.8M search results on google scholar, as of February 2024) and attracted significant interest and investment from public and private institutions. The establishment of the T. Denny Sanford Institute for Empathy and Compassion is one example of that investment – this UCSD centre was established with a philanthropic donation of $US100M from businessman Denny Sanford[1] to conduct empirical research into the most effective mechanisms to enable the demonstration of compassion and practice of greater empathy in healthcare settings. These mechanisms have been shown to provide effective training strategies in offering future doctors and other medical staff the tools necessary to harness their skills in compassionately caring for patients.

The research conducted at this and many other compassion research centres around the world in disciplines that include psychology, medicine, neuroscience, business, education, evolutionary biology, speech therapy, law, political science, criminology is confirming that we can be trained to connect to our own suffering and to each other's suffering, and to be motivated to act in helpful ways to prevent and/or alleviate it, in ways that makes a positive difference at an individual, societal and systems levels[2].

Both the Charter and the Coalition were founded on the basis that compassion is not only innate to humanity but is essential to human survival and wellbeing, and this Futures Directions in Compassion Science project was undertaken by the Coordinators of the Charter for Compassion's Science and Research Sector[3] and the Global Compassion Coalition's (GCC) Science and Research Cluster[4] with assistance from a senior lecturer who at the time was working with Federation University Australia.

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[1] https://empathyandcompassion.ucsd.edu
[2] Appendix 1 - list of Compassion Research Centres in countries across the world
[3] https://www.charterforcompassion.org
[4] https://www.globalcompassioncoalition.org

02 Compassion as a Value – Compassion as a Motivation

For centuries compassion as a value has been central to many spiritual and contemplative traditions. More recently, compassion has become the focus of formal research giving rise to the empirical field of compassion science. The scientific exploration of compassion extends our understanding of its mechanisms, informs interventions, and contributes to the development of evidence-based approaches to fostering compassion in individuals, organizations, communities, and societies.

Compassion science conceptualises compassion as a motivation that in evolutionary terms organised human attention, thoughts, feelings, and actions in very different and more constructive ways, to say, that of a motivation of revenge. This emerging academic discipline explores the prosocial motivations that orientates humans to be sensitive to suffering and find helpful ways to alleviate and prevent it.

Underpinning compassion as a motivation are evolved physiological (e.g., the myelinated vagus nerve, oxytocin) and psychological mechanisms (e.g., social intelligence and competencies) that drive caring motives and behavior. During human evolution, compassion is believed to have emerged from the combination of ancient and innate mammalian care-giving systems/motivation and complex higher-order human cognitive competencies (e.g., social intelligence, mind awareness, empathy) that evolved over the last two million years.

In this extremely unsettled world, the science of compassion is crucial, because as Prof Paul Gilbert, Director, Compassionate Mind Foundation, UK reflects *...a motivation of compassion pushes us to understand how we have structured the world, and to ask, how can we structure it better, not because we may suffer, but because others are suffering.*

03 Project Context – The Oxford Handbook of Compassion Science

This project had at its starting point the Oxford Handbook of Compassion Science because it was one of the first leading academic publications to synthesis the theory and application of this discipline from contributions by world leading experts.

The Oxford Handbook was sectioned by thematic approaches, that pulled together basic and clinical research ranging across neurobiological, developmental, evolutionary, social, clinical, and applied areas, which made it one of the first multidisciplinary and systematic approaches to examine compassion from multiple frames of references.

Importantly the Handbook provided a foundation for this new and rapidly growing field, by serving as a catalyst for academic researchers and students to support a better world. For these reasons, and in lieu of any revised addition of the Oxford Handbook, the report authors felt it was important to revisit this comprehensive guide and for it to be the basis for identifying future research directions in compassion science.

The Oxford Handbook was sectioned into seven parts and below is the list of authors that were interviewed within each of these thematic sections:

PART 1 – INTRODUCTION

Chp1:   *The Landscape of Compassion: Definitions and Scientific Approaches* – Emiliana Simon-Thomas

PART 2 – DEVELOPMENTAL APPROACHES

Chp5:   *Compassion in Children* – Tracy Spinrad
Chp8:   *Compassion Focused Parenting* – James Kirby

PART 3 – PSYCHOPHSYSIOLOGICAL AND BIOLOGICAL APPROACHES

Chp9:   *The Compassionate Brain* – Tania Singer
Chp14:   *The Roots of Compassion: An Evolutionary and Neurobiological Perspective* – C. Sue Carter
Chp14:   *The Roots of Compassion: An Evolutionary and Neurobiological Perspective* – Inbal Ben-Ami Bartal
Chp15:   *Vagal Pathways: Portals to Compassion* – Stephen Porges

PART 4 – COMPASSION INTERVENTIONS

Chp17:   *Studies of Training Compassion: What We Have Learned; What Remains Unknown?* - Alea Skwara
Chp19:   *Cognitively Based Compassion Training: Gleaning Generalities From Specific Biological Effects* - Jennifer Mascaro

PART 5 – SOCIAL PSYCHOLOGICAL AND SOCIOLOGICAL APPROACHES

Chp 22:   *Enhancing Compassion: Social Psychological Perspectives* - Paul Condon

PART 6 – CLINCIAL APPROACHES

Chp27:   *Self-compassion and Psychology Wellbeing* - Kristin Neff
Chp27:   *Self-compassion and Psychology Wellbeing* - Chris Germer
Chp29:   *Compassion Fears, Blocks and Resistances: An Evolutionary Investigation* - Paul Gilbert

PART 7 – APPLIED COMPASSION

Chp33:   *A Call for Compassion and Care in Education* - Lisa Flook
Chp35:   *Social Dominance and Leadership: The Mediational Effect of Compassion* - Daniel Martin

04 Qualitative Study Method

The project method comprised asking the chapter authors three questions. These questions were developed to encourage them to reflect on future directions in compassion science and they comprised: **Q1)** What did you posit in your Handbook chapter in 2017? **Q2)** What had changed in this research area since that time? **Q3)** What implications does that have for future research directions in compassion science?

The Oxford Handbook comprised 35 chapters, and many had multiple authors. From the book, 15 authors from 13 chapters engaged in the conversations. Although thoughts from all chapter authors were not gained, those who engaged are world leading experts in their respective areas of compassion science including Paul Gilbert, Tania Singer, Stephen Porges, Emiliana Simon-Thomas, James Kirby, C. Sue Carter, Kristin Neff, among others.

This project utilized semi-structured interviews/conversations to gather information and these interviews were conducted face-to-face via Zoom – where a free Zoom account was used. The interviews collected information from the authors on the complexity and directions in compassion science in interview settings, as face-to-face interviews are useful in a context where there is a need to collect in-depth information in a systematic manner.

The set of three predetermined questions allowed the respondents to answer in depth and for the interviewer to probe areas based on replies, by asking a range of supplementary questions. This meant that these face-to-face interviews were a very good fit for this project and target population.

05 ⟩ Findings and Analysis

Interviews were transcribed using Microsoft Teams and checked for accuracy by relistening to interview audio recording and reviewing the transcript. Line and page numbers were added to transcripts to support the data audit trail. Thematic analysis, guided by Braun and Clarke's (2006) six phases[5], was undertaken to identify patterns within the data. Firstly, interview transcripts were read to aid in data familiarisation with the initial ideas.

