UNIVERSITY OF DERBY

Epistemology, theory and Jung: Towards an analytical sport psychology

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Preface

The following work and ideas contained within are entirely my own, unless stated otherwise. Apart from chapter 6, the work is original and unpublished.

Abstract

Sport psychology has historically adopted a positivist and post-positivist conceptualization of science at the expense of systematic engagement with epistemology itself (Whaley & Krane, 2011). In this thesis it will be argued that positivist orthodoxy does not hold a monopoly over the idea of science, and that future theoretical developments within sport psychology will require more systematic engagement with epistemology. In order to explore this proposition, the thesis examines the epistemology developed in C. G. Jung's analytical psychology, an approach which has been generally overlooked within the sport psychology literature. In addition, more recent epistemological developments within psychology are considered with respect to current and future theorising within sport psychology.

The thesis is a "desktop study" comprising of 8 chapters. The introduction (chapter 1) outlines how the current crisis within psychological science is epistemological, not methodological, in nature. Chapter 2 identifies key foundational challenges to sport psychology based on positivism; and introduces C. G. Jung's analytical psychology which developed out of the rejection of a positivist conceptualization of science. Chapter 3 introduces aspects of a new epistemological framework (i.e., unconsciousness~consciousness; the psyche as a process) based on the work of Jung and identifies points of convergence between these contributions and more recent theorising. Chapter 4 considers the implications of analytical psychology with respect to momentum in sports. An original theoretical account of psychological momentum is outlined, based on libido theory (Jung, 1960), and the implications are considered with respect to current literature within sport psychology. Chapter 5 considers more recent developments in psychology (i.e., cybernetic systems paradigm, idiographic science) which have important parallels with analytical psychology, and which have important implications for the future of sport psychology as a science. Chapter 6 outlines an original theoretical perspective with respect to our understanding of performance variation in sport (Cowen, Nesti, & Cheetham, 2014), based on epistemological and theoretical developments outlined in the preceding chapters. Chapter 7 considers the implications of the epistemology outlined in the thesis with respect to current and future theorising in sport psychology. The central theme of this chapter is *temporality*, which, it is argued is necessarily an axiomatic component of future theoretical work, in order to overcome the foundational problems associated with a positivist conceptualisation of science.

In the final concluding chapter (Chapter 8) it is proposed that the provisional epistemological criteria outlined in the thesis (i.e., subject~object, conceptual integration,

being~becoming, teleology, temporality) offers a basis on which an analytical sport psychology could be developed. With respect to sport psychology, these criteria suggest that future developments should focus more on understanding performance variation itself rather than prioritising the study of psychological constructs, or objectivist representations, associated with performance. It is concluded that the "personal equation" – the creativity, judgement, intuition and/or insight of the researcher - represents an important component of the process of knowledge construction; which in turn necessitates collaboration as a necessary counterpoint to individual subjectivity. Taken together, this thesis suggests that analytical psychology, despite historically sitting outside of psychological science, can make an important contribution to the future of sport psychology as a scientific discipline.

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This is for Rosie and Tom, with love x

Historians of science have often noted that at any given time scholars in a particular field tend to share the same basic assumptions about their subject. Social scientists are no exception; they rely on a view of human nature which provides the background of most discussions of specific behaviors but is rarely questioned. (Kahneman, 2011, p. 8)

…there is no Archimedean point from which to judge, since the psyche is indistinguishable from its manifestations. The psyche is the object of psychology, and – fatally enough – also its subject. There is no getting away from this fact". (Jung, 1969b, pp. 49-50)

[T]he circle of sciences ultimately demonstrates what the analysis of each particular form of knowledge directly emphasizes, but in varying degrees, namely the close interdependence between subject and object. (Piaget, 1972, p. 84)

Chapter 1

Introduction

1.1 Psychology's historical alignment with science

Understanding the psychological factors which influence performance has been a defining aspect of sport psychology's historical development (Kornspan, 2012). Although interest in how the mind can influence performance goes back to antiquity, the emergence of sport psychology as a scientific discipline has occurred in the past 40 years (Williams & Straub, 2010). With respect to its most recent iteration, Moran and Toner (2017) have defined sport psychology as "the application of psychological theory and methods to understand the performance, mental processes and well-being of people who are involved in sport" (p.22). This definition reflects the disciplines increasing diversity of interests, and recognition of the reciprocal links between performance, participation in sport, and the associated psychological phenomena. These reciprocal links are also apparent in Williams' (1986) earlier definition which states that sport psychology is concerned with "both the psychological factors that influence participation and performance in sport and exercise and the psychological effects derived from them" (p. 1). The interdependent relationship between psychological phenomena and sport participation continues to be researched in relation to an increasing number of esoteric topics and epistemological frameworks. Despite the increasing range of interests being explored within sport psychology, and the associated lack of consensus about the nature of *what sport psychology is*, its status as a science is generally assumed (Moran and Toner, 2017).

The development of sport psychology as a modern science has been strongly shaped by its parent discipline, psychology (Kontos & Feltz, 2008)[1]. Psychology has not only influenced the theoretical perspectives adopted (i.e., behaviourism, cognitivism etc.), but also with respect to the more fundamental assumptions about the basis for "doing science" (i.e., ontology and

[1] In this thesis, *psychology* will be used in places to denote both *psychology* and *sport psychology*. Consideration of their respective epistemologies is assumed to transcend that which separates the two discipline areas.

epistemology). In this respect, the dominant paradigm adopted by sport psychology researchers is positivist or post-positivist orthodoxy with limited consideration of epistemology[2] itself (Krane & Baird, 2005; Whaley & Krane, 2011). In parallel with its parent discipline, the "scientific half" of sport psychology research has historically appropriated methods of the natural sciences, which implicitly assumes that we still live in Newtonian universe that is mechanistic in nature (Balague, Torrents, Hristovski, Davids, & Araújo, 2013; Martens, 1987). This is despite this model of science being a redundant one for psychology (Smith, Harré, & Langenhove, 1995), given the incompatibility between the scientific method and the nature of the subject matter (Giorgi, 2000). The history of psychology identifies psychology's alignment with the natural sciences and its separation from philosophy, as the birthplace of the modern scientific discipline (e.g., Goodwin, 1999). Interest in human nature, the notion of the mind, and the validity of knowledge "is as old as reflection" (Robinson, 1986, p. 12); but scientific psychology in its current form, specifically the enduring influence of empiricism, rationalism and positivism, owes much to its formative years.

The philosophy of science is interested in the assumptions and methods that provide the basis for scientific enquiry, and the extent to which scientific knowledge relates to truth and reality (Pintuck & Reynolds, 2012). As a branch of epistemology, the philosophy of science is an *ongoing* enquiry into what constitutes scientific knowledge. In western philosophy, science did not begin with the scientific revolution in the 16th century, but dates back to the Plato and Aristotle. However, it was during the scientific revolution in which the relationship between philosophy and science was at its most interdependent (Brown, 2012). Prior to this period in western philosophy, eternal knowledge concerning nature, including human nature, was inseparable from its creator (i.e., God; Lent, 2017). For example, Plato's theory of Forms suggested that the world exists in both a material and ideal form. Pure reality does not exist in the material world but exists exclusively in the form of immutable ideas or ideals, as created by God. Plato viewed mathematics as the pure representation of ideal forms, but the notion extended to all forms of human abstraction, such as beauty and justice. In contrast, the material world represented the changeable, imperfect manifestation of the ideal forms as experienced by the body (i.e., the senses); the central implication being that transcendent knowledge was not primarily dependent on the senses or the material world, but in reason (i.e., rationalism) and by association, the separation of mind and body. Thus, one of

[2] "Epistemology determines what researchers accept as the truth or as real, which then guides how we attain that knowledge" (Whaley & Krane, 2011, p. 396).

the legacies of Platonic thought was the assumption that a dualism between mind and body was necessary for the accumulation of pure knowledge (Lent, 2017).

