

**Sense of agency: an interpersonally situated  
embodied approach**

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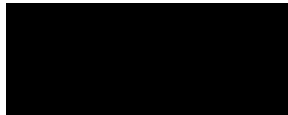
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This thesis is presented for the degree of PhD in Psychology

### **Statement of Originality**

I certify that this thesis “Sense of agency: an interpersonally situated embodied approach” has not previously been submitted for a degree or diploma at any university.

To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.



Catherine Deans (40535185)

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## Thesis Abstract

From button presses to loss of volition in depression, delusions of control in schizophrenia and anarchic hand syndrome, sense of agency has been related to a wide range of clinical and everyday phenomena. Does this concept—sense of agency—really have such a broad scope? In this thesis, I argue that it does. I suggest underlying commonalities and differences that need to be clarified if cross disciplinary discussions are to be fruitful. I also suggest ways of conceptualising implicit sense of agency and the relationship between reflective and pre-reflective forms, which are more closely aligned with clinical experiences of diminished sense of agency. Having established the broad scope of this complex construct, I suggest that whilst sense of agency research has proliferated in recent years—particularly in the fields of cognitive science, philosophy of mind and neuroscience—this fascinating work often neglects the interpersonal and emotional aspects of this concept. It is only recently that such aspects have begun to be included both empirically and theoretically. Focusing on the interpersonal and emotional aspects of sense of agency, I offer an account of its development in infancy, highlighting the interpersonal, embodied nature of intention formation and early experiences of contingency between actions and their effects. I explore the ramifications of this developmental account for adult experience of sense of agency, suggesting that the interpersonal and emotional aspects of the construct extend right down to the level of motor processes. I examine this way of approaching the concept in light of what it can reveal about diminished sense of agency in depression.

## **Chapter 1: General Introduction**

### **Significance of sense of agency**

In the words of one person suffering with depression: “your whole body struggles to move and [...] moving it is like pushing your way through treacle” (as cited in Ratcliffe, 2009, p.169). When sense of agency goes awry, it can have devastating consequences. Lack of volition in depression (Haggard & Chambon, 2012; Matthew Ratcliffe, 2013; Slaby, Paskaleva, & Stephan, 2013), delusions of control in schizophrenia (Farrer & Franck, 2011; Fuchs, 2005; Gerrans, 2015), agnosia for hemiplegia (Fotopoulou, Rudd, Holmes, & Kopelman, 2009; Nardone, Ward, Fotopoulou, & Turnbull, 2008) and experiences of lack of agency in trauma (Ataria, 2015) are just four examples of the life-altering impact of disruptions to sense of agency.

The degree to which our actions are caused or generated by us—rather than compelled, reactive, driven, or subject to external causes—is a fascinating subject for sense of agency research. This includes whether I can attribute agency for a given action to myself (i.e., ‘I did that’) and to what degree the first-order phenomenological sense of agency is present (i.e., to what degree I experience the action as fully caused or generated by me). Sense of agency in the context of everyday actions may seem trivial, and it is largely phenomenologically recessive—it is simply part of our experience of action and does not require us to attend to it. However, clinical applications are crucial. In addition to the clinical disorders mentioned above, further examples in which sense of agency is reduced include compulsive action in obsessive compulsive disorder (Belayachi & Van der Linden, 2010; Ezrati, Sherman, & Dar, 2018; Gentsch, Schutz-Bosbach, Endrass, & Kathmann, 2012; Moore, 2016; Oren, Friedmann, & Dar, 2016), feelings of loss of control in anxiety (Gallagher & Trigg, 2016) and compulsive behaviour in addiction (Riddle, Rosen, & Morsella, 2015). Delusions of alien control is one of the paradigmatic examples of loss of sense of agency (Stephens & Graham, 2000). Whilst each of these disorders involves a disruption to sense of agency, it remains controversial as to whether this disruption may or

may not reflect varying degrees of underlying disruption of agency itself. Regardless of one's stance on that conceptual and empirical issue, it is probable that the disruption of sense of agency itself is clinically important. There are also everyday experiences in which one has a diminished degree of sense of agency. Even the customary linguistic expression of this, such as 'I found myself doing x', indicates some sense in which the referent action is not experienced as initiated in a completely voluntary manner. Similarly, there are everyday events when two people may disagree as to who was the initiator of an action-outcome pairing (for example, in some forms of dance, or in arguments). A further application of sense of agency research is in the criminal justice system. Sense of agency has been posited as underpinning the insanity defence (Garvey, 2018). It has also been related to cases more generally, in which it is imperative to determine the degree to which an action was engaged in voluntarily—with intent—and whether the outcome was foreseeable (Haggard, 2017). Sense of agency has been related to healthy ageing (Moore, 2016), community intervention programs (Gallagher, 2013), and human-computer interfacing (Coyle et al., 2012). Given the wide array of health and legal applications of sense of agency research, it is crucial that we gain a greater understanding of the ways in which it goes awry, and how to prevent this from occurring.

### **What is sense of agency?**

Whilst a nice, clear definition of the subject at hand would be a traditional way to begin a thesis, part of the impetus for this thesis is that no such definition is available—at least, none that captures the complexity of the concept of sense of agency. Whilst this could be viewed as an indication that different concepts have been subsumed under the same term, I argue instead for a broad understanding of sense of agency. Available definitions suggest sense of agency involves the 'experience' of 'voluntary' action by 'generating', 'initiating' or 'causing' actions. It has also been related to experiences of action-effect contingencies and 'intended' or 'predicted' effects. Definitions vary across disciplines and within disciplines. In



the first article of this thesis by publication (*Sense of agency—what sense can we make sense of it? A critical overview*) which forms Chapter 2, I hope to demonstrate that an approach that acknowledges the full breadth of this concept is needed. I aim to show that sense of agency is applied and researched across multiple disciplines and multiple factors, including: processes (high-level conceptual and low-level motor processes), levels of awareness (including reflectively conscious, pre-reflective, and unconscious) time scales (retrospective, prospective, situated and long-term) and units of analysis (for example, specific motor actions, psychological episodes, tasks; also see Gallagher, 2013). I suggest that Haggard (2017) is correct when he suggests that “the core of sense of agency...is the association between a voluntary action and an outcome” (p. 198) but that this extends to a much broader array of phenomenon and that this broad approach is *already* a part of the way in which sense of agency is conceptualised within cognitive science. In the aforementioned paper, I give an overview of the various conceptualisations of sense of agency which can be grouped roughly into ‘bottom-up’, ‘top-down’ and integrative approaches (Braun et al., 2018; Haggard, 2017; Moore & Fletcher, 2012). I also give an overview of current ways of conceptualising sense of agency across factors and posit revisions to these accounts. The recent proliferation of sense of agency research is exciting, and it is important that the conceptual basis for this important phenomenon is as clear as possible.

### **Program of research offered in this dissertation**

This thesis by publication begins with a conceptual overview and critical discussion of sense of agency research. This is followed by an examination of the development of sense of agency in infancy, particularly the embodied, interpersonal nature of sense of agency development. The third paper includes an exploration of how the developmental account posited can add detail and depth to current ambiguities in sense of agency research, particularly regarding sense of agency as interpersonally situated and involving variously

activated affects emotions and motivations. Finally, I acknowledge that sense of agency disruption can involve a diverse range of psychopathology. I focus on depression and sense of agency, applying the insights gained in the previous two papers to better understand how disruption to sense of agency manifests in depressive illness. What follows this brief outline is a more detailed outline of the contributions of each chapter.

Chapter 1, *General Introduction* (the current chapter), provides a short introduction to sense of agency—why it matters and some of the complexities regarding approaches to sense of agency. This chapter is intentionally brief: the bulk of the introduction to approaches and models of sense of agency and the conceptual difficulties faced in the field are the subject of the first publication of the thesis (which forms Chapter 2).

In Chapter 2, *Sense of agency: what sense can we make of it? A critical overview*, I outline the sense of agency literature and engage in critical discussion regarding overlooked aspects of sense of agency. Sense of agency research, as it has been approached within cognitive science and philosophy of mind, has primarily focussed on specific motor actions. However, in Chapter 2, I argue that the conceptual creep towards more complex and broad aspects of sense of agency is evident even within this research—although it remains relatively unacknowledged (there are exceptions, such as Gallagher 2012; 2013; 2017; Pacherie, 2008). Engagement with more conceptual-level complexity is needed. It is this complexity that the current thesis explores, building on that already introduced by other scholars (see, for example: Bayne, 2017; Bayne & Levy, 2006; Bayne & Pacherie, 2007; Gallagher, 2012, 2013; Moore et al., 2012; Pacherie, 2007, 2008). In understanding the relationship between psychopathology and sense of agency, an approach which actively explores individual differences is crucial. I argue that the influence of long-term sense of agency has been relatively overlooked, particularly implicit aspects that constrain felt capacity to act and that structure possibility in ways outside of awareness (see also Gallagher, 2012, 2013; Ratcliffe, 2012, 2013). I also suggest that whilst aspects of prospective sense of

agency have received more attention in the literature, the socially situated nature of intention formation and the necessarily affective emotive aspects of actions in the context of what matters to one have received comparatively little attention (for exceptions see, for example Slaby, 2012; Slaby et al., 2013; Slaby & Wüschner, 2014). The need for more ecologically valid empirical paradigms is also discussed.

Chapter 3, *The interpersonal development of an embodied sense of agency*, offers a contribution following the call from David et al. (2015) that numerous questions in sense of agency research remain unanswered, such as ‘how...sense of agency develop[s] across the lifespan’ (p. 2). This chapter presents an approach to the development of a sense of agency that emphasises the embodied, interpersonal exchanges that occur in infancy and form the environment in which we first experience sense of agency. I highlight the manner in which we first experience action-effect contingencies. In doing so, I argue for the importance of interpersonal attunement and the ‘good-enough’ contingent responsiveness of caregivers. I also explore the ramifications of early environments in which opportunities for experiences of adequate contingent-responsiveness are diminished.

Chapter 4, *Sense of agency: an interpersonally situated, embodied approach*, builds on the conceptualisation advanced in Chapter 3, examining the ramifications of the interpersonal, embodied approach for understanding sense of agency in adults. Here, the connection between emotion and agency is crucial. After reviewing the existing literature on emotion and sense of agency, I offer an integrated conceptualisation of sense of agency. In doing so, I consider the impact of the varying availability of emotions and motivations to awareness and its influence on sense of agency. I also advance an account of sense of agency that acknowledges the history we bring to action. I consider the already well-developed notions within fields such as attachment theory and psychoanalysis in approaching the question of how best to conceptualise this history. Furthermore, I posit additional aspects of implicit sense of agency that have been relatively overlooked. The relationship between

levels of pre-reflective and reflective sense of agency is also discussed, and common conceptualisations of concordance between levels leading to increased sense of agency are questioned. Differences between sense of agency and sense of control are also explored, and suggestions made to increase the ease of interdisciplinary collaboration.

Chapter 5, *Diminished sense of agency in depressive experience: an embodied, interpersonal approach*, seeks to apply the conceptual approach developed within this thesis to examine diminished sense of agency in depressive experience. Here, I draw on phenomenological accounts to demonstrate the interpersonal, embodied aspects of sense of agency that are altered in depressive experience. I then suggest an account of long-term and prospective sense of agency that includes an understanding of additional aspects of implicit sense of agency (an account of which was developed in the previous chapters) that has similarities, and important differences, to Ratcliffe's (2014, 2018) notion of existential feelings. I examine therapeutic approaches and offer some suggestions regarding the assessment and treatment of depression based on the analysis of sense of agency developed within this thesis. In doing so, I explore ways in which existential feelings, such as hopelessness, which are implicated in depressive experience of diminished sense of agency, can be regulated.

Chapter 6, *General Discussion and Conclusion*, includes an exploration of the empirical and clinical applications of this thesis and a discussion of the conclusions reached within this program of research. Given the theoretical nature of this thesis, I felt it important to highlight ways in which the findings contained herein may give rise to actionable changes in the way that empirical research is conducted and to hypotheses regarding applications in clinical treatment (which would benefit from validation through further research before implementation). I also discuss further directions for research, including suggestions for exploration of: the culturally situated nature of sense of agency; interdisciplinary collaboration, particularly involving clinical context; and notions of self and sense of agency.

## **Rationale for approach**

This thesis takes an interdisciplinary approach, exploring sense of agency from the perspectives of cognitive science, philosophy of mind, phenomenology, infant research and psychoanalysis. As such, decisions were made to focus on areas most relevant to current debates and gaps in the sense of agency literature as I see them, including: conceptual ambiguities in sense of agency, including how levels of sense of agency (low-level motor processes and higher-level reflective processes) interrelate; sense of agency as socially situated; the development of sense of agency; and the influence of emotions, affects and drives on sense of agency.

I draw on developmental literature, including infant research, attachment theory and psychoanalytic approaches, in part to address the call by David et al. (2015) for a greater understanding of sense of agency across the lifespan. Considering the development of sense of agency in infancy can also provide a more detailed understanding of the ways in which sense of agency goes awry in adulthood. Such an approach to understanding psychopathology has a long history, and it has recently enjoyed renewed interest and support outside of the psychoanalytic domains in which it has historically been common (Luyten & Fonagy, 2018; NIMH, 2012).

The rationale for drawing on psychoanalysis at a time when it is far from intellectually fashionable is multi-fold. In addition to categorical symptom-based approaches to psychopathology employed in dominant diagnostic paradigms such as the Diagnostic and Statistical Manual of Mental Disorders (for example, DSM V), many researchers, clinicians and philosophers have argued for the importance of the inclusion of subjective and intersubjective approaches in understanding mental health disorders (see for example Fuchs, 2010; Luyten, Blatt, Van Houdenhove, & Corveleyn, 2006; Luyten & Fonagy, 2018; Ratcliffe, 2018). Psychoanalysis is a practice concerned with subjective and intersubjective

experience, and there exist few other avenues where such detailed observation and case studies have been conducted and refined over time. Varela, Thomson and Rosch (2017) suggest that psychoanalysis and Buddhist mindfulness are the two primary traditions of practical engagement involving detailed, ongoing attention to the nature of the mind. Whilst Varela et al., (2017) focus on the tradition of Buddhist practice, I focus instead on psychoanalysis. Valuable insights can be gained from considering hypotheses put forward in this body of work. The detailed observational work done by analysts and analysts in training is largely unrivalled, involving, for example, observing infants once weekly for an hour at a time for the first two years of life. The rigours of reflection on subjective and intersubjective states, both in supervision with senior colleagues and in the moment in the room, also form part of infant observation practice (Bick, 1964; Briggs, 2002; Cohen, 2018; Reid, 2013). The practice of seeing patients 4-5 times per week for 50 minutes at a time, often over multiple years, also means that analysts may be uniquely placed to comment on the subjective and intersubjective experiences of human beings in their myriad complexity (Bromberg, 2014; Mitchell, 2014; Shedler, 2010). In a thesis focused on the *sense of* agency, rather than agency in any veridical or metaphysical sense, psychoanalytic thinking may provide a window on phenomena that would otherwise remain hard to reach.

Psychoanalysis and infant research fields have benefited greatly from ideas taken from cognitive science and philosophy of mind. This can be seen, for example, in dynamic systems approaches integrated into psychoanalysis and infant research (see (BCPSG, 2013; Demos, 2007; Sander, 2002; Tronick et al., 1998); enactivist approaches (for example, see Lyons-Ruth, 1999); and embodied cognition approaches (see Emde, 2007; Fonagy & Target, 2007; Shai & Fonagy, 2014). However, as Fonagy and Target (2007) point out, these approaches themselves resonate with much longstanding theory in psychoanalysis (and, to a lesser extent, attachment theory). They state that the “idea of the mind comprehensively expressing itself exclusively through bodily referents was there in Freud’s aphorism ‘The ego

... is first and foremost a body-ego' (1923, pp. 26–27)" (p. 424). I believe a bidirectional influence between psychoanalysis and other disciplines could be mutually beneficial and illuminating, particularly where subjective and inter-subjective clinical phenomena are the subject of analysis (and the amusing synchrony between this notion and the ideas contained within this thesis is not lost on me).

I chose to draw on cognitive scientific approaches because of the current proliferation of research on sense of agency in this field and the intriguing and courageous mix of concepts contained therein. The focus on empirical validation of models and theories presents interesting challenges. In the discussion section of this thesis (Chapter 6), I outline some of the applications of the conceptual approach I have developed for empirical studies and posit some suggestions regarding increased ecological validity and novel (for this context) measures of implicit sense of agency.

Philosophy of mind approaches to sense of agency continue to engage with interdisciplinary critique of conceptualisations of sense of agency in cognitive science, as well as building on a rich philosophical history of engagement with questions pertaining to important elements of sense of agency research (see, for example, Bayne, 2013, 2017; Bayne & Levy, 2006; Bayne & Pacherie, 2007; Gallagher, 2007, 2012, 2013; Gallagher & Trigg, 2016; Gerrans, 2015; Grunbaum, 2008; Grünbaum, 2015; Hohwy, 2007; Mitchell, 2014; Pacherie, 2008; Slaby, 2012; Slaby & Wüschner, 2014). Indeed, the broad approach I argue for in Chapter 2 suggests a greater recognition of the rich theory already developed within philosophy. As I see it, contemporary approaches within multiple disciplines currently do not give full recognition to the vast wealth of accounts already developed. Approaches to sense of agency within contemporary philosophy of mind are varied, and I have attempted to draw on many of them. The aim of this thesis is integrative and not aligned with a specific theory or approach.

*A note on terminology*

The term ‘pre-reflective’ has a somewhat different meaning when approached from different disciplines. Within a psychoanalytic context, it has been used in relation to ‘pre-reflective unconscious’ processes, which include ‘a system of organizing principles formed in a lifetime of relational experiences, that pattern and thematise our lived experience [and that] operate outside of reflective self-awareness’ (Stolorow, as cited in Kenny, 2013, p.201). As I describe it in Chapter 3, ‘pre-reflective sense of agency is formed (primarily, although not only) during infancy and typically remains outside of awareness, but might nonetheless become subject to reflection later in life’. I note in this chapter that “this use of the term ‘pre-reflective’ differs from the way scholars such as Gallagher (2012) use the term, wherein ‘pre-reflective’ SoA [sense of agency] refers instead to SoA that is phenomenologically recessive; that is, it is not usually within the realm of explicit awareness but could nonetheless become the object of awareness if attention were directed towards it”. Thus, the term ‘pre-reflective’ will be used in this thesis to refer to both aspects of sense of agency. Wherever possible, what this term is being used to capture will be made explicit.

*A note on form*

This is a ‘thesis by publication’ which requires each individual article to be crafted in a form which allows for immediate submission to the selected journal (or which contains already published articles). As such, there is some overlap in content between the articles (which form Chapters 2 through to 5 of this thesis) due to the necessity of outlining relevant concepts in each paper so that each paper may stand alone. One chapter of this thesis by publication has already been published. Chapter 3, *The interpersonal development of an embodied sense of agency*, was published in the journal *Psychology of Consciousness: Theory, Research, and Practice*. I co-authored this journal article with Doris McIlwain and Andrew Geeves. The paper was based on a conference presentation I researched and wrote in full, and delivered to the *British Psychological Society, Somatic Consciousness* conference at



Cambridge University. I am grateful to the audience members for the ideas generated in the discussion following that presentation. I researched and drafted the journal manuscript in full, with the exception of the specific example of attunement involving the ‘delighted gestural shimmy’ which Doris McIlwain so eloquently described. Doris also commented on the manuscript and was very involved in discussions regarding the content. Andrew Geeves contributed to a re-structure of the sequence of the paper, and John Sutton provided very helpful comments and edits.

Thesis by publication regulations require each paper to be formatted according to the requirements of the journal to which submission is planned or in which the paper has already been published. As such, while formatting is consistent within chapters, it is not consistent across chapters. In order to increase the ease with which the papers fit together as a thesis, and in accordance with thesis by publication requirements, I have provided linking sections at the beginning of each chapter. I have also provided linking statements in parentheses within the text of the publication chapters in order to assist in the ease of reading the papers as a coherent interrelated body of work. The statements within parentheses will be removed prior to journal submission. Please also note that the text within this thesis is formatted in accordance with thesis submission requirements for double-spacing and Australian English, however prior to the submission of each paper to the targeted journal this will be altered in accordance with the specific journal requirements. I have used the American Psychological Association Sixth Edition referencing style for the General Introduction (Chapter 1) and the General Discussion and Conclusion (Chapter 6) in accordance with conventions for the submission of a PhD in Psychology.

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## **Chapter 2: Sense of agency: what sense can we make of it? A critical overview.**

This chapter sets out to provide a brief overview of sense of agency research, to critically engage with the sense of agency literature and to establish areas of conceptual ambiguity. Specifically, this chapter aims to establish an argument for the broad scope of sense of agency research, and I suggest that this broad scope is already employed in discussions of applications of empirical research—though this is rarely acknowledged. Open acknowledgement of the scope of sense of agency brings to light various conceptual problems facing this field of research. This includes a clearer understanding of the relationship between a number of factors that vary across disciplines. Approaches that contribute to the conceptualisation of sense of agency across factors will be examined. I identify a number of persisting problems and argue for revisions to increase conceptual clarity. Some of the conceptual difficulties faced by sense of agency research will be addressed in greater detail in subsequent chapters of this thesis.

This chapter is composed of a paper that has been prepared for publication as a *Hypothesis and Theory* article in the journal *Frontiers in Human Neuroscience*. As such, it has been formatted in the style required for that journal. Reaching an audience of cognitive scientists engaged in sense of agency research was the priority for this piece of work, hence the choice of a journal that has a history of publishing theoretical and empirical work in this specialised field. I researched and drafted the manuscript in full. Neil Levy provided invaluable support in commenting on the manuscript and provided extremely helpful suggestions. Vince Polito's comments and suggestions were also exceptionally helpful. Wayne Christensen generously commented on a draft of the manuscript.

RUNNING HEAD: Sense of agency: a critical overview

**Sense of agency: what sense can we make of it? A critical overview**

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### Abstract

Research into sense of agency has typically included investigations of this concept across a wide array of factors, including levels of awareness, processes (including low-level motor processes and higher-level conceptual processes), time scales and units of analysis. This often occurs without adequate discussion of how these levels and processes are linked conceptually. This matters—not only in a theoretical sense—but also practically insofar as it can lead to recommendations for clinical treatment and assessment that, whilst they might turn out to be true, do not yet have sufficient evidence to support them. I argue that Haggard’s (2017) view that ‘the core of sense of agency... is the association between a voluntary action and an outcome’ (p. 198) extends beyond the realm of specific motor processes and instead applies to sense of agency phenomena more broadly. I suggest an approach to sense of agency research in which the factors mentioned above are made explicit. A number of additional problems for sense of agency research are discussed, including: the confusion between within-self processes and those that pertain to self/other distinctions; long term and prospective sense of agency, including contributions from our interpersonal, affective histories of embodied action and individual differences; and sense of agency in the context of multiply motivated self-systems.

**Keywords:** *sense of agency, review, situated, long-term, prospective, interpersonal*

## Introduction

Recently, sense of agency research has proliferated, particularly in the fields of cognitive science, philosophy of mind, and neuroscience (David et al., 2015). The term—sense of agency—has been used to refer to processes contributing to delusions of control in schizophrenia (Frith et al., 2000; Stephens and Graham, 2000; Frith, 2013), lack of volition in depression (Fuchs, 2005; Ratcliffe, 2014), a lack of the experience of generating movements in disorders such as anarchic hand syndrome (Della Sala et al., 1991) and diminished engagement in health intervention programs at a community level (Gallagher, 2013) to name just a few examples. Does one concept really span such a broad scope? I suggest that it does.

Despite the proliferation of papers written on this intriguing topic, few authors have attempted to approach the broad scope of this phenomenon in such a way as to bring clarity to how (and indeed if) these various aspects of what is referred to as ‘sense of agency’ hang together. I believe there is more to add to the discussion regarding the breadth of phenomena to which sense of agency is purported to relate and just how the concept may be extended in such a way. This is particularly urgent given the extrapolation of some empirical findings to applications for the clinical treatment of a range of mental health disorders. For example, suggestions have been made for the use of implicit measures such as intentional binding (explained below) in the assessment and treatment monitoring of psychiatric disorders (Obhi et al., 2012; Barlas and Obhi, 2013; Braun et al., 2018). Further applications of sense of agency research have also been extended to questions of voluntary action, intent and responsibility in the legal system, such as accountability in circumstances of prolonged abuse (Haggard, 2017), high emotional intensity (Christensen et al., 2016) or delusional beliefs (Garvey, 2018). As such, the stakes are potentially quite high.

After providing a brief outline of the scope and approaches to sense of agency, I suggest that the two key aspects of the concept suggested by Haggard (2017) in relation to

specific motor action also extend to the broad notion of sense of agency established here and extend disciplinary lines. I suggest interdisciplinary discussions could benefit from the specification of key factors that vary between approaches and disciplines, including unit of analysis (Gallagher, 2013), level of awareness, timing and processes involved. I consider approaches that have advanced theories to conceptualise sense of agency in its broad form across some or all of these factors (Pacherie, 2008; Synofzik et al., 2008; Gallagher, 2012; 2013; Gallagher and Trigg, 2016; Mylopoulos and Pacherie, 2018). Following this, I posit some revisions to the conceptualisation across factors and to the broad notion of sense of agency. Greater clarification of the role and nature of long-term and prospective sense of agency is needed, and I offer a number of suggestions.

### **Scope of sense of agency**

The breadth of the scope of sense of agency is rarely explicitly acknowledged in cognitive scientific research, although it is evident in many empirical, theoretical and review articles in this field. For example, in a recent review for *Nature*, Haggard (2017) highlighted the relevance and importance of sense of agency research, stating that:

[I]n a major epidemiological study of work and well-being, a strong sense of agency (gained, for example, by making one's own decisions rather than executing routine tasks) was identified as a major determinant of health. Disruptions of the sense of agency (for example, in movement disorders or as a result of psychopathology) have major implications for quality of life (p. 197).

This statement serves to highlight the sheer breadth of the phenomena associated with sense of agency. This ambitious scope is by no means confined to this particular review (Moore and Fletcher, 2012b; David et al., 2015; Moore, 2016). Whilst it may indeed turn out to be the case that statements such as this are correct, I would like to suggest that what is required first is the overt acknowledgement that such a broad conceptual bow is being drawn. With acknowledgement of the conceptual scope of sense of agency comes the project of

developing an understanding of the way that the various aspects of sense of agency hang together, particularly across factors such as levels of awareness, processes (including motor actions, thoughts, emotional and motivational processes), time scales and units of analysis. I expand on this in the sections below.

Some researchers describe a lack of homogeneity within the concept of sense of agency (Synofzik et al., 2008; Braun et al., 2018). However, such statements are typically brief, and arguments have not been elaborated. Gallagher (2013) has put forward a ‘multiple aspects’ approach, which I hope to build upon here. He has also suggested that there is an inherent ambiguity in the sense of agency concept, above and beyond any lack of clarity in current conceptualisations of it. Whilst I acknowledge that there is a level of ambiguity in the manner Gallagher describes (discussed further below), the task of increasing the specificity and explanatory power of this concept and mapping the specific levels and aspects of sense of agency onto the various clinical and everyday phenomena to which they are relevant still remains. Cue integration approaches could also be viewed as contributing to this project, and whilst such approaches are valuable, I suggest that there is a need for greater detail to be worked out—particularly in attempting to account for individual differences in sense of agency and how these come about. This is particularly important in considering disorders in which sense of agency is altered, such as depression.

#### *A note on sense of agency and free will*

Engagement with the concept of sense of agency has sometimes included debates about free will. For example, Wegner’s ‘theory of apparent mental causation’ states that we construct or confabulate reasons for why we acted in the way that we have, believing that we must have consciously willed our actions even in the absence of phenomenological experiences of having done so (Wegner and Wheatley, 1999; Wegner, 2003). While such debates are fascinating and relevant to the concept of agency, the focus of this article is on

the ‘*sense of agency*’, or *experience of agency*, rather than the question of whether there is a veridical sense in which our agency is free or truly voluntary (for interesting discussions regarding free will and sense of agency, see, for example, Bayne, 2016; Gallagher 2006, 2017; Dennett, 2004, 2015).

### **Sense of agency: a brief overview**

The majority of sense of agency research in cognitive science has focused on the level of motor processes. Sense of agency is typically defined as the experience of ‘controlling one’s own actions, and, through them, events in the outside world’ (Haggard and Chambon, 2012, p. R390). Sense of agency has been distinguished from sense of ownership (Gallagher, 2000; Tsakiris and Haggard, 2005; Tsakiris et al., 2006; Tsakiris et al., 2010). In typical experiences of sense of agency, there is usually a concurrent sense of ownership—the actions or thoughts are experienced as one’s own (Gallagher, 2000, but for an alternate view see de Haan and de Bruin, 2010). However, feeling a sense of ownership does not automatically confer agency. For example, if someone is pushed from behind, they may experience a sense of ownership over their stumbling bodily movement but (initially at least) no sense of agency. Another example is the case of reflex movements, such as occurs in the patellar reflex, in which the leg moves involuntarily. Again, in this case an individual may have a sense of ownership of their body but no sense of agency—no experience of having caused a motor movement. In contrast, whenever I engage in a voluntary movement, I experience a sense of agency. But what is this ‘*sense*’ of agency that I experience?

Approaches to this question have typically taken either a bottom-up or top-down view, or as Bayne and Pacherie (2007) describe it, ‘narrator’ approaches in contrast with ‘comparators’. Following their distinction, narrators refers to approaches such as that by Graham and Stephens (1994) who suggest that sense of agency is only present when there is



a concordance between actions and higher order beliefs, desires and intentions. On this view, when a person's beliefs about how they should act or think conflicts with their actions, a lack of sense of agency will result. Whether I experience sense of agency for an action “depends upon whether I take myself to have beliefs and desires of the sort that would rationalise its occurrence in me. If my theory of myself ascribes to me the relevant intentional states, I unproblematically regard this episode as my action. If not, then I must either revise my picture of my intentional states or refuse to acknowledge the episode as my doing” (Graham and Stephens, 1994, p. 102). Wegner's (2002) approach, whilst not wholly narrative (Bayne and Pacherie, 2007), can also be understood under this umbrella, given the view that sense of agency is a mere post-hoc confabulation—that we simply find an ‘artful interpretation to fit them into our view of ourselves as conscious agents’ (Wegner, 2002, p.145). Wegner also argues that sense of agency is influenced by three criteria: priority (the thought or intention to move occurs just prior to the actual movement); consistency (the thought or intention is consistent with the movement); and exclusivity (the absence of alternative more plausible causes).

Similarly, though less often acknowledged, the extensive contributions of psychologist Albert Bandura could also be viewed as relevant here, given the emphasis on top-down belief (see, for example, Bandura, 1982; 1990). Bandura (2000) emphasises the importance of core beliefs of self-efficacy: ‘Among the mechanisms of human agency, none is more focal or pervading than the belief of personal efficacy. The core belief is the foundation of human agency. Unless people believe that they can produce desired effects and forestall undesired ones by their actions, they have little incentive to act” (p. 75). Although Bandura's work has been largely set aside by recent cognitive scientific investigations into sense of agency (although see Haggard, 2017, for examples of both exclusion and inclusion), the broad approach I am arguing for in this paper suggests that such exclusion may be somewhat premature.

An alternative view to the top-down theories, and one that has been prolific in empirical contributions, is the ‘comparator’ approach. Bottom-up or comparator models of sense of agency (Frith et al., 2000; Blakemore and Frith, 2003) suggest that sense of agency can best be explained by sub-personal motor processes that (in typical conceptualisations of the model) do not rely upon executive or central access (Haggard, 2017). Predictor and forward models suggest that when we engage in voluntary action, we generate an efferent signal which predicts the sensory feedback of the movement. This efferent signal then gets compared to a re-afferent signal that results from feedback due to the movement itself. The level of match in this comparison generates the degree of sense of agency—the degree to which the movement is experienced as self-generated. Whilst this model has been helpful in explaining some sense of agency phenomena, it is now usually accepted that it holds only under certain conditions (Haggard, 2017; for a discussion of the limitations of the comparator model, see Synofzik et al., 2008; Gallagher, 2013; Christensen and Grünbaum, 2018). For example, Synofzik et al. (2008) have argued that while the comparator model can account for a *lack* of sense of agency, it cannot account for a *positive experience* of sense of agency given that in such a circumstance, efferent and re-afferent signals cancel each other out and there is no error signal (for an interesting discussion, see Carruthers, 2009; 2012).

Synthesis of the wide array of empirical evidence for both ‘narrator’ and ‘comparator’ aspects of sense of agency has led to cue integration models. One such model is the Multifactorial Weighting Model (MWM) (Synofzik, 2008) that combines factors based on retrospective attribution of sense of agency (in accordance with the top-down approach described earlier) (Stephens and Graham, 2000), comparator model approaches to sense of agency at the level of motor processes (Frith, 2005) and additional agency cues of priority, consistency and exclusivity (Wegner, 2002). More recent versions of the MWM draw on Bayesian Cue Integration Theory (BCIT) (Synofzik et al., 2009; Vosgerau and Synofzik, 2012; Gentsch et al., 2015), in which agency cues from multiple levels are weighted

according to signal reliability (although see Gentsch and Synofzik, 2014 for a discussion regarding alternate weighting considerations). Essentially, the MWM is an integration of the key empirical findings of sense of agency research using BCIT. This has the advantage of drawing upon research findings that suggest there are contributions to sense of agency from retrospective, prospective, sensory motor and intentional level processes. However, this pragmatic, empirically driven approach does not provide a detailed explanation of individual variability in sense of agency. Cue integration models have received much empirical support, however there are still many questions left unanswered regarding the conceptual underpinnings of a coherent sense of agency concept, particularly as it pertains to explaining individual variability in the experience of sense of agency. For example, although there is evidence that individuals with schizophrenia experience more noise associated with internal signals relating to agency, and thus rely more heavily on external signals and experience increased salience of external events, the theory is somewhat thin with regards to the reasons *why* there is an increase in noise of internal signals (Franck et al., 2001; see also Moore, 2016, for a review). If cue integration models are to provide a true explanatory account, they need to explain how such differences in reliability weightings come about. Further, given the “occasionality problem” (see Carruthers, 2014, for a discussion) and the affective and cultural aspects of the disorder (the “problem of specificity”, Gallagher, 2007) the model also needs to account for within-individual differences across time and contexts, as well as between individual differences. Bayesian models fare better when compared to other cue integration models in this respect due to incorporation of ‘priors’ (Körding and Wolpert, 2004; Synofzik et al., 2009; Moore and Fletcher, 2012a), which may include emotive or affective aspects (Gentsch and Synofzik, 2014). Bayesian cue integration models have also been criticised regarding issues of falsifiability (see, for example, Bowers and Davis, 2012). It is beyond the scope of this paper to provide a comprehensive review or discussion of BCIT or predictive coding approaches (but see Howhy, 2007; Friston, 2012 and Clark, 2016; also

see Fotopoulou and Tsakiris, 2017 for an application of a predictive coding approach to sense of bodily ownership).