Semantic codes were then generated focused on describing the explicit meaning of participants data (Bryne, 2022)[6]. These codes were generated reviewing interviews segment by segment to capture key ideas participants reported. Similar semantic codes were then grouped together to form preliminary categories and subcategories, with initial definitions of each generated.

Further refinement of data to finalise themes, categories and associated sub-categories for this study was undertaken and this report outlines the project findings, indications of the future directions in compassion science and offers suggestions for forthcoming PhD studies.

5.1 WHAT WAS POSITED IN 2017?

The first question asked each of the chapter authors: *What did you posit in your Handbook chapter in 2017?* The overviews below provide information on both the interviewed authors, and a precis of what was said in their 2017 chapter.

5.1.1 Dr Inbal Ben-Ami Bartal is a faculty member at Tel-Aviv University's Psychology Department and School of Neuroscience. She completed her doctoral studies at the University of Chicago and her post-doctoral studies at Berkeley. Her co-written Oxford Handbook Chapter 14 was entitled *The Roots of Compassion: An Evolutionary and Neuro-biological Perspective.* This Chapter proposed that while our defensive and aggressive behaviours are viewed as playing a critical role in human survival - our prosocial behaviours which include compassion for the suffering of others are not as widely recognised as a positive survival attribute. The authors posited that compassion for others and social support have survival value and health benefits, and outlined that neuropeptide hormones, especially oxytocin, are implicated in social cognition, a sense of safety, and the capacity of sociality to permit compassionate responses.

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[5] Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research Psychology, 3(2), 77-101.
[6] Byrne, D. (2022). A worked example of Braun and Clarke's approach to reflexive thematic analysis

5.1.2 Prof Sue Carter is a Distinguished University Research Scientist at the Kinsey Institute, Indiana University, who co-wrote Chapter 14 *The Roots of Compassion: An Evolutionary and Neuro-biological Perspective.* Sue and her co-authors including Inbal Ben-Ami Bartal proposed that while our defensive and aggressive behaviours are viewed as playing a critical role in human survival, our prosocial behaviours including compassion for the suffering of others is not as widely recognised as a positive survival attribute. They contend that the processes through which oxytocin and vasopressin influence behavior and health have complex effects on the autonomic nervous system, and that knowledge of the mechanisms underlying the benefits of compassion offers new insights into the healing power of positive social behaviors and social support.

5.1.3 Assoc Prof Paul Condon is a Fellow of the Mind & Life Institute and an Associate Professor of Psychology at Southern Oregon University. His research examines the relational basis for empathy, compassion, wellbeing, and prosocial action, and the influence of compassion and mindfulness training on those capacities. His Oxford Handbook, Chapter 22 was entitled *Enhancing Compassion: Social Psychological Perspectives* and in that Chapter he reviewed compassion from the perspective of a social psychologist picking up issues such the affective states that promote us engaging in 'effortful' prosocial behavior, and on the situational forces that influence our compassionate responses. Paul and his co-author David DeSteno reviewed the current social psychological literature on compassion and its role in shaping moral decision-making and relationship formation, which included a review of the burgeoning field of contemplative science and meditation practices in shaping prosocial character. They concluded that humans are amenable to situational forces that tip the scales in favor of compassionate responding, and that such behaviors can be increased through simple, readily available meditation-based exercises.

5.1.4 Dr Lisa Flook is a senior researcher at the Learning Policy Institute, where she conducts research to inform educational practice and policy. She has also investigated the impact of stress on children and adolescents, and ways to promote well-being through school and community-based interventions, and these studies have drawn on the contemplative neuroscience at both the Mindful Awareness Research Center at UCLA, and with the Center for Healthy Minds at the University of Wisconsin-Madison. Her co-written Oxford Handbook Chapter 33 was entitled *A Call for Compassion and Care in Education: Towards a More Comprehensive Prosocial Framework for the Field* and it reviewed the evidence of compassion-based interventions in schools, and the variety of prosocial education initiatives— including Social and Emotional Learning (SEL) and mindfulness-based programs—which have been shown to make a positive impact. She and her co-authors found that these programs are often missing comprehensive theoretical models of prosocial development. They reviewed the evidence of compassion-based interventions and offered a compassion-based framework as an organizing principle for the field to assist in integrating diverse prosocial approaches and to support educators in responding more effectively to needs of our school communities.

5.1.5 Dr Chris Germer is a clinical psychologist and lecturer on psychiatry at the Harvard Medical School and with Dr Kristin Neff he co-developed the Mindful Self-Compassion program. They co-wrote Chapter 27 which was entitled *Self-compassion and psychological well-being* which outlined the three facets of self-compassion and identified some of the misgivings of self-compassion. They contended that there are many things we still don't know about the consequences of treating ourselves kindly and provided an overview on the link between self-compassion and psychological well-being, exploring definitions of self-compassion and empirical evidence that support those charted distinctions.

5.1.6 Prof Paul Gilbert is a clinical psychologist and founder of compassion focused therapy, compassionate mind training and author of many books including The Compassionate Mind. His co-written Chapter 29 was entitled *Compassion Fears, Blocks and Resistances: An Evolutionary Investigation.* This Chapter reasoned that our potential for compassion is rooted in the evolution of caring motivational processes – covering the components and competencies of compassion. The Chapter also covered the issues around compassion inhibitors and how an evolutionary perspective helps us understand why and how those barriers operate. This paper considered inhibitors to compassion: the fears, blocks, and resistances and their evolutionary and psychosocial origins, and began with an explication of a model for compassion, and showed how compassion rests on discrete components and competencies that can be differentially inhibited.

5.1.7 Assoc Prof James Kirby is a Senior Lecturer and Clinical Psychologist at the University of Queensland and Director of its Compassionate Mind Research Group.   His Chapter 8 was entitled *Compassion-Focused Parenting* and in that Chapter, he outlined why a Compassion-Focused parenting approach was important and why such an approach needed to sit alongside a public health approach. The Chapter described some of the elements of this public health approach and reflected that while evidence-based parenting programs have been demonstrated to have positive impacts on improving parenting style, reducing childhood social, emotional, and behavioural problems, their uptake remains low, and governments have been reluctant to provide evidence-based parenting on a wide scale. This chapter contended that the next generation of evidence-based parenting programs need to be grounded in evolved, caring motivational systems and affiliative emotion processing, further requiring an understanding of the evolved processes involved in parent–offspring caring and brain functioning.

5.1.8 Assoc Prof Daniel Martin is an academic in the Department of Management at CSU East Bay and a Collaborating Scientist at the Center for Compassion, Altruism Research and Education at Stanford University. His co-written paper with Yotum Heineberg - Chapter 35 *Social Dominance and Leadership: The Mediational Effect of Compassion,* and in that Chapter, they found a negative relationship between high levels of social dominance orientation and positive leadership; and discussed the mediating effect of compassion on SDO particularly around the domains of compassion for others, self-compassion, and the fears of compassion. The Chapter authors discussed the preliminary results on an interpersonal compassion-focussed intervention, and these results suggest that broadening the psychological well-being of employees with impactful interventions are important and can mitigate the negative behaviours within businesses that can lower job performance and innovation. This study discussed the preliminary results of an interpersonal compassion-based intervention, and the findings suggested that the opportunity to broaden psychological well-being of employees with impactful interventions is important as negative workplace behaviors can raise healthcare costs and lower job performance.