The scientific revolution was a period wherein the authority of the church diminished, and relatedly, the authority of science itself increased (Russell, 1961). As it became increasingly accepted that God did not hold a monopoly over truth, philosophers where concerned with establishing a philosophy of science which was not dependent religious cosmology for its origin. Eminent amongst those philosophers was Descartes who continued in the rationalist tradition, and whose philosophy of knowledge was based on his skepticism regarding the senses ability to capture true reality (Russell, 1961). In its place, Descartes developed a four-part method for acquiring rational knowledge:

1. Truth to be based on that which negates uncertainty and doubt in the mind
2. To separate a problem into as many of its constituent parts as possible
3. To start with the smallest problems first before
4. To ensure that any solutions found can be generalised with no exceptions

(Adapted from Robinson, 1986)

The famous result of this method was Descartes *cogito* – I think, therefore I am – which asserts all which is presented to the senses (i.e., the material world) is inevitably subjective with respect to its interpretation, and we can only truly know with certainty that which exists in our minds (i.e., idealism). The Cartesian legacy was to perpetuate the dualism between mind and body, mental processes and physical processes, because the only way to overcome the limitations of the senses was through their separation (Robinson, 1986). Descartes never considered the possibility that reason *and* sensory experience might both offer a legitimate insight into nature (Lent, 2017).

The 17th century philosopher John Locke is generally credited with founding the empiricist movement, based on the idea that knowledge is only available to us through our sensory experience. However, it was J. S. Mill's appropriation of this philosophy during the 19th century with respect to human nature which is generally considered to be the birthplace of psychology as a modern empirical science (Hergenhahn, 2009). In contrast to Kant's idealism, which contends that knowing it not merely based on our sensory experience of objects but is also dependent on interpretation of "things in themselves", Mill advocated the possibility of an objective empirical psychology based on principle of induction (Robinson, 1986). This principle contends that knowledge can be generated through establishing laws and theories based on a finite number of observations (Chambers, 1982).

The knowledge which results from principle of induction is dependent on three laws of association originally developed by David Hume: *resemblance*, the association of events which resemble one another; *contiguity*, the association of events which occur at the same time and place; and *cause and effect*, the association of two events when one regularly follows the other (Goodwin, 1999). By aligning empiricism with the principle of induction, empirical psychology became *inseparable from method* (i.e., the inductive process) as the basis for knowledge construction. Consequently, the value assigned to knowledge becomes dependent on its ability to conform to the methodological demands of the inductive process (i.e., consistency, or strength of association). Given that such knowledge is predicated on an observed consistency between events, "anomalies" in the form of variation becomes antithetical to the process of knowledge construction and can therefore be dismissed as "nature's noise" (Powers, 1973).

By assigning sense data, not thought (i.e., rationalism), as the epistemological basis for knowledge construction, empiricism makes a claim to objectivity and therefore science. In other words, if a scientific law is defined as "a consistently observed relationship between two or more classes of empirical events" (Hergenhahn, 2009, p. 8), then objective knowledge is dependent on the appropriation of the methods of empiricism (i.e., the scientific method). The name originally given for this was *positivism* by the 19th century philosopher Auguste Comte, who believed that the purpose of science was to establish general laws of nature which could be used to predict and control. However, Comte was primarily concerned with a science which could establish lawful relations between observable phenomena, and therefore did not believe that the mind was suitable for scientific study (Hergenhahn, 2009).

Mill himself acknowledged that the methods of empiricism would never lead to an exact science due to the probabilistic outcomes, but empirical psychology would be a science nevertheless. The reasoning for this was the assumption that the subject of psychology – thoughts, emotions etc. – are still governed by natural laws and are therefore knowable, albeit probabilistically (Robinson, 1986). Critically however, Mill understood that the mind was not a mechanical device wherein complex psychological phenomenon could be understood by being reduced down to its parts. For this to happen would require the mind to be governed solely by *primary laws* allowing for the precise prediction of observed phenomena. Precise prediction about human nature was not possible according to Mill due to the interaction of primary laws with *secondary laws* (i.e., individual differences and context) which resulted in variation not consistency (Hergenhahn, 2009). This did not prevent psychology as an empirical

science during the 20th century tacitly adopting a positivist philosophy of science, and a reductionist and deterministic view of human nature (Langenhove, 1995).

Lincoln and Guba (1985) observed that positivism is based on five key assumptions: (1) Reality exists independently of our senses (i.e., ontological realism) which can be broken down into its constituent parts in order to be studied; (2) The epistemological assumption that there can be a meaningful separation of the subject and object, the observer and observed; (3) Observations made exist independently of time and context, "so that what is true at one time and place, under appropriate circumstances…also be true at another time and place" (p. 28); (4) Linear causality between causes and effects; and (5) The methods of science ensure that any given findings are free from subjective influence.

By adopting a positivist philosophy of science, empirical psychology separated from philosophy, and aligned itself with the natural sciences. Positivism provided the aforementioned ontological and epistemology lens through which psychological phenomena could be scientifically observed, and any phenomena that did not conform was generally deemed unworthy of scientific consideration. The enduring influence on empirical psychology throughout the 20th century was the dominance of the scientific method as *the* basis for knowledge construction (i.e., scientism), and the general neglect of the challenges to positivism's ontological and epistemological foundations (Langenhove, 1995). Ironically, the consequence of this neglect is the reoccurring questioning regarding psychology's scientific credentials.

1.2 **Current crisis of psychological science – a modern crisis?**

> It has been repeated—up to a state of intellectual boredom—that psychology, despite its apparent successes, is a science in crisis. That has been so since it departed from philosophy in the 19th century. To put it short, the crisis is theoretical and about the conceptual and methodological foundation of scientific psychology. Psychology lacks coherence and unity, conceptual clarity, efficient analytical and conceptual tools able to accumulate and integrate empirical facts and to enrich and put critical perspectives on individual and collective phenomena. (Mammen & Mironenko, 2015, p. 681-2)

In 1954 Edmund Husserl wrote, "the history of psychology is actually only a history of crisis" (Husserl, 1970, p. 203). Husserl believed the human sciences and in particular psychology is in a privileged position to capture subjectivity but continues to fail having

"obscured the very subjectivity they seem to elucidate" (Buckley, 1992, p. 101). The basis for this failure according to Husserl has been the absurd assumption that psychic phenomena adhere to the same rules as physical phenomena, and therefore can be studied and understood in the same way (Buckley, 1992).