Models of sense of agency have utilised explicit and implicit measures to empirically test their hypotheses. Implicit measures have relied on variations of sensory attenuation and intentional binding (IB) paradigms (Moore et al., 2012a). IB utilises the finding that perceived time intervals between actions and their outcomes are subjectively compressed in cases of voluntary action compared to cases of involuntary action (Haggard et al., 2002). The degree of IB is taken to indicate the degree to which sense of agency is experienced. Sensory attenuation paradigms, by contrast, take advantage of the finding that voluntary action outcomes are attenuated while involuntary action outcomes are not (Blakemore et al., 2000). The paradigmatic example is that we cannot tickle ourselves—the sensory outcome is attenuated because of the voluntary nature of the action and thus diminished in intensity. Because of the potential for socially desirable responding, implicit measures have been favoured in investigating sense of agency (Haggard, 2017). However, implicit measures are not without controversy. Recent studies have questioned how, or indeed whether, the implicit measure IB actually relates to sense of agency (Buehner and Humphreys, 2009; Desantis et al., 2012; Hughes et al., 2013). It has been suggested that instead of sense of agency, IB may be an indicator of the temporal contiguity of causal events, which could be incorporated as a cue for sense of agency (Desantis et al., 2012). According to this formulation, rather than a direct measure of sense of agency, IB would indicate causal relations between observed events and outcomes, which are not specific to motor predictive control processes (Desantis et al., 2012; Hughes et al., 2013). Explicit measures of sense of agency involve directly asking subjects about their subjective experience of agency, including variations on the question: ‘Did you do that?’ (Moore et al., 2012a; Haggard, 2017). This question is often dichotomous in nature, rather than determining the degree of sense of agency experienced.

The majority of sense of agency research has involved laboratory-based empirical

investigations using paradigms such as button presses and joystick movements with the outcomes of such movements typically depicted on a screen. Recent calls for more ecologically valid research paradigms have included the need to address the socially and culturally situated nature of sense of agency (Gallagher, 2012; Christensen et al., 2016; Gallagher and Trigg, 2016). Gallagher (2013) gives an example of how sense of agency for specific motor actions and action-outcome pairings (in the case of his basketball example—shooting hoops) can be influenced by factors such as the audience in a given circumstance, and one's internal response to this. Christensen et al., (2015) similarly describe the influence of the environmental constraints, including the social environment, on skilled action. Accounts of the phenomenon of 'choking' in high pressure situations similarly speak to the socially situated nature of sense of agency for action (Hill, 2013).

While interpersonal and emotional factors have been more recently acknowledged as influencing sense of agency (Gallagher, 2012; 2013; Gentsch and Synofzik, 2014; Gentsch et al., 2015; Christensen et al., 2016; Gallagher and Trigg, 2016), the way in which this occurs has not been fully elaborated and continues to remain largely absent from a great deal of empirical sense of agency research. More recently, paradigms that involve experiences of coercion (Caspar et al., 2016), manipulations of the degree of personal power experienced (Obhi et al., 2012), as well as experiences of depression (Obhi et al., 2013), have been utilised. However, often the dependent variable in such empirical investigations is an implicit measure such as IB, which, whilst fascinating, has been customarily related to sense of agency for motor actions and it remains unclear as to how these empirical findings relate to sense of agency across different processes and levels of awareness.

The term 'sense of agency' has also been used to refer to agential phenomenology for actions or tasks in a manner akin to what would be described as a sense of empowerment in anthropological, indigenous studies, feminist or public health disciplines (see, for example, Tsey et al., 2005; Hage, 2006; Palmer, 2007; Campbell and Maynell, 2010; McEwan et al.,

2010; Eisold, 2016). One could view Haggard (2017) as referring to this aspect of the sense of agency concept in his reference to the health effects of “making one’s own decisions rather than executing routine tasks” (p. 197). Regarding the culturally situated nature of sense of agency, Gallagher (2013) described how attempts to motivate residents in a community in post-apartheid South Africa to engage in HIV prevention were met with explanations that ‘they were unable to help themselves because “as everyone knew, they were lazy”’ (p. 133). As Gallagher concluded, the far-reaching effects of apartheid had “robbed them of the possibilities for action” (p. 133). While there are many aspects to this complex situation, one aspect that is striking is that the cultural, historical and social context extends right down into specific actions and experiences of choice and felt voluntary action. Going back to Haggard’s (2017) example of the individual who has experienced prolonged abuse, situating this within the social, cultural and political environment seems crucial to understanding this experience of lack of sense of agency (for a case study examining the complex interaction between culture, gender and sense of agency, see Eisold, 2016.)

### **Key aspects of the sense of agency concept**

Haggard (2017) suggests two key aspects of sense of agency for specific motor action. I would like to suggest that these two key aspects are actually common across sense of agency in general, rather than just confined to specific motor action as Haggard has postulated. One common thread that runs through the phenomena associated with sense of agency is the notion that it involves an experience of the action, task, thought, or episode as ‘voluntary’. The second key thread is the connection between an action and its intended outcome, as given in the light switch example (however, see Grunbaum, 2018 for an alternate view). Our sense of agency will be diminished or enhanced based on how we experience the link between our action and the effect it creates in the world. For example, someone with depression may fail to notice the effect of their action, such as their smile lighting up another’s eyes, if the expectation that their action will have no effect is very strong. Thus, the

biases in perception that we bring to both action and outcome perception may influence the degree to which we experience sense of agency and the degree to which we perceive the *link* between action and outcome. As Haggard (2017) puts it: “the core of sense of agency, therefore, is the association between a voluntary action and an outcome” (p. 198). Thus, the key question of what influences the degree to which we experience sense of agency becomes instead: (1) What influences the degree to which an action is *experienced as voluntary*?; and (2) What influences the degree to which a *link* between action and intended outcome is experienced?

This manner of conceptualising sense of agency is consistent, to a large degree, with approaches across disciplines, and it articulates the crux of the sense of agency concept. For example, definitions of sense of agency from a psychotherapeutic approach include: “the experience that we can influence our physical and relational environment, that our own actions and intentions have an effect on and produce a response from those around us” (Knox, 2012, p. 7). Haggard and Chambon (2012) note that ‘most of us have the feeling that we are in control of what we are doing most of the time: this is the normal sense of agency’ (p. R390) and infant developmental accounts suggest that ‘the “sense of agency” refers to the experiential state that one’s actions cause events in the world’ (Zaadnoordijk et al., 2016, p.41). Similarly, authors from the discipline of child-development research define sense of agency as “the feeling that we voluntarily control our actions and, through them, events in the world” (Castelli et al., 2017, p. 56). Definitions from anthropology include: “the capacity of an intentional being or social group to make choices, to perform actions that have intended consequences, to effect results, or to control situations” (Palmer, 2007, p. 1048). While this brief discussion of definitions across disciplines is neither an exhaustive nor systematic review of all definitions of sense of agency, the idea being suggested, which warrants further investigation, is that Haggard’s (2017) suggestion regarding the two key factors extends

across disciplinary lines. If true, this may open up the possibility of greater interdisciplinary cross pollination, provided the factors outlined in the section below are made clear.

### **Factors that vary**

Given the broad scope of sense of agency, being aware of the key differences in the manner in which sense of agency is conceptualised can assist in facilitating generative discussions that extend across disciplinary lines. To this end, I will first outline the factors that vary, before discussing in greater detail how these factors relate to current theories.

Four important factors that vary between and within theories and discussions of sense of agency are: the unit of analysis (such as specific motor action, psychological episode, pragmatic intention); processes involved (such as motor processes, emotions, motivations, thoughts, beliefs); timing (prospective, retrospective, situated, long-term) and the level of awareness (non-conscious, explicitly conscious, in the sense of being the object of awareness, explicitly conscious in the sense of being the object of current deliberation). Researchers rarely clarify where the sense of agency they are discussing sits within these parameters. Such clarification would assist in avoiding the confusion that arises in some discussions of sense of agency, such as those described above. It also demonstrates the broad array of time scales, levels of awareness, variation in processes and multiplicity of units of analysis that are commonly found in sense of agency research. These factors will be outlined briefly below, before exploring theories of sense of agency as they relate to these factors.

#### *Levels of awareness of sense of agency*

The level at which sense of agency experience occurs can vary, ranging from low-level unconscious motor movements, such as anticipating the sensory outcomes of self-generated movements, to higher-level reflective processes, such as planning action (Pacherie, 2008; Gallagher, 2012; 2013). As noted above, sense of agency at the level of specific motor actions has been the subject of most sense of agency research. This implicit level of sense of agency has been described as ‘pre-reflective sense of agency’ (Gallagher, 2000) or the



‘feeling of agency’ (Synofzik et al., 2008). It is contrasted with explicit ‘reflective sense of agency’ or the ‘judgement of agency’. References to the distinction between pre-reflective and reflective sense of agency are now common within the literature and have extended across disciplinary lines, for example to psychoanalytic discussions of sense of agency (Knox, 2012) and developmental approaches (Zaadnoordijk, 2017). The distinction has been posed in similar forms by other researchers, such as the distinction between the ‘feeling of agency’ and the ‘judgement of agency’ (Synofzik et al., 2008) and between narrator and comparator approaches to sense of agency (Bayne and Pacherie, 2007). There is also contention regarding the phenomenology of agency—the ‘what-it-is-like’ to experience sense of agency. Scholars such as Grunbaum (2015) suggest that there is nothing that it is like to experience a feeling of ‘sense of agency’. In contrast, Haggard (2017) states that “we experience a clear feeling (or ‘buzz’) of agency during everyday actions” (p.198). Still others suggest there is an inherent ambiguity to agency experience itself (Gallagher, 2013). It is beyond the scope of this article to explore the question of phenomenology further (but see Bayne and Levy, 2006 and Bayne, 2016, for a discussion).

### *Unit of analysis*

As Gallagher (2012, 2013) has argued, the unit of analysis can vary considerably in discussions of sense of agency and may have large ramifications for what can be said about the degree to which sense of agency is experienced. While some researchers attempt to confine discussion to ‘specific motor action’ (e.g., Haggard, 2017), others analyse a ‘psychological episode’ (Stephens and Graham, 2000) or a ‘pragmatic level intention’ (Gallagher, 2013). Others do not specify the unit of analysis. Why does this matter? What might be understood as sense of agency at one unit of analysis (for example, the task of the physical action of washing one’s hands) may not be understood as sense of agency at another level of analysis (for example, the lack of sense of agency and lack of sense of voluntary initiation of hand washing in some presentations of obsessive-compulsive disorder). Failure

to specify the unit of analysis can result in greater complexity and confusion than would otherwise be the case. Specification can avoid unnecessary conflict regarding differences between theoretical approaches (see for example, de Haan and de Bruin, 2010). These debates may not occur if authors explicitly articulate the unit of analysis under discussion.

### *Processes involved*

The bulk of sense of agency research has focused on motor action processes. Thus, the degree to which we experience a specific motor action as voluntary, or whether we have a sense that an action is generated and controlled by us, is often what sense of agency is taken to mean. Some examples where there is a lack of sense of agency involving motor processes include: being pushed from behind, reflex movements, and actions under hypnotic suggestion. Typical experiments involve both implicit measures (such as sensory attenuation or IB paradigms) and explicit measures (often variations on the question ‘Did you do that?’; Haggard, 2017). However, the relationship between explicit and implicit processes, such as judgements and feelings of sense of agency, is unclear (Moore and Obhi, 2012). Further, while it is relatively well accepted that the level of awareness at which sense of agency experience occurs varies, ranging from the non-conscious (for example, at the motor level, such as anticipating the sensory outcomes of self-generated movements) to explicit reflective processes (reports of “I did that”), it is by no means clear as to the best way to conceptualise this without introducing confusion. For example, explicit processes of sense of agency are commonly thought to include judgements of agency (“I did that”). However, explicit sense of agency has also been extended to more complex reflective processes such as planning, captured in examples such as ‘I will buy a car next month’ (Gallagher, 2013) and ‘I will go to the shops this afternoon’ (Pacherie, 2007). Thus, ‘reflective sense of agency’ tends to be used both as an indicator of explicit reflective judgement of a specific instance of action, as well as referring to explicit plans for action and awareness of a voluntary choice and plan to act in the future.

Some of the most commonly cited example of sense of agency going awry is the clinical phenomenon of thought insertion in patients suffering from positive symptoms of schizophrenia (Frith, et al., 2000; but see also Gallagher, 2007; Synofzik, 2008). This phenomenon been described in the following terms: “a thought breaking into the fragmented intentional arc lacks the sense of agency; it is no longer mine. It appears against my intention and ‘speaks’ to me like being intended by an alien force; so it must somehow have been put into my head” (Fuchs, 2007, p. 234). In some cases, the comparator model (used to explain pre-reflective sense of agency for specific motor actions) is extended to sense of agency for thoughts. As Pacherie (2008) puts it, “there is no good reason why the idea of internal models should not be used in thinking about more global aspects of action specification” (p.208). Other authors have instead suggested that problems arise when attempting to explain complex phenomenon, such as delusions, using explanatory models such as the comparator model (Synofzik, 2008; Gallagher, 2012). Gallagher (2013) raises the question of the specificity problem, that is, how could such a model explain why delusions are typically not random but instead occur reliably more often in areas of cultural taboo. This also leads to questions regarding how the social and cultural context in which actions may occur influences sense of agency, including the effect of various emotional and motivational processes.

Sense of agency has also been related to group processes, asking the question whether it is possible for groups or pairs to experience what has been termed ‘we-agency’—a joint sense of agency for actions performed by the group (Pacherie, 2011; 2014). Evidently, the processes involved in we-agency must extend beyond simple efferent/re-afferent matching, as they transcend bodily bounds and occur across subjects.

### *Timing*

There is a time-based component to sense of agency. This is typically captured by descriptors such as prospective, retrospective situated and long-term. For instance, Graham

and Stephens (2000) argue that we retrospectively attribute agency to ourselves based on whether or not our actions are consistent with our beliefs and intentions. Similarly, for Wegner (2002), sense of agency emerges through retrospective confabulation. We make sense of our actions through the stories we tell ourselves about why we chose a particular option or behaved in a certain way. The MWM incorporates retrospective components that are weighted through BCIT. Prospective aspects of sense of agency include intention formation, and, according to Pacherie (2008), this spans proximal and distal intention ranges. Sense of agency is also analysed across varying lengths of time, from milliseconds to ‘long-term’ sense of agency, which Pacherie (2008) defines as “sense of oneself as an agent apart from any particular action, i.e., a sense of one’s capacity for action over time, and a form of self narrative where one’s past actions and projected future actions are given a general coherence and unity through a set of overarching goals, motivations, projects, and general lines of conduct” (p.98). In addition, sense of agency tends to be treated as if it is static. However, as Polito et al. (2013) point out, there are reasons to think that it is dynamic in nature.

### **The need for conceptual clarity**

Empirical studies exploring experiences of power and sense of agency (Obhi et al., 2012); coercion (Caspar et al., 2016); and freedom of choice (Barlas and Obhi, 2013; Barlas et al., 2017; 2018) understand these concepts to be distinct from sense of agency. However, an alternate view would be to understand these studies to be investigating relationships between aspects of the one broad sense of agency concept. On this view, it is somewhat startling that so few experiments that examine sense of agency empirically allow participants to choose which action they wish to engage in. Choice of action selection seems, theoretically at least, to be a key aspect of sense of agency. The narrowing of sense of agency research to researcher-specified actions within the lab is useful in honing in on very fine-grained aspects of sense of agency. For this reason, an argument could be made for the isolation of aspects of

sense of agency independent of choice. However, there is a risk in conducting experiments in conditions that differ from everyday experiences of actions and tasks. There is also the possibility that the results of such experiments may be affected by variables outside of the researcher's control that nonetheless may contribute to sense of agency experience and that results may be misinterpreted as belonging solely to one type of process (e.g., motor processes) when intentional-level processes or choices are also involved. As Gallagher (2012) has identified, many of the empirical investigations into sense of agency at a motor level also address sense of agency at an intentional level, and often results are discussed in a manner that confuses the two. For example, Gallagher highlights a study by Farrer and Frith (2002) examining the neural correlates of sense of agency, in which participants manipulated a coloured circle on a screen via movement of a joystick. Sense of agency was defined in terms of the connection between the joystick actions and the coloured circle movement (rather than just the action of moving the joystick, which was described in terms of sense of ownership over movement; Farrer and Frith, 2002). However, the results were interpreted in terms of the motor action and bodily movement in space, without reference to the intentional aspects of sense of agency—that is, the effect of the moment (manipulation of the circle on the screen; Gallagher, 2012).

Obhi et al. (2012) demonstrated that individuals who were induced to feel like they had less personal power experienced less sense of agency over a given motor action than those with greater power. Obhi and Barlas (2013) found that participants who experienced freedom of choice over action selection experienced a higher degree of sense of agency for specific motor action than participants who had no such choice. While some authors view sense of agency as confined to the experience of control over specific motor actions, other authors view sense of agency as related to the sense of voluntary generation of an episode that could include a specific motor action, thought, interaction, task, or numerous other units of analysis or processes. Part of the ambiguity in the literature is linked to the lack of clarity

of factors, such as units of analysis under discussion, processes, levels of awareness and timing.

This points towards a further confusion in the literature: aspects of sense of agency are not investigated that may nonetheless systematically influence results of empirical investigations. As Block (2002) so eloquently articulated, what may appear on one level to be a well-controlled experiment may actually be leaving to chance key aspects of the subjects' experience in the laboratory as it relates to the main variable of interest. It is possible, for example, that participants may begin a task with varying levels of baseline sense of agency for that task. Some participants could come to the tasks required in the experiment with a strongly developed sense of agency across multiple aspects of this concept, including for the completion of novel laboratory-based tasks, whereas other people might feel compelled out of duty to complete the experiment for first year credit and experience little 'sense of agency' at the level of choice, instead partaking in the experiment in a passive manner. Still others may come to the task with an unarticulated sense of hopelessness, while others may sign up and then not turn up altogether (which may be accompanied by joyous rebellion at finding and expressing choice in a situation in which receptivity to such freedom is diminished, or a sense of futility at the nature of the task, or any of a multitude of possible feelings). There may also exist conflicting combinations of some or all of these various states of intention and sense of agency operating at the same time or in quick succession throughout the experiments. As Pacherie and Haggard (2010) note in their discussion of intention and prospective sense of agency, "prospective intention in such [empirical] studies consists in the participant's decision to participate in the experiment in the first place" but the authors also acknowledge that "almost nothing is known about how these long-range, prospective intentions connect to immediate, short-term intentions" (p. 75) and thus influence sense of agency in the laboratory.

Whilst an argument could be made for the function of randomisation to groups as sufficient for controlling this potential confound, it remains possible that there may be systematic filtering that randomisation cannot counter. For example, it is possible that participants low in prospective sense of agency may be more likely to be among those that do not arrive for scheduled testing. To counter this, brief online screening measures could be employed upon sign-up to the experiment. Quasi-experimental designs, such as those investigating sense of agency among various clinical groups, would benefit from controlling for confounds arising from systematic variation in prospective sense of agency, which would first require adequate identification and measurement of this aspect of sense of agency. The main point being raised here is that without knowing what the subjective psychological environment of the participants partaking in these experiments is, or their experience of prospective sense of agency, ambiguity is introduced with regards to the implications of the empirical findings (Block, 2002). I suggest that there may be merit in investigating and measuring key variables related to the broader sense of agency even when the focus is on sense of agency for specific motor action, in order to control these variables as potential confounds given that systematic variation is likely. Whilst an objection could be made here that there has been a less than systematic relationship between implicit and explicit sense of agency variables found in the empirical literature (Moore et al., 2012b; Dewey and Knoblich, 2014; Saito et al., 2015), see below for a discussion of additional aspects of both implicit and explicit sense of agency in addition to those for which no relationship was found.

Suggestions for clinical applications of empirical tests of sense of agency, such as utilising research tools as treatment outcome measures for disorders like depression and anxiety (Obhi et al., 2013; see also Braun, 2018), highlight the need to clarify the scope of this concept and how, and indeed whether, the various aspects of the concept cohere. For example, Obhi et al. (2012) claim that ‘our results point to another potential use of the IB measure, as a pre and post intervention assessment tool, for patients with psychiatric

conditions that affect feelings of personal control. For example, depression and anxiety are both partially characterised by a feeling of loss of personal control' (Obhi et al., 2012, p.1549). While such suggestions may well turn out to be useful, what remains to be explicated is the conceptual link between aspects of sense of agency as measured by implicit paradigms, such as IB in relation to specific motor actions, and the broader psychopathological processes involved in experiences of anxiety and depression.

In a recent review of sense of agency research in cognitive science, Braun et al. (2018), discussing the implications of sense of agency research for clinical application, suggested that:

[I]mplementing a therapeutic intervention facilitating sense of agency may thus be a promising strategy to motivate patients to act, and to uphold the actions. This reasoning may apply in particular to depression syndrome where a loss of self-efficacy is thought to be a crucial upholding factor of this disease (Ehrberg et al., 1991). Practically, a sense of agency boost could for instance be realised by making the patients more aware of their actions and immediate impacts onto the world (p. 12).

Leaving aside the fact that a prolific literature already exists in which patients are assisted to become “more aware of their actions and immediate impacts onto the world”, particularly the relational world in the form of emotional attunement and enactments (Tronick et al., 1998; Stern, 2007; BCPSG, 2013), mentalisation (Fonagy and Luyten, 2018), and work with each member of the therapeutic dyad's effect upon the other (Knox, 2012), such recommendations only make sense if the concept of sense of agency extends across these various levels and processes, for example, from specific motor action to felt capacity and motivation to act and self-efficacy.

A final example is given by Caspar et al. (2016), in which the authors, conducting a ‘Milgram-type’ study examining whether coercion changes sense of agency, found that



coercive instructions did indeed decrease sense of agency as measured by an implicit measure (similar to IB). Interestingly, lower event related potentials occurred in relation to the tone ‘suggesting suppression of neural processing of action outcomes’ when instructions were coercive. Caspar et al. (2016) concluded that ‘reduced sense of agency under coercion is consistent with the possibility that social coercion effectively constrains an individual’s free choice’ (p. 206). In a related experiment, Rigoni, Kuhn, Satori and Brass (2011) found that for participants who underwent a disbelief-in-free-will induction, the readiness potential was reduced, indicating an influence of belief level processes on motor readiness. These experiments point towards connections between sense of agency for specific motor actions and socially situated aspects of sense of agency, such as experience of choice. However, whilst these experiments are positioned as examining the relationship between sense of agency and related concepts (such as choice), I suggest that if a broader conceptualisation of sense of agency is adopted, they could instead be conceived of as exploring aspects of the one concept. This is consistent with a view of sense of agency as varying across a wide array of factors, including processes, levels of awareness, units of analysis and timing, as outlined above.

### **Ways of conceptualising sense of agency across factors**

Having identified a number of factors across which sense of agency varies, I now examine ways in which sense of agency has been conceptualised across multiple (though not always all) factors. There are two main contributions to the conceptualisation of how these levels and processes of sense of agency interrelate across time scales and units of analysis, as I see it. The first was put forward by Pacherie (2008) in the form of a dynamic model of intentions (the DPM model, recently updated in Mylopoulos and Pacherie, 2018) and a corresponding outline of how sense of agency can be conceptualised across multiple levels of intention (distal, proximal and motor intentions). The second approach considered here was suggested by Gallagher (2012; 2013) who builds on Pacherie’s DPM model, highlighting the

complexity of the concept of sense of agency across pre-reflective and reflective levels of awareness and extending his analysis to socially situated and cultural realms (Gallagher, 2013).

In examining the phenomenology of agency and action, Pacherie (2008) suggests a dynamic theory of intentions. This theory draws upon previous dual-intention theories of action (such as those of Bratman, 1987; Searle, 1983; Brand, 1984; and Mele, 1992) and suggests instead a tripartite intentional model that includes distal intentions (D-intentions), proximal intentions (P-intentions) and intentions at the level of motor processes (M-intentions). D-intentions involve planning and decision-making—decisions about what to pursue as well as practical reasoning about means-ends goals that are subject to rationality constraints and must be “internally, externally and globally consistent” (Pacherie, 2007, p. 182). D-intentions involve future-directed events, such as planning to engage in an action in an hour, a week or years from now. The examples given to which D-intentions relate include various levels of complexity, from eating cake upon finishing writing this section to plans to retire one day. D-intentions are also involved in “high-level rational guidance and monitoring of action” (Pacherie, 2008, p. 183). Pacherie states that D-intentions are “not strongly dependent on the particular situation in which the agent finds [themselves] when [they] form the D-intention” (p.183).

P-intentions, in contrast, are involved in situational monitoring and control. Pacherie suggests that “P intentions provide us with a thin sense of what we are doing, restricted to our immediate goal, whereas D intentions provide a thicker form of what-awareness, a representation of the kind of action it is at a more abstract level, and one’s reasons for performing it” (p.184). P-intentions scaffold salience of affordances for M-intentions. Pacherie draws on Barresi and Moore’s (1996) conception of intentional schema theory in order to explain how P- intentions anchor the action plan they have inherited from D-intentions in the specific situational context. This relationship between more abstract, less

situationally anchored D-intentions and the greater contextualisation of P-intentions is best formulated, according to Pacherie, by using this schema approach. A schema approach allows for ways of organising and integrating information from different sources that includes both a more global, generalised structure as well as the application of this structure to specific contexts.

M-intentions fill the gap highlighted by examples of deviant causation, such as that, posed by Davis (1994), of John, who intends to propose marriage to his beloved, and who, upon reaching her, is so filled with emotion that he sinks to his knees. As Mylopoulos and Pacherie (2018) point out, John's falling to his knees is consistent with his intentions (D- and P-intentions) to get down onto his knees to propose. However, one could not rightly call his getting down onto his knees an action. M-intentions fill this gap in the causal chain. In the case of John, Mylopoulos and Pacherie (2018) suggest that "the causal chain leading from intention to behavior fails to include motor intentions. Thus, causing "in the right way" may be a matter of intentions causing behavior via the instantiation of appropriate motor intentions' (p. 3). M-intentions also allow for the fine-grained changes in muscle movements associated with the way in which the action may be carried out. For example, we grasp a cup differently depending on whether we are picking it up to drink from it or to throw it (Pacherie, 2008; Gallagher, 2013; Mylopoulos and Pacherie, 2018). Pacherie also makes the important point regarding the simultaneity of levels of intention acting together, rather than only in sequence. She describes an 'intention cascade' whereby D-intentions causally generate P-intentions and P-intentions causally generate M-intentions. However, she acknowledges that it is not always necessary that a P-intention is formed to start an action, nor is a D-intention required for either M- or P-intentions to occur.

Building on formulations by Pacherie (2008), Gallagher (2012, 2013) argues that sense of agency involves action, intention and effect. He suggests that pre-reflective sense of agency, such as commonly conceptualised in examples of specific motor action, is more

complex than sub-personal processes. Instead, he argues, it may be constituted by a combination of: reflective processes, including the formation of prior or distal intentions; pre-reflective monitoring of the action and its ongoing effects; efferent motor control processes that are involved in the experience of initiating and controlling movement; and retrospective attribution with regards to the effect of our action (Gallagher, 2013).

Similarly, Gallagher argues that sense of agency for actions across all levels of awareness may include any of the following: future intentions or prospective deliberation, such as planning; conscious monitoring of action, such as occurs in P-intentions regarding means-ends goal attainment; efferent signals, such as occur in motor processes that contribute to first-order bodily experience of agency; pre-reflective monitoring of effect of action; retrospective attributions of agency; and ‘long term sense of one’s capacity for action over time’ (Gallagher, 2013, p.130). Gallagher acknowledges that while it might be possible to understand sense of agency in terms of these various aspects, from a phenomenological perspective “we tend to experience sense of agency in a more holistic, qualitative and ambiguous way which may be open to a description in terms of degree” (Gallagher, 2013, p. 130). Gallagher also acknowledges that disruptions in sense of agency may occur in any of these various aspects, which is part of what contributes to the wide scope and complexity of the concept. He gives the example of disruptions at a motor process level in schizophrenic delusions of control and disruption at a retrospective cognitive level for cases such as narcotic addiction, which he describes as an experience in which the drug addict may come to feel that something other than himself is compelling the continued use of the drug. Gallagher points to the various aspects of sense of agency and the wide range of psychopathologies, indicating that loss of sense of agency can occur at any one of these, or indeed multiple of these, contributories. He then goes on to point out that action occurs not “just in the head” but in social and cultural contexts that play a crucial role in constraining or enhancing sense of

agency experience, which can be seen in the after-effects of oppressive regimes, such as Apartheid in South Africa.

As both Gallagher and Pacherie point out, multiple levels of intention and sense of agency may be operating at any given time. Gallagher suggests that concordance between levels leads to an increase in sense of agency. However, while this may be true in some instances, it is possible that this is not always true. Empirical investigations of concordance across levels have failed to find a relationship between explicit and implicit sense of agency (Moore and Obhi, 2012; Dewey and Knoblich, 2014). This is explored further below.

### **Revisions to ways of conceptualising sense of agency across factors**

Expanding the scope of sense of agency requires some revisions to the concept itself, as well as to the lexicon with which it is discussed. In the following section, I will build upon the accounts by Gallagher and Pacherie. I suggest that intention formation and felt capacity to act may influence sense of agency across multiple levels of intentions. I examine the notion of rationality constraints in relation to conceptualisations of the self as multiply motivated with varying access of awareness to self-states. Further, I argue that revisions to the way in which levels of pre-reflective sense of agency are conceptualised are needed to explain specific phenomena related to lack of sense of agency. Regarding levels of awareness of sense of agency, I question whether concordance across levels always leads to increased sense of agency. Finally, I suggest that if this broad account of sense of agency is to truly traverse disciplines, the lexicon with which it is discussed will need to change. Specifically, sense of agency needs to be adequately distinguished from sense of control.

#### *Sense of agency: a matter of degree, self/other distinction, or both?*

Although sometimes operationalised and even conceptualised as a dichotomous variable, there are many circumstances in which sense of agency is instead better understood as a matter of degree (Gallagher, 2013). Diminished but not absent sense of agency is often described by people suffering from depression, in which the experience of movements as

voluntary is diminished but not absent, as one patient describes it: “Everything seems 10 times harder. I had to do everything in such tiny steps. Just the simple task of getting out of bed or leaving a building would be a huge deal. I would have to tell myself ‘first get into a sitting position. Then we’ll worry about the rest of it afterwards’ [...] Just getting out of bed is difficult.” (as cited in Ratcliffe, 2014, p.169). Examples of diminished sense of agency are also apparent in experiences of individuals suffering from social anxiety, in which the action of withdrawing may feel to some degree compulsive or reactive rather than experienced as fully voluntary. The degree to which our actions are experienced as caused or generated by us, versus the degree to which they are experienced as compelled, reactive or driven, is a fascinating problem for sense of agency research. This arises not just in the question of whether I can attribute agency of a given action to myself, as in ‘I did that’, but to what degree the first order phenomenological sense of agency is present—to what degree I experience the action as fully or partially generated by me. Clinical applications of this are crucial, such as the need to understand how, in depression, someone can come to lack the experience of volition to varying degrees. Similarly, in cases of anxiety, we need to understand how people can come to feel compelled towards action, rather than experiencing action as a voluntary choice. Whilst the experience of delusions of alien control is one of the paradigmatic examples of loss of sense of agency, there are also everyday and clinical experiences in which one has a diminished but not necessarily absent degree of sense of agency.

Thus, sense of agency research, as I see it, could be viewed as investigating two, at times interrelated, streams—that of self/other distinctions and that of intrapersonal coherence and awareness. The former stream (within sense of agency research) has arisen primarily in response to attempts at understanding and conceptualising delusions of control in schizophrenia, and it primarily concerns the capacity to distinguish one’s own actions from those of another actor. The latter stream is concerned with the degree of authorship

experienced within oneself for various process including, for example, actions, tasks or thoughts and the contingent relationship with the intended outcome. Haggard (2017) states, “it remains unclear whether social attribution of actions to agents depends on an antecedent ability to compute and perceive instrumental agency [which Haggard describes as ‘self to world control’ such as the control over the speed of the bike as one pedals up hill], or *vice versa*” (p.199). In fact, in many empirical investigations into sense of agency these two aspects are not delineated. This is not just subsumed by the notion of sense of ownership, but rather a question of authorship. Developmental research suggests that in infancy they are indeed interrelated, although there is much debate concerning the specificities of this relationship (see, for example, Winnicott, 1965; Stern, 1985; Trevarthen, 2005). Indeed, these two areas of focus within sense of agency research could be viewed as mirroring a broader focus within developmental and clinical research. A wealth of empirical, clinical, longitudinal and developmental research supports a ‘complex dialectic transaction’ between the two fundamental dimensions of self/other distinction and interpersonal relatedness on the one hand and self-coherence and self-definition on the other (Luyten and Blatt, 2012). However, it is beyond the scope of this paper to explore this idea more fully.