5.1.9 Dr Jenny Mascaro is a lead scientist at Emory University and her work examined the impact of compassion meditation on social cognition and brain function, including on the biological bases of paternal caregiving behavior. Her co-written Chapter 19 was entitled *Cognitively Based Compassion Training: Gleaning generalities from specific biological effects* and it focused on how learning and engagement with CBCT alters the brain and body - finding that CBCT appears to be differentially effective depending on the population; and discussed how future research is required to better understand how CBCT courses can support clinical populations that have most to gain from contemplative training techniques. This article provided a theoretical and practical account of CBCT and reviewed the emerging evidence that it affects the brain and body in ways that are relevant for health, and suggested directions for future research to best examine the apparently complex effects of CBCT on health and well-being.

5.1.10 Assoc Prof Kristin Neff is based at the University of Texas at Austin's Department of Educational Psychology, and is the author of a number of books including *Fierce Self-Compassion - How Women Can Harness Kindness to Speak Up, Claim Their Power, and Thrive.* Her Oxford Handbook Chapter 27 was entitled *Self-compassion and psychological well-being* which outlined the three facets of self-compassion and some of the misgivings of self-compassion. Self-compassion involves being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's suffering and to heal oneself with kindness. Self-compassion also involves offering nonjudgmental understanding to one's pain, inadequacies, and failures, so that one's experience is seen as part of the larger human experience. The Chapter discussed methods that have been developed to teach individuals how to be more self-compassionate in their daily lives, some clinical implications of self-compassion training, and future directions for research.

5.1.11 Prof Stephen Porges is a psychologist and neuroscientist and is the Professor of Psychiatry at the University of North Carolina. He is currently Director of the Kinsey Institute Traumatic Stress Research Consortium at Indiana University, which studies trauma. His Oxford Handbook Chapter 15 was entitled *Vagal Pathways: Portals to Compassion -* and in that Chapter he outlined the aspects contemplative practices that support compassion practices and provided an outline of his polyvagal theory. Contemplative practices were conceptualized as methods that function as neural exercises enhancing vagal regulation of the autonomic nervous system. The model proposes that specific voluntary behaviors (e.g., breath, vocalizations, and posture), which characterize ancient rituals and form the core of contemplative practices, can trigger a physiological state mediated by vagal

pathways that fosters health and optimizes subjective experiences. The model emphasized that, in order for the positive benefits of contemplative practices to be experienced, the rituals associated with contemplative practices (e.g., chants, prayers, meditation, and dance) must be performed in a context defined by physical features that are calming and soothing and promote feelings of safety.

5.1.12 Dr Alea Skwara is a Postdoc Fellow at the Center for Mind and Brain in the Department of Psychology at the University of California, Davis, who co-wrote Chapter 17 entitled *Studies of Training Compassion: What we Have Learned; What Remains Unknown?* In this chapter Alea and her co-authors explored the impact of compassion training on biological and prosocial behaviour in better understanding the subtleties of the individual experience the different manifestations of suffering, and how they may be important in working towards global compassion. This paper drew on contemporary research from cognitive, affective, and social psychology to introduce the field of compassion training, and considered what constitutes compassion training and offer a summary of current meditation-based approaches. It provided an overview of the empirical evidence for a relationship between compassion training and changes in socioemotional processes, prosocial behavior, and physiological stress responses to the perception of others' suffering, and finished by asking if, specific changes in emotional experiences and reactivity to suffering could translate into changes in overt helping behaviours.

5.1.13 Professor Tania Singer is a social neuroscientist and psychologist and world expert on empathy and compassion. She is the scientific head of the Max Planck Society's Social Neuroscience Lab in Berlin, and in that role, she is principal investigator of the ReSource project, one of the largest longitudinal studies on the effects of mental training on compassion, pro-sociality, mental health, and brain plasticity. With her co-author Olga Klimecki, their Oxford Handbook Chapter 9 was entitled: *The Compassionate Brain* and it explored the neural substrates of compassion and compassion training, by focusing on the neuroscience of compassion and related social emotions such as empathy, empathic concern, or empathic distress. It reviewed the neuroscientific literature on empathy and the neuroscientific research on caregiving and social connection and described cross-sectional studies on the neural signatures of compassion. Importantly this article investigated whether compassion training could change neural functions and concluded that importantly compassion training could change neural functions, and that the neural substrates related to empathy for suffering differs both experientially as well as neuronally to that of compassion.

5.1.14 Dr Emiliana Simon-Thomas is the Science Director of the Greater Good Science Center, where she oversees the GGSC's research fellowship program and was one of the editors of the Oxford Handbook of Compassion Science. Her Chapter 1 was entitled *The Landscape of Compassion: Definitions and Scientific Approaches* and it explored compassion as a discrete emotion and as a motivation its evolutionary and biological aspect. This co-written chapter asks how can scientists define compassion – as an emotional state, a motivation, a dispositional trait, or a cultivated attitude? It set forth a working definition for compassion, to situate compassion in the context of related terms and mental experiences. In this paper, particular attention was paid to the evolutionary origins of compassion, the biological structures and processes implicated in compassion, the degree to which compassion is universal and variable across cultures, and documented approaches to fostering compassion. It also examined the potential impact of training compassion on personal well-being, the quality of relationships, organizational success, and society more broadly.

5.1.15 Prof Tracy Spinrad is based at the T. Denny Sanford School of Social and Family Dynamics. Her cowritten Chapter 5 was entitled *Compassion in Children* where she and her co-author Nancy Eisenberg defined aspects of children's prosocial behaviour, including the impact of factors such as temperament and socialisation. They examined the differences in children's prosocial behaviours that emerge from spontaneous rather than compliant circumstances. This article focused on the normative development of children's prosocial behavior and children's empathy-related responses and examined both dispositional and socialization factors that predict individual differences in children's concern for others. It finished by exploring related issues to different types of prosocial behaviour including costly, anonymous, and spontaneous; questioning what motivates children to engage in costly types of prosocial behaviours where prosocial behaviour is defined as voluntary acts to benefit another.

5.2 WHAT HAS HAPPENED IN THE RESEARCH SINCE 2017?

The second question asked authors: *What has changed in this research area since that time?* Since this Handbook was written there have been hundreds of additional studies done across all areas of compassion science, and this evidence-based research is engendering a deeper acceptance of compassion science as an academic discipline that is significantly contributing in basic and applied compassion research.

In this section the replies to this second question have been collated under some of the headings that emerged in the coding process. These headings comprise: Definitions of Compassion – Measures of Compassion – Drivers of Compassion – Misconceptions of Compassion – Models and Study Designs – Changing Language.

5.2.1 DEFINITIONS OF COMPASSION

In terms of variations to compassion definitions over the past 7 years, Emiliana Simon Thomas acknowledged that *it's tricky to get a whole globe of thinkers to arrive at a consensus, for what exactly compassion means* - but noted that *there's always an opportunity to synthesize across studies and recognize where the differences are, and where the overlaps exist.*

In her role as one of the Editors of the Handbook, Emiliana emphasised that having a taxonomy that people can turn to, to make more informed choices about which construct they wish to study and how to connect it with other constructs is still useful, and concluded that the more research that gets done… *the easier it will be to have that kind of confluence across conceptual approaches to defining compassion.*

The definition proffered in the Oxford Handbook was one that encompassed several distinct components:

1. *Awareness* of an antecedent (i.e., suffering or need in another individual)
2. *Feeling 'moved'* that is, having a subjective physical experience that often involves.
3. Involuntary arousal of branches of the autonomic nervous system.
4. *Appraisal* of one's own bodily feeling, social role, and abilities within the context of the suffering.
5. *Judgement* about the person who is suffering and the situational context; and
6. *Engagement* of the neural systems that drive social affiliation and caregiving and motivate helping[7].