The view that natural phenomena could not be fully understood mechanistically became apparent at the beginning of the 20th century by developments in the natural sciences which revealed nature to be non-linear, complex, intrinsically dynamic and interdependent (Capra, 1975). Indeed, it was the journey to isolate the building blocks of matter that has ultimately led to a view of nature entirely inconsistent with its reductive premise:

> Quantum theory has thus demolished the classical concepts of solid objects and of strictly deterministic laws of nature. At the subatomic level, the solid material objects of classical physicals dissolve into wave-like patterns of probabilities, and these patterns, ultimately, do not represent probabilities of things, but rather probabilities of interconnections. (Capra, 1975, p. 78)

The discovery of the quantum world, and the theory of relativity exposed the limits of the Newtonian world-view. Rather than just seeing non-linearity as problematic, apparent disorder has been found to generate complexity in the form of richly organised patterns (Gleick, 1997), as studied by non-linear science. Whilst this branch of science might appear far-removed from psychological epistemology, Neils Bohr, a key architect in the development of quantum theory suggested that there were potentially fundamental equivalences between the two. Writing on the epistemological significance of quantum theory for the future development of psychology, Bohr concluded that

> With regard to the more profound biological problems…in which we are concerned with the freedom and power of adaptation of the organism in its reaction to external stimuli, we must expect to find that the relationships of wider scope will require that the same conditions be taken into consideration which determine the limitation of the causal mode of description in the case of atomic phenomena. (Bohr, 1934, p. 118-119)

Yet, through experience and observation, it was still possible to have a view that human reality is complex whilst at the same time engaging in reductive science, despite the issue concerning their apparent incompatibility. As long as this incompatibility exists, psychological science is required to make a choice between scientism or confronting the epistemological challenges that acknowledging a complex subject matter presents. This tension does not exclusively apply to the human sciences, as the renowned physicist and philosopher of science David Bohm observed in 1980:

> At present physicists tend to avoid this issue by adopting the attitude that our overall view concerning the nature of reality are of little or no importance. All that counts in physical theory is supposed to be the development of mathematical equations that permit us to predict and control…Such a goal is not regarded as merely for its pragmatic and technical utility; rather, it has become a presupposition of most work in modern physics that prediction and control…is all that human knowledge is about. (Bohm, 1980, p. xvi)

Or put more directly: "The choice is always the same. You can make a model more complex and faithful to reality, or you can make it simpler and easier to handle" (Gleick, 1998, p. 278). In psychological science, this continues to be evident in the seemingly unbridgeable gap between reductive theoretical explanations of human behaviour and the complexity of lived experience itself (Ferguson, 2015).

By aligning itself with the natural sciences of the 19th century, psychology continued to be beset by the fundamental challenges which were recognised during this formative period and into the 20th century (Robinson, 1986)[3]. Whereas in its early form, psychology was intent on establishing a system which could be applied to all psychological phenomena, at the turn of the 20th century psychology was becoming increasingly fragmented in its interests (Robinson, 1986); a phenomenon which continues to be evident to this day. In the name of method, 20th century scientific psychology (i.e., behaviourism, cognitivism) was able to bury its head in the sand by systematically overlooking the fundamental epistemological challenges to its development as a separate discipline, and in turn allow for the ongoing fragmentation to go unchallenged. Towards the end of the last century however, developments in psychology began to acknowledge the inherently complex nature of psychological phenomena and consider the implications with respect to the development of theory and research (e.g., Kelso, 1995; Nowak & Vallacher, 1998; Thelen & Smith, 1994). Furthermore, given the temporal nature of psychological phenomena, there was renewed recognition of the fact that psychological processes are not static and deterministic, but dynamic and therefore subject to variation (e.g., Boker, 2002; Clark, 1997). As Boker summarises:

> Psychological data share little of the convenient aspects of physical data from astronomical observation. The relation of empirical psychological data to unobservable psychological processes presents measurement problems, the frame of reference for measurement is often undergoing change during the interval in which data are collected,

[3] Also see Koch (1964).

and the interaction between the observed process and the frame of reference is frequently non-negligible. (2002, p. 411)

However, such epistemological observations have not prevented mainstream psychological science as a research-intensive enterprise continuing to model psychological phenomena on a mechanistic view of nature which assumes that control and prediction is not only possible but meaningful. The inevitable consequence as Husserl observed in 1937, is a science in perpetual crisis. In a recent iteration of this crisis, Pashler and Wagenmakers (2012) asked whether prevalent doubts regarding the reliability of research findings have led to a "crisis in confidence in psychological science" (p.529). This doubt was subsequently reinforced in a study (Open Science Collaboration, 2015) in which 100 experimental and correlational peer-reviewed studies were replicated based on their "high-powered designs". Results found that only 36% of replications produced significant results, compared with 97% in the original studies. Given that replication is viewed as a central, yet neglected, element of social science (Schmitt, 2009), the study has re-exposed the ongoing debate regarding psychology's status as a science.

For example, in an opinion piece in *The New York Times* (Barrett, 2015) a few days after the study was published, Lisa Barrett, a psychology professor at Northeastern University (USA), suggested that the failure in replication did not represent such a crisis, but contextual oversight which many of these studies were presumably not sensitive to. On this point Barrett (2015) strangely conceded that "Much of science still assumes that phenomena can be explained with universal laws and therefore context should not matter. But this is not how the real world works!" ("Psychology is not in crisis", para. 10). Consequently, the failure in replication was seen by Barrett (2015) as an important part of process, given the opportunity it presents for further scientific discovery. In response, Caplan (2015) challenged this position, concluding that

> If things in psychology are as Professor Barrett maintains, then much more modesty ought to be in evidence when psychologists publish their findings, communicate them to the press, or popularize them in books and talk for laypeople. Drawing broad conclusions from a few highly controlled studies of the behavior of a small number of sophomores is not a responsible way to proceed.
>
> Professor Barrett's attempted rescue of her field is enough to make one suggest turning to the humanities for sources of truth about human nature and behavior. ("How reliable are psychology studies?", para. 4-5)

The requirement of accountability brings into acute focus the challenges and limitations of empirical science, where the demand for outward certainties mask and compensate for the uncertainty associated with any honest appraisal of the subject matter. This uncertainty does not just reflect a profoundly complex subject, but relatedly the challenge of establishing an epistemology on which a human science can be meaningfully based. As will be explored in this thesis, the problem of establishing psychology as a discipline separate from the other sciences is primarily epistemological, not methodological, in nature.

1.3 **The crisis is epistemological not methodological in nature**

> …the ontological and epistemological basis of psychology remains largely unquestioned. If one really takes the trouble to scrutinize the science of psychology, one is left puzzled by the sophistry and illusion that reigns. (Langenhove, 1995, p. 10)

> …the difficulties which has plagued, not just in our time but for centuries – its own peculiar "crisis" – has a central significance both for the appearance of puzzling, insoluble obscurities in modern, even mathematical sciences and, in connection with that, for the emergence of a set of world-enigmas which were unknown in earlier times. They all lead back to the *enigma of subjectivity* and are thus inseparably bound to the *enigma of psychological subject matter* and *method*. (Husserl, 1970, p. 5, italics original)

The debate lays bare the vulnerability of psychology's current status as a legitimate science, due to the evident tension between the appropriation of the scientific method, and the requirement for these methods to avoid a *destructive analysis* of the subject matter and generate outcomes which are accountable to academic peers and the public. If such accountability is to be tied, in any way, to the notion that reality exists independently of our senses (i.e., ontological realism) as opposed to relativism, then one is required to fundamentally question the epistemological assumptions underpinning the methods used - from which the "knowledge" derives - and not merely assume that to keep digging provides the best way out of the crisis. In other words, it cannot be assumed that issues of methodology can be addressed through continual refinement of method. Furthermore, to dismiss the replication crisis on the basis of context, requires that the development of theory, and associated research, is tied to more nuanced examination of the contextual variables. If this is to be the case, progress appears to

equate discovery with increasingly idiographic contextual outcomes - a state of infinite regress – not a generally accepted hallmark of science!