### *Long-term sense of agency*

Researchers often attempt to parcel out aspects of sense of agency in an understandable attempt to focus on one aspect, such as specific motor action. For example, Haggard (2017) suggests that a view of sense of agency which includes felt capacity to act can be equated with self-efficacy and “beliefs or facts about potential actions” (p.196) rather than specific motor actions themselves. The distinction Haggard (2017) draws, separating out reflective sense of agency, and even forms of pre-reflective sense of agency from “felt capacity to act” (p.196), is far from clear. As the brief overview of models and theories of sense of agency suggests, the focus of sense of agency research has been on pre-reflective and reflective levels of awareness and various types of intention. However, the question of

what allows these intentions themselves to form and how the scope of possible intentions are shaped over time, including in ways outside of awareness, is less well explored. Similarly, prospective sense of agency, including aspects of intention formation that contribute to action initiation in more immediate ways, remains less well explored.

Felt capacity for action has been included by some researchers in the phenomenology of sense of agency (Christensen et al., 2015, Pacherie, 2007; Gallagher, 2012). Moore (2016) discusses capacity for action in relation to ageing, stating that “a key factor in this reduced feeling of control is likely to be a reduction in the basic capacity for agency due to physical impairment” (p. 6). The question of whether or to what degree sense of agency for motor action, and across other processes, includes aspects of felt capacity to act and intention formation is interesting particularly with regards to understanding clinical phenomenon such as depression. The question of whether felt capacity to act has implications beyond the way in which D-intentions and P-intentions are formed remains to be explored more fully. Shooting hoops, for example, is a specific motor action. However, the degree to which someone experiences sense of agency for that action, or a sense of the specific motor action as voluntary, may well include the person’s felt capacity to act in that moment given the constraints of the situation. Investigating felt capacity to act and how this influences sense of agency at the level of embodied action and the perception of affordances for action, as well as ongoing intention formation, may be an interesting future avenue for understanding depression and sense of agency [see Chapter 5].

#### *Multiply motivated self and sense of agency*

Pacherie (2007) acknowledges that it is sometimes the case that our D-intentions are not consistent in the manner her theory suggests. She refers to “weakness of the will, emotional impingement on decision processes and the partial encapsulation of belief” as interfering with the normative and constitutive rationality requirements of D-intentions. A view of the self as multiply motivated, with varying availability of self-states (including



motivations, affects and drives) to conscious awareness, can assist in understanding the ‘exceptions’ described. If this were adopted, it may then be the case that rationality requirements relate to a part of the self that wishes to fulfill a certain plan, for example, to avoid taking illicit substances, while another part of the self may instead be intent on doing just that (obtaining the craved for substance). This is not a new idea. It goes back at least as far as Freud, and it remains one of the cornerstones of contemporary psychoanalytic theory (Westen, 1997; McIlwain, 2007; Bromberg, 2014; Mitchell, 2014). It has also been utilised in legal discussions around judgements of agency for action (Garvey, 2018), and it has featured in recent discussions within philosophy of mind (Clark, 2007; Ainslie, 2013; Sebo, 2015).

Access to an *awareness* of a multiplicity of self-states, as opposed to suppressing or experiencing some self-states as inaccessible, may influence the degree of sense of agency experienced. Relational psychoanalytic views suggest that it is the capacity to bear ‘standing in the spaces’ between self-states and holding multiple conflicting self states within awareness rather than a unitary or cohesive self experience that is the marker of psychological health (Bromberg, 2014). This is consistent with clinical conditions in which sense of agency is decreased, such as in depersonalisation, the core symptoms of which involves self-detachment and decreased sense of agency (Gensch and Synofzik, 2014), which has been conceptualised as resulting from a ‘shutting down’ of internal emotional responsiveness (Phillips et al., 2001). Differential access to internal feeling and motivation is also captured in the example of people suffering from agnosia for hemiplegia (AHP). Despite lateralised paralysis, patients with AHP experience a sense of controlling their own bodily actions on the paralysed side. Interestingly, this ‘not-knowing’ about their paralysis has been found to diminish under conditions in which they are assisted to become more aware of their own negative emotion (Fotopoulou et al., 2010). One hypothesis is that by becoming more aware of their own negative affect, they are influencing their access to the full range of feelings, which includes the negative emotion connected with their paralysis, and gaining a

more realistic sense of agency for action through this increased awareness (even if this is a temporary change). Many clinical approaches to disorders of sense of agency, such as anxiety, involve helping the individual connect to emotion, motivation and drives that they may habitually suppress but which, if awareness becomes possible, result in a decrease of compulsive action experiences. Attachment theorists suggest that awareness of one's past attachment experiences and the influence on current states of mind with regards to attachment is one of the most crucial factors in determining the degree of flexibility (rather than compulsive reactivity, in either an avoidant or anxious manner) a person has in the current moment in their response to a given attachment scenario (Fonagy et al., 2002; Fonagy and Luyten, 2018; Slade, 2008). Individuals who do not show reflective functioning with regards to their past attachment experiences and awareness of the manner in which they have been affected by them may be driven to act in their current relationships in predictable, patterned ways (Fonagy and Luyten, 2018).

## **Conclusion**

I have argued that sense of agency for specific motor actions and the processes involved is one aspect of a broader sense of agency concept. Sense of agency has at its core the experience of voluntary generation of action and contingency between action and outcome (Haggard, 2017). It extends to processes and units of analysis beyond motor actions, as most studies demonstrate when attempting to apply their findings to contexts that matter, such as clinical applications. I have suggested that if this concept is to hang together in a coherent sense, a number of key factors that vary between approaches and disciplines, including unit of analysis, level of awareness, timing and processes need to be clarified. I have also suggested that greater clarity is needed with regards to sense of agency as it refers to processes within the self or processes regarding self/other differentiation. I have argued for an approach that acknowledges the self as multiply motivated, and that acknowledges the long-term and prospective aspects of sense of agency.

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### **Chapter Three: The interpersonal development of an embodied sense of agency**

In this chapter, I outline an approach to the development of sense of agency in infancy. In doing so, I draw on developmental research, psychodynamic theory, and approaches from philosophy of mind. I present an argument for the interpersonal, embodied development of sense of agency in infancy, beginning with early experiences of contingent relationships between our earliest actions (and expressions) and the responsiveness of the environment (primarily the contingent responsiveness of the caregiver). I suggest that early environments in which attuned, contingent, ‘good enough’ responses are available from the caregiver will contribute to the ongoing formation of an implicit sense of agency within the infant.

Environments in which contingent responsiveness is lacking are likely to lead to impairments in sense of agency at an implicit level. This chapter expands on the argument in Chapter 2 regarding the need to consider implicit aspects of long-term sense of agency that may contribute to prospective, current and retrospective sense of agency. It also provides a detailed analysis of how sense of agency may first arise, which foregrounds the arguments made in Chapter 4 regarding the importance of emotional, embodied and interpersonal aspects of sense of agency in adults, and how this may go awry in depressive experiences (Chapter 5). I have used the acronym ‘SoA’ for sense of agency in this paper only. I have refrained from altering it because it has already been published, despite the lack of consistency with other chapters of this thesis.

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RUNNING HEAD: Development of a sense of agency

**The interpersonal development of an embodied sense of agency**

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### **Abstract**

We emphasize that a sense of agency has interpersonal origins and arises from a contingent coupling of the self and the social and material world. This perspective has implications for the way we conceptualize a sense of agency and how it is assessed in the empirical literature. We explore the development of a sense of agency as, in part, an implicit, embodied assumption that arises through the child's experience of 'good enough' contingent responsiveness from caregivers. We emphasize that a caregiver's capacity for audience uptake and access to a full range of feelings, coupled with the scaffolding of an infant's attempts at creating contingency in his or her environment, will impact the development of a sense of agency. Early environments in which infants experience a lack of opportunity for contingency raise questions about the development of a sense of agency as an implicit, embodied assumption. Presenting the experience of infants in neonatal intensive care as an example, we raise a series of questions about the impact of atypical early environments in which an infant's expressions of distress may be met with fewer instances of contingent responsiveness.

*Keywords: embodiment, attunement, contingency, sense of agency, infancy*

### **The interpersonal development of an embodied sense of agency**

Disruptions to a sense of agency (SoA) are associated with diverse manifestations of psychopathology (Frith, Blakemore & Wolpert, 2000; Seligman, 1974). Understanding the ways in which we develop (or fail to optimally develop) a SoA carries important implications for how we understand and treat disruptions in SoA. Research on SoA has proliferated in recent years, not only in clinical and neurological treatment settings (e.g. Frith et al., 2000; Tsakiris and Haggard, 2005) but also in understanding social and cultural phenomena more broadly (David, Obhi, & Moore, 2015). Still, as David and colleagues (2015) note, numerous questions remain unanswered, including “how... the sense of agency develop[s] across the lifespan” (p.2). Additional areas in which SoA research is lacking, or in which contradictory empirical findings remain to be explicated, include the link between a SoA and emotion (Gentsch & Synofzik, 2014) and SoA in social contexts (Obhi & Hall, 2011).

In this article we explore how a SoA develops in infancy and early childhood. In particular, we highlight the real world social and emotional context in which SoA develops, as distinct from laboratory settings in which agency is typically investigated in isolated controlled settings. We examine patterns of interactions with caregivers early in life that shape a person’s implicit assumptions about the self, the world, and other people, and contribute to a SoA. We draw together empirical and theoretical studies from diverse literatures, including infant research, developmental psychology and cognitive science, with the goal of illuminating and integrating rich insights from each. Moreover, we call attention to potential sources of individual differences in SoA, which thus far have received little focus in the empirical literature, and we consider whether a history of atypical experiences of interpersonal contingency in infancy might engender a diminished or disrupted SoA. Our developmental perspective provides a framework for understanding potential individual differences in SoA in adulthood, with implications for ways it can be assessed empirically.

### **Pre-reflective agency – why does our early life matter?**

During infancy, the millions of repetitions of interactions with caregivers occurring when the brain is most plastic and rapidly adapting to the environment are crucial in forming implicit and embodied basic assumptions about the world, self, and others. Bendit (2011) provides the following example from the Boston Change Process Study Group (Stern & BCPSG, 2007) of a depressed mother and her one and a half year old son:

The mother is sitting on the couch and her son is sitting a foot or two away from her, drinking from his bottle. She is sitting stiffly in the far corner of the couch staring into space...Her toddler finishes his bottle and stands up on the couch, bouncing up and down for a minute or two. Then he pauses before flopping over onto his mother's lap. At this point, without moving her stiff and remote arms, she jerks her head towards him and barks, "I told you not to jump on the couch!"... In other sequences on the same videotape, they describe her son walking up to her and reaching out his hand towards her knee, only to pull it away suddenly before actually touching her. His mother's aversion to affectionate touch appears to have led him to inhibit his own initiatives around seeking physical contact with her (Bendit, 2011, p.26).

Bendit contends that as an adult this child "...will have no memory of the laying down of these implicit memories. He will be able to remember later instances of difficulty with touch, perhaps describing a situation in high school where he found himself unable to cuddle his first girlfriend" (p.26). What is encoded implicitly is likely to shape the infant's cognitive-affective-behavioral schemas for 'how other people are' and 'how I am' and these will then strongly influence the schemas this child goes on to hold as an adult. Bollas (1987) referred to these implicit assumptions as the 'unthought known' – aspects of experience that come to be tacit, embodied assumptions that sculpt expectations and scaffold salient features of the environment. If implicit assumptions form most rapidly during infancy, how then do patterned interactions during this time period impact SoA?

While lack of SoA at an explicit level might be exemplified by someone who does not feel that he can ask for what he wants or strive for a desired outcome, in contrast lack of SoA at a more implicit level might be illustrated by someone for whom asserting his needs and wants or striving to achieve a particular outcome does not even come to mind as an option. The latter case illustrates what we mean when we refer to ‘pre-reflective’ SoA. We use the term ‘pre-reflective’ here in accord with Stolorow’s concept of the pre-reflective unconscious, defined as “a system of organizing principles formed in a lifetime of relational experiences, that pattern and thematize our lived experience [and that] operate outside of reflective self-awareness” (as cited in Kenny, 2013, p.201). Used in this sense, pre-reflective SoA is formed (primarily, although not only) during infancy and typically remains outside of awareness, but might nonetheless become subject to reflection later in life. Notably, this use of the term ‘pre-reflective’ differs from the way researchers such as Gallagher (2012) use the term, wherein ‘pre-reflective’ SoA refers instead to SoA that is phenomenologically recessive; that is, it is not usually within the realm of explicit awareness but could nonetheless become the object of awareness if attention were directed towards it.

### **Contingency, agency and pleasure**

Contingency detection is necessary, but not sufficient, for the development of SoA. After all, without such detection we would not be able to observe the relation between cause and effect in everyday actions. Given that the initial environment is necessarily social, insofar as an infant is unable to care for himself, we argue that the setting for contingency detection and the development of a SoA is primarily the interpersonal realm.

In numerous studies, researchers have documented the infant’s delight in his or her actions that cause contingent outcomes in the environment. Broucek (1979), for example, emphasized the difficulties in using traditional S-R (stimulus-response) frameworks to account for the pleasure derived from contingency. He highlights Papoušek and Papoušek’s

(1975) experiments in which infants had to first discover that a head rotation of 30 degrees in a specified direction would switch on a light display. In a control condition, the light stimulus was presented in a non-contingent manner and the infant displayed orienting behavior that habituated over time. In contrast, in the experimental condition, when the infant discovered that his own head movements could turn on the light display, “he repeated his feat so many times and with such joyful affect in his gestures and vocalization that it seemed more like attachment than habituation” (Papoušek & Papoušek, 1975, p.252). Broucek (1979) regarded this sense of pleasure, linked to the experience of producing at will a contingency that the infant initially did not expect, as pivotal to the development of a sense of self. He writes: “this sense of efficacy and the pleasure associated with it are in my opinion the foundation of self feeling” (Broucek, 1979, p.312).

### **Attunement, audience uptake and fullness of feeling**

It is worthwhile expanding Broucek’s claim to better understand how the development of SoA might be supported or disrupted, and thereby delineate sources of individual differences in the SoA later in life. We contend that it is not simply pleasure in being the cause of contingent outcomes that is the “foundation of self feeling” (p.312). Instead, the notion of pleasure in being ‘the cause’ is intimately and intrinsically connected with interpersonal elements of the experience (see also Alvarez & Furgiele, 1997; Lichtenberg, 1991, Rustin, 1997).

White (1959) posited pleasure in a SoA, or what he called ‘effectance pleasure’, as the intrinsic motivation for mastery experiences. Block (2007) contextualizes ‘effectance pleasure’ in evolutionary terms, suggesting that effectance pleasure and allied efforts at mastery confer both reproductive fitness and survival advantages. Nevertheless, interpersonal factors affect the meaning of this pleasure (Campbell, 1997; Trevarthen, 2009). Pleasure may be met in the interpersonal environment with attunement (Stern, 1985)

and ‘audience uptake’ (Campbell, 1997), in the optimal case, or it may instead be dismissed or misperceived. Accordingly, the interpersonal contingencies available both in the recognition and reception of infants’ pleasure, and in the infant’s developing capacity to identify and become aware of their own internal states, contribute to the development of a SoA. Stern (1985) nicely captures the act of attunement in his example of a nine month-old baby reaching for a toy, looking at her mother and emitting a joyous “Aaaah” as she does. These exchanges are uneven, in that one partner possesses an already developed sense of self, and is more-or-less able to accurately perceive the state of the other. Although the mother may share the state that the baby experiences (e.g. the pleasure in reaching for a desired play object), this shared experience is not simply an “experiencing with” – instead, optimally the mother provides “marked feedback” or cross-modal signaling to the baby conveying that, while she shares the intensity, rhythm, and timing of the expression of the baby’s pleasure, she and the baby are separate centers of experiencing. So the baby may express a joyous vocalized “Aaaah” in reaching for a toy, and the mother may respond with a delighted gestural shimmy of the upper body of the same intensity, rhythm, and timing, but in another expressive sensory register (i.e., gestural versus vocal). Further, there is a temporal gap between infant action and parental response. What is signaled to the younger person is that her inner state of joy is discernible to another person, and exerts an impact on that other person. The capacity of the caregiver to respond to the child in a marked way, reflecting back a discernment of the child’s own experience, is crucial for the child’s joy to be experienced and identified by her as hers (Stern, 1985). This interactional pattern stands in contrast to emotion contagion (Fonagy et al., 2002; von Scheve & Ismer, 2013) in which the caregiver is ‘experiencing with’ the infant, in an unmarked way, such that the emotion is amplified rather than attuned to and contained (where containment here refers to the modulation of powerful affect).

The very process of the formation of feeling is an interpersonal phenomenon.

Campbell's (1997) concept of 'audience uptake' clarifies the intersubjective nature of this process. According to this view, audience uptake is an iterative process whereby (in this case) the parent's receptivity to the infant's unfolding pleasure dynamically fosters the generation and further expression of that pleasure (Campbell, 1997). In contrast, when audience uptake is limited or absent, the emerging feeling might be dismissed or overlooked, curtailing not just the expression but also the ongoing formation of the emotion (Campbell, 1997). A capacity for what is called 'fullness of feeling' (McIlwain, 2009) within the parent is essential for adequate audience uptake of the infant's feelings. Parents must have access to the full intensity and range of nuanced feeling, so that they are able to attune to those feelings as they arise within the infant (McIlwain, 2009). However, parents themselves may not have experienced adequate attunement to, or audience uptake of, their own feelings early in life, as can occur in societies where the socialization of emotional expression is drawn along gendered lines (McIlwain, 2009). If fullness of feeling is lacking, parents may be limited in their capacity to identify, attune to, and contain certain feelings, thus increasing the likelihood that the infant will cope defensively (Campbell, 1997; McIlwain, 2009). Defensive coping includes habitual ways of managing negative affect that are relatively automatic and inflexibly employed (Tronick, 2011). If such defensive coping occurs often enough, particularly when the brain is most plastic in early life, it may later result in habitual diminished access to, or pre-reflective partitioning off of, those feelings, limiting the scope of adaptive behavioral choices in the future (McIlwain, 2008, 2009, 2014).

The experience of attunement and audience uptake facilitates the infant's formation and identification of his emotional states. The experience of the infant, as it relates to the development of agency might be, as Alvarez and Furgiuele (1997) formulate it: "I cause things to happen in her, therefore I begin to feel that I am, and I also begin to feel that she is" (p.125). SoA is an interpersonal phenomenon, arising through repeated acknowledgement of one's feelings and one's capacity to act on the world and others (Rustin, 1997). Furthermore,

emotionally contingent responsiveness from another during infancy is itself reinforcing. This process of attunement contributes to the developing recognition of the self as differentiated from the other, the sense of self or “I”, and a corresponding SoA.

Individual and dyadic differences are important to consider in the development of the SoA. As stated earlier, the parent’s ability to recognize what an infant might be feeling is essential for audience uptake and attunement. Such recognition requires that the parent’s emotional repertoire encompass the affect communicated by the infant and demands too that the parent respond (in an attuned way) to that affect, as opposed to being too joyously consumed and distracted by another person’s presence, or anxiously pre-occupied with his or her own emotional state. Infants vary too in their capacity to engender feeling and responsiveness in a parent and in the clarity of their communicative cues. The particular “fit” of temperaments of each member of the dyad influences how easy it is for the infant and parent to be in sync, or to discern each other’s respective states (Rustin, 1997; Sander, 1983). Thus, an extraverted mother and an introverted baby, to take an over-simplified example, might experience greater struggle in understanding and intuitively responding to each other’s mental and physical states than dyads with a greater degree of concordance of intersubjective experience. The emphasis on the multi-modal or cross-modal aspects of attunement also highlights the embodied form in which attunement occurs (Stern, 1985; McIlwain, 2007). We return to attunement and its relation with embodied cognition in a later section, but it is worth emphasizing here that attunement is a global body/mind phenomenon.

### **Good enough attunement, negative capability and containment**

Previous infant researchers assumed that the greater the interpersonal contingency between parent-infant dyads the better. However, more recent findings based on video micro-analytic data have suggested otherwise (Beebe et al., 2010; Beebe & Steele, 2013). What we will term “good-enough” attunement, to extend Winnicott’s (1965) phrase, is optimal.



Video microanalysis examines parent-infant interactions in face-to-face settings, and can be described as a “social microscope, capable of identifying ‘subterranean’ rapid communications, which are often not quite perceptible in real time” (Beebe & Steele, 2013, p.583). Analysis is usually undertaken at the level of one-second units. Interpersonal contingency is then measured using time series analyses to compute the extent to which one interactive partner’s prior behavior predicts the other individual’s current behavior (Beebe et al., 2010; Beebe & Steele, 2013). Recent microanalytic studies have demonstrated that infants who later become securely attached are actually more likely to experience dyadic interactions with their primary caregiver in the middle range of interpersonal contingency (Beebe et al., 2010; Beebe & Steele, 2013; Jaffe et al., 2001). In contrast, dyads with very low, or very high interpersonal contingency were more likely to become insecurely attached (Beebe, et al.2010; Jaffe et al., 2001).

Tronick (2007) suggests that this pattern of findings can be explained by the infants’ increased frequency of experiences of mismatch (i.e., dyssynchronous, non-contingent interaction between parent and child) and successful repair (i.e., re-establishment of synchrony) in this middle band of dyads. That is, if things go “well enough” but not perfectly, the infant experiences the interaction getting back on track after disruption, and may have the opportunity to develop both a sense of trust that repair is reliably possible, and a SoA in co-creating the experience of repair (Tronick, 2007). Beebe et al., (2010) highlight how infants can display an impressive repertoire of behaviors to engage actively in the re-initiation of communication after a mismatch, including in situations after the caregiver has initiated a mismatch (Beebe et al., 2010).

Another key element in explaining why this middle band of dyads might be relatively more secure relates to Bion’s (1970) theory of containment and his formulation of what was originally Keats’ notion of “negative capability” - the sense of being able to “not know” yet, to be “capable of being in uncertainties, mysteries, doubts, without any irritable

reaching after fact and reason” (Keats, as cited in Bion, 1970, p.125). This capability requires a certain level of comfort or ability to tolerate the anxiety of ambiguity, including both predictive uncertainty and the absence of control. Tolerance of ambiguity affords the caregiver the possibility of discovering what experience is arising in the infant, as opposed to responding preemptively, perhaps before the infant has more than a wisp of awareness of what it is he feels himself. ‘Good enough’ but less than perfect attunement may thus allow an infant to acquire awareness of what he feels while being ‘held in mind’ by a caregiver. This process allows the infant to develop trust in his capacity for fullness of feeling - that what he feels can be identified, responded to, and contained - at first by another person, and eventually himself through the internalization of this process (Winnicott, 1965).

### **Embodying agency**

Interpersonal interaction in infancy is an embodied enterprise. Our implicit interactional embodied memory is shaped through acting on the world as infants, first and foremost through our bodies in relation to our needs and to the experience (or not) of a reciprocal response. Interactional implicit memory is encoded and expressed in how we relate to others through non-verbal cues, as well as paralinguistic indicators like the prosody, tone, and rhythm of speech (Bendit, 2011; Trevarthen, 2005). These features are overlooked in the assessment of adult attachment using the adult attachment interview (based purely on written transcripts), but they appear to be embodied pre-reflective markers of security (or indeed insecurity) of attachment.

Jonas (1974) emphasized the body in action as the key initial experience of causality. Pre-reflective SoA is distinct from, although linked to, our conscious beliefs about our capacity, or our sense of self-efficacy, to carry out a given action. Early experiences of interaction or isolation, of contingency or non-contingency, of agency or lack thereof, occur across millions of repetitions and form part of the “unthought known”, or the very ‘reality’

of the world, self, and others, for the infant. This ‘reality’, to underscore the point, is an embodied reality, an aspect of the unthought known captured in Behnke’s (1997) notion of “ghost gestures” and McIlwain and Sutton’s (2014) concept of “signature patterns of tension,” including “silent zones”. These aspects of oneself are not necessarily held in current phenomenological awareness, yet shape future action-pattern propensities and perceptions. The key overlapping concept that unites these diverse notions of unreflected or implicit beliefs and action tendencies is the notion of an ongoing accumulation of the residue of repetition of patterns of acting on the world and others, and the experience of the reception of these actions through caregiver containment and audience uptake (Campbell, 1997). This accumulated residue forms a crucial part of what we bring to our encounter with the world in the future, including our capacity for agency and what we are capable of imagining and bringing to mind.

### **Ways in which the development of a sense of agency might go awry**

We now explore some of the ways in which the development of a SoA might go awry. We view these disruptions as important sources of individual differences to be kept in mind when examining agency later in life. There are, of course, myriad difficulties that may arise, or are inherited (e.g., organic neurological deficits), that we will not discuss; rather, our focus will be primarily on the early interpersonal environment.

Taking as a starting point the need for opportunities for experiencing contingency in the environment, we ask, what happens when infants lack such opportunities? Papoušek and Papoušek (1975) described the reaction of a typical infant to a situation in which non-contingency predominates (such as insoluble problems) as one in which a sudden behavioral change may occur, akin to “a biological playing possum: the infant lies motionless with non-converging, staring eyes and sleep-like respiration... This passive behavioral state, which may be characterized as a sort of total inner separation from the environment, may appear

more frequently during the first two months of life” (p. 251). This description captures what happens when typical infants are faced with an isolated event of non-contingent responsiveness. But what happens when non-contingent responsiveness is repeated over time? A wealth of empirical studies examine defensive strategies (i.e., habitual ways of coping with negative affect that are relatively automatic and inflexibly employed) used by infants who experience a repeated lack of contingent responsiveness from their caregivers. Defenses can reliably be identified as early as four months of age (Tronick et al., 2011; Tronick, 2007). In the ‘still face’ experimental paradigm, the caregiver is instructed to remain expressionless for a short period of time, thereby simulating an absence of contingency (Tronick, 1989, 2007). Similarly, in the double video paradigm, parent and infant interact via video link up, and interpersonal contingency is manipulated through the use of either live video streaming (regular interpersonal contingency condition) or delayed video streaming (lower contingency condition; Weinberg & Tronick, 1996). Research utilizing these paradigms supports the hypothesis that infants develop defenses to protect themselves from negative affect in situations where they experience a lack of contingency (Tronick, Als, Adamson, Weise, & Brazelton, 1979; Tronick, 1989). As defenses are automatically employed with the aim of minimizing future experiences of negative affect, they necessarily limit the possibility of novel experiences and engagement in new situations (Tronick, 1989, 2007). Our early interactions include our SoA in a given moment, but also contribute (through repetition) to the development of a pre-reflective SoA as an implicit, embodied assumption that often unknowingly shapes future interactions. This shaping process may then enhance or preclude a person’s capacity to become aware of the full range of affordances in the psychological environment. McIlwain (2008) describes this process as a sequence of cascading constraints, whereby early suboptimal experience alters the range of available developmental trajectories (including through the development of defenses), thus limiting future possibilities.

Defenses also arise in coping with mismatches of a different sort – namely, situations where a parent is misattuned through misidentification of what an infant feels. This misattunement may arise from distraction, or more significantly as a habitual affective pattern of responding over time due to limitations in parental fullness of feeling. Limitations in the parent’s personal access to fullness of feeling impacts audience uptake of specific emotions and thereby limits opportunities for contingency development, pleasure in contingency recognition, and, ultimately, the infant’s SoA.

In contrast, interpersonal contingency that is ‘too concordant’ can also limit or disrupt the infant’s SoA (Beebe & Steele, 2013). Prediction of cause and effect may engender SoA and a feeling of security within a predictable care-giving relationship that gives rise to the capacity for negative capability described earlier. Nevertheless, prediction can also be associated with a more reactive stance. Thus, a person might be hyper-vigilant to her surrounds and exceptionally good at predicting what might happen, without experiencing an accompanying SoA, a sense that she could do something to influence what occurs.

The distinction between the infant’s predictive and active capacities is also supported by research noted earlier that found that especially high levels of attunement are linked with worse rather than better outcomes (Beebe, 2010). Perhaps individuals in a more highly attuned infant-mother dyad are more reactive (in a hyper-vigilant sense) towards each other than individuals with good-enough (middle range) attunement. The more highly attuned dyad may be better at prediction, while creative, spontaneously arising action is constrained at the same time (Fonagy, Gergely, Jurist & Target, 2002). Hyper-vigilance may occur at the expense of free-floating attentional resources that are available for both capturing feelings that emerge within the infant, and directing attention and interest outwards in exploring contingencies available in the environment.

For a securely operating dyad, the risk of disruption of attunement may be more manageable, and contending with it more pleasurable; both members of the dyad are

comfortable in bringing the interaction back on track in the event of a mismatch. In contrast, the insecure dyad, while perhaps minimizing the risk of a mismatch, may perpetuate a situation in which hyper-vigilance (or avoidance) regarding each member's behavior and emotional state limits spontaneous, creative and connective interaction. The recovery from mismatch may not be experienced as a given, due to the limited opportunities for experiences of agency in the past.

Sander (1983) emphasizes brief windows of 'open space' in which the dyad is free from basic regulatory demands (e.g. nutrition, temperature regulation) in the development of SoA. Such windows can provide important intervals during which infants - while being held in mind by caregivers - might begin to pursue their unique preferences and conduct self-initiated explorations of the world around them (Lichtenberg, 1991; Rustin, 1997). Nevertheless, we also underscore the importance of experiences of agency during interactional regulation. Infants do not wait for windows of time to experience agency – the experience of exerting an impact on others and having needs recognized and met (or not) *is* the context in which the developing SoA is shaped (McIlwain, 2008). Stated in another way, interpersonal contingency occurs within the embodied context of our needs as infants, and it is within this context that a SoA develops.

If this interpersonal opportunity is not available, an infant might develop the capacity to 'react' but not to 'act.' To 'act' requires awareness of an internal state or need that prompts action. This identification and awareness of inner states allows for a greater range of available adaptive responses consistent with the individual's skill repertoire and environmental affordances, as opposed to merely reacting to external stimuli that demand attention. This description of what it is to 'act' rather than 'react' includes the case in which the infant responds to a stimulus that arises externally, but the response is enacted with an awareness of choice rather than compulsion; that is, she is aware of her feelings and external demands do not obliterate her connection with these feelings. As Blomfield (1993)

described, “what emerges from an opening-up of intersubjectivity is allowed to take its own form and not have form imposed on it” (p. 92). Parents’ capacity for negative capability (the containment of anxiety associated with the uncertainty) allows for a temporal gap in the interaction with the infant to arise, which creates the possibility that infants will increasingly identify and become aware of their personal internal states. Over millions of interactions, this process is scaffolded through attunement to, and audience uptake of, feeling states, thereby facilitating a SoA. We suggest that this pattern of interpersonal interaction becomes internalized as part of the ‘unthought known’ (Bollas, 1987) and promotes the unfolding of the SoA as an implicit, pre-reflective embodied assumption. This pre-reflective SoA has the potential to become a more reflective, and indeed self-reflective SoA as the suite of developmental competencies is enhanced over the early life period.

### **Limited contingent responsiveness – a case example**

What happens if experiences of non-contingency are repeated consistently over time? Examining atypical early environments provides a window into what cannot be explored in laboratory-based research. Some environments, which lack contingent responsiveness on the part of the main caregiver have been researched extensively. A wealth of research suggests that children of mothers who experience postnatal depression are more likely to go on to experience insecure attachment and have a higher likelihood of suffering from psychopathology later in life (Fonagy & Target, 2005; Murray et al., 2011; Murray, 1992).

However, a less well-explored example of an atypical early environment is the Neonatal Intensive Care Unit (NICU). Studies of parents’ visitation and holding of their infants in the NICU suggest that infants in this setting experience fewer opportunities for interpersonal contingency and the collateral development of a SoA. Fortunately, visitation and holding of infants in the NICU has been increasingly feasible due to changed hospital policies in many countries, and programs such as “Kangaroo care” that encourage skin-to-skin contact with infants (Feldman & Eidelman, 2003; Reynolds et al., 2013). Nevertheless,

visitation and holding frequency vary considerably. Some studies report that daily visits occurred for the majority of infants, whereas other studies found that most infants were visited on five or fewer days per week (Latva, Lehtonen, Salmelin & Tamminen, 2007; Reynolds et al., 2013). Thus, this environment is characterized by a relatively high degree of variation in exposure to interpersonal contingency and opportunities for containment, attunement, and scaffolding. We would expect the development of a SoA to be impacted by these atypical experience and (often lack of) interpersonal contingency.

In the NICU, higher visitation frequencies were associated with less infant irritability and stress. Both higher visitation and holding of infants predicted more mature and fluid motor movements, as indicated on the NICU Network Neurobehavioral Assessment Scale (Reynolds et al., 2013). The variability in opportunities for interpersonal contingency is likely to occur over a multitude of repetitions for some infants, rather than as isolated instances such as those that Papoušek and Papoušek (1975) described. Furthermore, ample research demonstrates that premature infants are at a higher risk of psychopathology later in life, ranging from increased rates of ADHD, anxiety, depression, anorexia, and many other disorders, to an increased prevalence of suicide (Lindberg & Hjern, 2003; Lindström, Lindblad, & Hjern, 2009; Patton et al., 2004; Riordan, Selvaraj, Stark, & Gilbert, 2006). While a broad brushstroke understanding of this increased risk has signposted the potential vulnerability in these populations, the processes associated with how atypical starts to life confer increased risk are not yet well understood. We postulate that disruptions to SoA may well contribute to the increased risk of psychopathology detected in this population. We are not proposing that a disruption to SoA is the only process whereby increased risk of psychopathology is conferred. Other factors, such as parental mental health, undoubtedly play a role in promoting risk and affecting the development of a SoA. In addition, infants in NICUs typically experience an average of 14 painful procedures per day (Grunau, 2013), which could impact the formation of a SoA due to the overwhelming experiences of fear,



pain, and helplessness in response to intense affect without audience uptake and containment. Because the primary role of medical professionals is to care for infants' medical health, they may not be in an optimal position to respond to infants' distress, nor may it be advisable at times, given the attention and focus required to perform often life-saving medical procedures (Cohen, 2003). Nevertheless, the potential confound of infant medical status is important to note in determining the impact of this atypical environment and lack of interpersonal contingency on mental health in general and the development of pre-reflective agency in particular.