Some authors spoke about differentiating between compassion and other concepts such as empathy, empathetic concern, cognitive empathy, and cognitive reorienting. For example, in referencing her landmark research project ReSource[8], Tania Singer spoke about distinguishing concepts such as empathy and compassion at the level of neural pathways in the brain – i.e., moving beyond language to understand that empathy and compassion can be mapped in different neural pathways… *we discovered a different (brain) network(s) underlying compassion and loving kindness and these more social emotions… are based in care and affiliation motivational systems, and are actually not really overlapping with empathy.*

In reflecting on definitions Skwara noted that when she thinks about compassion, she doesn't necessarily recall an emotion, but rather her own ability to notice, connect, to be attuned to suffering… *and then to ascertain actually what would be of use in the moment and to respond in that way.*

When addressing definitions of self-compassion Germer noted - *in a nutshell, it means a loving connected presence… self-kindness, common humanity, mindfulness.* Both Chris and Kristin Neff made a distinction between the definition of kindness and that of self-compassion noting that – *it's (compassion) not the same as kindness because it also includes mindfulness and a sense of common humanity.*

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[7] Seppala, E. Simon-Thomas, E. Brown, Worline, M. Cameron, D. Doty, J. (2017) The Oxford Handbook of Compassion, Oxford Publishing, UK.
[8] https://www.resource-project.org/en/

That important difference between kindness and compassion was also cited by Stephen Porges who stated that our ability to be compassionate is reliant on us calming our bodies in the presence of suffering so that we form support for that individual. His polyvagal theory contends that our visual and emotional cues and responses to suffering are important because... *our neurophysiology provides the substrate upon which the brain interprets and acts. We need to shift our underlying physiological state to a state that is accessible to broadcasting signals of threat to the ones that we want to be helpful to …. when we see someone who is severely injured, reflexively our empathic response is to feel their pain. But when we feel their pain, our nervous system reacts and our facial expression changes, our posture shifts, the intonation of our voice changes. However, once we experience and become aware of our bodily reactions via interoception we are able to use top-down pathways that recruit calming via the vagus (nerve). Sometimes we intuitively enhance our access to the calming vagus by taking a breath and slowly exhaling, Or, at times we move the muscles of our face and head or even massage our neck or forehead. All these actions communicate with the vagus and dampen physiological reactions. Basically, we calm ourselves down, and when our body is calmed, it broadcasts cues to others that they are being witness and that they have a voice. Since many of us come from an academic tradition, we tend to think that pragmatic behaviours are important, thought processes are important, and intensity is important, and we have forgotten our intuitive roots that all those actions broadcast signals to others that we are not accessible and that they are not being welcomed. From my perspective compassion is about broadcasting our accessibility.*

In identifying a change in the terms that define compassion in education Tracy Spinrad reflected on personal distress and its role on prosociality in children by noting that they interpret prosocial behaviour as voluntary behaviour intended to help another person *…when thinking about nuances in prosocial behavior, you really have to think about the motivations for different forms of prosocial behavior. That is, sometimes individuals perform helpful behaviors for a variety of reasons-- and sometimes those reasons are not other-oriented. In that case, those behaviors would not be considered altruistic. So, in our view, we've really thought about prosocial behaviour as a very broad global construct, and we often just use the term prosocial behaviour rather than talking about altruism. Particularly with children we don't always know their motivation for performing particular actions.*

Paul Gilbert also made a distinction between the definitions of self-compassion and compassion by noting… *the way in which we are able to use compassion for ourselves is different, although it overlaps, with our being compassionate to others.* His overall definition of compassion is *… a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it.*

5.2.2 MEASURES OF COMPASSION

Those interviewed noted that compassion science studies are still using similar research tools to measure compassion interventions. For example, Tania Singer stated that the fMRI technologies are comparable to those she has used in the past six years in her ReSource project observing that those technologies *…were already there in the first studies on structural brain plasticity so that's not new.*

In terms of measures of physiological responses, Skwara noted that she and her colleagues who include Cliff Saron at UC Davis are still *…chipping away at some of the core questions raised in their chapter including on the idea of processes or mechanisms of change for the different pathways towards compassionate responding.*

Similarly, Stephen Porges' Neuroception of Psychological Safety scale is still a measurement scale that he uses in his research. Stephen deliberated on that importance of broadening the reach of compassion science from individual therapy to social change by asking how do we measure the impact of safe environments across the generations? *…for example, in the neonatal intensive care unit, how noisy that is and with a child who's fragile or schools that have very noisy air conditioning. The issue is that we're wired for certain frequencies in the acoustic spectrum, low frequency sounds are wired into our nervous system as threat and our nervous system needs time to turn off reactions and start to see what else it can become.*

5.2.3 DRIVERS OF COMPASSION

Across the interviews authors spoke about drivers that underlie compassion and those that activate compassionate action, such as our emotional motivations and our evolutionary drive which is still very much connected to caring. The authors spoke about what drives people to, and inhibits people from taking compassionate action towards another's suffering. More recent studies continue to identify the compassion facilitators within humans that activate compassionate action.

Emiliana Simon-Thomas stated that compassion is a fundamental quality of human mental life noting that compassion is *…an inborn capacity, it is native to our DNA in a manner such that we don't need to rely on, like experience or rules of politeness or cultural norms to actually experience, extend or benefit from compassion in our lives rather it's this core affordance or ability that occurs both in these global levels and at the very narrow emotional levels. And I think just making that case, it's not something we have to learn. Certainly, our life experience impacts it, but we come with this urge and capacity for compassion.*

Emiliana went on to say that compassion as a motivation has both personal and political implications *…the urge to approach vulnerable others who are suffering and do something to alleviate their suffering happens in the context where we encounter suffering. When I think about it on the landscape of the global level, I feel like it has more to do with a person's sense of agency and accountability as a human in service of others. It's recognizing there's a problem and … wanting to do something to address that problem. So they're very related.*

In terms of the drivers of compassion in organisational leadership, Daniel Martin said that in this troubled world… *we see a growing awareness of need for mental health support… increases in terms of people's productivity… but, what we don't see is that reflection of our innate capacity.*

In the years since 2017 much of Paul Gilbert's work has continued its focus on the evolutionary drivers that relate to the detection and responses to suffering *…we see compassion very much in terms of the evolutionary*
motives….. we now know that there are different systems in the brain which are important for our ability to detect and be moved by signals of suffering and also very different systems in the brain which relate to how we think about what we're going to do about it. So, it's very important that we make a distinction from a research point of view, can we understand how people detect, respond to, have empathic engagement with signals of distress and suffering in need and … how they work out what they're going to do about it because we can, we can detect suffering and need but then we can behave unwisely. So that's important from an evolutionary point of view. Those are the two key processes.

5.2.4 MISCONCEPTIONS OF AND BARRIERS TO COMPASSION

Misconceptions of compassion remains an important area to address. Authors reinforced the clear distinction between compassion and kindness, which can be a common area of confusion.

In his interview Paul Gilbert again reinforced that a major misconception of compassion is that, at its basis compassion is not about being 'nice' – rather the basis of compassion is courage and wisdom – stating that one of the greatest challenges of humanity today is inter-group conflict, whether that's between nations or political groups or racial groups.