Whatever one's position on this ongoing debate, it is evident that the history of psychology has been shaped by the tension between the questions we would like to answer and the methods we have to answer them (Jones, 2013). These questions extend beyond the more traditional preserve of science, and as Jones observed, "it is a paradox of modernity that when we seek to apply scientific techniques and discourses, the soul - the seat of subjectivity - vanishes" (2013, p. 411). As such, there appears to be a trade-off between engagement with science and the possibility of contact with the realm of the subject. However, rather than accept this trade off, the central thesis to be developed is that an opportunity is presented for sport psychology to establish new epistemological footings on which to develop what has been referred to as a "better philosophy of the psyche" (Giorgio, 2000, p. 63). This opportunity is neither primarily dependent on continual refinement of method, nor more data, but re-orientating the discipline with epistemology and therefore science itself.

Epistemology is "the study of how we know what we know, of what constitutes a valid understanding/explanation/knowledge" (Papadopoulos, 2006, p. 11), and therefore determines the "standards to which genuine knowledge should conform" (Harré, 1972, p. 5). Methodology on the other hand provides the link between our epistemology and the methods used (Whaley & Krane, 2011). Whilst methodology provides a framework on which the quality of research can be judged, it is epistemology which "provides the foundation for methodology" (Krane & Baird, 2005, p. 89). In other words, epistemology, methodology, and method are mutually dependent constructs; any critical consideration of methodology is incomplete without exploring the underpinning epistemological assumptions.

Yet as suggested, the alliance of sport psychology with positivism has resulted in methodology, not epistemology, being the basis on which research has been judged (Whaley & Krane, 2011). Given methodology is the application of one's epistemological assumptions (Papadopoulos, 2006), the validity of the associated data is determined primarily by the extent to which it conforms to one's epistemology, rather than reflects nature itself. For example, when theory and research is based on a positivist epistemology (i.e., the assumption of linear causality, objectivity), the validity of the methods adopted will be judged on the extent to which the data conforms to a view of nature consistent with these epistemological assumptions. As shown by the "replication crisis" (e.g., Pashler and Wagenmakers, 2012), data which does not readily conform (e.g., individual differences, temporal/contextual variation) represents a threat, rather than an essential phenomenon in its own right.

The idea that developments in science are tied to developments in epistemology is not a new proposition. The enlightenment period shifted our understanding of knowledge as being concerned with "facts", towards viewing knowledge itself as a process (Piaget, 1972). Indeed, Popper (2002) argued that the *problem of demarcation*, between science and non-science, cannot be addressed through methodology, but is a matter for epistemology. Popper goes further in asserting that the idea of science is centrally placed to understand how knowledge itself develops: "The central problem of epistemology has always been and still is the problem of the growth of knowledge. And the growth of knowledge can be studied best by studying the growth of scientific knowledge" (p. xix). Central to his conviction was the belief that positivism is not able to address all questions of science. Therefore "epistemology, or the logic of scientific discovery, should be identified with the theory of the scientific method" (p. 27). In other words, when no one epistemology has a monopoly over the idea and practice of science, *developments in science become inseparable from developments in epistemology*.

Epistemology does not only determine one's methodology but represents an ongoing enquiry in its own right. However, as Popper (2002) observed, positivists dislike "the idea that there should be meaningful problems outside the field of 'positive' empirical science – problems to be dealt with by a genuine philosophical theory" (p. 29). Thus, when positivism holds a monopoly over the idea of science, questions of epistemology can become seemingly irrelevant to the development of science. With respect to psychology, the separation from philosophy resulted in a separation between the pursuit of knowledge concerning the nature of experience, and the fundamental questions concerning the nature of knowledge itself (Charles, 2013). By acknowledging that the current fragmentation within psychology is tied to its separation from philosophy, Charles (2013) stresses that future unification is dependent on engagement with two closely related questions: "What is the nature of knowledge? What is the nature of experience?" (p. 141).

Despite positivism historically being afforded a privileged status as the basis for knowledge construction in sport psychology (Whaley & Krane, 2011), the sport sciences are beginning to embrace an increasingly diverse array of epistemological approaches (Giardina, 2017). The recognition that positivism does not and cannot hold a monopoly over the idea of science has been recognised within the sport psychology literature (e.g., Martens, 1987; Nesti, 2004; Whaley & Krane, 2011). Consideration of different epistemological criteria within the human sciences is in many respects to be welcomed, as it provides a critical tension on which the discipline can develop. Yet the flip side of epistemological diversity is fragmentation with research being framed within an increasing number of "isms", and the erroneous assumption

that the fragmented application of epistemology (i.e., methodology) is the same as engagement with epistemology itself.

Given the limited consideration of epistemology within sport psychology (Whaley & Krane, 2011), this thesis will explore the proposition that *scientific developments in the discipline is primarily dependent on engagement with questions related to epistemology itself*. At the heart of this dialogue between science and philosophy, for all the human sciences, is the question of subjectivity, objectivity and their inter-relation (Husserl, 1970). For if sport psychology is to make a claim to objective science, it has to do so based on claiming dominion over a subject matter (i.e., mind or psyche) which appears to have a relativistic, subjective nature. Given the importance of the inter-relation of objectivity and subjectivity for philosophy, Husserl (1970) contended that psychology was centrally placed to examine where these two ideas intersect[4], yet has failed given its alignment with a positivist philosophy of science. As this thesis will explore, the inter-relation of objectivity and subjectivity with respect to the development of sport psychology as a science raises some key questions: (1) Is it possible to assume objective knowledge about the nature of subjective experience? For if that is the case, it would be dependent on the assumption that subjective experience is structured according to objective, universal laws; and (2) What methods can be used to elucidate that which structures subjective experience? Taken together the question that this thesis will consider is: *If positivism and/or post-positivism does not hold monopoly over the idea of science, and objectivity and subjectivity are inter-related, what does this mean for the future of (sport) psychology as a science?*

1.4 **Rationale and contribution**

Carl Gustav Jung's analytical psychology was primarily an epistemological endeavour (Papadopoulos, 2006), concerned with the aforementioned questions. Perhaps best known for his theoretical (e.g., archetypes, the collective unconscious) and applied (e.g., psychotherapy) contributions, Jung systematically explored this tension between objective universality and subjective individuality as the basis for his own science of the psyche (Saban, 2014). The link between epistemology and psychology is fundamental to Jung's methodology, given that his work was in part based on "a reflection on the very possibility of psychology" (Shamdasani,

[4] Psychology is "decisive for the struggle between subjectivism and objectivism. For by beginning as an objective science, and then becoming transcendental, it bridges the gap (Husserl, 1970, p. 208).