Finally, a wide range of so called atypical early interactional environments may limit opportunities for contingency and agency. Specifically, factors such as parents' limited capacity to be aware of, and respond to, an infant's state; parents' own attachment styles; childhood exposure to trauma, genetic influences, and the availability of support may all impinge on the early interpersonal environment (Fonagy & Target, 2005; Liotti, 2004).

### **Final thoughts**

To conclude, we have emphasized the primacy of the environment and highlighted the importance of the caregiver's scaffolding and audience uptake of the infant's pleasure in bringing about contingent outcomes and facilitating a SoA. We have also emphasized attunement in which accurate, marked, inter-modal feedback plays an important role in the infant's developing ability to identify and regulate internal states. We suggest that these processes are integral to the development of a pre-reflective SoA; that is, the infant's experience of another person recognizing and responding to his inner states and the infant's experience of *affecting* another person, in turn.

We have also highlighted findings that 'good enough' attunement – interpersonal contingency in the middle range – is optimal for secure attachment (Beebe et al., 2010). For these dyads, the caregiver's capacity to tolerate uncertainty may create a gap in which infant

and parent can sense feelings as they arise, increasing opportunities for novel spontaneous exchanges, while also providing greater opportunity for the repair of mismatches (Tronick, 2007). In contrast, infants in dyads with partners who are unable to surmount anxiety associated with uncertainty, and are thus hyper-vigilantly attuned, are more likely to go on to experience a diminished SoA. Similarly, we hypothesize that infants in situations where opportunities for contingent relations are limited, such as those that may occur in atypical environments like the NICU, are more likely to experience SoA disruptions later in life.

We have argued that aspects of a SoA are inaccessible to introspection. It is possible that in some instances it is not simply the case that a person may not believe that her actions can cause an adaptive contingent outcome in the environment, but that it may not even occur to her to think that this could be so. Understanding individual differences in the development of an embodied SoA has important implications for how we assess and treat disorders of agency in adulthood. Research is needed to better understand potential individual differences. We hope that by synthesizing diverse literatures, the framework that we have advanced will facilitate this important endeavor.

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## Chapter 4: Sense of agency: an interpersonally situated embodied approach

In considering how the interpersonally situated embodied account of sense of agency development relates to sense of agency in adults, this chapter seeks to build on the developmental approach presented in the previous chapter. I examine empirical and theoretical approaches to emotion and sense of agency within cognitive science, and I critically engage with this work. Gentsch and Synofzik (2014) highlight the need to incorporate ‘affective priors’ into current models. I examine already well-developed approaches in other disciplines that could assist in addressing this gap. I also suggest that long-term sense of agency requires positing additional aspects of pre-reflective sense of agency, and I explore the relationship between levels of pre-reflective and reflective sense of agency. Finally, I suggest a distinction between sense of agency and sense of control.

The journal *Frontiers in Psychology* was chosen for this manuscript, which is written as a *Hypothesis and Theory* article. *Frontiers* continues to be one of the foremost journals for publication of sense of agency research. Whilst this paper is atypical for this journal, in that it does not fit neatly into previously published work, the purpose of the journal selection is to expand the conversational bounds of sense of agency research among researchers who would not ordinarily encounter some of the ideas and perspectives put forward in this paper. I researched and drafted the article in full. My supervisors, Neil Levy and Vince Polito, contributed with exceptionally helpful comments and suggestions on drafts of this manuscript. Doris McIlwain’s contributions through lively and inspiring discussions and comments on a very early draft proved invaluable in the development of this paper.

RUNNING HEAD: Sense of agency: interpersonally situated and embodied

**Sense of agency: an interpersonally situated embodied approach**

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### Abstract

Sense of agency, as it develops in infancy, is an interpersonally situated, affective, embodied enterprise (Deans et al., 2015). In this article, I argue for the importance of considering the interpersonal and emotional aspects of sense of agency in adulthood. I discuss relevant empirical research and theoretical approaches in cognitive science, and I suggest ways in which interesting questions that arise in this research can be addressed. I agree with Gentsch and Synofzik (2014) about the importance of considering the affective aspects of ‘priors’ or ‘expectancies’ on sense of agency, and I argue that approaches to just this problem are already well developed in other disciplines. In considering the socially situated aspects of sense of agency, I draw on the work of Susan Campbell (1997), particularly addressing the implications of an account of the interpersonal formation of feeling on sense of agency in adulthood. I then go on to posit additional forms of pre-reflective sense of agency, I and examine the question of how pre-reflective and reflective levels interrelate. Finally, I suggest a distinction between sense of agency and sense of control.

**Keywords:** *sense of agency, interpersonal, situated, embodied, emotion*

## Introduction

Sense of agency research has been applied to a wide range of clinical and everyday phenomena. For example, it has been related to difficult questions of intent and assessment of ‘voluntary action’ within the judicial process (Christensen et al., 2016; Haggard, 2017). Haggard (2017) points to cases in which sense of agency over action may be diminished, such as in situations involving intense emotion or circumstances of prolonged abuse. In such cases, ascertaining the degree to which actions were voluntary and outcomes were foreseeable is of utmost importance. Sense of agency has also been implicated in a wide range of psychopathologies—lack of volition in depression, de-personalisation disorder (DPD) and experiences of trauma, to name just a few. However, despite relevance to applied domains of the judicial process and clinical treatment, few current approaches include the influence of emotions, affects and motivation on sense of agency (Gentsch and Synofzik, 2014).

By beginning to rectify this omission, I aim to contribute to the development of a more comprehensive conceptualisation of sense of agency. Although much of the sense of agency literature focuses on the more easily operationalised aspects of human behaviour, such as motor processes, there has been a call to acknowledge the socially and culturally situated nature of sense of agency (Gallagher, 2012, 2013; Gallagher and Trigg, 2016). Studies from an enactivist perspective have partly addressed this call (Slaby et al., 2013; Slaby and Wüschner, 2014; Buhrmann and Di Paolo, 2017), and I draw on select contributions from this approach below. Empirical research in cognitive science is just beginning to address the effects of emotion and motivation on sense of agency (Gentsch and Synofzik, 2014). While Gentsch and Synofzik (2014) have provided the beginnings of a framework for the integration of these findings with current models of sense of agency, I believe there is more to add. I hope my contribution can offer a novel integration of perspectives on the emotional and interpersonal influences on sense of agency. Specifically, I

wish to demonstrate how theories of the development of sense of agency in infancy, as well as perspectives from attachment theory, psychoanalytic approaches to sense of agency and views from philosophy of mind (Campbell, 1997), can inform an interpersonally situated concept of sense of agency.

Our first experiences of sense of agency are with our caregivers, and these interactions involve the embodied, socially situated responses to our earliest actions and needs (Deans et al., 2015). I argue that the development of sense of agency is primarily interpersonal, embodied enterprise, and these factors continue to influence sense of agency in adulthood. I endeavour to show how the interpersonal manner in which sense of agency first arises has implications for sense of agency across the lifespan. This more detailed, multi-level, interpersonal conceptualisation of sense of agency has several advantages over the dominant approach of considering sense of agency simply in terms of the individual's experience. I suggest that such considerations provide the basis for a more ecologically valid approach that allows for greater integration of current conceptualisations of sense of agency with real world experiences of actions outside of the laboratory.

My approach is consistent with the view that intention formation is multiply motivated and occurs within the context of variously activated affects, motivations and emotions (McIlwain, 2006; McIlwain, 2007). I look at the implications of the varying availability of these affects, motivations and emotions for conscious awareness and the effects of this variation on experiences of sense of agency. I suggest that the strength of sense of agency will likely be affected by the interpersonal milieu (including the interaction of interpersonal and intrapersonal affective, emotional and motivational factors) such that it may be possible to think, imagine and do different things in one interpersonal context but not another.

I begin with a brief outline of common conceptualisations of sense of agency. I then provide an overview of the empirical literature on emotion in sense of agency research from a

cognitive science perspective as well as an existing framework for addressing affect in sense of agency (Gentsch & Synofzik, 2014). I then present a case for an embodied, interpersonally situated sense of agency. In doing so, I draw on accounts of the development of sense of agency in infancy and theories from philosophy of mind and infant research regarding the interpersonal formation of feeling, which I extend to emergent intention formation and action. The importance of acknowledging the influence of the varying availability of emotions and motivations to awareness on sense of agency is then outlined. I aim to demonstrate how the personal histories we bring to action in the form of ‘procedural action expectancies’ PAEs (Beebe et al., 2010) can shape our sense of agency in specific ways that help explain individual differences across situational contexts. I then posit additional aspects of pre-reflective sense of agency and explore the relationship between pre-reflective and reflective levels of sense of agency. Finally, I suggest a distinction between sense of agency and sense of control.

### **Sense of agency**

As Haggard (2017) puts it, ‘the core of sense of agency... is the association between a voluntary action and an outcome’ (p. 198). To take a simplified everyday example, you likely experience a sense of agency when you flick a switch to turn on the lights. Your (presumably) voluntary action—flicking the switch—results in the intended contingent outcome (the lights coming on). Conversely, if you manage to flick the switch but the lights do not come on, you would not experience a sense of agency (Haggard, 2017; but see Christensen and Grubaum, 2018; Grunbaum and Christensen, 2018). There are at least two key components—the sense of the action as voluntary and the contingent link between action and intended outcome. Arguably, a third component is your capacity to distinguish own action–outcome contingency from that of other agents and from unrelated events that happen in the world. Sense of agency usually includes a concurrent sense of ownership—it feels like your own body acting to turn on the switch. However, the converse is not necessarily true, as

in the case where sense of ownership is retained in the case of reflex movements. In such cases, sense of agency is lacking—it does not feel voluntary when your leg kicks forward after a physician taps your patella [I have also discussed this in Chapter 2]. However, whilst such descriptions provide a basic sketch of the concept as it has been examined in much of the cognitive science literature, the complexity and ambiguity of sense of agency remains. I have suggested elsewhere that a generative interdisciplinary discussion needs to be clear about a number of factors that span the broad array of clinical and everyday phenomena related to sense of agency [see Chapter 2]. Factors that vary across disciplinary discussions include processes involved (from low-level motor processes to higher conceptual processes), levels of awareness (from pre-reflective or ‘phenomenologically thin’ to reflective, which can include explicit retrospective judgements about action—“I did that!”—or plans for future action), unit of analysis (whether the task is the unit of analysis—flicking on the lights—or whether the motion of the action—flicking—is the unit of analysis, will have a bearing on whether sense of agency can be said to be present), and timing (prospective, retrospective, long-term, or current) [for a more detailed description of these factors, see Chapter 2]. Sense of agency can go awry in a multitude of ways. At least some of the ways include: the degree to which the action feels voluntary; the forming of intentions; the ascribing and/or experiencing of the intentions as coming from within versus someone or something else or the environment; detection of the outcome; linking of contingent outcome to the intention; and perception of the outcome as the intended contingent outcome rather than merely a contingent outcome.

I suggest that a number of neglected aspects of sense of agency are highly relevant to understanding the ways in which sense of agency can go awry in the manner listed above. These include the emotional and motivational aspects of sense of agency, which I argue can influence how ‘voluntary’ an action is felt to be. Long-term and prospective sense of agency are also closely linked with emotional and motivational processes, as I will show below.

Furthermore, the self/other distinction necessary for accurate experience or attribution of intentions actions and outcomes to self can arguably be influenced by emotional and motivational processes. Before considering these arguments in detail, I first explore the existing empirical literature on emotion and sense of agency. I then consider how these findings have been incorporated into current theoretical models, before presenting a positive account. I posit an account of sense of agency that acknowledges the interpersonally situated embodied nature of this concept. In doing so, I build on an account of the way in which sense of agency develops in infancy, and I suggest ramifications for the way in which this concept is conceived of in relation to adults.

### **Empirical investigations of emotion, motivation and social contexts**

Despite a recent call for experimental paradigms that have greater ecological validity (Yoshie and Haggard, 2013; Christensen et al., 2015; Christensen et al., 2016; Beyer et al., 2017), including paradigms incorporating emotional and motivational stimuli, there remains a scarcity of studies investigating these factors in sense of agency research. The studies that have been conducted have returned inconsistent findings. Two studies using intentional binding (IB) paradigms found a link between negative outcomes and lowered sense of agency (Takahata et al., 2012; Yoshie and Haggard, 2013). These studies found reduced IB for actions paired with negative outcomes, such as tones paired with simulated financial loss using a gambling paradigm (Takahata et al., 2012) or negatively emotionally toned voices (Yoshie and Haggard, 2013). These results suggested that sense of agency was diminished under conditions in which negative emotion was activated through negative outcomes of actions. In contrast, sense of agency was relatively increased for positive outcomes. Both studies suggested that these findings can best be understood as support for the influence of a self-serving attributional bias. That is, they suggested that the tendency in healthy adults to attribute positive outcomes to the self and negative outcomes to others is consistent with the finding of diminished sense of agency (a sense that these actions were ‘less of their own



doing’) for actions that result in negative outcomes and a contrasting increase in sense of agency for actions that resulted in positive outcomes.

Gentsch et al. (2015) used sensory attenuation rather than IB as an implicit measure of sense of agency and found evidence of reduced sense of agency for negative outcomes. Ohbi, Swiderski and Farquhar (2013) also found reduced sense of agency, measured by IB, when memories of depression were triggered, compared to baseline or memories of the previous day. Aarts et al. (2012) found that subjects primed with positive visual stimuli showed increased binding compared to those primed with neutral visual stimuli. Christensen et al., (2016) attempted to differentiate the contributions of retrospective and prospective components of sense of agency in a paradigm using an emotionally valenced outcome. They found that when outcomes were (1) positive, (2) unexpected and (3) relatively unlikely, IB was increased, which they interpreted as evidence that retrospective (but not prospective) pre-reflective sense of agency was increased, consistent with the self-serving bias. Their findings also suggest that prospective sense of agency is reduced in the case of predictable negative experiences. They report that ‘affective context may change the experience of the *nature and quality of the act*’ (Christensen et al., 2016, p. 8, emphasis in original), that is, the emotional context may change how actions are experienced down to the motor process level. Taken together, these results draw a picture in which sense of agency is diminished for negative outcomes or for instances in which negative emotional states may be triggered.

However, the picture becomes more complex as further studies are integrated. Moreton, Callan and Hughes (2017) failed to replicate Yoshie and Haggard’s (2013) results using identical methodology and stimuli, as well as identical methodology and visual instead of auditory stimuli, despite being a well-powered study. Moretto, Walsh and Haggard (2011) found increased rather than decreased binding for outcomes that involved morally relevant negative visual stimuli compared to outcomes that involved less negative stimuli. However, this study did not sufficiently distinguish arousal or salience of outcomes from the effect of

the valence of the outcome and was under-powered (Yoshie and Haggard, 2013).

Findings from Hughes (2015) indicated further anomalous results. Sense of agency (measured using sensory attenuation) was increased rather than decreased for fearful versus neutral facial stimuli. Hughes (2015) suggested these results could be explained in terms of social cues and the behaviour they elicit. For example, the social cue of fear could elicit a behaviour of approach to comfort or offer assistance, whereas anger typically elicits avoidance. It is possible that the fearful face elicited ‘approach’ and thus functioned as one would expect more positively valenced stimuli would—increasing sense of agency. However, this is at best a hypothesis, and further experiments are required to clarify whether this difference was due to the type of stimuli, situational or other measurement features. Also, it is likely that there would be individual differences based on personality style, the assessment and clarification of which may also help to cash out details of the connection between behaviour, affect, stimulus and sense of agency. For example, whilst fear may elicit ‘approach’ in safe contexts from personalities who have access to ‘hot’ empathic responding, it may result in a very different response in more psychopathically oriented personalities in which it may be paired with affects of interest, excitement, and blunted perception of intensities (for a discussion of the influence of personality on perception, see McIlwain, 2006).

The results of empirical studies thus far suggest there is a link between negative outcomes and reduced sense of agency. However, due to anomalous findings and a lack of nuance in the distinction between negatively versus positively valenced stimuli, a coherent picture of the influence of emotional factors on sense of agency is still needed. The use of more ecologically valid experimental paradigms in sense of agency research is an exciting development in the field. However, there remains room for further development.

The stimuli in some of the paradigms outlined above included emotional and social aspects, such as positive and negative faces or voices, and situations involving ‘moral’

outcomes. Studies that focused specifically on social aspects of sense of agency included paradigms in which participants engaged in ‘joint action’ involving coordinated action performed with others, parallel action in the presence of others or paradigms in which stimuli evoked social contexts (for example, of moral responsibility).

Desantis, Roussel and Waszak (2011) investigated parallel action and the effect on sense of agency (measured by IB) by instilling participants with the belief that they would cause the tone as opposed to another person causing the tone. The authors found that the belief that their own actions would result in the tone sounding was correlated with higher IB effects. They concluded that prior belief can increase sense of agency in the presence of other people but not while acting alone (Desantis et al., 2011). Dewey and Carr (2013) found that when people acted in parallel, when asked about the effect of the action via the question “who produced the tone?” (to which participants responded on a Likert scale; p. 163), they attributed agency to the person who performed the action in closest temporal contiguity with the action outcome (in this case an auditory tone). This was the case even when prior pairings had been established between actions and outcome tones of a specified duration of 600ms (Dewey and Carr, 2013).

Moretto, Walsh and Haggard (2011) examined sense of agency and sense of responsibility in morally and economically relevant social contexts. They found that sense of agency increased in morally relevant contexts relative to economic contexts. As mentioned above, they also found increased binding (and increased sense of agency) when outcomes were more severely negative. The authors note the absence of the typical finding regarding the tendency to avoid action rather than take action in the trolley problem, which was one of their stimuli. The trolley problem involves a moral dilemma in which the subject must either choose to take action and divert the train so that it would kill just one person or to abstain from action which would result in five people being killed by the train. Typically, there is an effect whereby subjects tend to abstain from action rather than engaging utilitarian decision-

making principles (by which the least harm would result, that is, the train would be diverted to kill just one person rather than five). To explain the absence of this effect in their study, Moretto et al. (2011) point towards the impersonal nature of the stimuli they used, which has been shown in other studies to result in the engagement of utilitarian reasoning rather than avoidance of action (and by implication avoidance of responsibility). However, an alternative explanation could be linked to the fact that *action was required to make either response*. In their experiment both options (to ‘change’ and divert the trolley to kill one person or to ‘stay’ and have the trolley kill five people) involved an action (pressing the relevant button). It is thus possible, and even likely, that the usual case of action versus inaction was not actually being tested. A further hypothesis might draw on the potential adaptiveness of the increased salience of negative outcomes regarding moral actions in the social context (Vaish et al., 2008). It is clear that further research is needed to clarify the relationship between these variables.

It is encouraging that more studies are using paradigms that include greater recognition of the effects of emotion and motivation and paradigms that are more ecologically valid and thus more directly relevant to the everyday and clinical conditions to which sense of agency research purportedly relates. Having reviewed the empirical literature on sense of agency in emotional, motivational and social contexts as it currently stands, I turn now to the question of how these results have been incorporated into current models of sense of agency, before demonstrating the gaps in these models and positing a novel framework to address these omissions.

### **Current theories of sense of agency: emotion, motivation and social contexts**

Gensch and Synofzik (2014) highlight the importance of emotions to our understanding of sense of agency and their neglect in much research in this field. They put

forward an ‘affective coding of agency’ theory aimed at extending current cue integration models (such as the multifactorial weighting model; MWM) through the incorporation of the influence of emotions on sense of agency at varying levels, including prospective, immediate and retrospective levels. ‘Prospective affective coding’ includes emotional and motivational Bayesian priors affected by: current mood, attitudes and expectations of action outcome; motivation to perform a given action; and action context (such as friendly or hostile environments). Unlike Braun et al., (2018), they suggest that bottom-up, not just top-down, factors influence affective and motivational priors. ‘Immediate affective coding’ is conceptualised as directly affecting the pre-reflective ‘feeling of agency’. Gensch and Synofzik (2014) point towards evidence from Le Doux (2000) regarding the rapid and automatic manner in which emotions can affect bodily responses. They also suggest that individual differences at this level will exist in the form of varying levels of interoceptive sensitivity (typically measured empirically through tests of the accuracy of the participant’s detection of their own heart beat). In contrast, ‘retrospective affective coding’ is influenced by ‘attributional style’, ‘situational self-schemas’, self-motives and post hoc affective appraisal of action outcomes. In addition to these levels, Gensch and Synofzik suggest there will be factors that operate across all levels, including ‘affective style’ and emotion regulation capacity. Here they draw on the finding that depersonalisation, associated with low sense of agency, is often linked with a ‘shutting down’ of affect and an affective suppression style (Phillips et al., 2001).

Gensch and Synofzik (2014) argue that the proposed ‘affective coding of agency’ has implications for the process by which cues are weighted in the MWM. Previous models of the MWM are more closely aligned with traditional Bayesian Cue Integration Theory (BCIT), in which cue weighting is reflective of the reliability and accuracy of the signal input. However, motivational and emotional factors may affect the weighting of different cues over and above signal fidelity such that traditional formulations of BCIT regarding weighting cues

via cue reliability need to be revised (Gensch and Synofzik, 2014). Cue weighting, they argue, may instead be ‘influenced by activated self-motives in a given social/emotional context’ (Gensch and Synofzik, 2014, p. 3). However, a detailed conceptualisation of how this would be formulated has not yet been proposed.

Gensch and Synofzik’s (2014) ‘affective coding of agency’ provides a solid basis for a more emotionally literate sense of agency concept. Elements that need to be incorporated, in addition to those they suggest, include the elaboration of the interplay between emotions, motivations and *interpersonally* situated sense of agency and *how* emotions and motivation may influence weighting in the MCM and Bayesian priors. The authors call for a systematic investigation of affective processes and emotion regulation strategies: this is part of what I address in this paper. I suggest that, in other disciplines, there are already highly organised and systematised ways of approaching patterns of emotion regulation, affective style and motivation factors, which can be drawn upon to address this gap.

The focus on ‘self-motives’ (Leary, 2007) has some advantages, particularly regarding the operationalisation of related concepts (such as the self-serving bias). However, it does not acknowledge the vast previous literature regarding the influence of motivation on actions and self-awareness (dating back at least as far as Freud). In particular, ‘self-motives’ do not sufficiently integrate emotional factors with an interpersonally situated formulation of motivation, but rather tend to adopt an individualistic approach that emphasises concerns such as self-presentation and self-enhancement. Accounts from attachment theory and psychoanalysis are better positioned to investigate the influence of motivation on sense of agency due to the capacity of these frameworks for offering an integrated interpersonally situated approach. This is particularly important with regards to how emotional and motivational factors scaffold situational salience, because this relates not only to Bayesian priors in the MWM but also to the ways in which sense of agency cues, rather than only priors, are perceived.

While studies utilising the self-serving attributional bias may provide a test case for explorations of sense of agency, the wide range of potential biases that people bring to action and interaction extends well beyond this. A more comprehensive system is required, whereby motivational, emotional and interpersonal factors can be examined in light of the effect they have on cue weighting and Bayesian priors. This requires a very different approach than the one undertaken thus far. Research that undertakes to investigate sense of agency in interpersonal contexts has operated under the assumption that actions and intentions are not interpersonally co-constituted but, rather, the properties of individual agents (although there are exceptions, for example see Burhnmann and Di Paolo, 2017). Such a ‘brain-bound’ (Clark, 2005) approach is problematic for reasons elaborated below. I suggest adopting an approach that is not limited to the confines of causal brain states, which includes the influence of other people on the initiation and unfolding execution of actions or the emergence of intentional states. The majority of research in this area has continued to involve laboratory-based experiments of individuals acting alone and performing experimenter-specified basic actions (such as button presses or joy stick movements) under no choice conditions (Haggard, 2017, Braun et al., 2018; Moore and Obhi, 2012; however, see Barlas, Hockley and Obhi, 2017). Such paradigms have proven incredibly useful in examining detailed differences in neurological correlates of motor action processes and sense of agency at a pre-reflective motor action level (David, Obhi and Moore, 2015). However, there remains a need for empirical paradigms and theoretical models to shift in the direction of a more integrated framework. As Gallagher (2013) puts it:

We shouldn’t be looking exclusively inside the head. Rather, embodied action happens in a world that is physical and social and that often reflects perceptual and affective valiances, and the effects of forces and affordances that are both physical and social. Notions of agency and intention, as well as autonomy and responsibility, are best conceived in terms that include social effects (p.135).

As the recent empirical work reviewed above suggests, even at the level of motor processes there is now evidence that emotional, motivational and social factors affect pre-reflective sense of agency. This is consistent with the clinical picture of disorders that involve an aberrant experience of sense of agency and concurrently altered motivational and emotional aspects that are a feature of these same disorders (Fotopoulou, 2010).

Research into the emotional and interpersonal aspects of sense of agency is just beginning. However, as Lambie and Marcel (2002) put it, ‘having emotions means that the way things are, were, or will be *matters* to one’ (p. 219) To leave emotions out of any conceptualisation of a sense of agency is to omit the very *reasons* for action from our *experiences* of action. The emotional context of action is importantly linked with conditions in which sense of agency might be enhanced or diminished and how sense of agency might arise ‘in the wild’, to use Hutchins’ (1995) phrase. In stripping back our studies of sense of agency to button presses and joystick manoeuvres, we may have gained controlled environments but lost much of what makes sense of agency interesting in the first place—it’s relevance to everyday life, judicial decisions (Moretto, Walsch and Haggard, 2011) and disorders of agency found in illnesses such as schizophrenia (Farrer and Franck, 2011; Fuchs, 2005), agoraphobia (Gallagher and Trigg, 2016) and depression (Slaby, Paskaleva, and Stephan, 2013).

Few studies of sense of agency have occurred in circumstances in which the tasks that subjects are asked to complete matter to them, even minimally. Although laboratory experiments allow high levels of experimenter control, these types of experiments also minimise relevance to personhood and ignore the larger framework of social interactions and culture within which sense of agency resides.

In the next section, I argue that conceptualisations of sense of agency as an interpersonally situated concept can benefit from an understanding of the development of sense of agency in infancy. I focus on an understanding of emotional interaction as one of the



first contexts in which we learn our actions can have a contingent impact upon the world. The interpersonal nature of the formation of feelings is also examined in light of the connection between emotional expression and the formation of feeling and the contingent responsiveness of others. Elsewhere, I have argued that the development of a sense of agency is primarily an interpersonal, embodied enterprise (Deans, McIlwain, Geeves, 2015). Our first experiences of sense of agency are with our caregivers and involve the embodied, socially situated responses to our earliest actions and needs. Here, I endeavour to show how this relates to sense of agency in adulthood, and I argue that the concepts of audience uptake, fullness of feeling and contingent responsiveness are pivotal in understanding sense of agency in adults.

### **Towards an integrated concept of sense of agency**

In elaborating on the need for a more socially situated sense of agency, Gallagher (2013) provides the following example:

Consider instances where you are quite capable of and perhaps even proficient at doing action A, e.g. successfully throwing a basketball through the hoop. Your performance may be affected simply by the fact of having an audience of very tall basketball superstars. You might in fact feel a degree of inadequacy in such a circumstance, simply because certain people are present.’ (p. 132)

Whether we are inclined to approach the basketball superstars with excitement as big friendly giants from which to learn, or to shrink away from the formidable, intimidating professionals towering above us, will depend in part on the interaction and the emergent, ongoing formation of a number of factors. These include, but are not limited to: the signals the basketball superstars give us (welcoming smiles versus hostile glares); the current mood we find ourselves in (tired after a long day at work or enlivened after an interesting conversation with a friend); and the history of interpersonal interactions and related experiences that we bring to the occasion and which the particular attributes of the unfolding dynamic of *this*

interaction with *these* individuals *in just this way* may trigger. Our emergent sense of agency with regards to our actions (how well we can access our skill of shooting hoops) in such a scenario is heavily influenced by these factors and, I argue, cannot be said to be fully separate from the unfolding interpersonal situation at hand. That is, it will continue to be affected by the emotions and motivations activated (and their availability for awareness) and our own interpersonal history, including the continually unfolding dynamic process of emotional, physical, social and cultural exchanges that are changing moment to moment. Individual differences in the interpersonal, emotional and motivational histories each person brings to action and their current experience of variously activated emotions (such as fear) and motivations (for example, to impress others) will shape situational salience of agency cues in a dynamic, unfolding manner. Similar to Campbell's account of the interpersonal formation of feelings, I am suggesting that the interpersonal milieu extends right down into the very formation of intentions and sense of generating a specific motor action.

This approach draws on current attachment theory, infant research and psychoanalytic theories. What is new is the proposed integration with current models of sense of agency, in accordance with recent calls for a conceptualisation of sense of agency as socially situated. There is a long history of attachment theory, infant research and psychoanalytic thought benefiting from theories that cognitive science and philosophy of mind have elucidated, systems theory to name just one example. I believe it is time for some of the influence to flow in the opposite direction.

#### *Development of sense of agency as an interpersonal, embodied enterprise*

We experience contingent responsiveness as infants when our actions cause a response in the other person. As Alvarez and Furgiuele (1997) put it, the experience of the infant could be summed up as "I cause things to happen in her, therefore I begin to feel like she is, and I begin to feel like I am" (p.125). This happens at the level of motor action and

during emotional exchanges in which the infant begins to connect internal bodily experience of feeling (such as distress) with the expression formation and unfolding response from the caregiver (such as soothing: Stern, 1989; Tronick, 1985, Beebe, 2010). Thus, a person's connection with their own emerging feelings is not a given (Gergley and Watson, 1996). Rather it is through the multitude of interpersonal exchanges in which an interactive partner is able to attune to, and adequately contingently respond to, our expressions or actions, that such a connection with fullness of feeling arises [see Chapter 3]. This process continues into adulthood, as Campbell's (1997) concept of the interpersonal formation of feeling details, and which I explain below. The term 'fullness of feeling' is used here to refer to a person's capacity to access a broad range of emotional feeling states, as opposed to individuals in whom the range of emotional feeling states may be restricted (for example, in people who may have been raised in environments in which it was not safe to feel or express fear of anger; McIlwain, 2010).

The experience of our actions and their effects is crucial to sense of agency. Emotional interaction is, arguably, an instance of this, in which our actions (expressions, gestures, paralinguistic indicators, such as tone and prosody, and the linguistic content of our verbalisations) affect or fail to affect another person. In this manner, the iterative and interpersonally-emergent process of emotional interaction unfolds and with it, I argue, our dynamically emerging sense of agency. I suggest that such a process leads to both in-the-moment individual differences and individual differences that may persist over time, which each scaffold the salience of other agency cues (and much else besides) in influential ways. As I suggest below, whilst this process begins in infancy, it is nonetheless not confined to infancy, and it is an important aspect of adult sense of agency.

### *Interpersonal formation of feelings and sense of agency*

The formation of feeling—not just the expression of it—is an interpersonal phenomenon (Campbell, 1997). Campbell's concept of 'audience uptake' captures the

iterative relational process through which one person's receptivity to their interactive partner's unfolding emotion dynamically contributes to *both* the generation and further expression of the feeling (Campbell, 1997). However, when audience is limited, the emerging feeling may instead be dismissed. This can interfere with the ongoing *formation* of the feeling, rather than just influencing the expression of the emotion (Campbell, 1997). The capacity for 'fullness of feeling' (McIlwain, 2009, 2010), that is, the capacity to be aware of the full range and intensity of feelings, is required for more complete audience uptake of, and attunement to, the interactive partner's feelings (McIlwain, 2009, 2010). This process begins in infancy and involves mutual influence from parent and infant. As Tronick (1989) states, "affective communications of each infant and mother actually changes the emotional experience and behaviour of the other" (p.114). I argue elsewhere [Deans et al., 2015, see Chapter 3] that it is in these early interpersonal emotional exchanges that we first experience our actions (including facial expressions, movements, vocalisations and gestures) contingently affecting the world (for example, the responsiveness of the caregiver). That is, this is the primary way in which we first experience a sense of agency (Deans et al., 2015; Knox, 2011; Rustin, 1997). Thus, Campbell's (1997) account of the interpersonal formation of feeling can be extended to intention formation, and this captures the dynamic emergent quality of sense of agency.

*Influence of varying availability to awareness of emotions and motivations on sense of agency*

None of us experience perfect audience uptake of our own feelings early in life and, as such, we bear certain biases in our capacities for audience uptake, depending on which emotions are being expressed and in what interpersonal context. For example, it is frequently the case that women in many cultures are socialised to experience more fear and less anger relative to men. That is, there has been more receptivity to and audience uptake of their fear

than their anger, which may have met with more dismissive responses (McIlwain, 2009).

This introduces biases which form part of the interaction expectancies that I describe below.