He also confirmed that understanding the fears, blocks and resistances to compassion, remain an important area of future research area… *fears (of compassion) you're frightened to engage, for example, people who have mental health problems they don't really want to have to engage with their trauma memory, for example, or they don't really want to have to engage with the distress that's sitting underneath an alcohol problem. And then you have the fear of taking action … people can be well, I know what the problem is that I don't think I could do it, you know. If you think of a firefighter right, they need a lot of courage to engage. So, these are two issues to do with*

fear. Blocks (of compassion) are where people are not frightened of it, but they really are not attentive, they're in denial or whatever dissociation and they're also not quite sure what to do, it's not that they would not like to be helpful, they'd like to be helpful, but they don't know what to do. Resistances (of compassion) are when people are very well aware, but they simply don't want to help. ...like immigration ...we know that the immigrant people have all these problems....why should we do anything? It's too costly... so, resistances are much more aggressive, pushing back against the issues of the actions that are needed to take care, to help others and to engage in social justice.

Prof Gilbert also referenced James Kirby's meta-analysis study which very clearly demonstrates that when it comes to being compassionate to oneself and being open to the compassion from others, turning to others and allowing others to help you, fears, blocks, and resistances: *...are very highly linked to all kinds of mental health problems, depression, anxiety, alcohol difficulties, etc.* So again, he was reinforcing that compassion in action is addressing some of the critical mental health issues of today and is not about being 'nice'.

In terms of why people are resistant to self-compassion, Neff affirmed that these fall into three main categories: it can be perceived as selfish, as weak, and as undermining motivation; explaining that a very common misgiving of self-compassion is that people think it is selfish *...they think that if you give yourself compassion, you're going to have less compassion left over, less to give to other people...and of course it doesn't work that way because it's additive, the more compassion flows inwards the more resources we have for compassion to flow outwards. So, for instance, you're less likely to burnout while caring for others if you resource yourself with compassion. Another big one is that people think it means you can be weak, they think of compassion as kind of soft and squish but that they don't realise that in fact having your own back, supporting yourself, being an ally to yourself as opposed to an enemy actually leads to being stronger and coping better in difficult situations.*

Another misgiving as expressed by Neff is that self-compassion is going to lead to self-indulgence...*right like, can you be too self-compassionate! When they say that they think that self-compassion is just giving yourself pleasure or taking it easy where sometimes you need to work hard, or you know need to do the things that are not easy to do.*

Instead, Neff contends that if you care about yourself, you'll do what you need to be healthy *...the biggest myth about self-compassion and what we know really stands in the way the most, is the belief that it will undermine motivation, we think need to be harshly self-critical and tough on ourselves to get anything achieved and again research really disproves that. It is actually more effective self-motivator then self-criticism, most importantly because it allows us, when we can accept that we failed, it doesn't mean that I'm the failure then that means I can focus on how do I learn and grow from this mistake, how do I move forward?*

5.2.5 MODELS AND STUDY DESIGN

In the years since Jenny Mascaro co-wrote her chapter the focus of research has shifted to examine models that better capture the variance in the ways that people behave compassionately in the real world across different ages, genders, racial and ethnic groups. Specifically, since 2017, Jenny and her colleagues have been involved in researching how to create... *culturally flexible ambulatory toolkits capable of detecting signals of compassion and pro-sociality in hospital settings – without burdening patients with self-reporting surveys.* Further stating that - *improving observational methods in determining shifts in compassionate behaviour has been underway over the past seven years.*

James Kirby in his interview noted that one of the things that he and his team have done in the last six years is to move beyond looking at associations and starting to do some intervention work...*to analyse through a randomised controlled trial, this question of can compassion training increase not only compassion but also improve our parenting style to help with child outcomes - and at the time when we wrote that chapter, there wasn't really any work that had looked at that at all.*

In the area of intervention in self-compassion Chris Germer also noted that a lot of the research that's happening now focuses on creating training programs to increase self-compassion or embedding it into psychotherapy with a focus on self-compassion…. *we could say that the field of psychotherapy in particular has flourished in the last six years.*

Likewise, Kristin Neff reflected that one of the things that is happening now is a lot more experimental research…. *which is great as I think for a long time, research was primarily using the self-compassion scale.*

5.2.6 CHANGING LANGUAGE

With the significant growth in new technologies, including in artificial intelligence, something that has changed in recent times is the new language being used. For example, Paul Gilbert in his interview used the term 'algorithms' *'…we see compassion very much in terms of the evolutionary motives – and all motives are run by local algorithms. …. So if you're motivated to eat, you have to be able to detect food, if you're motivated to avoid a threat, you must be able to detect what a threat is and then act. So that's an algorithm.*

According to Paul Gilbert compassion can be seen as a stimulus–response algorithm *(i.e., "if A then do B"), where A involves the detection of the stimuli: i.e., signals of suffering/need; and then B the triggering appropriate responses, i.e., actions to alleviate and prevent suffering and address needs. In the light of this reasoning, he proposes a definition of compassion as a basic algorithm which is: [A] sensitivity to suffering in self and others with [B] a commitment to try to alleviate and prevent it.*[9]

Terms such as algorithms tended not to be used in psychology studies used in 2017. With AI based on algorithms and an emerging technology, its use in the compassion field although not discussed in the Handbook or during the conversations might have a role to play in future compassion interventions, something time will tell.

5.3 IMPLICATIONS FOR FUTURE DIRECTIONS IN COMPASSION SCIENCE

The final question asked of those interviewed was: *What implications does that have for future research directions in compassion science?* In terms of the future directions some of the shifts occurring relate to areas such as Research Interventions – Compassion Training – Broadening Populations - Better Understanding Mechanisms - Expanding Reach – Societal and Systems Change.

5.3.1 RESEARCH INTERVENTIONS

The interventions of compassion-based research were remarked on by many of the authors in interview particularly as they relate to the various population groups. Chris Germer reinforced *that most of the research in inventions through training programs designed to increase compassion and self-compassion and most of that research actually happened after 2017. Similarly, Kristin Neff indicated that future research into self-compassion needs to focus on empirically supported self-compassion interventions for specific clinical conditions.*

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[9] Gilbert, P. (2014). The origins and nature of compassion focused therapy. British Journal of Clinical Psychology, 53, 6–41. https:// doi.org/ 10. 1111/ bjc. 12043

One of the significant studies over the past six years is that of Prof Singer's team at the Social Neuroscience Lab of the Max Planck Society who have studied the impact of novel forms of intersubjective mental training practices that are performed with a partner, aimed at boosting social closeness and perceived interconnectedness., i.e., contemplative dyads.