2003, p. 91). Jung was particularly interested in the "personal equation"[5] which he recognised both informed and compromised his theoretical contributions. Indeed, developments in epistemology (e.g., Polanyi, 1958) suggest a personal dimension to so-called objective knowledge is unavoidable for *all* sciences, not least for the human sciences. Therefore, if an objective understanding of psychological processes in sport is in part dependent on the role of subjectivity, understanding the theoretical basis for their inter-relation is of primary concern for the development of the discipline as a science. As this thesis will explore, Jung's epistemological and theoretical contributions have important implications with respect to the future development of sport psychology as a science.

To date, theoretical developments in sport psychology have been informed by psychology, with systematic consideration of psychodynamic theory being limited to the work of Freud (e.g., Conroy & Benjaman, 2001; Hanrahan & Andersen, 2010; Hill, 2001; Strean & Strean, 1998)[6]. As a colleague and mentor, Freud was an important influence on Jung's early career, but differences in their views concerning the nature of the psyche led to their disunion in 1912. At the heart of this split was disagreement over the focus that Freud placed on sexuality with respect to psychopathology (Doran, 2017). In contrast to Freud, who theorised that neuroses were caused by a sexual trauma in the past, Jung maintained the view that neuroses were equally a function of the present, and what the psyche is working towards. As will be shown in this thesis, Jung developed a teleological, dynamic view of the psyche which is irreconcilable with Freud's casual-reductive epistemology (Papadopoulos, 2006). Furthermore, in contrast with Freud, whose "causal/reductive approach is labelled objective" (Saban, 2014, p. 40), Jung's epistemology assumes that a dialectical relationship exists between subjectivity and objectivity. Specifically, the importance of the "personal equation" which is necessarily associated with any psychological observation, and role of the *objective psyche* (i.e., archetypes and the collective unconscious) in accounting for subjective experience (Saban, 2014). Differences in their respective approaches resulted in the development of two separate schools, with the term *analytical psychology* being used to represent the work of Jung (Jacobi, 1962).

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[5] Coined by William James and later adopted by Jung to describe the subjectivity of experience in both the observer and the observed (Shamdasini, 2003).

[6] An exception is a paper by Beauchamp, Maclachlan, & Lothian (2005) who considered Jung's typology of "personality types" with respect to group dynamics in sport.

As will be shown, analytical psychology offers an original perspective on which to re-examine established psychological phenomena within sport. For example, this thesis will consider the implications of libido theory (Jung, 1960) with respect to psychological momentum in sport, a well-established but poorly understood phenomena (Crust & Nesti, 2006). In concluding their review which found that the empirical evidence failed to support the existence of the "hot hand" - a phenomenon associated with positive momentum - Bar-Eli, Avugos, & Raab, (2006) wrote:

> In light of the conflicting outcomes of the studies presented in this review, we think a step further needs to be taken. First, the debate should be shifted from the search for evidence for or against the existence of the hot hand to a profound discussion about the norms used by statisticians, psychologists, and sports people. Such an approach may promote a better understanding of the issue. (p. 550)

These norms do not just relate to methodology, but to the deeper assumptions which potentially go unchallenged when an epistemological position is adopted. Psychological momentum is complex and dynamic in nature (Gernigon, Briki, & Eykens, 2010), and so is unlikely to conform to positivist epistemology. The 'profound discussion' referred to by Bar-Eli et al. (2006) is one that concerns the very assumptions on which science is based (i.e., epistemology) and extends beyond issues concerning the construct itself. Although discussion in this thesis will consider a number of psychological constructs (e.g., psychological momentum, motivation, confidence), the purpose is to show how limitations in their conceptualisation and evidence base ultimately reflect flaws in the underlying epistemological assumptions. When the theory and data do not conform to our epistemological assumptions, the *discussion needs to be concerned with the assumptions themselves* and the view of nature they afford, rather than prioritising the refinement of method. Given the foundations on which empirical science is based (i.e., positivism and post-positivism) does not provide the final word on the idea of science, I will argue that scientific advancement in sport psychology without engagement with epistemology is not a sustainable position.

By exploring the links between Jung's theory of knowledge and the associated theoretical contributions, this thesis will also consider how engaging in epistemological questions offers a basis on which knowledge concerning psychological phenomena within sport can be developed. For example, adopting the assumption that psychological phenomena reflect a process - rather than a state - which are temporal and dynamic in nature, *necessitates the study of performance variation itself*, rather than continuing to prioritise psychological constructs associated with performance (Cowen, Nesti, & Cheetham, 2014). In addition to the

work of Jung, I will draw upon other theoretical developments within psychology which have placed epistemology at the heart of their approach and place great importance on the study of variation as an essential phenomenon in its own right: namely, the *cybernetic-systems paradigm* (Vancouver, 2000) and *idiographic science* (Molenaar, 2004). The cybernetic systems paradigm is interested in how open systems maintain their stability, adapt and change through their interaction with dynamic environments, based on a hypothesised set of sub-systems (e.g., feedback loops; Vancouver, 2005). In contrast to cognitivism which contends that mental processes can be enframed within objective representations, cybernetics suggests that conceiving the mind as an open system requires an "ontology of unknowability and becoming" (Pickering, 2010, p. 33), wherein thought and behaviour are emergent responses. Similarly, idiographic science views the mind as a self-organising open system, and therefore experience is, by its very nature, unique to the individual. Idiographic science is primarily concerned with intra-individual variation and contends that the establishment of general laws is only possible by studying the singularity of psychological phenomenon (Salvatore and Valsiner, 2010). To my knowledge, neither of these approaches has been given consideration within the sport psychology literature to date yet they provide important implications with respect to the development of the discipline as a science.

In addition to the influence of Jung's analytical psychology, this thesis is also a product of personal/subjective views relating to ontology (i.e., the "personal equation"), which I continue to grapple with. Despite the deep uncertainties I hold in this regard, experience has led me to some tentative (ontological) beliefs which drew me to the work of Jung and underpin this thesis. Central, is the belief that existence, including that of the psyche, is dependent and can therefore be understood based on a dynamic balance, or inter-dependence, between so-called dualisms. Kelso and Engstrøm, (2006) have referred to this as "the complimentary nature", to describe how existence *at all levels* is dependent on mutually dependent opposites, or complimentary pairs (e.g., energy and matter, wave and particle, consciousness and unconsciousness). Furthermore, they proposed the use of the symbol ~ to represent the complementarity of any pair of opposites (e.g., energy~matter, wave~particle, consciousness~unconsciousness). Given my own ontology, the notion of complementarity is a defining characteristic of the epistemology developed in this thesis, and the symbol ~ will be used - as described by Kelso and Engstrøm (2006) - for the purpose of representing a complimentary pair.

Finally, as someone who has studied psychology and not philosophy, the task of considering the implications of epistemology with respect to the development of sport

psychology as a science is a daunting proposition. I am not the first to do so with respect to the development of psychology as a discipline. In addition to Jung, a number of psychologists have made important contributions, some of which will be considered in this thesis (e.g., Giorgi, 2000; Varela, Thompson, & Rosch, 1991). I feel very similar to Koch (1961) who, in proposing that psychology was centrally placed to explore the potential unity between science and the humanities, wrote:

> If my tools for this task are feeble, I claim some extenuation merely from the fact that I am a psychologist. Little that my field has done during its brief history as an independent science could equip me for work on the present question. (p. 629)

My education has given me no systematic grounding in philosophy yet reflecting on the question of psychology as a science has inevitably led me to epistemology. Taken together, what follows therefore is not a thesis on epistemology itself, but an exploration of the epistemological questions posed by Jung, in relation to current and future theorising in sport psychology.