Differential access to fullness of feeling affects sense of agency. For example, I argue, along with Gensch and Synofzik (2014), that the core symptoms of depersonalisation involve self-detachment and decreased sense of agency, resulting from a ‘shutting down’ of internal emotional responsiveness (Phillips et al., 2001). Differential access to fullness of feeling and our own motivational processes is also captured in the example of people suffering from agnosia for hemiplegia (AHP), in which they experience a sense of controlling their own bodily actions but are in fact paralysed and cannot voluntarily produce motor actions (Feinberg, Roane and Ali, 2000) [discussed in Chapter 2]. This ‘not-knowing’ about their paralysis diminishes under conditions in which they are assisted to become more aware of their own negative emotion (Fotopoulou et al., 2010). One hypothesis is that by becoming more aware of their own negative affect, they are influencing their access to fullness of feeling, that is, to the negative emotion connected with their paralysis. In this way, they influence their motivation ‘not-to-know’ about their awful predicament and gain a more realistic sense of agency for action through this increased awareness (even if this is a temporary change). Many clinical approaches to disorders of sense of agency, such as anxiety, involve helping the individual to connect to emotions and fullness of feeling that they may habitually suppress.

In examining the relationship between fullness of feeling, audience uptake and sense of agency, I draw on an example from Knox (2007). She describes a chance observation of a father and daughter in a supermarket:

The child, a girl of about 8 or 9, was scanning in the purchases. The father, clearly impatient and irritable, could not allow her time to work out how to do it, but as she uncertainly picked out an item from the basket, said in an annoyed tone, ‘pay attention; careful what you are doing’, sighing loudly as she tried to scan the item and

when the machine misread it, he immediately and triumphantly blamed the child saying, ‘now look what you’ve done’, although it was clearly a machine error and not the child’s fault. She picked up each further item with greater and greater hesitancy, her body language conveying her self-doubt as she fumbled and glanced anxiously at her father each time. He responded with remarks such as ‘don’t get it wrong again’ and ‘this is rather a slow process—we haven’t got all day’, eventually taking over the job from her in exasperation. (p. 545)

An important point that this example serves to highlight is that our first actions and our developing sense of our capacity for action emerge within the interpersonal context of an attachment relationship in which we depend upon the other person for survival. These parameters mean that we may be motivated to act in particular ways and experience a motivated ‘not-knowing’ with regards to certain elements of our experience (Bowlby, 1960). For example, if the father in the above observation is intolerant of his daughter’s angry protest, she may eventually begin to suppress anger habitually and develop a passive mode in which she no longer has access to the full range of feelings. Such motivated not-knowing about anger, in the service of maintaining proximity (both physical and emotional) to a caregiver upon whom one depends for survival, was first described in detail by Bowlby (1960) and has been the subject of much research since (for example, Ainsworth, 1978; Sroufe, 2005; for an overview, see Cassidy and Shaver, 2002).

Knox (2007) acknowledges that a one-off occurrence of the type of interaction she described would be unlikely to have a major influence on the child, aside from the momentary depletion in sense of agency evident in her increasing hesitancy of movement. However, repeated over millions of interactions in a child’s life, this dynamic pattern will likely become internalised such that it becomes a PAE for future interactions. If it becomes part of a habitual way of relating for this dyad, an interaction of this nature is likely to affect the child’s developing sense of agency. This will include changes in perception such that

experiences that offer environmental affordances (such as the initiation of actions) may be less available to perception and, if they are perceived, be accompanied by a sense of anxiety, resulting in avoidance or other defensive reactions (Bollas, 1992). By ‘defence’ I refer here to any response or action that is habitually, automatically and inflexibly deployed to minimise the likelihood of distress at the cost of full recognition of the current situation, including limiting the potential for new learning (Tronick, 2007). Thus, biases are introduced into the child’s perception and interpretation of situations (and interpersonal cues) in the direction of decreased sense of agency.

I have argued for an account of sense of agency that acknowledges the interpersonally emergent nature of sense of agency, including the impact of emotion and motivation and the varying availability of these factors to awareness. Next, I elaborate on the way in which our interpersonal history can impact our sense of agency.

*Procedural action expectancies—the interpersonal history we bring to action*

Gensch and Synofzik (2014) suggest an integration of ‘affective coding’ with the MWM, including the addition of emotional and motivational Bayesian priors that encapsulate ‘affective style’ and emotion regulation. I suggest that PAE’s may fulfil these requirements. Not only do they capture established patterns of affective style and emotion regulation over time, they are also inherently interpersonal and have a substantial research base. I explain this further below.

That one’s interpersonal, embodied history can shape future perception and action patterns is an idea that has received much attention in the attachment literature, cognitive clinical schema approaches, psychoanalytic theories and infant research. It has been variously referred to as an ‘internal working model of attachment’ (Bowlby, 1960; Bretherton, 1999), ‘representations of interactions that have been generalised’ (RIGs; Stern, 1989), ‘schemas’ (Young et al., 2003), forms of ‘implicit relational knowing’ (Lyons Ruth and BCPSG, 1998)

and PAEs (Beebe et al., 2010). Whilst there are important differences in the formulations of this concept, it is beyond the scope of this paper to review them. One key commonality is the notion that over time we develop patterns of expectancies regarding ‘how an interaction will go’ that are implicitly encoded and may be variably available for reflection in a given moment and over time (Fonagy et al., 2002; Fonagy and Luyten, 2018). Importantly, various terms convey differing commitments to underlying assumptions about the nature of mind and memory. For example, internal working models were initially conceived of by Bowlby (1969) who drew heavily on the popular control theories of the time and whose conceptual framework included commitments to the computational models of mind inherent in this approach. Since this time, the field has moved on to include flexible hierarchical conceptualisations of internal working models (see revisions proposed by Bretherton, 1999) and embodied non-representational approaches (as elaborated by Lyons Ruth with the BCPSG, 1998). In this paper, I use the term PAEs from Beebe et al., (2010), which, in its simplicity, captures the central idea without being wedded to a particular stance regarding the debate concerning representational or enactive views of the nature of mind.

Research in attachment and psychoanalytic theory has established that early events and ongoing interaction with caregivers early in life shape our implicit embodied assumptions about the world. According to attachment theory, patterns of interpersonal interaction in infancy later become patterns of intra-personal interaction that shape the way in which we perceive and relate to the world, other people and ourselves (Bowlby, 1969; Ainsworth, 1978; Sroufe, 2005). Perhaps the most fascinating aspect of this process is that it usually occurs (at least to some degree) out of awareness. A person will not typically be able to recall the experiences early in life that contributed to the formation of patterns that make it difficult to perform certain actions or experience particular feeling states. Indeed, such experiences that contribute to the formation of such patterns or schemas include experiences in infancy prior to the capacity for explicit memory generation, as well as experiences that



would not typically be included in explicit memory even after this capacity is available, but would instead form part of implicit embodied PAEs (as detailed below).

In elaborating the notion of PAEs, I draw on the work of Beebe et al., (2010) who report detailed and painstaking work, undertaken over a period of 10 years, analysing the interactions of mother-infant dyads using video microanalysis, a technique they describe as akin to a social microscope that allowed them to pick up aspects of interactions and patterns of interactions that are not observable to the naked eye [also discussed in Chapter 3]. Beebe et al.'s (2010) work examines dyads interacting in a 'free play' mode (seated opposite each other and instructed to play freely, without toys). Using time series analyses of the video micro-analytic data collected during these 'free play' interactions, Beebe et al. (2010) were able to examine the moment-to-moment interpersonal contingencies of each dyad over time. Video microanalysis is an empirical technique in which footage is broken down to tenths of seconds and patterns between interactive partners are mapped over time. Thus, in this context, 'contingency' is a very specific construct that refers to the outcome of a statistical measure using time series analysis of the degree of correlation between one partner's prior behaviour and the other person's current behaviour (after self-contingency—the predictability of each individual's current behaviour from his own prior behaviour—is taken out of the analysis) (Beebe et al., 2010; Beebe & Steele, 2013). This has the advantage of being an objective measure rather than being based on clinician or researcher judgement. Beebe et al. (2010) were able to predict, from just two and a half minutes of free play interaction data at four months of age, the security of the relationship between the members of the dyad at 12 months (using a measure of attachment style), which in turn was able to predict dissociation in young adulthood in the younger partner (see for example, Lyons-Ruth and Jacobvitz, 2008). Through this work, Beebe et al. (2010) suggest that infants develop PAEs. It is through the multitude of repetitions of interactions with their caregiver that infants come to build up dynamic expectancies of 'how interactions go' (Beebe et al., 2010; Beebe, 2014).

Examining the relationship between sense of agency and interpersonal contingency in infancy, Beebe and Steele (2013) suggest that ‘when the infant has difficulty predicting what the mother will do next, his expectation that he can influence her is lowered, impairing a sense of agency’ (p. 593). This can occur in a number of ways, such as through maternal withdrawal, which may make it difficult for infants to anticipate that their mothers can recognise and join with them in their joyful or sorrowful states. Instead, as Beebe and Steele (2013) describe it, in this case ‘infants are relatively helpless to affect mothers with their facial-visual engagement processes, which disturbs the infant’s sense of interactive efficacy’ and (I would add) their sense of agency.

The experience of interpersonal contingency in the form of attunement allows the infant to have their emotional states identified. They develop a felt sense of what it is to have their inner world recognised and reflected back to them over millions of repetitions and, as part of this process, they develop a sense of their experience *affecting an other*. The emergent *sense* of agency is dependent on the contingent responsiveness of an other, through which an infant begins to recognise their own feelings while simultaneously having their experience *affect* the other.

Experiences of attunement and contingent responsiveness are not limited to infancy. Such experiences are an ongoing aspect of adult interpersonal interaction, rendering sense of agency irrevocably interpersonally situated and emergent. Note that ‘interpersonally situated’ does not require one to always be in the presence of other people. It extends through the ongoing dynamic shaping of PAEs to the particular and specific ways in which interpersonal interactions have shaped *intra-personal* ways of relating to self and the formation of feelings, motivations and intentions.

An understanding of audience uptake, fullness of feeling and the contingent responsiveness of others to our actions and expressions is crucial in understanding why we might experience a diminished sense of agency in one context but not another. In addition to

the in-the-moment effects of capacity for fullness of feeling and the experience of audience uptake of unfolding expression of emotion, prior experiences of interpersonal interaction influence our ongoing experience, such that we might meet with intimidating basketball superstars and suddenly find ourselves unable to access our prior skill of shooting hoops, or approach the self-checkout filled with nameless dread for performing the simple action of scanning the items we wish to purchase.

In this section I have presented an argument for the connection between emotional and motivational aspects of sense of agency and the interpersonally situated nature in which sense of agency both first arose and continues to be experienced. I have examined the role of emotional attunement, fullness of feeling and audience uptake in sense of agency in adults and proposed that these concepts help to integrate aspects of sense of agency that have not been elaborated in current models. The next section examines the nature of implicit sense of agency.

### **Revisions to the conceptualisation of implicit sense of agency**

In this section, I highlight the need to examine conceptualisations of implicit sense of agency more closely. That sense of agency can occur at multiple levels of awareness is not in dispute (Gallagher, 2012). As highlighted by Gallagher (2012), sense of agency can occur at the level of reflective self-awareness (including introspective and situated reflective awareness) and at the level of pre-reflective awareness (sense of agency that is not an explicit focus of attention but still part of the structure of conscious awareness). I would like to suggest that there are aspects of implicit sense of agency which do not figure in current conceptualisations, but which are nonetheless important in understanding disruptions to sense of agency.

I suggest that there are additional aspects of implicit sense of agency. One additional

aspect involves sense of agency that is implicit in the sense that it is an aspect of our PAEs that may not have ever become the object of reflective awareness, but which constrains our felt capacity to act. I refer to this as ‘unconscious implicit sense of agency’. I have termed it ‘pre-reflective sense of agency’ elsewhere (Deans et al., 2015) drawing on previous notions of ‘pre-reflective unconscious’ processes (see Stolorow and Atwood, 1992). However, because of the complexity of situating it in relation to pre-reflective sense of agency as it is more commonly understood, I have used a different (more general) term here in recognition of the details regarding relationships between aspects of sense of agency that remain to be worked out. Although it is not impossible that this form of implicit sense of agency could become the object of reflective awareness, it is nonetheless not a straightforward matter of turning one’s attention towards it, as in the case of regular pre-reflective sense of agency. Instead it involves a more complex (usually intersubjective) process through which it can be brought to awareness. This is possible—as a vast therapeutic literature can attest (see for example: BCPSG, 2013; Lyons-Ruth, 1999)—through experiences that challenge the assumptions underlying PAEs and allow the individual to experience what Tronick et al., (1998) have described as ‘dyadically expanded states of consciousness’, that is, a change at the level of implicit, interpersonal, embodied assumptions about world, self and other (see also Buhrmann and Di Paolo, 2017). It is just such changes that psychotherapy strives to create—changes in what is felt to be possible in a manner that could not previously have been conceived of by the patient. People commonly present for therapy with the wish to return to the way they inhabited the world prior to the onset of (for example) depression or anxiety. Instead, what happens if all proceeds well-enough (to adapt Winnicott’s well known phrase; Winnicott, 1965) is that ways of being in the world that were not previously possible to even conceive of may over time, through co-created intersubjective experience and ‘working through’, become part of the patients implicit relational experience, including their intra- and inter-personal relational experience (see Lyons-Ruth et al., 1998; Tronick et al., 1998;

BCPSG, 2013).

A second aspect of implicit sense of agency is that which is out of awareness because of a motivated ‘turning away from’ or ‘not-knowing’, as described earlier in relation to the example given by Knox (2007). I suggested that there are certain conditions in which a motivated not-knowing may decrease an individual’s access to emergent feelings, motivations and emotions, which may influence emergent intention formation and sense of agency. I term this form of sense of agency ‘motivated unconscious implicit sense of agency’. Again, this term arises only from long tradition dating back to Freud that acknowledges the effect of the conflicting multiplicity of affects and drives which individuals experience in the context of survival needs (for a recent discussion of the dynamic unconscious, see McIlwain, 2001).

There are a number of different ways one could integrate these suggestions with current approaches to sense of agency. A related approach, taken by Ciaunica (2015), suggests that minimal selfhood and pre-reflective awareness is, in part, constituted relationally. This is in contrast with what Ciaunica calls the “first-personal or for-*me*-ness” manner in which pre-reflective awareness is usually understood. Ciaunica (2015) drawing on Rochat’s (2004) notion of co-awareness and evidence from developmental research that suggests the primacy of intersubjectivity (Meltzoff and Moore, 1977; Trevarthen, 1979). She argues that self-awareness is first experienced as embodied co-awareness. As Ciaunica (2015) acknowledges, there is a long history of debate within developmental theory regarding the primacy of relatedness versus individuality. Fotopoulou and Tsakiris (2017) also argue for a notion of minimal self-hood that is, at least in part, interpersonally constituted. However, they take a somewhat different view, drawing instead on ‘second-person approaches’, such as those put forward by Reddy (2008) and Schilbach et al. (2013). Consistent with interaction theory (Gallagher, 2001. 2004) Fotopoulou and Tsakiris (2017) state that “the capacity for a minimal, affective consciousness is prescribed by phylogenetic development, but

nevertheless each infant's minimal self (i.e. *the particular quality of its experiential states*) is determined in ontogenetic development. The evolutionary risk of lacking caregivers is not some unconscious "zombie-like" state [contra Zahavi, 2017], but rather death" (p. 7, emphasis mine). Although the authors do not work out an account of pre-reflective sense of agency, the view they expound can clearly be extended to do just this. The developmental approach I have put forward (Deans et al., 2015) is consistent with the account they offer in many ways. Arguably, an extension of their account is captured by way of detailing the manner in which "the particular *quality* of its [the infant's] experiential states" (Fotopoulou and Tsakiris, 2017, p.7, emphasis mine) is influenced by individual differences in interpersonal embodied interaction during early development and beyond. It is not just the affective state which changes the "*nature and quality of the act*" (contra Christensen et al., 2016, p. 16, who take the phrase from the famous M'Naghten legal case in which the defendant pleaded not guilty by reason of insanity). Instead the nature and the quality of sense of agency depends crucially on the interpersonal, embodied aspects of current, situated experience and PAEs or long-term 'felt-capacity' as it is dynamically activated out of awareness in *just this way*, in *just this moment*.

The objection may be raised that any mode of sense of agency must involve an experiential 'sense of'. I suggest that this 'sense of' is indeed present in a similar way that 'background feelings' (Ratcliffe, 2014) colour one's sense of the world, self and other people. Ratcliffe (2014), building on the notion of 'background emotions' posited by Damasio (1999, 2003), suggested that 'background feelings' can be distinguished from primary and secondary emotions and moods. They form the tacit background affective experience that shapes thoughts and behaviour in important ways. Ratcliffe draws on Merleau-Ponty (1965) in suggesting that background feelings are not simply contained within the individual but are bound up in how the person finds themselves in the world and the way in which the world presents itself. They form a tacit backdrop to experiences in the world,

including actions and the sense of *possibility* (Ratcliffe, 2014). Background feelings are not typically available to conscious awareness, although they form an implicit marker of the way in which the individual experiences self, world and other. Situating aspects of implicit sense of agency within a similar conceptual space to background feelings, I suggest there is an important overlap between the implicit influence of implicit sense of agency on felt capacity for action. This is discussed in more detail elsewhere [see Chapter 5].

Sense of agency as it is more commonly conceptualised involves a notion of agency that is for the most part phenomenologically thin and remains largely out of awareness. The additional aspects of sense of agency I posit are not beyond the realm of introspective awareness under the right conditions. However, they are less immediately available for conscious awareness than the conceptualisation of pre-reflective sense of agency currently used in the sense of agency literature (Gallagher, 2012; Pacherie, 2008; Synofzik, et al., 2008). Whilst further details of this account and how aspects of sense of agency interrelate needs to be more fully worked out, I hope I have offered some sense of how this may begin to take shape.

### **A note on the relationship between aspects of sense of agency**

A clearer understanding of how levels of sense of agency interact is needed. There are multiple examples in which research into sense of agency at a motor level has been extrapolated to sense of agency at higher levels of functioning without a clear line of reasoning as to how this connection can be explained. Similarly, though perhaps less well recognised, there are accounts that draw on sense of agency research from cognitive science and philosophy of mind and extrapolate these findings and theories to sense of agency within different frameworks, for example psychoanalytic theory and case material (Knox, 2010; Eisold, 2016). While it may turn out that the connections being drawn are accurate, what is currently missing is a clear conceptualisation of how these different levels of sense of agency are connected and how they interact. I hope that the suggestion regarding the need to

distinguish sense of agency from sense of control will assist in this endeavour through increasing the coherence of the concept and decreasing the propensity for disagreements arising out of differing conceptualisations of what sense of agency entails.

So far, sense of agency research has seemed to indicate that congruence between levels of sense of agency (for example, pre-reflective and reflective sense of agency) leads to higher sense of agency (Gallagher, 2012). However, I suggest that this is not always the case. I will now turn to two contrasting examples in which I examine the relationship between levels of sense of agency.

First, in considering the relationship between different levels of sense of agency—for example, between reflective and pre-reflective sense of agency—Gallagher (2012, 2016) suggests that prior reflective processes involving setting of intentions and planning (reflective sense of agency) may affect pre-reflective processes (including pre-reflective sense of agency) such that an increase in reflective sense of agency can lead to an increase in pre-reflective sense of agency for an action. He gives the example of purchasing a car, suggesting that a person will likely feel greater sense of agency if they have planned to buy a new car and go to the dealership specifically for this purpose. In contrast, they might feel ‘a little out of control’ if they find themselves spontaneously buying the red mustang that happens to catch their eye. This example shows that, in some cases, sense of agency can be strengthened when there is concordance between the levels at which sense of agency is experienced.

But let us now examine another example: a close, intimate conversation with a trusted other. Here, the relationship between reflective sense of agency and pre-reflective sense of agency may be different. For example, the use of previously planned answers or mentally rehearsed descriptions (even if just occurring in the seconds or milliseconds before they are spoken) may emerge from a lack of sense of agency rather than increased sense of agency. This could occur because prior planning could lead to a lack of contingent responsiveness both in terms of what is arising within the person themselves and externally within the other



person (Christensen et al., 2015; Pacherie and Haggard, 2014). This opting out of the co-construction of an in-the-moment interaction, which typically requires tolerance of uncertainty (and a letting go of control), would, I hypothesise, lead to decreased sense of agency. This decreased sense of agency is situated within the interpersonal context. For example, if another person responds to us in a hyper-critical manner, we may start to weigh our words with greater precision. We would likely experience a decrease in sense of agency, and we may become more tentative in our actions and expressions.

The concept of ‘fresh speech’ from the Adult Attachment Interview (AAI; George, Kaplan and Main, 1985; Hesse, 2008, Gojman-de-Millan and Millan, 2013) captures a related concept. ‘Fresh speech’ refers to the in-the-moment construction of a narrative that is part of the linguistic signature of individuals whose state of mind with regard to attachment is more secure, which is a marker of psychological health. I hypothesise that this linguistic marker of secure attachment could also function as a marker of interpersonal implicit sense of agency—signalling that one feels sense of agency for constructing the narrative in an emergent moment-to-moment manner, rather than feeling compelled by internal pressures or perceived external expectations to construct specific answers. Note that this suggests a need to distinguish between sense of agency and sense of control: in this example, letting go of control is related to increased sense of agency. I expand on this below.

In this section, I have argued that additional aspects of pre-reflective sense of agency are needed to explain individual and contextual differences found in sense of agency that are not accounted for by current models. I have also suggested that further work is needed in clarifying the way in which different levels of sense of agency may interact. In the next section, I aim to continue this endeavour through proposing a distinction between sense of agency and sense of control that I believe contributes to even greater conceptual clarification (see below for more details). I argue that the synonymous use of sense of agency and sense of control confuses rather than clarifies conceptualisations of sense of agency. I suggest that

while at the level of motor processes, sense of agency and sense of control are indeed typically synonymous, when processes extend beyond low-level motor processes, this relationship becomes problematic. Further, in forging an interdisciplinary framework for sense of agency, such distinctions are helpful in making sense of phenomena in the clinical literature that are otherwise difficult to integrate into conceptualisations of sense of agency in cognitive science and philosophy of mind.

### **Sense of agency and sense of control**

Many of the most commonly cited definitions of sense of agency reference control, such as the definition by Haggard and Chambon (2012), who describe sense of agency as the experience of ‘controlling one’s own actions, and, through them, events in the outside world’ (p. R390). While these definitions make sense at the motor process level, I suggest that the use of ‘sense of control’ as a synonym for sense of agency may cause confusion when extended to other processes.

Results from empirical studies report the seemingly anomalous finding that sense of agency as measured by the implicit paradigm IB is lower among people with high OCD tendencies, even when explicit reports by the subjects themselves indicate high levels of sense of agency (Oren, Eitam and Dar, 2017). This has been pointed to with regards to the possible dissociation between explicit and implicit measures of sense of agency and has been replicated using other measures of implicit sense of agency, such as sensory attenuation (Gentsch et al., 2012). Oren et al. (2017) suggest that these anomalous findings might be explained by strong motivation for greater levels of control among the high OCD subjects. Pascherie’s (2008) account is similar. She draws on the compensatory nature of the repetitive behaviours of people suffering from OCD and the attempt to thereby generate a subjective experience of control. This points to a possible candidate for distinguishing sense of agency from sense of control across levels of processing—namely, the degree to which a sense of the

action is experienced as voluntary. Could it be that we retain a sense of control even when an action is not experienced as voluntary? What kinds of actions would these be? Coerced or compulsive actions are potential candidates. For example, a lack of sense of agency at a personal level is often associated with compensatory control strategies, that may serve to stand in for diminished sense of agency but that lack the two core aspects of voluntariness and contingent effect. When we look at sense of agency and sense of control across levels simultaneously, we find that there are instances in which sense of control may indicate diminished sense of agency at a higher level (concerning a wider unit of analysis).

Checking behaviours in OCD are not experienced as ‘voluntary’ at the personal level. Instead, they are experienced as compulsive or driven. Similarly, the person suffering with agoraphobia may feel a need to control the spaces they inhabit (through carving it up into safe versus dangerous regions; Gallagher and Trigg 2016). Whether or not sense of agency is increased by the use of these strategies is contentious, or so I would like to suggest. These strategies do increase the sense of control, albeit in a compensatory way. Further, the contingent effect of action is crucial for sense of agency but not for sense of control. To use the example of compulsive checking behaviours in OCD, the contingent effect of this action is low even when sense of control for the specific action is high (the person attempts to gain some degree of control through checking but fails to register the contingent effect of their action and thus checks another 20 times before leaving the house).

Could there be sense of agency without a simultaneous experience of control over what is happening? Block (2002), in outlining the conditions for resilience, suggests that individuals need to be able to respond in dynamic and ‘specifically unrehearsed but effective ways’ (p. 4). McIlwain (2014) extended this notion and emphasised the adaptive capacity of relinquishing the need for a sense of control, which may allow for greater flexibility of responding in some situations, particularly those in which no sense of control is possible. This raises the possibility that sense of agency and sense of control could be dissociated—

that one could experience a sense of agency without a concurrent sense of control. This may occur in some self-states in which one lets go of control and yet retains a sense of awareness and the possibility for action (such as for a long term meditator, see Ataria, 2015), or as captured in the above example, where letting go of control may enhance the experience of sense of agency in conversation with a trusted other.

A counter-argument could be raised with regards to the distinction I have drawn between sense of agency and sense of control. Instead of postulating such a distinction, I could simply draw on the specificity of the unit of analysis under which sense of agency is deemed to be present (Gallagher, 2012). For example, it could be argued that a person suffering with OCD may experience sense of agency at the unit of analysis pertaining to a specific action, such as checking the locks, but not for the task of leaving the house on time. However, while this may allow researchers to claim that sense of agency is both high and low (as in the case of people suffering from high OCD tendencies) depending on the level of analysis, I suggest that a distinction between sense of agency and sense of control is more helpful. Distinguishing sense of agency from sense of control could be particularly useful in bridging the disciplinary divide between clinical approaches and sense of agency research in cognitive science, particularly given that notions of sense of agency differ markedly from sense of control under some clinical approaches. Attempts at traversing the disciplinary divide have been few and have often been limited to brief comments alluding to neuroscientific approaches (for example, from an ethnographic psychoanalytic perspective: Eisold, 2016) or philosophical conceptualisations (from a clinical psychoanalytic perspective: Knox, 2010) without engaging in substantial discussion about links and differences between approaches. Greater clarity in the use of terms and greater concordance in meanings of terms would increase the ease with which much-needed trans-disciplinary cross-pollination could occur. In this section I have argued for a distinction between sense of agency and sense of

control. At least for higher levels of sense of agency, distinguishing these two concepts can add clarity and aid interdisciplinary discussion.

## **Conclusion**

Sense of agency is indeed an ambiguous and complex concept (Gallagher, 2012). This paper has taken an interdisciplinary approach, exploring important factors that an interpersonally situated sense of agency needs to include. This has involved drawing on concepts from infant research, attachment theory, psychoanalysis and philosophy of mind, particularly the understanding of humans as multiply motivated, affective, emotional beings engaged in actions that matter to themselves and the people around them. I have endeavoured to add clarity to the discussion around levels of sense of agency, including illuminating ways in which we can more clearly draw distinctions between pre-reflective sense of agency, reflective sense of agency and influences on intentional action, as well as suggesting a terminological clarification to assist in bridging the disciplinary divide and striving towards a truly interdisciplinary conceptualisation of sense of agency.

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## **Chapter 5: Diminished sense of agency in depressive experience: an embodied interpersonal approach**

In this chapter, I apply some of the insights developed in the previous three chapters to the experience of depression, specifically, to a consideration of the impact of disrupted long-term and prospective sense of agency. Depression was chosen for the target of this article due to the devastating impact it can have on sufferers, its high prevalence and poor response to treatment (in terms of long-term relapse rates, even after ‘gold standard’ cognitive behavioural treatment; Westen et al., 2004). Depressive experiences also hold particular interest in the exploration of sense of agency research because of the lack of volition that often permeates across all levels and processes of experience. The aim of this chapter is to apply and extend the work of previous chapters.

The paper that comprises this chapter has been formatted in accordance with the requirements of the journal *Frontiers in Psychology* for a *Hypothesis and Theory* article. Whilst a journal that focuses on phenomenological research may have been a more natural choice, the aim was to reach as wide a cross-disciplinary audience as possible. The article was researched and drafted in full by me, and I received exceptionally helpful comments from my supervisors Neil Levy and Vince Polito.

RUNNING HEAD: Sense of agency in depressive experiences

**Diminished sense of agency in depressive experiences: an interpersonal approach**

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### Abstract

Depressive experiences hold particular interest from the perspective of sense of agency research. These experiences involve lack of volition, typically across all levels of experience and processes, and, I shall argue, the lack of clear self/other distinction in socially situated interactions in which guilt, shame, or responsibility feature. I examine disturbance in long-term and prospective sense of agency in depressive experiences. In doing so, I suggest that there are similarities between the conceptualisation I have offered regarding relatively neglected aspects of implicit sense of agency (Deans et al., 2015) and Ratcliffe's (2009) notion of 'existential feelings' (explained below). I explore the similarities and differences in the context of first-person depressive experiences that have been reported in phenomenological research and first-person autobiographical studies. I examine prospective sense of agency and suggest that the dialectic of intrapersonal and interpersonal aspects of intention formation is disrupted in depressive experience, as are action-effect contingencies. This is exacerbated in part by the tendency to withdraw and to maintain a distance between what is expressed to others and what is felt inwardly. Whilst employed to protect the self, these defensive strategies often have the opposite effect—creating lack of contingency between one's experience and other people's response and eventually diminishing the connection with one's own inner feeling, as the prevalence of reports of numbness and emptiness suggest.

**Keywords:** *sense of agency, situated, embodied, sense of ownership, depression*

**Diminished sense of agency in depressive experiences: an interpersonal approach**

*A piece of burned meat  
wears my clothes, speaks  
in my voice, dispatches obligations  
haltingly, or not at all.  
It is tired of trying  
to be stouthearted, tired  
beyond measure.*

(Kenyon, 1992)

Lack of sense of agency is a key aspect of a range of mental health conditions, including depression. As the quote by Jane Kenyon above eloquently captures, experiences of depression can often involve a terrible sense of distance and alienation from aspects of oneself, accompanied by a lack of volition and deep weariness that inhibits the initiation of actions and expression. This paper explores aspects of sense of agency—particularly interpersonal and emotional aspects—and how these relate to the experience of depression.

Drawing on first-person accounts, I hope to demonstrate the ways in which sense of agency goes awry in depression in specifically emotional, interpersonally embodied ways. Phenomenological evidence suggests that impaired sense of agency in depression affects not only actions that are preceded by deliberation or choice, but even actions that are “ordinarily habitual, unthinking and effortless” (Ratcliffe, 2014, p. 160). Of particular focus in this article is the way in which sense of agency is altered at an implicit level in depression, including in ways outside of awareness. I draw on the account of infant development of sense of agency I have elaborated elsewhere, which emphasises the embodied, interpersonally

situated context in which sense of agency arises and its ongoing impact on implicit pre-reflective sense of agency (Deans et al., 2015). The implicit sense of agency I discuss is similar in some respects to the concept of ‘background feelings’ proposed by Ratcliffe (2005) and I explore points of overlap and difference. The argument put forward here is that experiences of attunement in the inter- and intra-personal realms are disrupted in some forms of depression, such that the emergent formation and expression of emotion and intentions is altered. Thus, a person comes to experience themselves as detached from their own inner desires, feelings and intentions, which disrupts sense of agency at an implicit level and has a devastating impact on self-worth and sense of self.

The predominant focus in cognitive science has been on retrospective sense of agency in both explicit and implicit forms. Less attention has been directed towards prospective sense of agency (Pacherie and Haggard, 2010; Chambon et al., 2014) and long-term sense of agency (Pacherie, 2008; Gallagher, 2013). I hope to show that both prospective and long-term aspects of sense of agency are particularly important in relation to depression. Specifically, I elaborate a view of long-term and prospective sense of agency that engages with key questions regarding intention formation and self experience to better understand how this is impaired in depression.

This integrated approach has implications for how depression treatment is formulated, including the importance of identifying the level at which sense of agency is primarily disrupted. In elaborating considerations for treatment, I will also engage with recent recommendations in the cognitive scientific literature regarding the application of empirical findings to the assessment of psychopathology. A partial aim of the paper is to assist in bridging the interdisciplinary divide for researchers and clinicians alike and to further motivate efforts towards deepening and integrating current conceptualisations of sense of agency. Some scholars have approached sense of agency from the perspective of metaphysical questions regarding ‘free will’ (Wegner and Wheatley, 1999; Wegner, 2002). I

limit the focus of this article to the *experience* or ‘*sense of*’ agency (however, see, for example, Dennett, 2004; Gallagher, 2006; Dennett, 2015; Gallagher, 2017).

### **Depressive experiences**

In the words of one person suffering with depression, it “[f]eels hopeless, like I shouldn’t exist and it would be better for family and friends if I wasn’t here. Just feel dark, worried, impending feeling of doom’ (as cited in Ratcliffe, 2015, p. 136). Depression is a devastating disorder. Current estimates suggest that depressive disorders effect over 300 million people across the globe (Friedrich, 2017; Organization, 2017). There is also significant mortality associated with the disorder, and depressed individuals make up a significant portion of the 800,000 individuals who take their own life each year (World Health Organization, 2017). Experiences commonly include feelings of worthlessness, pointlessness, disruptions to appetite and sleep, anhedonia, fatigue and feelings or thoughts about suicide. Depression is often a recurrent disorder, and relapse rates, even after empirically supported treatments, are high (Westen & Morrison, 2001). Some estimates suggest as many as two thirds of patients relapse after evidence-based treatments (for a meta-analysis see Westen et al., 2004). A deeper understanding of this debilitating disorder and how best to treat it is obviously needed.

Luyten and colleagues have argued for the need to consider approaches to depressive experience other than the current categorical symptom-based models (Luyten, 2006; Luyten & Blatt, 2005; Luyten, Blatt, Houdenhove & Corveleyn, 2005). Luyten et al. (2006) have emphasised the need for an etiologically based model of depression, including an integrative developmental approach which recognises the heterogeneity in depressive presentations, and the need to understand the multiplicity of etiological pathways that can lead to depression. Fuchs (2010) also identifies the limitations of categorical symptom-based approaches to depression and argues instead for the inclusion of subjective and intersubjective approaches to the treatment and assessment of mental health disorders.