Results from both the ReSource Project and the CovSocial project (developed during the Covid-19 pandemic) revealed that... *contemplative dyad practices, when compared to attention-based mindfulness practices have differential effects on outcomes such as attention, compassion, Theory of Mind, altruism, emotion regulation, as well as social stress and autonomic body regulation. Dyadic practices seem to emerge as the most powerful, increasing social connectedness and positive thoughts about others, while decreasing loneliness and hormonal responses to social stress, and improved resilience and positive interpretation bias (i.e., the tendency to perceive the world more optimistically).*

James Kirby noted that in those early stages the most work that had been done were correlational studies and over the past five years one of the things that he has examined are the correlations and associations to intervention work. He commented that they are *...starting to analyse through randomised controlled trials, this question of can compassion training increase not only compassion but also increase or improves probably a better word, our parenting style to help with child outcome and at the time when we wrote that 2017 chapter, there wasn't really any work that had looked at that at all.*

James finished with an appeal that the next generation of evidence-based parenting programs be informed by an understanding of the processes implicated in parent-offspring caring and brain functioning, observing that compassion focused parenting offers an opportunity to help parents and children become more aware of these pressing issues: *how that fits into the broader social, scheme is really important. And then the intergenerational effects of, being parented in particular ways and how that's turning up, in a couple of generations.*

Perhaps one of the most important contributions of compassion research is how it might assist in intervening in individual, societal and global conflicts. Paul Gilbert says in order to do that, a clear distinction needs to be made between the emotion of love, the action of kindness, and the motivation of compassion. Paul Gilbert commented that while kindness and love are important, they are not the basis of compassion - rather the basis of compassion is courage and wisdom... *from an evolutionary point of view compassion partly evolved within genetically related family groups and so we are very compassionate to people we know people, we like people who are in our group, not so much for people we don't know, people we don't like and in another group. So, one*
of the greatest challenges of humanity today is inter-group conflict, whether between nations, political groups.... compassion for ourselves and for other people in our communities, that's not too difficult to promote, compassion across groups that disagree with each other, that's another matter.

5.3.2 IMPROVING COMPASSION TRAINING AND BROADENING TARGET POPULATIONS

Some interviewees spoke about the compassion-based training approaches implemented back in 2017 and how these have since expanded to different groups of people, across disciplines, and the ways in which the outcomes of compassion-based training approaches are measured.

For example, Daniel Martin's preliminary research results on an interpersonal compassion focused intervention suggests that broadening the psychological well-being of employees with impactful interventions are important and can mitigate the negative behaviours within businesses that can lower job performance and innovation. Daniel stated that we need a better appreciation that targeted training can improve higher levels of compassionate leadership... *and that future studies into compassion training in leadership settings in multiple work environments industries and occupations are required.*

Other authors spoke about compassion-based training approaches implemented at the time of their book chapter and how these have expanded since to different groups of people, across disciplines as well as the ways in which the outcomes of compassion-based training approaches remeasured.

Across the interviews, it was noted that compassion-based research is a growing discipline, particularly in relation to differing populations. For example, reflecting on Cognitively based Compassion Training, Jenny Mascaro noted that she and her team... *have been focusing on a lot of our effort and research energy into incorporating CBCT into places in Emory Healthcare and beyond where we think people are grappling with serious illness and with real acute crisis and may particularly benefit from CBCT and compassion-based approaches.*

In the area of organisational development Daniel Martin is continuing to study training interventions to wider groups within organisations – *we were looking at something called positive leadership which is aligned with compassionate leadership....weaving together things like transformational leadership...where the leader is meeting the needs of the individual development in terms of challenge, and growth, and matching the organisations growth and capability.*

In extending the reach of compassion in his area of compassion research, James Kirby noted that in child-rearing, compassion is now being expanded to different groups of maternal experiences particularly in the early motherhood period and at the time of childbirth... *where there can be a lot of difficulties... a 1/3 of births are experienced with some kind of traumatic experience, including for emergency caesareans.*

And Kristin Neff acknowledged that the scope of application for self-compassion interventions is growing... *what's happening is that people are tailoring self-compassion interventions for particular populations e.g., eating disorders, athletes, leadership, health care workers, children, parents, people with cancer.*

Neff also noted that her area of research is expanding to consider gender and physiological indicators of compassion, commenting that we know little about gender as a category in compassion studies, rather than gender per se ... *it turns out it is more about gender orientation - and we are only just getting better at understanding some of the physiological indicators of self-compassion e.g., emotion regulation, heart rate variability, brain changes, etc.*

Across the interviews authors called for compassion research to study other cultural groups, moving research into the real world to build an evidence base to guide policy and shift perspectives of compassion on the individual to considering the broader influence compassion can have at a systemic and societal level including on factors such as prosocial behaviours or social issues such as climate changes and business leadership.

In reflecting on future directions in compassion science as they apply to interventions in self-compassion, Chris Germer said there are still very few well controlled research studies, that specifically target self-compassion, which he noted was curious because the data is so clear that self-compassion is a good focus for psychotherapy. He stated there have been very few psychotherapy studies done that have focused on how to increase self-compassion in therapy... *when you do ACT therapy or cognitive behavioural therapy, but specifically targeting self-compassion and psychotherapy, is in my view a real omission. So, if someone wants to do that, that'd be great.*

Paul Condon spoke of the importance of contemplative practices in compassion development. Back in 2017 when he was reviewing studies that looked at meditation as a way to train and enhance compassion, he found that there were a number of studies that looked at whether or not meditation could be used to enhance things like empathy, prosocial behaviour and compassion... *there have been a number of studies that show that mindfulness meditation, loving kindness meditation, and various forms of compassion meditation can all enhance prosocial behaviour. And in the chapter, we showed this across different ways of measuring compassion. So, through things like people's reports of behaviour showing reductions in implicit bias, showing that compassion training led people to give more resources, or donate more resources or spend more time helping people. So generally, there seems to be a growing amount of evidence that meditation could enhance compassion.*

5.3.3 BETTER UNDERSTANDING MECHANISMS

During her interview Tania Singer commented that we need to better understand the mechanisms that drive different mental practices, affirming that…*while we have understood the effects of different types of mental practices on our brain, behaviours, hormones, and stress - we have not yet developed a real understanding of the specific mechanisms by which those work.* She emphasised how compassion training supports *the up-regulation of our systems of care and affiliation - rather than the down regulation of our negative affect which has implications for some aspects of empathy, including empathic distress.*

Similarly, James Kirby observed that future research should concentrate on the mechanisms that promote prosocial constructs such as compassion rather than a focus on how to reduce external negative parenting behaviours such as yelling or hitting.

And Alea Skwara commented that in addition to continuing the work with some more rigorous comparisons, her lab is now *working on different types of contemplative training and looking at the basic processes that better support compassionate responding.*

Inbal Ben-Ami Bartal noted that compassion research procedures should continue to inform how we can better understand the human experience – *for example prosocial behaviours were developed in our evolved primary care evolutionary behaviour., and neuro-imaging techniques such as fRMI's show that when people help others there is a part of the brain for pleasure that shows up – so assisting others doesn't just reducing the distress of the suffering of the other - we are hard wired so that we actually feel better too.*

And crucially findings from the ReSource project found that when we see others in pain, instead of causing us to get overloaded and retreat, compassion motivates us to reach out and help – which in turn offsets empathic distress. Tania Singer's research has found that compassion activates our caring affiliative system in a way that allows for positive changes, because… *in compassion you accept the reality that is out there, but you activate the system which will allow you to be resilient against the potential negative effect of overwhelm and empathic distress.*

5.3.4 SOCIETAL AND SYSTEMS CHANGE

Overall, these interviews confirm that the issues raised in the Oxford Handbook of Compassion Science will remain important to study well into the future. The application of compassion has been shown to support and foster human development not only at an individual, but also at collective and systemic levels of change.

At an epigenetic level - Stephen Porges found that trauma can have intergenerational impacts because studies show that if individuals are hurt too much, their safety trust circuit doesn't come back on… the vagal pathways to compassion are inhibited, for practical reasons – *i.e., not wanting to be hurt again – the damage that causes is inter-generational and epigenetic And Sue Carter also noted that peptides such as oxytocin are targets for epigenetic 'tuning' which allow for modifications of emotional systems by individual experiences.*

In early childhood - James Kirby's found that compassion training for parents had positive outcomes including that it lessened self-criticism, improved a child's prosocial behaviour, and reduced a child's emotional difficulties – meaning that compassion science has important applications for current generations.