1.5 **Chapter summaries**

Chapter 2 ('Positivism and analytical psychology') begins by introducing the foundational challenges to a sport psychology based on positivist epistemology. To provide oppositional contrast, the second half of the chapter introduces C.G. Jung and the central tenets of his analytical psychology.

Chapter 3 ('Towards an analytical sport psychology') explores in greater depth the challenges to positivist science identified in chapter 1 in relation to current theorising into flow and motivation. A new epistemological framework is outlined based on the work of Jung (i.e., subject~object, conceptual integration, being~becoming), and points of convergence between key contributions (i.e., consciousness~unconsciousness, psyche as a process) and more recent theorising are identified.

Chapter 4 ('Jungian analysis of momentum in sport') considers the implications of analytical psychology with respect to momentum in sports. An original theoretical account of psychological momentum is outlined, based on Libido theory (Jung, 1960), and the implications are considered with current literature which suggests a close relationship between the "person" and "athlete".

Chapter 5 ('Towards a psychology of being and becoming') considers more recent developments in psychology (i.e., cybernetic systems paradigm, idiographic science) which have important parallels with analytical psychology and which have important implications for

the future of sport psychology as a science. Taken together, these developments suggest that future research should focus more on understanding performance variation itself rather than prioritising the study of psychological constructs, or objectivist representations, associated with performance.

Chapter 6 ('The psychology of performance variation in sport') outlines an original theoretical perspective with respect to our understanding of performance variation in sport (Cowen, Nesti, & Cheetham, 2014), based on epistemological and theoretical developments outlined in the preceding chapters.

Chapter 7 ('Theoretical implications for sport psychology: The role of time') explores the implications of the epistemology outlined in the thesis with respect to current and future theorising in sport psychology. The central theme of this chapter is *temporality*, which, it is argued is necessarily an axiomatic component of future theoretical work, in order to overcome the foundational problems associated with a positivist conceptualisation of science.

Chapter 8 ('Conclusions') proposes that the provisional epistemological criteria outlined in the thesis (i.e., subject~object, conceptual integration, being~becoming, teleology, temporality) offers a basis on which an analytical sport psychology could be developed. It is concluded that the "personal equation" – the creativity, judgement, intuition and/or insight of the researcher - represents an important component of the process of knowledge construction; which in turn necessitates collaboration as a necessary counterpoint to individual subjectivity.

Chapter 2

Positivism and analytical psychology

> A psychological interpretation of science begins with the acute realization that science is a human creation…Its laws, organization, and articulations rest not only on the nature of reality that it discovers, but also on the nature of the human nature that does the discovering. (Maslow, 1954, p. 1)

> Anyone who wants to know the human psyche will learn next to nothing from experimental psychology. He would be better advised to abandon exact science, put away his scholar's gown, bid farewell to his study, and wander with human heart through the world. (Jung, 1966a, p. 246-247)

2.1 **Introduction**

Given the complex and dynamic nature of the psyche, Jung understood that its expression manifests indirectly in the form of symbols which contained the deeper associated meaning (Fordham, 1966). Yet one consequence of the dominance of positivism in our human sciences, and society at large, is symbolism being afforded little value (Massarelli & Terret, 2012). As a result, progress is assumed, and defined by the development or accumulation of tangible "facts" which are assigned discrete labels, and which help to give sense to objectivist sensibilities. Data which does not fit this criterion is, by implication, unworthy of scientific investigation, and therefore belonging to the realms of mysticism[7]. However, as this chapter will begin to explore, this form of science is unlikely to lead sport psychology to a body of knowledge which can capture the inherent nature and characteristics of the subject, and continuation on this path will lead to "the scientific study of ourselves without a subject matter" (Varela, Thompson, & Rosch, 1991, p. 13).

[7] Which Russell (1963) describes as "little more than a certain intensity and depth of feeling in regard to what is believed about the universe" (p.10).

Central to this thesis is that to date scientific developments in sport psychology have been one-sided in their acceptance of the dominant and guiding positivist tradition (Martens, 1987; Nesti, 2004; Whaley & Krane, 2011), with the function of empirical evidence appearing at times to make the scene fit the crime. Similarly, Giorgi (2000) observed that "maintaining the experimental model and attempting to explain psychological phenomena by cause and effect relationships…is to presume too much uncritically" (p. 66). Developments in epistemology and psychology have challenged the epistemological underpinnings of positivism, with regards to the basis on which legitimate knowledge can be assumed. Without exploring the implications of these challenges, any science associated with sport psychology is likely to be epistemologically, theoretically and methodologically flawed. Furthermore, science becomes restricted to ultimately serving and being answerable to the adopted method, at the expense of progress; whereby progress is defined by genuine scientific discovery, resulting from exploring the exception to the rule rather than the rule itself (Kuhn, 1996).

As with empirical data, in order to accept the validity of a set of epistemological assumptions, one needs to be continually open to any reasonable challenge, thus allowing for accountability and the possibility of rejection (Popper, 2002). If scientists are required to remain skeptical and dispassionate, one cannot hold onto acceptance without equally holding onto the possibility of rejection. Thus, acceptance loses credibility and meaning when the possibility of rejection is diminished. Ongoing faith in the methods of the natural sciences, pervasive in both behaviourism and the cognitive revolution in psychology, reflects a desire for scientific status (Giorgi, 2014). Up until its recent history, this has occurred at the expense of other conceptual foundations being overlooked, and a general lack of epistemological debate in psychology concerning the basis and means associated with the doing of science (Smith, Harré, & Langenhove, 1995).

Despite the recent increased interest in non-positivist epistemologies, mainstream psychology continues to associate scientific rigour with positivist epistemology (Rogers & Willig, 2017). Yet as Smith et al. (1995) observed, when our understanding concerning the nature of science means is monopolised, we and our science becomes impoverished given that at its nature it is "a polymorphous activity, drawing from a range of theoretical and philosophical bases and employing a range of different methods" (p. 2). In other words, if one accepts that the purpose of science is to expand our understanding, as well as to place

restrictions on the criteria associated with scientific knowledge, the spirit of science is being compromised not advanced if one unquestioningly sticks to a dominant creed.[8]

In sport psychology, one might reasonably argue that in response to the dominance of positivism and post-positivism there has been a noticeable increase in interpretativist, qualitative based research, aimed at capturing the subjective experiences of athletes. However, as this chapter will consider, defining one's epistemology based on the choice between objectivity *or* subjectivity, positivism *or* interpretivism, is a legacy of psychology's philosophical foundations, and in particular the entrenchment of dualistic thinking. As long as their (i.e., positivism/interpretivism) incompatibility remains unresolved, so-called "mixed methods" research serves only to remind us of this entrenchment, through attempting to solve the problem from within. The problem is not how to make the choice, but that this choice appears to be an epistemological necessity.