In line with these approaches, this article draws on subjective and intersubjective aspects of depressive experiences, as well as developmental research, philosophy of mind, and clinical approaches. The approach taken is consonant with a view of depressive experiences as heterogeneous and dimensional (rather than categorical). I do not purport to cover all forms of depressive experiences here. Rather, I hope to contribute to the discussion regarding sense of agency and aspects of depressive experience, particularly those captured in first person phenomenological studies.

### **Sense of agency and depression**

Whilst there are many definitions of sense of agency, the view taken here is aligned with Haggard's (2017) statement that "the core of sense of agency...is the association between a voluntary action and an outcome" (p. 4). The sense of how 'voluntary' an action is and the contingency between action and (intended) outcome are key to understanding sense of agency in relation to specific motor action (as Haggard, 2017, suggests) and more broadly [as outlined in Chapter 2]. The sense of how 'voluntary' an action is experienced as being will be implicated in the degree of sense of agency experienced and whether the action is attributed to oneself or to some other cause (Haggard, 2017). The experience of action-effect contingencies can go awry in multiple ways, some of which include lack of (or impeded) intention formation; lack of awareness of the contingency of action and outcome; and lack of awareness or distortion of perception of the outcome. One example of a failed awareness of contingency is the lack of perception of a link—such as when a depressed person may fail to notice their presence lighting up another's eyes. In terms of outcome perception, a person may fail to register that the 'lighting up' has occurred. The broad approach to sense of agency taken in this paper incorporates social, personal and motor action processes. Because of the breadth of the concept, I have suggested elsewhere a useful delineation of factors that assist in clarifying discussions across disciplinary lines, including: processes (such as thoughts, group processes, specific motor actions); levels of awareness (conscious, phenomenologically

thin but accessible to consciousness if one's awareness is directed towards it, non-conscious); timing (prospective, retrospective, situated, long-term); and unit of analysis (such as psychological episode, specific action irrespective of effect, action-effect sequence).

*Empirical studies related to sense of agency and depression*

Empirical studies in cognitive science related to sense of agency and depression have focused on the self-serving bias and the apparent lack of this bias in depression. I have discussed these studies in more detail elsewhere [see Chapter 4]. Briefly, Ohbi, Swiderski and Farquhar (2013) examined the relationship between sense of agency and depressive experiences. The authors found that sense of agency (as measured by intentional binding—an implicit measure of sense of agency) was diminished when depressive memories were activated in healthy subjects, which was interpreted as support for the lack of the self-serving bias in subjects for whom depression was simulated (Obhi et al., 2013). Some studies examined negative emotional stimuli or negative valenced outcomes in relation to implicit sense of agency (as measured by sensory attenuation or intentional binding). This research has returned mixed results. Some studies have supported the notion that healthy subjects experience less sense of agency for negative outcomes and greater sense of agency for positive outcomes (Takahata et al., 2012; Yoshie and Haggard, 2013; Gentsch et al., 2015). However, other studies have failed to support this claim (Hughes, 2015; Moreton et al., 2017). Indeed, studies supporting the notion of 'depressive realism' receive only mixed empirical support across other disciplines. Only a small depressive realism effect has been detected in meta-analytic and review studies (Ackermann and DeRubeis, 1991; Moore and Fresco, 2012). Interestingly, studies with greater ecologically validity demonstrated less depressive realism effects (Dobson and Franche, 1989; Moore and Fresco, 2012).

### **An interpersonal, embodied approach**

Whilst the empirical research examining the self-serving bias in sense of agency is helpful in a preliminary sense, a more nuanced approach to sense of agency in depression is required, beyond that which the self-attribution bias allows. I would like to suggest that an integrated approach that takes into account the influence of multiple motivations and emotional experiences and views sense of agency as interpersonally situated is helpful in reaching a more ecologically valid view of sense of agency in depression. Enactivist, phenomenological and other philosophy of mind approaches to sense of agency have gone some way to elaborating elements for the greater explanatory power required of the sense of agency concept if it is to extend to the clinical conditions to which it purports to contribute (Fuchs, 2005, 2007; Ratcliffe, 2009, 2013; Gallagher, 2012, 2013; Slaby, 2012; Benson et al., 2013; Varga and Krueger, 2013; Ataria, 2015; Gallagher and Trigg, 2016). In this section, I draw on these approaches to demonstrate similarities between the revisions I proposed to the conceptual scope of implicit sense of agency [outlined in Chapter 4] and Ratcliffe's (2008, 2013) notion of 'existential feelings'. Also, by comparing Varga and Krueger's (2013) conceptualisation of the ontogeny of background feelings with an approach to the development of sense of agency in infancy (Deans et al., 2015), I extend these insights to the context of sense of agency in depression.

The interpersonal, embodied nature of sense of agency is most apparent in infancy [see Chapter 3]. However, the coupling between interpersonal and embodied aspects of sense of agency continues into adulthood and remains an influence on the degree to which actions feel possible and voluntary. Empirical studies supporting this claim suggest that the world reveals itself in a different manner depending on embodied interpersonal factors. Just one example among many (see Varga, 2018 for a critical review) found that the steepness of an incline was judged to be higher depending on whether the subject was alone or in the presence of a friend (Schnall et al., 2008). This revelatory nature of affectivity, in which the

world is revealed to us in different ways depending on current embodied affectivity (Krueger, 2016), is linked with a sense of possibility and influences sense of agency over time.

Consider the finding that the incline appears steeper in the alone condition versus in the presence of a friend. The friend's presence likely increases the subject's sense of agency such that the affordances of the environment are altered and certain actions (for example, ascent of the incline) appear more possible. Intention formation is thus more likely. This occurs not just at the level of personal processes but extends right down to motor-level processes and the initiation (or not) of action. The interplay between the interpersonal and embodied aspects of sense of agency is apparent in adult depressive experiences. For example, descriptions of depressive experiences often contain concurrent references to embodied factors, such as the heaviness or remoteness of bodily experience and the simultaneous remoteness from the (social) environment. This is captured by Fuchs (2001), in which he describes a "leadens heaviness... [and] the bare materiality of his body that is otherwise hidden in the movement and performance of life... In serious cases a literal freezing and reification of the body ensues which is no longer capable of resonance with its environment" (p. 183). In depression, there is typically a marked disruption and change in the way in which the body is inhabited, that is, in sense of bodily ownership.

A distinction between the 'lived body' (*Leibwahrnehmung*) and the 'body as object' (*Körperwahrnehmung*) (Husserl, as cited in Gallagher, 2005) may be helpful in discussing sense of ownership in depression. The 'lived body' in healthy adults is usually 'otherwise hidden in the movement and performance of life' (Fuchs, 2001, p. 183). By contrast, in depression, the 'lived-body' is reduced to *Körper*—body-as-object—in which the liveliness that is typically part of the backdrop of lived experience is no longer present and movement (if indeed possible) is experienced as 'mechanistic' (Fuchs, 2001; 2005). The body in depression is cumbersome, demanding effort and concentration for the simplest of tasks: "Everything feels 1000 times harder to do. To get out of bed, Hold a cup of tea, it's all such



an effort” (as cited in Slaby et al., 2013, p. 48).

In depression, the body is also described as feeling ‘detached’, ‘numb’ or ‘distant’. This is connected with the experience of body as *Körper* rather than *Liebe*—the body as lived has receded and instead becomes ‘*thinglike*’ (Merleau-Ponty, 1965, p. 209) and must be dealt with, rather than lived through. The interconnected nature of sense of agency and sense of ownership is apparent in the simultaneous ‘corporealisation’ of the body and the lack of the “conative dimension of the body, that is, its seeking and striving for satisfaction, is missing” (Fuchs, 2005, p. 99). Without the corporeal experiences of hunger, sexual desire, and thirst, the world is no longer experienced as disclosing appetitive enticing possibilities (Leder, 1990; Fuchs, 2005). Thus, affordances go unperceived, and the world loses its colour, its enticing nature, its scope of possibility (Fuchs, 2005). This is captured in the words of a participant in Benson et al.’s (2013) study: “I have become impervious to any stimuli, be it other people, colours, tastes, etc. It feels very much as though I am separate from anything and anyone else – in other words, detached and unable to make connections with any other thing” (as cited in Benson et al., 2013, p. 65). To reiterate Gallagher and Trigg (2016), the ‘dimensions of agency and ownership are intertwined, and always situated within both a subjective and intersubjective context’ (p. 6). The intertwined notion of sense of ownership and agency is captured in relation to experiences of vitality. As Andrew Solomon (2014) in his first-person account of depression puts it, depression is ‘the opposite, not of happiness, but of vitality’ (p. 443). Indeed, other first-person accounts attest to this loss of fullness of feeling, including experiences of ‘numbness’, ‘flatness’ and ‘the feeling of lack of feeling’ (Fuchs, 2005, p. 100). By ‘fullness of feeling’ I refer to the capacity of individuals to have access to the “full, specific awareness of one’s inner state (the ‘bodily clout’ of feelings)” (McIlwain, 2010, p.240).

Depression involves a particularly horrific change in sense of agency due to the extent of disruption across multiple levels, processes, and timescales. Sense of agency is usually

affected both as a matter of degree (within oneself) and in the capacity to make a clear self/other distinction. Interestingly, the distinction between the degree of diminished sense of agency within-oneself and the difficulties experienced with self/other distinction could be viewed as mapping, at least partially, onto the two polarities of relatedness and self-definition suggested by Blatt and Luyten (2009) as underpinning the two dominant subtypes of depression. ‘Anaclitic’ depression involves “feelings of loneliness, abandonment and neglect”, whereas ‘introjective’ depression includes “feelings of failure, worthlessness and guilt” (p. 53). It is interesting to note that dominant themes of relatedness and self-definition have also arisen as subtypes across various clinical approaches. For example, Beck (1983) identified autonomy and sociotropy as two major themes of depression experience (for a review see Blatt and Homann, 1992). Importantly, subtypes of depression have been found to respond differently to psychotherapeutic intervention (McWilliams, 2012). A neat delineation of aspects of sense of agency onto depressive subtypes is not what is being proposed (neither in the current paper, nor in other research). For example, despite a dominant organisation centered around interpersonal relatedness as it is in anaclitic depression, an all-pervasive sense of guilt may be present. Rather than symptom-based categories, subtypes instead indicate the dominant underlying struggle around which the person’s life and depressive illness is organised.

Disruptions in self/other distinction in sense of agency at the level of personal processes in anaclitic depression often involves an ‘other-directedness’. By contrast, introjective depression is more self-focussed. As psychotherapist Nancy McWilliams (2012) notes, treatment of introjective depression is often tailored towards countering the inner-critic or harsh super-ego—that aspect of the personality that can be so brutal in its self-condemnation in depression. The interventions she suggests are aligned with drawing the patient’s attention to the inflated sense of agency they have ascribed to themselves, as when a patient ruminates that “I should have been able to do otherwise”. Rather than an openly

supportive stance, which is effective with anacritically organised patients, those with introjective subtypes of depression are more likely to feel more depressed following openly compassionate reflections by the therapist. As McWilliams (2012) puts it: “they would feel I had not really understood them, that they had conned me into thinking they were better than they were, they would feel inferior to me because my generosity of spirit contrasted with their own felt badness, and they would get more depressed” (p.564). Instead, what is effective is drawing a patient’s attention to the over-extension of agency they have attributed to themselves. Interestingly, a (defensive) inflated sense of control over (in this instance) the therapist may accompany this subtype—a shutting down of uncertainty through an inner conviction of badness that forecloses interactive possibilities. By ‘defense’, I follow Tronick (1989) in taking this term to mean the indiscriminate and inflexible utilization of self-regulation strategies that are employed at first adaptively, but later become problematic through the automatic way in which they are deployed [I have discussed this in detail in Chapter 3]. Self/other distinction is often blurred in the sense of extended responsibility and the ensuing immobilising shame or pervasive guilt for perceived slights or wrongdoing. Anger may similarly be blurred and is more likely to be experienced as exogenous (as in fear or certainty of criticism from others) than towards others.

Regarding a broader conceptualisation of sense of agency across person-level processes (rather than confined to motor level processes), there is a vast literature examining aspects of altered sense of agency in depression, such as retrospective over-attribution of guilt and increased attribution of self-control for negative outcomes (“I should have been able to do otherwise”) and self-responsibility (“it was all my fault”), decreased sense of agency and increased tendency for external attributions of locus of control (increased hopelessness, “there’s nothing I can do, nothing will change things, nothing will work”). There is also evidence for a lack of sense of agency at a meta-cognitive level, for example in increased rumination—thoughts feel involuntary and may be experienced as intrusive and unbidden.

### **Long term sense of agency and depression**

Felt capacity for action over time has been included by some researchers in the phenomenology of sense of agency (see Pacherie, 2008; Gallagher, 2013). However, most research examining sense of agency in cognitive science does not engage in discussions about longer-term aspects of sense of agency or felt capacity for action, which has been described as quite distinct from sense of agency for motor action (Haggard, 2017; although see Pacherie & Haggard, 2010). The question of whether (or to what degree) sense of agency for motor action and across other processes includes aspects of the felt capacity to act is of interest particularly with regards to difficulties experienced in depression. I will argue that the degree to which someone experiences sense of agency for an action, or a sense of an action (including specific motor actions) as voluntary, may well include aspects of the person's long-term felt capacity to act, as well as their short-term capacity to act in that moment given the constraints of the situation. Investigating felt capacity to act and how this influences sense of agency at the level of embodied action is an interesting avenue for understanding sense of agency in general and sense of agency in depression in particular.

### *Implicit sense of agency and background feelings*

Sense of agency as it is more commonly conceptualised involves a notion of agency that is, for the most part, phenomenologically thin and remains largely out of awareness. The additional aspects of implicit sense of agency I posit are not beyond the realm of introspective awareness under the right conditions. However, they are less immediately available for conscious awareness than the conceptualisations of pre-reflective sense of agency currently used in the sense of agency literature (Gallagher, 2012; Pacherie, 2008; Synofzik, 2008).

There are similarities between the distinction of additional aspects of implicit sense of agency I have suggested and Ratcliffe's (2014) notion of 'existential feelings'. Drawing on Merleau-Ponty's (1962) account of the nature of perception and action and expanding on

Damasio's (1999, 2003) view of 'background emotions', Ratcliffe (2014) argues that background feelings are not simply contained within the individual but are bound up in how the person finds themselves in the world and the way in which the world presents itself. Ratcliffe (2009) follows Husserl who states that "perceptual experience includes various kinds of possibility" and "perception of worldly possibility is inseparable from bodily phenomenology" (as cited in Ratcliffe, 2014, p. 160). Background feelings can be distinguished from primary and secondary emotions, as well as moods. They form the tacit background affective experience that shapes thoughts and behaviour in important ways (Ratcliffe, 2014). Background feelings thus form a tacit backdrop to experiences in the world, including actions. They are not typically available to conscious awareness, although they form an implicit marker of the way in which the individual experiences self, other and world. Ratcliffe (2014) argues that "some experiences we call 'moods' are not generalised emotions or feelings without intentionality; they are 'ways of finding oneself in the world'...they determine the kinds of intentional states we are capable of having, amounting to a 'shape' that all experience takes on" (p. 35). Thus, in depression, background feelings amount to the way in which one finds oneself in the world, rather than any specific emotional state or thought one might be currently having.

Situating aspects of implicit sense of agency within a similar conceptual space to background feelings, there is an important overlap between the influence of implicit sense of agency on action and *possibility* articulated by Ratcliffe (2014). For example, background feelings in depression include "a diminished ability to act that is at the same time a transformation of the experienced world" (Ratcliffe, 2014, p. 155). Further, in the same way in which I argue for aspects of implicit sense of agency that are not simply phenomenologically thin (that is, out of awareness but if asked we could turn our attention towards it and agree that we are experiencing sense of agency), so too do background feelings capture an experience that is nonetheless at times beyond the realm of conscious

introspection. Background feelings form the tacit backdrop through which we experience the world, ourselves and other people (Ratcliffe, 2014). To take another example from experiences of depression, Ratcliffe (2014) describes a woman for whom “her world is sapped of the possibilities that experiences of agency and choice presuppose. So much is already gone from it that she experiences herself as no longer fully alive” (p. 114). Thus, it is not the content of the woman’s experience, but instead the *lack of possibility* for sense of agency and choice that is *pre-supposed* by her manner of being in the world that is of primary importance. So, for Ratcliffe (2008), “the experience of freedom is sewn into the way of finding oneself in the world that is pre-supposed by action rather than being attributable primarily to a kind of episodic feeling that precedes or accompanies certain actions.” (p. 164). Background feelings are inherently part of one’s experience rather than pertaining to this decision, that action, or this task.

This is largely consistent with my account of the aspects of implicit sense of agency that have so far been largely missing from discussions of sense of agency. However, there are some important differences. Consider the description given by one sufferer of depression from Ratcliffe’s (2018): “The world holds no possibilities for me when I’m depressed. Every avenue I consider exploring seems shut off” (as cited in Ratcliffe, 2018, p. 129). One of the key differences between the constraints on possibility that I propose as part of implicit sense of agency, and that captured in background feelings, is the level at which this occurs. The comment “every avenue I consider exploring seems shut off” holds within it the experience that things could be otherwise. The level of disruption of possibility that occurs in the additional aspects of implicit sense of agency that I propose is instead at the level where it doesn’t even occur to one to be “exploring” avenues.

Conceptual similarity is also present between an elegant account examining the ontogeny of background feelings by Varga and Krueger (2013) and my account of the development of sense of agency in infancy and the contribution to implicit sense of agency.

Varga and Krueger (2013) emphasise background feelings as indicators of felt proximity to caregivers and the ensuing possibility for distributed emotion regulation and the development of this in infancy, which is diminished in depressive experiences. Varga and Krueger's (2013) discussion of *proximity* in the ontogenesis of background feelings highlights the disconnection and distance people experiencing depression feel. The lack of affordances for intimate connection and distributed emotion regulation further increase unbearable affect and enhance the feeling of being different, leading to a self-perpetuating withdrawal into aloneness (Varga and Krueger, 2013). Descriptions of remoteness from others are indeed common among people experiencing depression, such as the feeling of being 'behind a pane of glass' or behind a 'bell jar' to use Plath's term. Vincent van Gogh put it thus: "One feels as if one were lying bound hand and foot at the bottom of a deep dark well, utterly helpless". Fuchs (2005) describes the key element of depressive experience as "this loss of intersubjectivity: the other is separated by the abyss, and cannot be reached" and "the corporealised and frozen body loses this capacity of emotional resonance" (p. 100). Key points of difference between my account and that of Varga and Kreuger (2013) are: first, I argue for an account that emphasises an additional key factor in both the ontogeny of background feelings and their ongoing influence—sense of agency; and second, whilst Varga and Kreuger emphasise the relational nature of background feelings, I also emphasise the *intra*-personal sense of remoteness, which is the ensuing corollary of interpersonal remoteness. Take, for example, the experience of a participant in Benson et al.'s (2013) study who described the following: "I want to reach out to the world, but it isn't there to reach out to... Nothing can get into or out of my psyche, I am emotionally isolated, on an island with sea all around and no chance of rescue" (p. 65). This statement, in the phrase 'nothing can get into or out of my psyche' contains within it a point of difference which I wish to develop further, namely the connection between the intra and inter-personal (lack of) attunement to feelings and emotions arising within the person. This is a particularly important factor, I

argue, in diminished sense of agency in depression, and it forms part of the crux of the overlap between sense of agency for motor action and the sense of capacity for action.

*Interplay between intra- and interpersonal embodied sense of agency*

This interplay between bodily experience of remoteness (feeling distant from oneself, numbness, lacking in liveliness and vitality) and lack of connectedness with others is linked, I suggest, with the emergent nature of intention and action-effect coupling. What the depressed person describes is a simultaneous distance from their *own* emotional motivational experience (a lack of self-attunement and inner audience uptake) *as well as* a distance from other people (and affordances they may offer in terms of possibility for distributed emotion regulation, attunement to unfolding aspects of connection, and contingent responsiveness). In the words of one depressed woman: “without a voice, I could not ask, which also eliminated the desire to want” (Crowley-Jack, 1997, p. 151). The capacity to affect, and be affected by, other people is required for intention formation and for felt possibilities of action-effect contingency.

In depressive experiences, a person tends to have less attunement to their own and others’ feelings (less intra and inter-personal contingency), resulting in greater likelihood of ‘flat affect’ and withdrawal from social situations because of lack of resonance with others. Here I am expanding the notion of a lack of bodily resonance with other people and the environment (Ratcliffe, 2009; Krueger, 2018), and applying it to the notion of self-feeling. This is consistent with Broucek (1979) who, writing in the developmental literature, suggested that initial experiences of sense of agency or of ‘being the cause’ is the beginning of ‘self-feeling’ (p.312). Sense of agency requires that a person act as a subject, inhabit their lived body, and experience emotional resonance within that body. “To become a subject or to have a sense of subjective self...is to feel that one is the center of one’s own affective experience and one’s own initiative” (Teicholz, 2014, p. 365). To the extent that loss of



connection with inner feelings and numbness prevail, a person will experience a diminished sense of being a subject and a diminished sense of their own actions as voluntary. Their sense of agency will also decrease.

In depression, there is a lack of emergent intention formation and a lack of experiences of contingent action–effect coupling. This lack of emergent intention formation is in part connected with a lack of attunement to feelings from within and is part of a remoteness and disconnection not just from other people and the world, but also from the self and one’s own feelings. Participants in Benson, Gibson and Brand’s (2013) study report feeling “numb and dead...as if I am an empty shell and not really alive anyway” or “numb and closed off”. One woman reported: “I did not feel connected to myself, as if I was an automaton and suicide was the natural response” (Female, 22, questionnaire; Benson, Gibson and Brand, 2013, p. 64). This ‘feeling of not feeling’ (Fuchs, 2005, p. 100) leads to a lack of entering into action–effect couplings in the world. There are diminished opportunities for shifting this cycle of lack of expressiveness, lack of inner attunement and ensuing social withdrawal. This is in part due to the nature of the self-perpetuating cycle: “I feel like I’m being a burden and that they only put up with me because they feel they have to” (cited in Slaby, Paskaleva and Stephan, 2013).

As Slaby, et al., (2013) suggest, the withdrawal experienced in depression is also due to the fact that “the active exercise of one’s communicative and interpersonal capacities... obviously requires intact agency” (p. 13). This is perhaps reinforced by the actions in which the depressed person does engage, in which they act in a way they imagine is expected of them rather than based on feelings or intention arising from within: “The majority of people who know me think I’m ‘sorted’. It would worry them to know the inner me... This is why my life feels fraudulent – and as such, not really worth that much (as cited in Benson et al., 2013). This serves to increase the sense that action-effect has lost its personal meaning and instead becomes empty and meaningless. This is not an act of ‘chosen’ deception but instead

an adaptation to a lack of audience uptake from within, as well as from others in the world. This relates to what Winnicott (1965) has described as a ‘false self’ or ‘alien self’ and which Bowlby (1969) describes as originating in parent-child interaction in which the child is motivated to ‘not-know’ about aspects of their experience which may be perceived as unacceptable to a parent (the person upon whom the child depends for survival). This motivated not-knowing has ramifications for that person’s access to fullness of feeling over time (McIlwain, 2009). Aspects of experience may then remain out of awareness, though they may continue to influence a person’s actions, motivation and emotion (Bowlby, 1969; McIlwain, 2009). Such processes continue to occur in adulthood, in which aspects of our experience (such as the extent of our anger at our boss/partner/teacher) may be kept to some degree out of awareness. This ‘not-knowing’ also occurs in an everyday manner, rather than being limited to more severe experiences (such as trauma). For example, a patient of mine finally admitted to herself, after she had postponed a romantic date for the fifth time, that perhaps she didn’t actually want to go on the date after all.

Increasing withdrawal from social interaction and projects in the world may further decrease the sense of possibility for action and sense of agency and enhance the de-coupling experienced between intentional actions and their contingent effects. The person in the depths of depression may be less sensitive to recognising contingent effects of their actions in the world and with others, as well as within themselves. Thus, diminished attunement to their own feelings has the compounded effect of a lack of vitality and, with it, disruptions in affectivity (things no longer matter to one in the same way) and a disrupted capacity to notice the moment to moment changes or contingent effects of their actions both within themselves and as expressed by others or the world. “[Depression] makes me completely incapable of doing things. When I’m at my worst I can barely drag myself out of bed. My concentration is affected, I can’t hold everyday conversations or complete everyday tasks. Even getting dressed feels like a challenge” (as cited in Slaby et al., 2013, p. 11). Over the longer term,

action–effect coupling is diminished and a lack of contingency becomes part of what is anticipated—part of procedural action expectancies (Beebe, 2012). This is further supported by descriptions of the feeling, out in the world, that one is behind a glass wall or in a glass box: “I felt that a glass box separated me from the person who was still out there functioning” (as cited in Benson, Gibson and Brand, 2013).

### **Self and sense of agency in depression**

Disrupted experience of reality in relation to (dis)connection with inner feelings has also been captured in the work of Dana Crowley Jack (1991) whose book *Silencing the self—women and depression* involved an in-depth qualitative longitudinal study with women. The central theme that emerged among these interviews was a ‘loss of self’ and, particularly, ‘loss of self in relationship’. The experience of ‘silencing of the self’ in close relationships, in which their subjective experience was habitually dismissed, invalidated or minimised by their partners and over time also themselves, led to an internal distance from their own feelings and intentions. Changes in sense of self were often gradual, as one woman put it: “it’s like water running over a rock in a river. You can’t see the rock change shape, but you know it does” (Crowley-Jack, 1991, p. 118). Many women reported a loss of intention formation and inner feeling that had ramifications for their sense of self, their sense of reality and their sense of agency. Similarly, many reported losing contact with (typically self-protective) affective responses such as anger in a context in which to express such feelings was relationally (and for some physically) dangerous. Over time, what began as a tendency not to express became instead a tendency not to feel, through the iterative process of interpersonal formation of feeling (or lack thereof) that Campbell has so eloquently described (Campbell, 1997) [I have elaborated on this in Chapters 3 and 4].

The link between diminished emotional expression and altered emotional experience over time described by the women in Crowley-Jack’s studies is consonant with evidence

from empirical studies. For example, studies examining situations in which diminished emotion *expression* led to decreased emotion *experience*, such as Hochschild's (1983) studies with airhostesses—who were required to carry out 'facework', that is, maintain 'polite' 'warm' expressions, and suppress negative expressions, even (or especially) under difficult interpersonal conditions. Hochschild (1983) found that over time, changes in emotional experience occurred: 'feeling is thinner, less freighted with consequence' (p. 13)

Consistent lack of audience uptake for emotional expression and the dismissing or minimising of feelings and initiation also constitutes a devaluing of *self as subject* (Bendit, 2011; Campbell, 1997; Crowley-Jack, 1991; Fonagy et al., 2002; Fonagy and Luyten, 2018). This can be linked with an 'other-directedness' as is often the case in the anaclitic subtype of depression discussed earlier (Luyten and Blatt, 2012). A lack of attunement to one's self-states can also arise in introjective depression, more commonly through a dismissing or active devaluing of inner experience. As Sander (1983) described it, this can result in a habitual turning away from self-states as a valued source of information and initiative. This *vital* source of information about world, self and other is instead precluded by attunement to the other (in anaclitic depression) or towards the critical part of the self (in introjective depression). Further, the capacity for flexibility, and for 'standing in the spaces' between self-states and holding multiple conflicting states in mind is diminished or absent (Bromberg, 2014). Instead, there is a concreteness to experience, described in psychoanalytic terms as 'psychic-equivalence' (Fonagy et al., 2002). In the words of one patient: "When I feel depressed [...] I feel that I am wading through quicksand. I hate it and fear it, but it is me. Inside and outside me. When I am depressed, that is all that I am" (as cited in Lemma, Target and Fonagy, 2013, p.552).

*Immobilisation, depression and sense of agency*

When faced with impossible problems of a temporary nature, wherein their actions did not result in contingent responsiveness from the environment, Papousek and Papousek (1975) found that “a sudden behaviour change in the infant may occur which reminds one of Pavlov's protective inhibition or of a biological ‘playing possum’; the infant lies motionless with non converging, staring eyes and sleep-like respiration” conveying what the authors described as a “total inner separation from the environment” (p. 251). Interestingly, Varga (2015) suggested that “depression could be seen as a defense mechanism that helps the person disengage from *impossible undertakings* that have become so ingrown in consciousness that it is impossible for him to abandon them under normal circumstances” (p. 155, emphasis mine). Whilst I acknowledge this is speculation, the parallels between these investigations of sense of agency and contingency of actions in infancy, on the one hand, and the hopelessness induced through a lack of contingency of action-effects in adults, on the other, are consistent with diminished sense of agency in depression.

**Prospective sense of agency**

Whilst the predominant focus in cognitive science has been on retrospective and situated sense of agency in both explicit and implicit forms, recent attention has been directed towards prospective sense of agency (Pacherie & Haggard, 2010; Gensch & Synofzik, 2014; Gallagher & Trigg, 2016; Gallagher, 2012, 2013). Pacherie and Haggard (2010) suggest that it is “not just contribution of intention to the final process of action initiation, but also the anterior decision processes that take place at the level of prospective intentions” that are important (p. 70). As Pacherie and Haggard (2010) note, few empirical studies consider prospective sense of agency. They suggest that “prospective intention in such [empirical] studies consists in the participant’s decision to participate in the experiment in the first place, and thus lies beyond what can be measure in the experimental setting itself” (Pacherie & Haggard, 2010, p. 75). This problematic aspect of identifying aspects of sense of agency

(particularly prospective aspects) in the laboratory has been discussed elsewhere [see Chapter 2 and 6]. In sum, I agree with Pacherie and Haggard (2010) that participants may indeed arrive at the laboratory with varying experiences of prospective sense of agency, in terms of their intentions to participate in the experiment. However, I do not see this as beyond the possibility of empirical investigation [see Chapters 4 and 6 for more detail]. Further, such investigations could begin to address a deficit in the literature: the authors state that “almost nothing is known about how these long-range, prospective intentions connect to immediate, short-term intentions” (Pacherie & Haggard, 2010, p. 75).

I suggest that the notion of the quality of intentions is useful in understanding the interaction between prospective intentions, prospective sense of agency, and action. Forming intentions may well include discrete ‘event-like’ experiences that involve higher-order decision making regarding future commitments. However, intentions are not always formed in ‘event like’ ways. Both present moment ‘immediate’ intentions and future-directed prospective intentions can be formulated over time and do not necessarily involve explicit reason-based processes (see Gallagher, 2013). The process of forming intentions may involve dynamic attunement to feelings, motivations and affects that are both intra and interpersonally emergent. Some authors have noted the propensity for cues in the environment to influence how likely it is for future directed intentions to result in action. What has received less attention in the literature are the ways in which intrapsychic conflict, vertical partitioning of aspects of self, and lack of intrapersonal attunement to self-states may influence the process of intention formation.

The broader question of the nature of intentions also comes into focus when considering prospective sense of agency (Pacherie, 2008; Myopoulous & Pacherie, 2018; Chambon, Sidarus & Haggard, 2014; Christensen, Bicknell, McIlwain & Sutton, 2015). Pacherie and Haggard (2010) view intentions as ‘mental states, which may be associated with particular brain states’ (p. 70), and on their formulation they are conscious and occur in

relation to action. This is at odds with the view of intention formulated here—which is that intentions are not always mental states, although they can be. Instead, in accordance with Gallagher (2017), M-intentions can be understood as bodily intentions and need not be considered to be representational in nature (it is beyond the scope of the current article to delve into a comprehensive discussion on this point, but see Gallagher, 2017).

In recent conceptualisations of mental time travel, implicit aspects of this concept have been suggested, in addition to the more commonly discussed explicit formulations (Gerrans and Sander, 2014). For individuals who are not able to enter into embodied emotional resonance, as is often the case in depression, it may be that mental time travel lacks the compelling qualities that are accessible to people not suffering in this manner. Embodied projection of the self into future scenarios is also only possible when there is a concurrent experience of a background feeling of possibility (Ratcliffe, 2009) *and* implicit level sense of agency. This is consistent with the finding that people suffering from depression experience difficulty with mental time travel in both directions—towards the past as well as the future. For example, D’Argembeau and Van der Linden (2006) found people suffering from depression reported less vivid detail in recounting past memories and less future-oriented mental time travel.

Returning to the notion of the quality of intentions, the idea presented here is that the quality of intention formation will differ both between individuals and within individuals over time, depending on a number of factors. For example, whilst intentions typically retain a degree of flexibility, the degree of flexibility is likely to vary systematically with various personality styles (such as autistic rigidity, or malleability of intentions that may be experienced by individuals diagnosed with borderline personality disorder). Intention formation may also be influenced at times by the history of experiences of action-effect contingency (including early action-effect contingent responsiveness from caregivers, as well

as more recent experiences). This includes influence on whether intentions are formed at all (as noted in the decreased formation of future intentions in sufferers of depression).

Can there be bodily intention formation which is at odds with reflective intention formation at the level of thoughts? Does the automatic action, say, of driving, count? In this case M-intentions formed out of awareness may be accompanied by only thin phenomenological awareness of action and may indeed be contrary to higher order intentions, such as when we habitually drive home despite having formed a prior intention to do the grocery shopping after work. What if there were additional motivated elements to this ‘forgetting’, such as feeling quite annoyed about grocery shopping earlier that day but nonetheless feeling that it ‘should’ be done? In this case, conflicting motor intentions and higher-level intentions may result in diminished sense of agency. This has also been supported by Riddle et al. (2015), who examined sense of agency and intrapsychic conflict. The authors found that under conditions of intrapsychic conflict induced by incongruent primes in the Stroop task, sense of agency as measured by IB was indeed reduced [I have discussed this in greater detail in Chapter’s 2 and 6].