In aged care - Jenny Mascaro confirmed that they are now putting their research resources into assessing healthcare interventions where people are grappling with serious illness and acute crises which may particularly benefit from compassion-based approaches.

In education settings – Lisa Flook noted that implementing compassion and its natural inclination and motivation to want to relieve suffering in others, is particularly important in school settings where *…there can be so many negative effects on mental health of the kind of self-blame judgement that it occurs widely and is reinforced by standard practises in our educational system that are ranking and comparing students constantly.*

At an organisational level - Daniel Martin's studies are demonstrating that applying compassion in real world settings, such as business, can improve the psychological well-being of employees and mitigate the negative behaviours within businesses that can disrupt valuable innovations.… *with human resources information, engagement, clinical outcomes, and so on …it's making people aware that nothing really happens in isolation and employees are going to be more creative, more innovative and more team orientated when they feel like they are a part of a team. Belonging, has become a new hot topic too… these are core functions of what compassion is.*

At a societal level – Paul Condon's studies are identifying which situational factors can discourage prosocial behaviour, and defining these factors are important if we are to grow compassion at societal level. Paul asserts that our emotional states of empathic concern and compassion for other people will encourage us to behave pro socially *…even when there are situational forces that might discourage us from doing so. That we have something within us, an emotional impulse that can be activated… that then shapes our moral intuitions and moral impulses to sacrifice our own personal interest to actually come to the aid and help of other people.*

Importantly, Paul Condon and his colleagues have found that the emotional experience of compassion combined with targeted actions, such as investing time in relationships, putting effort into other people's needs and relationships, as opposed to our own personal desires, and forgiving others can all positively shape our moral behaviours *… when we experience compassion, we are more willing to listen to others and to give others attention, even if they have engaged in negative behaviours … so it seemed fair to suggest that compassion is a moral, emotional state that shapes behaviour in a way that is protective of social relationships and social exchange.*

At a human level - perhaps one of the most important line of inquiries for future directions in compassion science is our tendency for indifference to human suffering. Paul Gilbert stressed that future studies need to go beyond compassion as an individual support mechanism to systemically address the more harmful side of human nature *…I think people have got caught up in this idea that compassion is for happiness, and that's great. But in the work we do, compassion is to address the harmful side, how to stop the way we cause suffering through our indifference, or through our economic policies … what's happened with child sexual abuse is a gradual waking up, a gradual paying attention, a gradual noticing of these issues and that's crucial to compassion and beginning to notice.… we can't address these issues until we pay attention to them, until we become aware of them, until we talk about them, until we share them, then we can notice them and then we can do something about it.*

At an evolutionary level - Emiliana Simon-Thomas also outlined the importance of compassion studies supporting our evolutionary journey as a human species being sensitive to one another. *… that was the kind of evolutionary quality or adaptation that has led to our, our intelligence as a species. I'm hoping we'll just keep pushing that edge to generate more and more evidence that this works better than what we've been doing … because we want to optimize our lives.*

And finally Stephen Porges reminds us of yet another important component of compassion which is that compassion supports our ability to sit with suffering long enough to hear others, noting that while everyone has a right to be angry that anger needs to be witnessed *… we all have a right to be angry about the treatment of indigenous peoples, but anger of the indigenous peoples need to be witnessed and it needs to be witnessed by people who are compassionate and not people who get angry listening to people being angry. The presence of people who can listen, and functionally hold the space with another is a powerful form of compassion from my perspective, and I think it has a tremendous healing effect. And if we think about what's going on in Australia or New Zealand or the US or Canada, it's that they need to be heard.*

06 ⟩ Conclusion

At a time where our world is facing many multi-faceted challenges including global conflicts, climate change, threats to democracies, inequality, global pandemics, the rise of artificial intelligence, among others, Paul Gilbert clearly articulates why compassion science, and its future study is important, by stating that *…we need compassion to really open our eyes to the fact that humans are potentially very, very dangerous if we don't regulate our destructive side.*

Those interviewed for this project described in various ways the mental experiences and the evolutionary origins of compassion, the biological structures and processes implicated in compassion, the degree to which compassion is universal and variable across cultures, and documented approaches to fostering compassion. They further explored the potential impact of training compassion on personal well-being, the quality of relationships, organizational success, and society more broadly.

These are all vital areas of study that will continue to guide future directions in compassion science.

Developing the advanced levels of cooperation required for humanity's collective wellbeing will necessitate that we prioritize compassion in all our human endeavours, which is a crucial reason for compassion science to be taken seriously and to be better supported by universities, research centres and by philanthropic donations.

As Sue Carter noted *…while our defensive and aggressive behaviours are viewed as playing a critical role in human survival, our prosocial behaviours including compassion for the suffering of others, are not as widely recognised as positive survival attributes…..so knowledge of the mechanisms underlying the benefits of compassion offers new insights into the healing power of positive social behaviors and social support.*

Compassion is vital for human wellbeing and now researchers, including those referenced in this report are demonstrating how it manifests in the brain. Therefore, advancing the understanding of the neurobiology of compassion and its application in every area of human endeavour will remain an important evidence-based research undertaking well into the future.

Consequently, it is especially encouraging to witness the growth of this academic discipline, as the Oxford Handbook commenced in 2017 and as this project has sought to continue in 2024.

07 — Questions for Future PHD's Studies

Another outcome from this study was the development of PhD questions for consideration by students wanting to investigate compassion science. Below are some potential questions to inspire students in universities across the world.

7.1 DEFINITIONS OF COMPASSION

- Does using matrix approaches to define compassion assist in building consensus on definitions?
- Can acquiring a deeper understanding of the differences between compassion and empathy reduce less burnout in medical professionals?
- How can different culturally infused meanings of compassion affect compassionate behaviors and the engagement in compassion training?

7.2 DRIVING COMPASSIONATE ACTION

- New advances in mapping the neural substrates that enable compassionate practices to mediate psychological distress of witnessing suffering.
- How does compassionate action (towards others and oneself) operate/change over time under challenging circumstances (e.g., personal, professional, societal)
- Are the Inhibitors of compassionate action changing and if so, How?
- Mis-perceptions of Compassion – Does addressing the misgivings / misunderstandings of self-compassion improve self-compassion?
- Developing more robust measures of compassionate behavior / action.
- What are the key internal and external inhibitors and facilitators of compassionate action/behaviour?

7.3 UNLOCKING COMPASSION

- An investigation of what motivates children to engage in costly types of prosocial behaviours.
- What external factors impinge on our capacity to be compassionate – are these changing?
- How can we develop compassion towards those who we might be more resistant to be compassionate towards (e.g., outgroup members, people we dislike/do not agree with)
- What neurobiological and psychological processes underpin the unlocking of compassion?
- What type of intervention/practices are more effective in unlocking compassion?