Russell (1963) observed that attempts to understand the world led people to either science or mysticism, but was ultimately dependent on a union between the two. Despite their complementarity, Russell (1963) argued that few thinkers have historically been able to combine both impulses, with the tendency towards one, science or mysticism, dominating. Writing in relation to psychology, Giorgi (2000) believed that any integration of positivist and interpretivist approaches would require a new philosophy of science on which to reconcile their apparent incompatibility. Furthermore, Giorgi argued that natural science cannot capture all aspects of human nature and experience, and instead advocated the need for a

> …better philosophy of the psyche (or experience, consciousness, behavior) that might guide methods in a better way to the essences of its phenomena, which in turn would lead to a more adequate and articulate framework concerning the whole discipline of psychology (2000, p. 63).

The criteria and purpose of a human science that Giorgi (2000) proposed is not modest, and includes (a) working towards an understanding of the interconnectedness of *all* human phenomena; (b) acknowledging the temporal and symbolic dimension to experience; and (c)

[8] The notion of 'discovery' in psychology is further complicated by the fact that, at its heart, there is arguably a question of whether psychology has anything to truly discover or solve. Furthermore, this leads to the question of accountability. By comparison, in the natural sciences, there is clearer accountability with regard to the outcomes of scientific endeavor – a spacecraft either does or does not land on the moon! (I am indebted to a colleague for this observation).

the establishment of an indigenous psychology which "confront their phenomena directly and develop methods independently of what the natural sciences did" (p. 69). If this is the task, the retreat to an established philosophy of science becomes an understandable proposition! However, the path of least resistance should not be a valid basis on which to conduct science. In the name of objectivity, the inconvenient truths regarding a subjective, complex subject matter do not, in themselves, offer any apparent justification for their epistemological (i.e., scientific) denial. Equally, the apparent gulf between the natural sciences and a human science, as described by Giorgi (2000), does not, in itself, provide a justification for the retreat to subjectivity.

The dominant epistemological traditions – positivism and interpretivism – are by their natures incompatible with one another (Denzin, 2010; Lincoln, 2010), and both contribute towards a dualistic view of subjectivity and objectivity. Positivism assumes that a true reality exists beyond the senses (i.e., realist ontology), and the possibility of nomothetic, objective knowledge based on the methods of the natural sciences (Lincoln & Guba, 1985). In contrast, the interpretivist tradition assumes multiple realities (i.e., relativist ontology), and is based on a subjectivist epistemology concerned with individual meaning (Guba & Lincoln, 1994). This dualism also creates an unhelpful separation between "real-science" (i.e., positivism/post-positivism) concerned with nomothetic objectivity, and "soft-science" (i.e., interpretivism) concerned with idiographic subjectivity. Rather than being required to make a choice, the proposition to be explored in this chapter is that a better philosophy of the psyche is predicated on a union of subjectivism or objectivism.

Given the association of positivism with real science, this chapter will begin by exploring how the assumptions on which this epistemology is based are problematic with respect to the development of sport psychology as a science. The limitations of the positivist conceptualisation of science are considerable and have been considered extensively within the psychology (e.g., Guba & Lincoln, 1994; Lincoln, & Guba, 1985; Langenhove, 1995) and philosophy of science (e.g., Popper, 2002) literature. Emphasis will therefore be placed on examining how a positivist epistemology has helped to shape as well as compromise the development of theory within sport psychology, rather than a general critique of positivism itself. In light of these challenges to positivist science, the second part of the chapter will provide an introduction to C.G. Jung and his main contributions; which will be considered more in-depth throughout the thesis.

2.2 **Theoretical developments within sport psychology – foundational problems**

Throughout its history, sport psychology has been shaped by psychology its parent discipline, but since the 1980s there has been a shift towards studying sport-related constructs (e.g., confidence, mental toughness, flow, motivation; Kontos & Feltz, 2008). Yet despite this, the assumptions underpinning a positivist conceptualization of science continue to be evident in theoretical developments associated with these constructs. As outlined in the introduction, Lincoln and Guba (1985) identified 5 key aspects of a positivism: (1) Phenomena can be meaningful reduced down into its constituent parts (i.e., reductionism); (2) separation of subject and object; (3) a-temporality; (4) linear causality; and (5) the scientific method ensures objectivity. The purpose of what follows is not to provide a comprehensive review, but to identify some of the foundational problems associated with the development of theory in sport psychology shaped by positivist epistemology. This will be done by situating the main epistemological themes (e.g., subject~object; temporality) explored within the thesis, in relation to the development of theory which intends to elucidate sport related constructs.

2.2.1 **The problem of abstraction**

> The scientific method of abstraction is very efficient and powerful, but we have to pay a price for it. As we define our system of concepts more precisely, as we streamline it and make the connections more and more rigorous, it becomes increasingly detached from the real world. (Capra, 1975, p. 40-41)

Given the nature of the mind or psyche does not present itself directly to our senses, in addition to the study of behaviour, psychology as a science has been reliant on abstracting hypothesised internal states. Abstraction, or abstract generalisation, is a form of objectivist representation which Powers (1973) refers to as "the classification of specific observations into categories" (p. 10). As will be shown, abstraction in psychology typically perpetuates a dualist view of the subject and object, and the organism and environment; as well as offering only surface descriptions of observable phenomena:

> The problem with abstract generalisations is that they are superficial, in the literal sense. They deal only with the surface appearance of a phenomema. More often, their true basis is nothing more solid than verbal custom or common sense. (Powers, 1973, p. 13)

Abstraction has become a very popular method in sport psychology as a way of developing theory. If the validity of this method of science was based on the volume of work

devoted to the identification and elucidation of sport related constructs, sport psychology is in good health. Such constructs have been afforded countless articles to their "discovery", qualification, classification, and quantification of their meaning; a process that Kuhn (1996) referred to as "fact-finding". Yet, this form of atomisation is inconsistent with Kuhn's (1996) notion of a paradigm. As he observes: "In the absence of a paradigm or some candidate for a paradigm, all the facts that could possibly pertain to the development of a given science are likely to seem equally relevant" (p. 15). The consequence is a conceptual landgrab, with researchers becoming associated which these concepts through publishing a critical mass of papers devoted to their elucidation, at the expense of critical debate regarding the underpinning epistemological assumptions on which their validity is based.

Two epistemological problems with abstraction can be identified: It either (a) results in a separation between the subject and object - the end result of which is the elucidation and refinement of the construct, not necessarily that which it seeks to reflect; and/or (b) weds the associated meaning of a construct so closely to the meaning of its observed effects, to the point that there is barely anything separating then. For the latter, consider the following, albeit extreme, examples:

- "Research supports the idea that self-confidence in athletes is positively related to positive affective feelings (e.g., satisfied, excited, proud) and negatively related to negative affective feelings (e.g., distressed, nervous, ashamed)". (Vealey & Chase, 2008, p. 85)
- "Athletes also experienced a large variety of affective themes during PM [psychology momentum]. Generally PM+ [positive momentum] and PM- [negative momentum] were associated with pleasant (e.g., elation, satisfaction, self-confidence) and unpleasant (e.g., self-doubt, displeasure, anxiety) feelings, retrospectively". (Briki, Den Hartigh, Hauw, & Gernigon, 2012, p. 378)

A fundamental consequence of this form of theorising is that we are left with limited potential for explanatory power, given the meaning of such constructs are typically self-serving, and therefore based on circular reasoning (Smedlund, 2016; Valsiner, 2014). For example, self-confidence in sport, or "sport-confidence" (Vealey, 1986; Vealey & Chase, 2008) is said to exert a positive 'causal' influence on sporting performance. Yet as Bandura recognises, past performance accomplishments are the most influential source for these self-efficacy beliefs (Bandura, 1986, 1997). As will be shown in chapter 5, this form of representation is *pseudo-empirical* as data is not required for its verification (Smedlund, 2016).