Does sense of agency require integration across levels, or at least require that there not be a conflict between levels that is out of awareness? This is indeed what psychoanalytic theory suggests—that we do tend to experience less sense of agency when there are aspects of our experience to which we are not attuned and which are in conflict with other motivations or desires, or for which we experience a motivated ‘attending away’. Kohut (1971) described a vertical partitioning of self, in addition to the horizontal partitioning of repression. As a result of such partitioning, we may not be able to link feelings, motivations and thoughts that occur in one self-part or self-system with those that occur in another self-system. McIlwain (2007) discussed this in the context of the danger for therapists to ‘attend away’ and ‘not know’ about aspects of their experience that are taboo and which may produce discomfort. Such motivated not-knowing may increase the likelihood of an



enactment—of acting out (rather than mentalising and reflecting internally on the meaning of the desire for both patient and therapist). She states that: “shame can fragment us, can isolate us from the support of [others], and also diminish the integration of emotional experience (EE) via producing partitions or vertical splits and via promoting incomplete information processing and, thus, detachment. Responding with shame to felt emotions can undo links between elements of emotion experience, or prevent the formation of such links” (p.60)

*Intra- and inter-subjective action–effect contingency: two sides of the same coin*

The understanding of sense of agency in depression presented thus far is suggestive of a dialectical conceptualisation. Bolis and Schilbach’s (2018) application of dialectical thinking to notions of ‘self’ and attunement can be extended here to sense of agency. The authors point to the work Lev Vygotsky (1896–1934) as an example of dialectical thinking in which, in Vygotsky’s words “through others we become ourselves”, and further, that “all ‘higher’ mental processes *within* an individual result from an internationalization of prior social interactions *between* people”. Bolis and Schilbach (2018) propose that it is the “dialectic between internalization and externalization that provides a more complete picture of the co-construction of individual and social reality” (p.4). Similarly, I have argued that intrapersonal and interpersonal relatedness are key to sense of agency. This approach suggests that intention formation and action–effect contingency could be viewed as two aspects of similar subjective/ intersubjective processes. Might it be that ‘good enough’ contingencies between actions and effects could, over time, mirror the degree to which a person feels able to form intentions? Campbell (1997) points to the interpersonal formation of feeling, where emotional expression and emergent formation of feeling co-occur an iterative emergent manner. Perhaps intention formation occurs in a similar way, in the sense of both an iterative process between the intra- and inter-subjective aspects, as well as this occurring already within multiple aspects of the dynamic self-patterns. As Gallagher and Trigg (2016) stated: ‘The *subjective* and *intersubjective* dimensions of agency and ownership *cannot be*

*considered in isolation from one another, but instead form an interdependent pairing'* (p. 2, emphasis added). I extend this further to suggest that insofar as the intrapersonal and interpersonal are intertwined in the manner described in my developmental account of sense of agency, this can be construed as two aspects of the one process in the intrapersonal experience of the dynamic relation between action and contingent responsiveness in the parent-infant dyad.

### **A note on therapeutic approaches to depression and diminished sense of agency**

Braun et al., (2018) offers a formulation of the therapeutic implications of current sense of agency research, suggesting that therapeutic approaches to depression should assist patients in connecting actions with their effects. I would like to draw attention to the vast literature within relational psychotherapy and psychoanalysis that does just this—at the level of emotion and interpersonal relatedness (BCSG, 2011; Bromberg, 2014; Mitchell, 2000). An important aspect of treatment, from these approaches, is the ongoing experience of co-constituted intersubjectivity. Also important, as detailed by various analysts (Teicholz, 2015; Symington, 1986), is the capacity of the analyst to allow the patient to affect them. Knox (2011) recounted the experience of a session in which an analyst finally spoke directly to the patient in exasperation, which whilst unconventional, brought the therapy back from a therapeutic impasse. Knox (2011) suggests that (in this particular case) directly experiencing the impact of her struggles on the analyst may have increased the patient's sense of agency – that is, increased the sense of the connection between her actions (and expressions) and another's contingent response (the analysts exasperation). Part of the theorising around such exchanges supposes a deficit in experiences earlier in the patient's life, such that they may need (for a time) to experience the impact of their actions (or expressions, or way of interacting) on the other person to shore up a sense within themselves that such an experience is indeed possible. Knox (2011) suggests that as therapy progresses experiences of a sense of agency through having a direct emotional impact can then move to more symbolic methods

of communicating, for example, through being able to articulate one's needs verbally.

In a study in which patients were interviewed in the emergency department after having just attempted suicide, researchers found that the variable which most reliably predicted those patients who subsequently went on to complete suicide was not the clinicians' notes or risk assessment, nor the demographic risk factors or history of prior attempts, or other variables known to be associated with completion of suicide (Archinard et al., 2000). Instead, the best predictor was the facial expressions of the psychiatrist (and to a lesser extent the patient's facial expressions) whilst conducting the interview with the patient (Archinard et al., 2000). It is possible that what was registered in the dyadic system was what could not be put into words. Instead, it was embodied by the psychiatrist's emotional expression conveying, perhaps, the difference in intersubjectivity registered within these dyads in comparison to non-completers during the interview. This is consistent with the analysis presented above, and perhaps akin to what some patients describe as 'being behind a wall of glass' (e.g. Benson et al., 2013) - a lack of capacity to affect or be affected by others, which is one manifestation of impaired sense of agency. A potentially fruitful extension of the study by Archinard et al., (2000) would be a video-microanalysis time-series analysis based on the methodology utilised by Beebe et al., (2010), which could capture the interpersonally situated dynamic interplay between the psychiatrist and patient, as opposed to the individualistic Facial Action Coding System (Ekman and Friesen, 1978) utilised in the study.

There is a heterogeneity of levels of sense of agency within depressive experiences. I would like to suggest that it is important to consider the level of sense of agency in treatment formulation and assessment for depression. For example, there may be a lack of reflective sense of agency (belief that I cannot do the task), or a lack of pre-reflective sense of agency (that is phenomenologically recessive). Furthermore, there may be a lack of implicit non-conscious sense of agency such that it may not even occur to one to imagine they might be able to do the task. There may also be a motivated not-knowing, in which the situation

involves a lack of sense of agency at a pre-reflective level due to a motivated turning away from affective experiences such as anger, which contribute to an experience of lack of felt possibility for action.

This is particularly important because some treatments, such as forms of Cognitive Behavioural Therapy (CBT), often assume a level of pre-reflective sense of agency, at least at the pre-reflective levels, and often also at a reflective level (i.e., the ability to plan, for example to do homework exercises, or the motivation to engage in thought challenging). CBT works within the realms of reflective sense of agency and, arguably, presupposes at least a level of enduring pre-reflective sense of agency—a person needs to be in a state in which they experience at least some things in the world as holding the potential of possibility. This is lacking in many depressed individuals, as Ratcliffe (2014) so poignantly captures. In some cases where a chronic lack of attunement, both intrapersonally and interpersonally, has preceded the depression, such an instruction from the CBT practitioner may re-invoke this lack of attunement towards the patient's internal state and further heighten the experience of lack of contingency and hopelessness regarding possibilities for change. Similar to Bendit's (2011) argument regarding the treatment of chronically suicidal individuals, what I am proposing here is for health professionals to consider first at what level the disruption to sense of agency is likely to be, and then to be conscious in their attempt to avoid repeating the underlying processes that might have contributed to the suffering in the first place.

Ratcliffe (2019) also points towards the way in which a clinical appreciation of the manner in which existential feelings structure experience may assist in increasing therapist empathy. His detailed account provides a rich reservoir for clinicians to better understand exactly these structural changes to experience that are so hard for individuals who have not experienced them to grasp. A challenge for clinicians is honouring the dialectic of acceptance and change (Miller, Rathus, and Linehan, 2006)—balancing empathy with the patient's current experience whilst also holding another possible way of being in mind. This is

captured nicely by renowned psychodynamic psychotherapist Nancy McWilliams description of finishing an initial session with a depressed patient: “I can tell that you really have no hope that change is possible and are coming to me despite your sense of futility. I guess for a while I will have to carry the hope for both of us” (p. 35).

The capacity for the clinician to be affected by a patient and to utilise the experience of this impact is referred more generally in the clinical literature as use of the ‘counter-transference’ (see, for example, Knox, 2011). This is a feature of multiple clinical accounts, although not formulated specifically in relation to sense of agency. Teicholz (2014) describes the intersubjective emotion regulation taking place in therapy and the importance of dynamically fostering an increased sense of agency on the part of the patient through the scaffolding provided in the therapeutic relationship. Background feelings, as well as more explicit and additional pre-reflective (phenomenologically thin) sense of agency, are also impacted by the interpersonal milieu and may allow the possibility for the patient to engage in experiences not previously available to them. This was captured by Tronick et al., (1998), in their work on dyadically expanded states of consciousness in relation to both experiences in infancy, and applications to clinical work. The emphasis among relational psychodynamic psychotherapists is the co-construction of intersubjective experience ‘in the room’ and a simultaneous striving to understand the processes emerging between the dyad. Knox (2011) also argues for the need to ascertain the level of sense of agency at which each particular patient is operating. However, she emphasises the capacity for mentalisation, including whether a person is able to represent experiences symbolically, reflect upon their meaning, and communicate this through language rather than ‘acting it out’ (i.e. putting into action what might otherwise be reflected upon). Individuals operating at lower levels of mentalising capacity (and with lower levels of sense of agency) will ‘communicate via impact’ instead of symbolically, for example, by creating a feeling or experience in the therapist that they themselves are unable to bear.

In sum, I have suggested that situating key aspects of the development of agency within an embodied, implicit, unformulated context has important ramifications for therapeutic intervention. Specifically, this would necessitate what Fuchs (2010) describes as a multi-faceted diagnostic system that incorporates inter-subjective and subjective investigation, in addition to the current penchant for categorical symptom classification. Such an approach stands to assist clinicians in understanding and formulating treatment for what may be otherwise seemingly incomprehensible self-states, such as chronic suicidality (Bendit, 2011). The notion that the best way to treat such self-states is through problem solving or cognitive challenging is to fundamentally miss the point that such phenomenon are likely to involve implicitly encoded unformulated experience and background feelings of lack of possibility.

## **Conclusion**

I have argued that diminished sense of agency in depressive experience can be shaped by aspects out of awareness that nonetheless constrain the possibility space in a manner similar to existential feelings. I have explored key points of overlap and difference between Ratcliffe's (2019) conceptualisation of existential feelings and implicit sense of agency. I have also discussed relatively neglected aspects of sense of agency, namely long term and prospective varieties, in the context of depressive experience. Finally, I have explored ways in which clinical treatment and the approach discussed in this article coincide. In doing so, I suggested that attention to the level at which sense of agency is disrupted is crucial.

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**Chapter 6: General discussion and conclusion**

In Chapter 6, I review the contributions of the program of research offered in this thesis. I then explore potential applications of the approach developed herein to empirical research. I hope that the concrete applications I discuss may result in empirical research that has greater ecological validity, increased clinical applicability, and greater likelihood of interdisciplinary collaboration through which creative ideas could spring forth. Next, I explore future directions for research and elaborate on some of the avenues that such interdisciplinary research could include. I suggest that the approach contained within this thesis could be extended to culturally situated sense of agency, and I make some initial suggestions in that regard. I also discuss sense of agency and notions of ‘self’ as a natural extension of the work contained in this thesis, and I offer some initial formulations. Finally, I offer a conclusion to draw together the elements of this thesis.



## **Chapter 6: General discussion and conclusion**

## **Contributions of this Program of Research**

I have argued that sense of agency research has been extended across a wide array of factors and that this has typically occurred without explicit acknowledgement of the broad manner in which sense of agency has been conceptualised and applied. I have also suggested that there are questions regarding how the various levels and processes are linked conceptually. This matters—conclusions are being drawn and clinical recommendations made without sufficient explanation or context for how this is warranted. For example, in applications of sense of agency research, intentional binding has been recommended as a measure of treatment progress in depression and anxiety (Braun et al., 2018; Obhi, Swiderski, & Brubacher, 2012). Such recommendations, as I have shown, are problematic in a number of ways (Chapter 2). In particular, until a more detailed understanding of how the different levels of sense of agency (such as low-level sub-personal motor processes, and higher-level reflective capacities) relate to each other, caution is required before applying research in this manner. Further, lack of acknowledgement of explicit links between aspects of sense of agency impairs cross-disciplinary pollination. There is rich potential for new approaches to be developed, both empirically and theoretically, through the extensive overlap between disciplines, which I expand upon below. Further, I have suggested that to increase coherence across disciplines, more specific articulation of the factors that vary between approaches to sense of agency is required.

I have emphasised the need for greater consideration of the importance of interpersonal and emotional factors in the experience of how ‘voluntary’ an action may feel, in the degree of accuracy in self/other distinction, and in action-effect contingency experience. I suggest that these aspects can be extensively influenced by interpersonal and emotional factors across situated, prospective and retrospective aspects of sense of agency. The importance of considering the role of long-term and prospective sense of agency was also highlighted. Specifically, additional aspects of pre-reflective sense of agency were

posited. The relationship between pre-reflective and reflective levels of sense of agency was examined and an argument put forward that concordance between levels does not always lead to increased sense of agency.

To address some aspects of the lack of conceptual clarity, I examined the development of sense of agency in infancy (Chapter 3). I suggested that our early experiences of contingent action-effect coupling occur within an embodied interpersonal affective context in which we first interact with caregivers. I have argued that sense of agency develops optimally in conditions in which caregiver attunement to feelings and intentions arising within the infant is in the middle range (rather than hyper-vigilantly attuned or lacking in attunement). This development of sense of agency is an embodied interpersonally situated phenomenon. Interpersonal attunement, and disruptions thereof, have implications for the degree to which action that is experienced as voluntary, contrasted (for example) with action that feels compulsive, in which sense of agency is diminished. Initially, in infancy, this takes the form of good-enough attunement and contingent responsiveness of caregivers, in which caregivers are able to sufficiently tolerate uncertainty to wait to attune to what is arising within the infant rather than pre-emptively assuming what the infant is feeling (which I have linked with the parent's capacity for negative capability – see Chapter 3 for more details). If the infant's expression of feeling is met with adequate audience uptake, then the infant begins to become more aware of the coupling between their own feeling states (and expressive action) and effects in the world (contingent responsiveness of the caregiver). If such experiences are 'good enough' they will lead to an action-effect coupling that contributes the background feeling or pre-reflective embodied assumption of sense of agency in an ongoing manner. I suggest that it is within these early embodied interpersonal interactions that we first become aware of our feeling states, including those that contribute to the formation of intention, which is an emergent socially situated process. This is crucial for an infant to begin

to experience themselves as a source of the action/effect coupling necessary for implicit sense of agency, which crucially also forms experience that contributes to self/other distinction.

Following my examination of the development of sense of agency in infancy, I argued that these developmental experiences have ramifications for sense of agency in adulthood (Chapter 4). Specifically, our experience of the felt ‘voluntary’ nature of actions, as well as the capacity to distinguish self from other, have developmental underpinnings that can continue to influence aspects of sense of agency experience across the lifespan. Long term sense of agency, in particular, may be influenced by the residue of our embodied interpersonal histories of action-effect contingencies. Although recent calls for a more ecologically valid and emotionally literate sense of agency have suggested that ‘priors’ include our affective histories, I have argued that disciplines outside of cognitive science already have the conceptual tools which can be built upon in approaching the task of understanding the contribution of our embodied history to our current action. For example, the individuals embodied interpersonal history of action-effect coupling becomes part of their ‘unthought known’ (Bollas, 1997) or the implicit pre-reflective manner in which a person encounters opportunities for action. These ‘procedural action expectancies’ (PAEs; Beebe et al., 2010) can be multiple and may be variously triggered both in and out of awareness, influencing the scope of possibilities and scaffolding situational salience of affordances in unique ways. They are a source of individual differences and provide an explanatory account of the way in which these differences emerge (Beebe et al., 2010).

I argued that an account of the development of sense of agency in infancy can help in understanding the ontogeny of such ‘background’ or implicit aspects of sense of agency experience. The history we bring to action, in the form of PAEs, will also have varying degrees of influence on current sense of agency, depending on the parameters of the context and how they map onto prior history of action-effect coupling. Examining aspects of prospective sense of agency, I have suggested that developmental accounts, and Campbell’s

(1997) work on interpersonal formation of feeling in adults, highlight the emergent nature of intention formation. This has ramifications for how ‘voluntary’ self-initiated actions may feel. This is related to the contingent effect of action or expression (audience uptake, or contingent effect on environment) and the unfolding, dynamic, iterative process whereby this might be fed back into increasing sense of agency for the action. On the other hand, if met with hostility or dismissiveness, the individual might experience diminished sense of agency for the unfolding action/s.

Finally, I applied the approach developed in this thesis to the experience of adults suffering from depression (Chapter 5). This included a consideration of conceptual overlap between the additional aspects of pre-reflective sense of agency posited in this thesis and Ratcliffe’s (2009) notion of ‘background’ or ‘existential’ feelings. Similarities and difference were explored. The primary difference hinged on the weight given by my account to intrapersonal and interpersonal attunement and the connection to the developmental underpinnings of background experiences of *possibility*. Approaches to the regulation of existential feelings were then considered, including the implications for clinical treatment of depression. Given the heterogeneity of depressive presentations and sense of agency experiences, it was suggested that ascertaining the level(s) at which sense of agency is disrupted is vital in assessing the most appropriate form of treatment, particularly given that some treatments pre-suppose a level of sense of agency whereas others do not. A practical and seemingly trivial marker of which therapies this may include, for example, is whether or not the type of therapy in question requires patient homework—something that may indeed increase treatment efficacy if patients are able to comply. However, if sense of agency is severely diminished such requirements of the patient may instead reinforce core beliefs around failure, provide yet another experience of lack of capacity for action, and reflect a lack of attunement by the therapist to the patient’s current level of suffering.

### **Empirical applications: measuring sense of agency**

This research has identified several methodological and conceptual innovations that will enable better scientific study of sense of agency. These include: the need for alternative implicit measures of sense of agency; consistent simultaneous use of multiple measures that seek to identify the relationship between different aspects of sense of agency; the use of more ecologically valid experimental approaches, including interpersonal paradigms and action in contexts that matter to participants; the importance of assessing for long-term and prospective sense of agency in standard sense of agency paradigms; and use of phenomenological research methods with ‘healthy’ individuals to ascertain more clearly the experience of what-it-is-like to act in the world with varying degrees of sense of agency and to examine the dynamic nature of the concept.

#### *Alternative measures of sense of agency*

There is a need for implicit sense of agency measures beyond intentional binding and sensory attenuation (Grunbaum, 2018; Hughes et al., 2013). A number of concerns have been raised with regards to intentional binding as an implicit measure of sense of agency (see for example Buehner & Humphreys, 2009; Buehner, 2012; Hughes et al., 2013). Among them, Hughes et al., (2013), found empirical evidence to suggest that intentional binding cannot distinguish between temporal perception and sense of agency. Whilst it could be argued that intentional binding *is* in part temporally based (see Wegner, 2012; Wegner and Weatley, 2002) there is no claim that it is *only* temporally based. Further, it becomes especially problematic in investigating sense of agency and phenomenon such as depression, in which temporal perception is known to be disrupted (Fuchs, 2005; Gallagher, 2012; Ratcliffe, 2012) and in which temporal perception is disrupted across an array of domains which extend beyond sense of agency. Sensory attenuation also has limitations. For example, Grunbaum (2018) suggests that sensory attenuation cannot account for positive experiences of sense of

agency, given that it is a mechanism for cancelling or dampening down signals that indicate a match between efferent motor signals and afferent signals indicating sensory feedback. That is, according to sensory attenuation models the closer the match the weaker the signal, which Grunbaum (2018) argues is a poor candidate for sense of agency detection in which the closer the match the higher the sense of agency. It is beyond the scope of this discussion to include a comprehensive review and critique of implicit sense of agency measures (but see for example, Grunbaum, 2018). I raise the fact that implicit measures are not without their limitations to point to the need for additional types of implicit measures of sense of agency.

What can this thesis contribute to the question of measures? Empirical implicit measures of long-term sense of agency are lacking. One place to begin that arises out of this thesis might be in examining implicit aspects of narrative structure, such as ‘passive speech’ that is coded in the Adult Attachment Interview (AAI)—an interview measure used to determine the participants state of mind with regards to attachment (George, Kaplan, & Main, 1985; Hesse, 2008; Gojman-de-Millan & Millan, 2013). Whilst some studies have examined narratives for explicit content (e.g., research examining the frequency of agency related words) or asked subjects to explicitly endorse agency related statements (Polito, Barnier, & Woody, 2013; Tapal, Oren, Dar, & Eitam, 2017), the AAI instead provides a method of analysis by which the structure of the speaker’s language is coded and analysed. In this context, ‘passive speech’ provides a linguistic marker of a subtype of insecure attachment (while passive speech constructions are less common in interviews of individuals who are more securely attached).

It is important to note that AAI conceptualisations of ‘passive speech’ are very specific—this label does not simply refer to passive tense in the grammatical construction of sentence structure, although it can include this. It is a broader umbrella term. Briefly, it involves such elements as: empty phrases, unfinished thoughts, run on sentences, a lack of self-reflection except in a preoccupied sense, uncertainty invoked by multiple pauses and

stop/start sentence construction, tangential content, and vague or difficult to discern content (see George, Kaplan and Main, 1985, or, for a current review, see Hesse, 2008). It is beyond the scope of this paper to expand on the technical aspects of the analysis. West and George (2002) found a higher prevalence of linguistic indicators of low sense of agency amongst insecurely attached individuals. Similarly, although using quite different methodology, Oren, Friedman and Dar (2016) found higher use of non-agentic grammatical sentence construction and linguistic omissions of the agent among people who scored higher on a measure of obsessive compulsive symptoms compared to individuals with lower scores.

This also leads to the question of what a bodily anchored corollary of the type of structural analysis that the AAI affords might be (Wayne Christensen, personal communication). One candidate is the quality of actions in terms of their vitality forms (Stern, 2010). As Stern (2010) puts it: “Vitality is a whole. It is a Gestalt that emerges from the theoretically separate experiences of movement, force, time, space and intention” (p.5). The link between sense of felt voluntary qualities of action, and experiences of vitality, has been suggested by a number of theorists and clinicians (Korner, 2000; Slaby & Wüschner, 2014). Infant observation data also supports this claim (Briggs, 2002; Cohen, 2018; Reid, 2013). Lack of vitality can manifest in infancy through a lack of bodily tonality, which is one indicator of failure to thrive (Crittenden, 2018). Non-organic failure to thrive and lack of bodily tonality is also used clinically to indicate problems in the parent-infant relationship (Cicchetti, Toth, & Bush, 1988; Crittenden, 2018; Selwyn, 1993; Weinberg & Tronick, 1997). Thus, there is scope to investigate and develop bodily-based observational measures of sense of agency deficits. Such measures could also contribute to clinical assessments, as discussed in Chapter 5 regarding the need to develop more accurate risk assessments for individuals at risk for suicide (Archinard et al., 2000).

How do explicit measures of sense of agency fare? Explicit measures are heterogenous in terms of questions asked (such as variations of ‘did you do that?’) and



whether the measures are dichotomous or instead employ Likert scales (which ask participants, for example, to rate between 1 and 8 “to what degree” they felt they produced a particular outcome; Sato, 2009, p.76; see also Dewey & Knoblich, 2014) or ratings (for example, from 0 to 100, where 0 is I “totally disagree” I produced the outcome, through to 100 “totally agree”; Sato & Yasuda, 2005, p.246). Further, it is not always acknowledged that different aspects of sense of agency underlie different types of questions. For example, some explicit measures focus on self/other distinction and ask participants to indicate whether they caused an outcome or whether someone else (a confederate, other participant, or experimenter) caused the outcome. Other measures focus instead on the degree to which a person experienced or felt that they caused a particular outcome, asking questions that include variations of ‘to what degree did you feel that you caused the tone?’. These measures arguably tap into something somewhat different from self/other distinction, perhaps more ‘within-self’ aspects of sense of agency. Still other measures ask about the degree of effort experienced in generating an action, and yet others inquire as to the level of control experienced either during the action or in causing the outcome. There is thus ambiguity in what explicit questions are tapping in to and how participants might interpret these questions. Objections have been raised with regards to the fact that such explicit questions are quite unusual—we do not usually engage in discussion or introspection in the manner required of participants in these experiments (see for example, Pacherie and Haggard, 2015). What it is exactly that participants may be reporting on when they answer such questions in the context of an experiment is largely speculative and there is scope for qualitative investigation of this question (Pacherie & Haggard, 2015). Such techniques have been employed in other fields, such as public health research, in which participants not only answer questions regarding a specific phenomenon but are also asked to report how it is they have understood the question being asked of them (see for example, Pugh & Porter, 2010). More detailed explicit sense of agency measures have been developed for use in the investigation of hypnosis. Polito et al.

(2013), developed the Sense of Agency Rating Scale (SoARS) to address the gap in the literature regarding the absence of validated tools for investigating sense of agency. Using exploratory and confirmatory factor analytic methods, they produced a scale with two primary factors: involuntariness and effortlessness. Research investigating the use of this scale in contexts outside of hypnosis has been conducted, or which employ similar methodology to create and validate scales beyond the hypnosis specific context, could assist in gaining a clearer picture of explicit sense of agency and greater concordance across empirical studies with regards to measures used.

### *Ecologically valid paradigms*

Pacherie and Haggard (2015) point out that it is often unclear what participants are doing when they carry out actions in relation to experimenter requests. This highlights the need—emphasised throughout this thesis—for more ecologically valid paradigms, particularly paradigms which include action in context that matter to participants. Specifically, I have suggested that use of interpersonal paradigms to investigate sense of agency within dyadic interactions in context that matter to participants may assist in addressing the need for greater ecological validity in research. In addition to joint agency paradigms and examinations of the notion of we-agency (Obhi & Hall, 2011; Pacherie, 2011, 2014), I am referring to the interpersonally situated sense of agency as it is experienced as unfolding within the person during the interaction. I address joint agency and we-agency in detail elsewhere (see Deans & Pini, in preparation). Whilst there has been an increase in more ecologically valid of paradigms in recent research (as discussed in Chapter 4), few attempts have been made to examine sense of agency in natural settings in which actions and outcomes already matter to the participants. Christensen et al. (2015) are an exception. They examined sense of agency in the context of skilled action. Sense of agency experience was explored in relation to the actions of a skilled expert and contrasted with the experiences of

skill acquisition of a novice. Interpersonal naturalistic paradigms such as this one could also examine dyadic or multi-person interaction in the context of activities already being undertaken, such as filming a creative project, sport, discussion, or other event in which multiple people are engaged and employing the analysis techniques described earlier. Whilst such suggestions are obviously speculative, more creativity regarding naturalistic paradigms is exactly what is needed in my view.

In the absence of naturalistic research, more ecologically valid paradigms could be employed in the laboratory. For example, building on the study by Riddle et al. (2015), intrapsychic conflict could be examined in conditions in which a person was experiencing a current real-life conflict. Research methods drawing on Gottman's research with couples could be employed. For example, a study could examine a situation in which a couple was asked to discuss a recurring low- or high-level interpersonal conflict in the laboratory. This could involve situations of both interpersonal conflict (between members of the couple) and intrapersonal conflict (within each individual—for example, inner conflict between relationship goals and individual goals). Alternatively, dyads could engage in ecologically valid physical or conceptual problem-solving tasks together, such as everyday tasks of varying complexity. Examining sense of agency across multiple levels simultaneously, including sub-personal motor levels and higher order levels (such as reflective experience and judgement regarding actions) may assist in beginning to tease out the relationship between levels of sense of agency under conditions of intrapsychic conflict.

Empirical studies have begun to utilise the simultaneous deployment of multiple measures to identify the relationship between different aspects of sense of agency. However, more ecologically valid paradigms are needed. For example, Dewey and Knoblich (2014) employed the concurrent use of intentional binding, sensory attenuation and explicit (situated rather than long term) sense of agency measures. However, the paradigm used had minimal ecological validity in relation to understanding real-world actions in contexts that matter. An

ecologically valid approach *and* the simultaneous deployment of multiple measures across levels of sense of agency could include the utilization of: an adult adaptation of the video-microanalysis and time series analysis traditionally used to investigate the individual and dyadic patterns of interaction in parents and infants (Beebe, 2005; Beebe et al., 2010); physiological measures used in current sense of agency paradigms; trained researcher ratings of vitality contours and forms; and content and structural analysis of narrative content and the dynamic change in this over the course of an interaction with another person. Subjective ratings and qualitative report of retrospective sense of agency could then be undertaken whilst watching a video playback of the interaction (utilising a similar methodology to that described in Beebe, 2005). It would be interesting to investigate fluctuations in sense of agency as measured by different assessment types over time, as well as concordance (or lack thereof) between measures of situated and retrospective reflective reports whilst watching the video playback. The dynamic nature of sense of agency (Polito, Barnier, Woody, & Connors, 2014; Polito, Langdon, & Barnier, 2015) remains to be empirically explored. The development of measures that can track fluctuations of sense of agency across time and on multiple levels would assist in gaining a fuller understanding of the concept. Methods such as participant narration of video playback may enable rudimentary access to some aspects of retrospective sense of agency. It is possible that a person may have experienced sense of agency at a given point in time and later revises their judgement of this in light of new information, such as when participants may be debriefed regarding the presence of subliminal primes. I acknowledge the resource intensiveness of these suggestions. However, I wonder at the possibilities for collaboration across disciplines and studies already engaging in types of research that could include sense of agency as a specific area of interest.

*Assessment of long-term and prospective sense of agency*

Whilst long-term and prospective sense of agency are an interesting topic of research in their own right, I have suggested that it is possible that, at least some of the time, they may systematically influence responses during experiments investigating immediate or situated sense of agency in the laboratory, at least in quasi-experimental designs as employed when clinical conditions are the subject of enquiry (for example, with patients suffering with schizophrenia). Assessing participants' long-term sense of agency could assist in controlling for what could be a confounding variable. This could take various forms, which need to be further formulated and validated empirically. Based on the conceptual analysis I have presented, candidates could include a combination of explicit and implicit long-term sense of agency measures. For example, the Sense of Agency Scale (SoAS) is an empirical questionnaire that aims to measure participants "general, context-free beliefs" about sense of agency (p.1). I have suggested that long term sense of agency may also be investigated through implicit methods such as narrative structure analysis (including adaptations of the Adult Attachment Interview coding system, see below).

Explicit prospective sense of agency for the tasks of the experiment could be assessed using measures such as an adapted version of the SOARS, altered so that the tense of statements was future-focussed, and in which 'instructions' could be substituted for 'suggestions' (as Polito et al., 2013, propose). Linguistic content analysis employing methods similar to Oren et al., (2016) regarding grammatical construction and use of agency related words could also be employed, for example in relation to participants describing the experimental task required. Such measures would need to be validated in these contexts.

There is a need to develop empirical paradigms and methods that can examine differences between the manifestations of sense of agency disruption in one disorder (such as anarchic hand syndrome) but not a similar disorder (such as utilisation behaviour; Bayne and Levy, 2006). One hypothesis is that the difference between these disorders may reflect a

difference between prospective sense of agency at the personal level. For anarchic hand syndrome, for example, the experience at both the personal and sub-personal levels is low (in which the unit of analysis is an episode of aberrant action, for example, taking food off someone's plate in a restaurant). This includes prospective, retrospective and immediate sense of agency for the unit of analysis under question. In contrast, in utilisation behaviour there is a higher level of predictability to the behaviours and thus prospective sense of agency at the personal level is higher, whilst it remains low at the sub-personal level (the patient cannot easily halt the behaviour). Thus, at a reflective level, some understanding or sense can thus be made of the occurrence of utilisation behaviours, whereas for anarchic hand syndrome reflective level sense of agency is low. There are also likely to be motivational, affective and interpersonal factors in play, such that subjects may wish to disown behaviors that are socially disruptive. Whilst socially disruptive behaviors occur in both disorders, it may be that in the presence of greater unpredictability of the behaviors elicited by the disorder there is greater weight put on the need to disown these actions. Further, investigations into when disruptive actions are more likely to occur, such as which interpersonal or affective contexts are likely to trigger anarchic hand syndrome behaviors, would provide an interesting window into the disorder. Prospective measures across multiple levels and processes of sense of agency could thus help to ascertain whether such any of the previous speculations have merit.

#### *Further phenomenological investigations into sense of agency experience*

There remain many contentious aspects of sense of agency, including the phenomenology of agency—the ‘what-it-is-like’ to experience sense of agency. Scholars such as Grunbaum (2015) suggest that there is nothing that it is like to experience a feeling of ‘sense of agency’. In contrast, Haggard (2017) states that “we experience a clear feeling (or ‘buzz’) of agency during everyday actions” (p.198). Still others suggest there is an inherent ambiguity to agency experience itself (Gallagher, 2013). It is beyond the scope of this

discussion to explore this phenomenological question further (but see Bayne & Levy, 2006; Bayne, 2007, 2016 for a discussion). Whilst there are in-depth phenomenological studies of disrupted sense of agency experience in depression (Ratcliffe, 2014; Slaby et al., 2013), suicidal feelings (Benson et al., 2013), trauma (Ataria, 2015), agoraphobia (Trigg, 2013; Gallagher & Trigg, 2016), there is a dearth of phenomenological research on sense of agency in individuals not suffering from mental disorders. Whilst this may be because sense of agency among healthy individuals is rather unremarkable, the conceptual analysis presented in this thesis suggests that there may be dynamic fluctuations in the sense of agency throughout the interpersonal, emotional, interactions that form our everyday lives.