7.4 COMPASSION TRAINING

- New approaches to compassion training – what works best in the Digital Age?
- How do different types of contemplative training impact the basic processes that better support compassionate responding?
- What factors best sustain compassion practices – moving from imposed compliance to choosing everyday practice.
- How are parenting practices improved with compassion interventions?
- Examining the mechanisms of change underlying different compassion focused interventions and practices.
- Exploring neurobiological mechanisms underlying specific compassion practices.
- How does compassion mediate the psychological distress of witnessing suffering?
- Improving the ways of sustaining compassion practice – moving from compliance to practice

7.5 EXPANDING COMPASSION-BASED RESEARCH

- What are the factors that interrupt our ability to create compassionate environments that are safe for human development?
- An overview of the new measures of self-compassion – from trait scale - to state scale - tools that measure fears, blocks & resistances.
- How is compassion measured and promoted at a collective level? Does compassion at a collective level influence systematic change (i.e. policies, legislation, governance)?
- What do we lose and what do we gain when translating compassion research from the laboratory to the real world?
- What is the nature of compassion inhibitors and does addressing them increase the use of compassion in different domains of life?
- How do we cultivate compassion across different cultural settings?
- Better understanding the measures of oxytocin levels as a receptor for compassion.
- Does improving the psychological well-being of employees through compassion interventions, mitigate the negative behaviours within businesses that can disrupt valuable innovations? If so, how?
- From the laboratory to the real world - exploring the new methods of translating compassion research.

7.6 COMPASSION AS A GLOBAL CHANGE AGENT

- How can innate human qualities and motivations, including compassion be embedded in government policies such as climate change?
- What are the incentives that can best overturn humanity's harmful side and indifference to compassion?
- What impact will the rise of radical governments have on their inhabitants' capacity for compassion to perceived in-groups/out-groups?
- Moving from individual outcomes to collective and systemic outcomes/changes in compassion training.
- How do we best support human vulnerabilities through the use of compassion-based approaches for vulnerable groups in society?
- How can compassion focused interventions / training produce systemic and collective change?

Appendix 1

List of Compassion Research Centres and Institutes

COMPASSION CENTRE	COUNTRY
Centre for Mindfulness and Compassion – University of Bath	UK
Body, Heart, and Mind in Business Research Group – University of Sydney	AUST
Center for Compassion Studies – University of Arizona	USA
Center for Compassion and Altruism Research and Education (CCARE) – Stanford University Medical School	USA
Center for Contemplative Science and Compassion-Based Ethics – Emory University	USA
Center for Mindfulness and Compassion – Cambridge Health Alliance - Harvard Medical School Teaching Hospital	USA
Center for Mindfulness, Compassion and Resilience – Arizona State University	USA
Centre for Consciousness and Contemplative Studies – The University of Melbourne	AUST
Centre for Healthy Minds - University of Wisconsin – Madison Wisconsin	USA
Center for Research in Neuropsychology and Cognitive and Behavioral Intervention – University of Coimbra	EU
The Compassion Mind Research Group – University of Queensland	AUST
Compassion and Wellbeing Research Centre – University of Derby	UK
Compassionate Communities Centre of Expertise – Vrije Universiteit Brussel	EU
Social Neuroscience Lab - Max Planck Society Berlin	EU
Global Compassion Initiative – University of Edinburgh	UK
Greater Good Science Center – University of California-Berkely, California	USA
Max Planck Institute - Frankfurt am Main, Hessen	EU
The Monash Centre for Consciousness and Contemplative Studies – Monash University	AUST
T. Denny Sanford Institute for Empathy and Compassion – University of California San Diego	USA
Centre for Emotional Intelligence – Yale University	USA

Dear

We are writing to you as an author of a chapter in the 2017 Oxford Handbook of Compassion Science to invite you to participate in a project that is exploring Future Research Directions in Compassion Science.

As you are aware Compassion Science is an emerging field of research, and the Oxford Handbook of Compassion Science was the first leading academic publication to synthesis the theory and application of this discipline with contributions from world leading experts, such as yourself.

In this current project we plan to speak with the chapter contributors in online interviews of 15-20mins to ask each interviewee three questions:

• What did you posit in your Handbook chapter in 2017?

• What has occurred in this research area since that time?

• What implications does that have for future research directions?

In addition, at the end of the interviews we will collate all the ideas that have emerged into a set of research questions for distribution to compassion research centres and institutes in universities across the world for consideration by their PhD students.

If you are willing to reflect on the questions above as they apply to your Chapter, I (Lynne) would very much appreciate speaking with you.

If you can send me a day that suits you, at a time that suits us both, then I will send you a Zoom link for our 15-20min conversation. (I am based in Melbourne, Australia)

Please confirm your interest via reply email.

Warm wishes,

Dr Lynne Reeder – Adjunct Research Fellow, Federation University Australia
www.charterforcompassion.org

Dr Marcela Matos – Clinical Psychologist, Auxiliary Researcher, University of Coimbra, Portugal
https://globalcompassioncoalition.org/

Links to the Full Interviews with Interviewees:

Prof C Sue Carter
https://fedflix.federation.edu.au/media/Sue%20Carter/1_837yh6hs

Prof Paul Condon
https://fedflix.federation.edu.au/media/Paul%20Condon/1_pljtv6x0

Dr Lisa Flook
https://fedflix.federation.edu.au/media/Lisa%20Flook/1_w45dt1lt

Prof Tracy Spinrad
https://fedflix.federation.edu.au/media/Tracey%20Spinrad/1_kvomfwlm

Dr Inbal Ben-Ami Bartal
https://fedflix.federation.edu.au/media/Inbal%20Bartel/1_r0wxhydy

Assoc Prof Daniel Martin
https://fedflix.federation.edu.au/media/Dan%20Martin/1_92tlbd3e

Dr Jenny Mascaro
https://fedflix.federation.edu.au/media/Jenny%20Mascaro/1_fyjgjv5g

Prof Dr Tania Singer
https://fedflix.federation.edu.au/media/Tania%20Singer/1_b1kc2tne

Assoc Prof Kristin Neff
https://fedflix.federation.edu.au/media/Kristin%20Neff/1_mpqkskuj

Prof Stephen Porges
https://fedflix.federation.edu.au/media/Stephen%20Porges/1_qxg5dbia

Dr Chris Germer
https://fedflix.federation.edu.au/media/Dr%20Chris%20Germer/1_qppx52i5

Prof Paul Gilbert
https://fedflix.federation.edu.au/media/Paul%20Gilbert%20/1_2n4czfnw

Prof Emiliana Simon-Thomas
https://fedflix.federation.edu.au/media/Future%20Directions%20in%20Compassion%20Science/1_we0y7q3a

Assoc Prof James Kirby
https://fedflix.federation.edu.au/media/Research%20Directions%20in%20Compassion%20Science%20-%20Dr%20James%20Kirby/1_qdyilucc

Dr Alea Skwara
https://fedflix.federation.edu.au/media/Alea%20Skwara/1_93ighi6k

RECENT PAPERS FROM THE CHAPTER AUTHORS

If you would like to read more of what these authors are currently writing here are some recent papers:

Berry, M. P., Lutz, J., Schuman-Olivier, Z., Germer, C., Pollak, S., Edwards, R. R., Gardiner, P., Desbordes, G., & Napadow, V. (2020). Brief Self-Compassion Training Alters Neural Responses to Evoked Pain for Chronic Low Back Pain: A Pilot Study. Pain Medicine, 21(10), 2172–2185. https://doi.org/10.1093/pm/pnaa178

Carter. (2019). A focus on biology: Peptide pathways to human evolution. Open Access Government. Retrieved March 2, 2024, from https://www.openaccessgovernment.org/peptide-pathways/75184/

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