### **Future directions**

Directions for further research are discussed in this section, which has been divided into areas of focus including: interdisciplinary collaboration in the exploration of sense of agency; exploring culturally situated sense of agency; sense of agency and a multiplicity of self-states; and infant development of sense of agency.

#### *Interdisciplinary collaboration in the exploration of sense of agency*

Further directions for sense of agency research suggested by this thesis include a greater emphasis on interdisciplinary collaboration. One avenue of potential investigation includes examining empirical and theoretical accounts of ‘self’ involving a dynamic multiplicity of self-states (described in Chapter 2 and expanded upon below), the experience of dissociative states, and how this relates to sense of agency. The framework developed in this thesis could build on Ataria’s (2014) phenomenological work on trauma and sense of agency and ownership, to create a richer conceptual understanding of dissociation as it pertains to interpersonal trauma (including developmental trauma). Following this thread

further could extend Gold and Kyratsous' (2016) account of sense of agency in Borderline Personality Disorder (BPD). Individuals suffering with BPD are much more likely than healthy controls to have experienced trauma in early life (Herman & Van der Kolk, 1987; Fonagy et al., 2002; Fonagy & Luyten, 2018; Linehan, 2006) and have typically also experienced highly invalidating emotional environments. As adults, individuals with BPD experience two primary areas of problematic self-functioning, namely:

‘1. identity: The self is impoverished, poorly developed or.... unstable self-image, which is often associated with excessive self-criticism; chronic feelings of emptiness; and dissociative states under stress. 2. self-direction: instability in goals aspirations, values and career plans’ (p. 1020, Gold & Kyratsous, 2016).

There are similarities between BPD and depressive experience. For example, excessive self-criticism, feelings of emptiness, over-generalised memories, and impaired capacities for mental time travel are all common across both disorders. However, BPD is usually accompanied by marked instability of self, which manifests in terms of both instability of identity and characteristic instability in interpersonal relationships (Herman & Van der Kolk, 1987; Fonagy et al., 2002; Fonagy & Luyten, 2018; Linehan, 2006). Thus, whilst the account of sense of agency in BPD that Gold and Kyratsous' (2016) provide is illuminating, particularly regarding self-identity experience, a more interpersonally situated account could build on their approach and allow for examination of another fascinating aspect of sense of agency: self/other distinction. As noted in Chapter 2, Blatt and Luyten (2009) highlight two dimensions of psychopathology in the form of interpersonal relatedness and self-definition. BPD is an example of an unfortunate constellation of both of these dimensions, and as such provides a unique window into the relationship between these two aspects of sense of agency.

Greater collaboration between researchers and clinicians engaged in working with patients to improve their sense of agency would add to the richness of current discussions. For example, in her clinical work with non-speaking (and often non-eating) children,



Magagna (2012) describes therapeutic work highly relevant to sense of agency research. Her therapy involves the gradual piecing together of the meanings of the child's gesture and gaze and, importantly, her vocalisation and empathic embodied gestural and tonal resonance with what she observes and imagines the child is experiencing. The message that is thereby conveyed to the child is that his or her experience is seen and has an effect on another person. Further, what is being communicated is that this effect on the other person is not random, but instead highly contingent—their actions have meaning and can be understood and someone cares enough to attempt to do just that. The therapist and child are engaged in the kinds of iterative processes described in Chapters 3 and 4, in which something emerges that was not possible for either person alone. This continually unfolding process whereby actions-effect contingent couplings continually feed into further actions-effect couplings contributes, I argue, to each member of the dyads pre-reflective and reflective sense of agency both in the present and, if repeated often enough, also in a long-term sense.

### *Exploring culturally situated sense of agency*

Whilst the approach developed in this thesis has focussed on socially situated sense of agency, further directions following from the ideas developed herein could be applied to culturally situated sense of agency. Researchers in cognitive science have begun to examine the influence of cultural factors on sense of agency. For example, a study by Barlas and Obhi (2014) investigated the effects of the valence of outcome and cultural differences on sense of agency measured implicitly through IB and explicitly through subjective reports of 'feelings of control' over actions. However, the approach to 'culture' in this study involved the over-generalised conceptualisation of cultural differences in terms of a 'Western' and 'non-Western' binary. Whilst common in empirical work examining cultural differences, the limitations of such generalised approaches to culture influence the meaning that can be drawn from the results. The authors found that for Western and non-Western subjects, actions that

resulted in pleasant outcomes (in the form of consonant musical chords) increased explicit sense of agency compared to actions that resulted in unpleasant outcomes (dissonant chords). The authors suggest these findings were driven by the self-serving bias in which people experience greater sense of agency for positive outcomes. Barlas and Obhi (2014) found an effect for culture only when sense of agency was measured implicitly. While Western subjects demonstrated an IB effect for pleasant relative to unpleasant outcomes, non-Western subjects did not demonstrate any effect at the implicit level of sense of agency. The authors draw on evidence from studies outside of sense of agency research that support these findings, including a study by Hetts et al. (1999) that found no difference between Western and Eastern subjects using explicit measures of self-evaluation, but an effect of culture when the tendency towards self-enhancement was measured implicitly (through reaction times).

A more nuanced approach could be developed through the application of Campbell's (1997) interpersonal theory of the formation of feeling to sense of agency in the cultural realm. Indeed, applications to culture are already contained within Campbell's work, in which she illustrates the way in which culture reaches right down into the intimate personal experience of the way in which our emotions form (or don't fully form). Campbell's (1997) work highlights the interconnectedness of the cultural and the personal, including the way in which dominant groups and narratives can influence our capacity to feel, think and imagine.

Audience uptake of emotion can have a political and personal effect on minority groups by dismissing or minimising their reality (Campbell, 1997). This can occur through various linguistic devices. For example, calling someone 'bitter' can dismiss legitimate anger, shifting the focus to the (now maligned) character (Campbell, 1997). Such a move is made to deny the reality of the experience of the individual in question and shift the focus away from the legitimacy of the experience of anger. Campbell (1997) states poignantly that "no one calls someone holding a bomb bitter" (p.171), pointing towards the fact that there are some constraints under which a person's emotional reality can no longer be dismissed

(Campbell, 1997).

Situating sense of agency within cultural contexts requires an acknowledgement of the norms of that culture. ‘Symptoms’ may only be symptoms within a given context. For example, Eishold (2015) describes her work with a woman who had escaped from her country to avoid her second daughter being subjected to female genital mutilation. This practice was the norm in her country of origin and both she and her first daughter had been subjected to it. Eishold (2015) described the woman’s resourcefulness and courage in seeking to come to a country where such a fate would not befall her other daughters, particularly in the context of a culture in which she had arguable survived because of her submissiveness and subservience. Eishold (2015) described her view that the male voice with which this woman corresponded nightly, who had given her the strength to follow her desires for a different life, was not a pathological case of delusion but an understandable response to a cultural environment in which women did not demonstrate such independence or follow their own desires (at least not openly or without great cost). The interaction between sense of agency and culture is a rich and under-explored avenue for future conceptual and empirical investigation. Future research would benefit from acknowledging the complexity and nuance exemplified briefly above. The interplay between sense of agency and the cultural realm is a promising area for future research.

### *Sense of agency and a multiplicity of self-states*

In Chapter 2, I argued that approaches to sense of agency could benefit from a view of ‘self’ as multiply motivated, rather than unitary. Here I wish to suggest that further development of this view in the context of sense of agency research and theory is needed. The view described in brief in this thesis could be expanded in relation to dynamic systems views of self, specifically building on Clark’s (2007) views of self as ‘soft hybridization-favoring, *partial* self-governing routines’ (p. 118) and psychoanalytic conceptualisations of

self (Fonagy et al., 2002; Bromberg, 2014). There is also related work to be done regarding the function of narrative commitment for behavior and action. Key to further exploration, I suggest, is the notion of awareness and integration of self-systems, and the role of these in sense of agency. I will endeavor to show why this is relevant for future research below in a brief sketch of the issues at hand.

The compelling phenomenological experiences of the *sense* of having a self are hard to shake. Even experiences of a lack of sense of self are not limited to psychopathological experiences, but instead permeate everyday parlance, as in phrases such as ‘I’m just not myself today’ or feeling that a particular action ‘just wasn’t [the usual] me’, or ‘I found myself doing x’. Such statements point towards the subjective experiences of actions, thoughts and feelings that vary in the degree to which they are felt to be aligned with some central notion of ‘self’. This view is one that underlies approaches to notions of a ‘true’ self and a ‘false’ or ‘alien’ self (discussed in Chapter 4). However, they also point towards a non-unitary way of conceptualising ‘self’. Notions of true/false self are indeed common in approaches concerning sense of agency. For example, Garvey (2018), examining sense of agency in a legal context, suggests that an aspect of assigning moral responsibility and lawful culpability rests (in part) on ascertaining the degree to which actions undertaken were aligned with the person’s ‘true self’ versus those that were not (a concept he refers to as an ‘alien self’). Conceptions of a ‘true’ versus a ‘false’ or ‘alien’ self have a long history in psychoanalytic theory (for example, see Winnicott, 1965). For Garvey (2018) the ‘true’ self is that self that is aligned with the person’s explicitly held beliefs and values, whilst the alien self may be experienced as foreign to themselves, as in the sleep walker who commits murder whilst asleep, or the schizophrenic who, once well, experiences both horror at actions undertaken as well as a sense of it “wasn’t me” (Garvey, 2018). In contrast, psychoanalytic approaches to true versus false self originate in the notion, explained in chapters 3 and 4, that as immature creatures we are dependent on our parents for survival and may form a ‘false

self’ or way of experiencing the world that is at odds with our ‘true’ feelings if our true feelings and wishes present a threat to the attachment relationship (and thus to our survival).

Bowlby (1969) wrote in detail of the formation of this ‘false self’ particularly where it concerns the expression of emotions such as anger, which may be implicitly or explicitly communicated as unacceptable by the parent. In order to maintain proximity and survival, such feelings and associated action impulses and thoughts may be initially suppressed and, over time, may be less likely to reach awareness. These split off parts of the self, which are actually part of the true self (or so the theory goes), will then become more likely to be acted out in an unconscious manner, rather than to be felt and reflected upon. We are required ‘not to know’ about parts of our experience if the risk of damage to the survival-sustaining relationship is perceived to be too great (Bowlby, 1969).

Whilst true/false conceptions of self have allowed for interesting and helpful discussions regarding motivated not-knowing about aspects of the self, they do fall prey to reification of the notion of ‘the self’. More recent clinical approaches in psychoanalysis (see for example: Bromberg, 2014; Mitchell, 2000), attachment theory (see Bretherton et al., 1990, 1999) and schema therapy (Young et al., 2003) highlight a multi-part or multi-system (or dynamic systems) approach to understanding ‘self’ rather than the dichotomous true/false notion suggested in these earlier accounts.

Whilst it is beyond the scope of this discussion to review the literature here, self-parts (Bromberg, 2014; Lamagna, 2011), -systems (Beebe et al., 2000; Sander, 2002), -models (such as the Internal Working Models of attachment theory, Bowlby, 1982), and the previously mentioned procedural action expectancies (Beebe et al., 2010) have a long history and vary in the manner in which they approach questions of etiology, plasticity, interrelationship and perturbations of such self-systems. Importantly for the current discussion, these various approaches are not just conceptualised as arising from the need to explain to ‘oneself’ the reasons for acting in particular ways (as confabulation in the form of

narrative is commonly portrayed) but instead arise out of adaptations to increase the likelihood of survival.

What role does *awareness* of self-systems or self-states have in the degree of sense of agency experienced? I suggest that access to subjective experience of a multiplicity of self-states may influence the degree of sense of agency experienced. Many clinical approaches to disorders of sense of agency, such as anxiety, involve helping the individual connect to emotion and motivation that they may habitually suppress but which, if awareness becomes possible, result in a decrease of compulsive action experiences. Attachment theorists suggest that awareness of one's past attachment experiences and the influence on current states of mind with regards to attachment is one of the most crucial factors in determining the degree of flexibility (rather than compulsive reactivity, in either an avoidant or anxious manner) a person has in the current moment in their response to a given attachment scenario.

Individuals who do not show reflective capacity with regards to their past attachment experiences and awareness of the manner in which they have been affected by them may be driven to act in their current relationships in predictable, patterned ways (Fonagy & Luyten, 2018). This relates to the degree to which individuals will experience action as 'voluntary'. Similarly, Knox (2011) and Fonagy et al. (2002) suggest that integration, awareness and the capacity for reflection are key to understanding what feels 'voluntary'. Becoming aware of the fullness of feelings arising from within is a developmental achievement rather than a given (as argued in Chapter 3; Gergley & Watson, 1996). This capacity arises through adequate or 'good enough' interpersonal experiences that allow a person to become subjectively aware of the various and conflicting array of motivations, affects and drives occurring within and to be able to reflect upon these as opposed to compulsively acting them out. Integration is born not out of lack of psychic conflict but from awareness of conflicts and reflective capacity for such conflicts coupled with types of responsiveness to these (compassionate and receptive versus punitive and dismissing, for a simplified example).

Attunement to unfolding emotional experience, and curiosity and negative capability (the capacity for ‘not knowing’) regarding that emergent experience, allows self-systems to both expand in nature and find coherence through reflectiveness with other self-systems. For example, a self-state of anger, if met with either interpersonal or intrapersonal attunement, may be integrated with reflectiveness, allowing the anger to become meaningful, rather than being defensively partitioned off. Defensive partitioning involves the suppression or dissociation of emotion, making it more likely that someone will experience what in psychotherapeutic terms is called ‘acting out’ (Knox, 2011). Acting out involves the expression of motivations or emotion (for example, anger) behaviourally and without awareness—without a sense of agency—as when we find ourselves ‘forgetting’ to carry out a task for a person we resent, or to rescheduling a meeting for the fifth time due to ‘being busy’ yet again (Fonagy et al., 2002; Knox, 2011).

The degree of integration, awareness and capacity for reflection is key to the experience of how voluntary something feels. This is consistent with adult attachment interview studies regarding the coherence (or integration) of securely attached individuals. It does not indicate that all systems are in alignment (in terms of an absence of intra-psychic conflict) but it does indicate there is reflective capacity and a coherence to the narrative story that is embodied (i.e., it can’t just be any old narrative, but instead one that is linked with the bodily cloud of emotion and motivation). Without integration, narrative can have an empty quality, as experienced in some forms of psychopathology.

Returning again to the notion of ‘self’, a problem that arises is what does the integrating, the reflection, and what or who is aware when we say there is greater or lesser awareness? Here, I will draw upon Clark’s views, to help demonstrate that integration, reflection and awareness do not necessarily lead to a reification of self. Interestingly, there are three key points of overlap between Clark’s position and the views expounded above. For

one, he also argues for a multiplicity of self-systems, rather than a unitary notion of self.<sup>1</sup> Second, and perhaps much more surprisingly, the notion of cohesion of aspects of self-systems are viewed by Clark, as they are in various psychoanalytic and developmental perspectives, as an achievement rather than a given. Clark (2007) puts it thus: “the unit and cohesion of self, and the distinctness of the self (the sense we have of being individual agents, located thus and so, confronting a wider world) are not simple givens. Instead, they are (imperfect and constantly vulnerable) *achievements*” (p. 114, italics in original). A third point of overlap is in the emphasis on unconscious or non-conscious influences, as when he states that we humans have “only the most tenuous collective grip on what it means to be a choosing, acting ‘self’ or a unified ‘mind’, and because we suffer from a chronic tendency to misconstrue the relations between our self-conscious choosings and the vast webs of nonconscious processing activity (all those whirrings and grindings of machinery, neural and perhaps nonneural, internal and perhaps external) that also structure and determine our own actions and responses” (Clark, 2007, p. 106). Clark’s view, in these three respects at least, is very similar to prominent psychoanalytic and developmental views (Fonagy et al., 2002; Knox, 2011).

These are the similarities, but what are the points of difference? I suggest there are two fruitful points of difference. One is the suggestion by Clark (2007) of the role of the loci of self-systems; the second in the nature of the narrative self-function. Consider the first point of difference: the suggestion, by Clark, of the notion of an ‘ecological controller’ that is the locus of the multitude of self-systems but is not an entity in itself. This suggestion attempts (and I believe succeeds) in addressing the problem of how we are to account for the

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<sup>1</sup> As when he states that “for my own part, I remain wary of the idea of any single such self-model, and much more inclined (see Clark 1997) towards a vision of multiple partial models, most of which may be relatively low level (e.g., a variety of forward models of bodily dynamics; see below). As far as the most inclusive and abstract such ‘self-model’ goes (the one that corresponds most closely to the narrative self), I wonder what the notion of a model here adds to the simpler notion of systems that know some stuff about themselves and use that knowledge to help select actions?” (Clark, 2007, p. 117).



compelling subjective experience of a somewhat unified ‘self’ described earlier, as well as how we are to understand concepts such as integration, awareness and reflection without reifying notions of ‘self’. One question that arises then is: what can do the work of the ecological controller if it is not a cartesian thinker or homunculus residing somewhere in the brain? Clark suggests a view of self as the dynamic loci of multiple systems of ecological control, a “suite of soft hybridisation-favouring partial self-governing routines [that] cannot reconstruct a stereotypic Cartesian mind of a traditional single central self” (p.117). Using this idea, he suggests that through this approach “we may appreciate what is correct in Dennett’s depiction of that kind of [Cartesian] self as a kind of illusion while embracing the causal potency of (perhaps a variety of) empirically real partial self (and world) models, *some of which link memory and motivation to action and choice*” (Clark, 2007, p. 118, italics mine).

Extending this idea further and considering the role of narrative in the “suite of soft hybridisation-favouring partial self-governing routines”, Clark (2007) argues against views of self-narratives as an ‘add on’. Instead, he points to the function of self-narrative, rather than merely as an (at times confabulated) accompaniment to action and perception. He draws on accounts by Vellman (2000), expanded by Ismael (2004, 2006), such as, he suggests, in the case of stating something in the order of ‘I need to leave’ and the ensuing function this self-statement may have in increasing the likelihood of engaging in this action. This, Clark refers to as the trick of ‘forward narrating’, confined as far as is known to the human experience (a capacity that differentiates us from other animals). Clark, drawing again on Ismael, suggests that we are self-organising systems but that the self-model is part of these systems whereby our self-model can influence behaviour and action through committing us to various courses of action or projects through the narrative voicing (internally or externally) of commitments (see also Ainslie, 2001, 2007).

Consider again the impact of narrative statements such as ‘I’m going to go’ on the

ensuing action. I would like to suggest that the aforementioned conclusions pre-suppose a degree of cohesiveness and integration within the individuals' self-systems that may or may not be present. People will vary with regards to the degree of awareness, the capacity for reflection and integration experienced both within themselves over time, as well as between individuals with regards to signature patterns. In some individuals, the aforementioned statement may actually *decrease* the likelihood of leaving through the activation of schemas around feeling constrained or pressured, and a resultant inner rebellion against the part of the self that had made the previous decision. Whilst likely to happen in all of us from time to time, in some individuals this will be far more probable, such as when there is a lack of integration of self-systems (in the case of, for example, borderline personality disorder). Winnicott (1965) suggests that just such dynamics may arise when a person's actual feelings are not met with audience uptake early in life and instead they are required to conform to the expectations of the other (for example, the parent)—so they have not experienced a period of expression (without shame) of greed, aggression, and other such 'negative' feelings. This may, he argues, result in the suppression (to varying degrees) of such feelings and the internalisation of a harsh authoritarian other. The person may then experience a stronger than average inner rebel that, paradoxically, may be proportionate in strength to the degree of prior conviction the other part of the self had in relation to the forward-statement of commitment to the future task. This is but one example of the complexity of individual differences that may arise in relation to the 'trick of forward narrating'.

Further, rather than an understanding of narrative self-representation that is limited to the explicit content of the narrative, I would like to highlight the implicit aspects of narrative self-representation, such as linguistic markers (identified in assessment tools such as the AAI as mentioned above), as well as paralinguistic indicators such as tone (which apply not just to outer speech but also to inner speech) and embodied markers such as signature postural changes that accompany aspects of the narrative. This is not, it seems, at odds with Clark's

argument, but nor is it adequately emphasised (at least in my view). Clark does seem to argue for both conscious and unconscious dimensions to self-representation or self-models, as when he states that “Certainly, at any given moment, not all the cognitively important goings-on in my brain are present as contents of my current conscious awareness. This is why we sometimes find thoughts and ideas, ones that we nevertheless recognise as originated by ourselves, as simply “popping up into our heads”: they are the intrusive conscious fruits of some ongoing, subterranean, nonconscious information processing” (Clark, 2007, p. 107).

Analysis of self-narrative’s such as the AAI allow for the pre-reflective implicit aspects of the narrative to become more apparent. The narrative could be viewed then as a way for the person to ‘do’ something (albeit non-consciously and pre-reflectively). For example, a person who is avoidantly attached may actively avoid anxiety through the employment (again unconsciously) of idealisation and over-generalisation of memories that allow them *through the act of narrating* to maintain a distance from what could be experienced as overwhelming anxiety. This implicit pre-reflective action is nonetheless apparent to the trained observer. This is consistent with Knox’s (2011) approach, whereby individuals will communicate in a variety of ways which can be depicted in a hierarchy of reflective function or mentalisation capacity. Individuals who are more able to bear the fullness of feeling and negative capability required for embodied reflection, are less likely to ‘act out’ their feelings or experience in implicit ways of which they are not aware. These aspects of one’s experience are not yet integrated or mentalised.

There is an ongoing interplay between self-model feedforward effect and emerging self-systems. Rather than the ‘narrative-self’(system) conceptualised as an ‘add on’—confabulated to ‘make sense’ of experience (to whom?)—it is instead an aspect of the emergent multi-dynamic-system integration. We tell stories about ourselves as a way of actively integrating ourselves, rather than as a way of creating an integrated *picture* of ourselves. Disembodied abstracted reflectiveness may well lead to the kind of ‘empty

narrative' that is mere confabulation (such as Dennett and Wegener refer to), as well as disembodied or minimally dissociated from bodily cloud of emotional experience (as in avoidant attachment styles). What has been argued for here is the importance of integration of self-systems (narrative, bodily, emotional) within the interpersonal and intrapersonal contextual systems.

One of the potential problems introduced by these suggestions is the need for a hierarchical integration (in which embodied reflectiveness or mentalisation is higher than lower level forms of integration) for certain kinds of scenarios (to be sure, if we reflected on every situation it would be far from adaptive). However, it is beyond the scope of this article to engage with this issue here. Another problem or question arising from this analysis is: what are the ramifications for experiences of intention formation? What does a view of self experience as the loci of multiple partial self-systems confer for the formation of intention? Also, what are the ramifications of the view presented here regarding the importance of integration, awareness and embodied reflection for understanding intention formation? The more that parts of the self are split off (from awareness, either in a dynamic motivated way, or through never having been the object of awareness), the more actions are experienced as compulsive or reactive. Intention formation could be viewed as a coming together (loci) of 'soft hybridization-favoring, *partial* self-governing routines' that occurs through the intra-personal and, I have argued above, inter-personal milieu. Attunement to aspects of these partial self-systems, either within oneself or by another (or both) may allow the emergent formation of feeling to unfold more fully. Failures of audience uptake, either within oneself or in the interpersonal environment may decrease the experience of integration (and under certain conditions, awareness) of these feelings, and thus lead to diminished formation of intentions and diminished sense of agency.

Perhaps 'intention formation' is, at least some of the time, a false way of conceptualising it. Maybe instead of an event-like view of intention formation, what we are

doing (some of the time) is attuning to self-states and integrating parts of self-states wherein aspects of these pre-potent intentions are already present, such as in the ongoing currents of wishes desires and feelings. This would allow for the changes and perturbations in these systems that are occurring in a continuous ongoing manner, rather than ‘event-like’ in their coming together (see Anzola, Barbrook-Johnson & Cano, 2017 for an argument regarding the problematic nature of ‘event-like’ conceptualisations of phenomena). Thus, intention formation could be viewed as involving the attunement to ongoing self-states that include desires, affects, drives and emotions. Perhaps, then, intention formation could be conceived of as a type of tuning in, rather than sudden point of creation. In the absence of this, there is likely to be a lesser degree of sense of agency. However, I am not suggesting this is the only mechanism whereby sense of agency is reduced. I do not discount the impact of organic lesions. Approaches which emphasise instead imbalances in neurotransmitters leading to impacts on (for example) motivation are not at odds with the account presented here. I am suggesting, however, that we take seriously and attempt to understand the interpersonal embodied affective aspects of sense of agency experience.

The formulation offered in this section is speculative and intended to inspire future research and discussion. There is much still to be worked out in delineating a view of ‘self’ and how it relates to sense of agency.

### *Infant development of sense of agency*

There is much work still to be done examining links between developmental experiences of sense of agency in both typical and atypical contexts, and adult sense of agency. I have focused on the interpersonal and emotional aspects of sense of agency in this thesis and I have argued that these aspects are relatively neglected in current discussions. Interpersonal emotional embodied aspects also play a key role, I have argued, with respect to the broad conceptualisation of sense of agency. However, further development of this

approach is needed, particularly with regards to the way in which connections between levels of sense of agency are conceptualised. I elaborate on this briefly below.

In addition to the interpersonal, situated nature of sense of agency as a key focus, a range of other possible foci were not pursued, but nonetheless remain relevant for future research into the development of sense of agency. The focus of this thesis has been to examine the development of sense of agency in infancy, and to relate to this approach to sense of agency in adulthood. However, the development of sense of agency in infancy is an expansive topic in its own right. For example, questions such as when do infants first develop the capacity to differentiate their own body from others; experience proprioceptive awareness; demonstrate intentional goal directed action; show delight in being the cause; and recognise goal-directed behaviour in other people? Extensive work has already been conducted in addressing these and related questions. Furthermore, collaborative interdisciplinary efforts have formed (see for example, Gallagher & Meltzoff, 1996). However, there is much exploration still to be done to better understand this key concept, and I have argued that interdisciplinary collaboration is key to unlocking the possibility this holds. For example, I have discussed the key role of interpersonal contingency in the development of sense of agency, however other aspects of contingency are important for sense of agency. In discussing this below I offer a brief sketch of further avenues for research and conceptual analysis that could arise out of the work completed in this thesis.

### *Infancy – a window into connections between aspects of sense of agency?*

Links between kinaesthetic experience of specific motor actions, emotional experience during actions, and the response of others (such as the caregiver) on the developing sense of “I can” could shed light the broad notion of sense of agency and how it hangs together. If Broucek (1979) is right, and an infant develops a sense of agency through recognising that their at-first spontaneous action causes an outcome in the external world and

then repeats that action to cause the previously experienced contingent outcome and experiences delight in being the cause (as when an infant gleefully knocks a piece of food off his tray table), then it is plausible that there could be a cross-over here between different aspects of sense of agency. Sense of agency for specific motor-actions, that is, sense of agency as it is most commonly researched in the domains of cognitive science and philosophy of mind, is concerned with “this experience of controlling one’s own actions and, through them, the course of events in the outside world” (Haggard, 2016). Is it possible then, that these initial actions in the world could be both the ‘foundation of self-efficacy and self feeling’ (Broucek, 1979, p.312) *as well as* the beginnings of sense of agency for motor actions? This is what evidence from developmental studies suggests is indeed the case. The infant’s initially spontaneous action, when repeated, leads to a ‘delight in being the cause’ to use Broucek’s phrase. What happens next is crucial—if the infant’s delight in being the cause is met with ‘good enough’ attunement and audience uptake in the interpersonal environment (by the caregiver) then this allows the infant’s initial delight to continue to unfold and to be fully felt. The infant comes to subjectively experience their delight in being the cause of *both* the contingent outcome in the world *and* the delight in their caregiver. This interpersonal formation of feeling and marked mirroring from the caregiver allows the infant to begin to match up their own inner experience of being the cause, of delight, and of the contingent (facial, gestural, tonal) expression from their caregiver. This in turn feeds back into the experience of being the cause, and the continued repetition that is so common among young children. The light switch example, commonly used in cognitive science as an exemplar of sense of agency, takes on new life in the hands of a two year old. I have emphasised elsewhere that without audience uptake by the parent of the delight expressed by the infant, the interpersonal formation of this feeling is likely to be curtailed, and if repeated often enough over time the infant will become less likely to form such feelings of delight in

relation to being the cause of a contingent outcome in the environment through his action, leading to a diminished pre-reflective sense of agency.

### *Self-worth and sense of agency*

There is a connection between the capacity to have an impact on the world through our actions, and our sense of self-worth. Benson (1994) has argued for this connection in relation to sense of agency in adulthood. Specifically, he argues that agents ‘must have a certain sense of their worthiness to act’, without which action is constrained in ways that are not ordinarily taken into consideration in discussions regarding action (Benson, 1994). Developmental theories suggest that one’s sense of self-worth, and capacity for action, arise in connection with each other. Bendit (2011) has emphasised the impact on the infant’s sense of self-worth in situations in which a parent is chronically unresponsive. He hypothesised that implicit procedural memories can come to include the expectation that the infant’s distress and cries will not be responded to, resulting in procedural implicit memories first of the sense that ‘nobody comes’ and then of the feeling that ‘I don’t matter’ or ‘I’m not important’ (p. 27). We could add to this ‘I can’t make things happen’ in the sense that the cry or vocalisation may come to be experienced as non-contingent—that is, it fails to make the caregiver appear (more subtle versions of the lack of impact of vocalisation, gesture and gaze are also possible). Thus, if the infant’s action or expression (the cry of distress) is met with a lack of contingency over a multitude of repetitions that form a consistent pattern, the infant will likely come to have a procedural action expectancy or ‘unthought known’ of a lack of responsiveness and a lack of acknowledgement. Crucial for self-worth is the experience of being delighted in (Powell et al., 2013). Security of attachment at one year can be predicted from interpersonal contingency data at four months of age (Beebe, 2010). Secure attachment has also been found to be linked to self-worth in longitudinal research (see for example Sroufe, 2005).



The approach taken by Demos (2007) is useful in understanding additional aspects of sense of agency related to self-worth. She emphasises the caregiver's attribution of agency or intentionality to the infant in the interpretation of the infant's actions, as well as the affective pattern that occurs in exchanges in which the infant has ventured to explore something or try for something of their own initiative (e.g., to vocalise). In situations in which the caregiver is not able to support the child, the child learns that their efforts to explore or to engage in challenging tasks are not valued or noticed by the caregiver. Instead, the infant's experience is one of being left alone in negative affective states (such as frustration) until they change their orientation to what the caregiver wants them to do or how the caregiver wants them to feel. In so doing, they may lose the habitual referential object of their inner experience (which is thought to be key in maintaining self-worth; Sander, 1983) in favour of their caregiver as a habitual object of reference, thereby missing out on what could be valuable information in a future context—that is their inner states as a guide to plans and choices (Demos, 2005; Sander, 1996). What is experienced is “I cannot explore or try new things without you (the parent) first initiating or desiring it – I am dependant on you for what happens next and my capacity to cope with it, and whenever I follow my own will or desire I end up distressed and you end up displeased” (p.142). As Demos (2007) emphasises, the attention and energy of the infant may then become habitually directed towards obtaining and maintaining the parent's attention, fostering an other-directedness rather than encouraging the infant's own initiative, and a conditional sense of value and self-worth. Following repetitions of the positive-negative-negative cycle, the infant can come to expect that explorations initiated by the infant themselves are unwelcome and lead to greater distress. Thus, they may lose the habit of turning towards their inner states as a valuable source of information, instead learning to focus on the caregivers' states and wishes. This forms an adaptation to a situation in which initiation of their own is associated with rupture within the dyad and thus comes to feel devalued. Some sense of agency can be gained, says Demos (2007), through this infant

matching to parent expectations and wishes. However, this comes at the expense of the infant's own vitality and affects as a source of information (and of value). This is similar to Winnicott's notion of a 'false self' (discussed in Chapter 4), in which the child learns to express what the caregiver requires from him due to the dependency on the caregiver for survival. From an attachment theory perspective, this is viewed as an adaptive survival strategy to maintain both physical proximity to the primary caregiver and to maximise the (albeit limited) emotional availability and closeness of the caregiver (Biringen, 2000; Bowlby, 1983).

The synchrony between accounts of other-directedness among the adult women in Dana Jack's (1997) study (discussed in Chapter 5) and the account of other-directedness in infancy presented by Demos (2007) is startling. Indeed, it is the same type of mechanism posited in which the sense of initiative is gradually diminished over time and, instead, attunement to the wishes of the other is adopted in the service of maintaining relational proximity. The effects on the self-worth of the women in the study were far reaching, as one woman described it: "Finally I got to the point where I thought my opinion was worth nothing... and I thought, when this thing or that think happened, I thought I won't cause waves, I won't say anything" (participant, Dana Jack, 1997). This (relationally) motivated lack of attunement to self-states can lead to a defensive partitioning-off of self-states, in which part of the self (or 'partial self-governing routines', Clark, 2007) may become less accessible over time (as introduced in Chapter 3 and elaborated in the previous section of the discussion: sense of agency and a multiplicity of self-states).

## **Conclusion**

I have argued that a broad conceptualisation of sense of agency is already being employed in sense of agency research and that explicit acknowledgement of the breadth of this concept would give rise to opportunities for rich cross-pollination between disciplines. I have

reviewed a number of ambiguities within current conceptualisations of sense of agency and argued for the need for a greater focus on long-term sense of agency including aspects of pre-reflective sense of agency that are initially shaped by our early embodied interactions with caregivers in the development of sense of agency in infancy. I have suggested that the embodied interpersonal histories we bring to action may scaffold salience of affordances, bias experience of action-effect contingencies and influence the felt ‘voluntary’ nature of action and self/other distinction. I have offered an account of sense of agency in depressive experiences, highlighting the similarities and differences between implicit sense of agency and Ratcliffe’s notion of ‘existential feelings’, and the clinical ramifications of considering sense of agency in this context.

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