In addition to the reliance on studying abstract generalisations, there has also been a noticeable recent trend towards emphasising the multidimensional nature of constructs such as *confidence* (e.g., Hays, Maynard, Thomas, & Bawden, 2007; Vealey, 2001; Vealey & Chase, 2008) *mental toughness* (e.g., Gucciardi, Gordon, & Dimmock, 2008; Jones, Hanton, & Connaughton, 2007) and *anxiety* (Martens et al., 1990), and thus to divide them into discrete elements. For example, Gucciardi et al. (2008), argued that previous research into mental toughness "has failed to provide conceptual clarity due to the atheoretical approaches to the research" (p. 262), and suggested Personal Construct Psychology (PCP; Kelly, 1955) as a suitable framework. Given that PCP is an approach which attempts to understand how individuals construct their unique understanding of their world (i.e. is subjectivist in nature), it is perhaps surprising that they arrive at 11 key characteristics (or objectivist representations) for mental toughness (self-belief; work ethic; personal values; self-motivated; tough attitude, concentration and focus; resilience; handling pressure; emotional intelligence; sport intelligence; physical toughness), which are in turn further broken down[9]. Whilst it could be argued that characteristics such as "tough attitude" allow for different interpretations for each person, one cannot help but feel a sense of Cartesian anxiety resulting from this oscillation between subjectivity and objectivity, due to their paradoxical interdependence and incompatibility.

2.2.2 **The problem of objectivity**

The question of how to account for cognition and behaviour is a debate not new to psychology. The rise of cognitivism in the 1950's, associated with the demise of behaviourism, assumed the mind is a "representational system", which reflects or reconstructs a pre-given world (Varela et al., 1991). In the 1990's the dynamical systems approach has brought into question the more traditional approach to our understanding of internal representation (Clark, 1997; Thelen & Smith, 1994). Whereas early cognitive theorists sought to attribute causation to objectivist representations of internal mental states (Varela et al., 1991), cybernetics[10], and more recent developments in cognitive science referred collectively by Clark (1997) as the

[9] See chapter 5 and Andersen (2011) more a more extensive critique of current theorising into mental toughness in sport.

[10] Cybernetics, a precursor to cognitivism, has historically operated outside of mainstream psychology (for an outline and history, see Pickering, 2010). Also see chapter 5 for an introduction to cybernetics.

"Embodied Cognition Thesis", have embraced notions of complexity, self-organisation, interrelation and change (see Clark, 1997). Such theoretical developments provide an opportunity to re-examine the current reliance on abstract generalisations with respect to our understanding of the psychological basis for performance in sport.

The embodied cognition thesis posits that the mind is not passively representing and processing environmental stimuli as suggested by traditional cognitive theory but is engaged in continuous dialogue with the external conditions, resulting in emergent responses (Varela et al., 1991). Based on this thesis, any substantive explanation of cognitive processes requires an approach which allows us to understand the basis for how these responses change temporally in their embodied form; in contrast to objectivist representation (i.e. deriving knowledge through abstraction) which Clark (1997) described as being "detached, action-independent, highly detailed, [and] static" (p. 472). To do the latter could be viewed as equivalent to trying to understand the properties underlying the flow of water in a stream by extracting any particular unit of water for analysis at any given time. Furthermore, to assume a relationship between a disembodied objectivist representation and the 'subject' is to assume that a separation of the 'object' for the purposes of study will ultimately elucidate our understanding of the subjective experience. Yet, as shown in relation to current theorising into mental toughness, objectifying an embodied phenomenon is dependent on capturing its subjective form, which has inevitably resulted in a regress with respect to its elucidation (see Andersen, 2011). As Varela et al. (1991) point out, "representation can be construed either as the 'projection' (subjectivism) or 'recovery' (objectivism) of the world" (p. 241). Thus, any attempt at providing an objectivist representation of phenomena which are subjective in their manifestation "discloses the shiftiness, the instability of the entire subjective/objective polarity" (p. 242).

If lived experience exists as a function of time and context, the notion of embodiment suggests that there can be no demarcation between the subject and object, the organism and environment (Varela et al., 1991). However, if one makes the assumption that objectivist knowledge derived through abstraction is an appropriate epistemology for the study of human behaviour, one is assuming that there can be a meaningful separation in psychology between the subject and object; a legacy of Cartesian dualism and the association of science with objectivity.

2.2.3 **The problem of time**

Extrapolation, the process of making an inference about the future based on past events, ultimately fails because it doesn't account for the fact that *over time conditions change* (Powers, 1973). Thus, although it might be reasonable to assume that an athlete might have their own optimal psychological state (e.g., arousal level) for any given competition, that state cannot be expected to be exactly the same for future competitions. In evolutionary terms such an optimal state is referred to as a "fitness peak" and is one, or one of a number of points on a "fitness landscape" (Kauffman, 1995). But as Kauffman has observed: **"**The idealization we have used that fitness landscapes are fixed and unchanging is false. Fitness landscapes change because the environment changes" (p. 208). This analogy is a useful one because as with its original evolutionary premise, competition for limited "resources" is integral to sport, which requires those who take part to continually adapt to their competitor's adaptations: "In coevolving systems, each partner clambers up its fitness landscape toward fitness peaks, even as that landscape is constantly deformed by the adaptive moves of it coevolutionary partners" (p. 27).

Fitness landscapes suggest that the whole notion of a fixed optimal psychological state in sport is a misnomer. Psychological states must change continually over time in response to the dynamic environments in which sports men and women engage. For example, there will be times when either high or low levels of anxiety are required depending on the nature of the situation faced by an athlete (Nesti, 2011). Arguing for a more ecological basis for our understanding of sporting performance, Davids & Araújo (2010) observed that

> In such landscapes of possibilities it is difficult to prescribe the existence in advance of 'the optimal' decision for a particular performer since affordances are dynamic and differ in stability (i.e., they appear and dissolve momentarily in the dynamic performance environment), dependent on the interaction of intrinsic dynamics of an individual performer, with task dynamics and environmental constraints. (p. 636)

Similarly, Araújo, Davids, and Hristovski (2006) write:

> As a performer moves with respect to his/her surroundings, opportunities for action persist, emerge and dissolve, even though the surroundings analysed as objects, and the relations among them, remain stable. Subtle changes of action can give rise to multiple and marked variations in opportunities for subsequent actions. (p. 655)

What emerges therefore is a picture of variability and complexity: Athletes operating in dynamic environments, where variation is one of the few constants. Athletes are not just adapting and responding to the changing external conditions, but also modifying their

behaviours in response to their changing internal state. Given the resultant indeterminacy (Schall, 2004), the reciprocity and mutuality between athlete and environment (Araújo et al., 2006); on an ecological level, notions of isolation, prediction and control become an irrelevance. That is not to say that in the name of objectivity individual psychological constructs cannot be *theoretically* isolated, but within a sporting environment they become indivisible, and ultimately unrecognisable with the "the-world-as lived" by the athlete (Nesti, 2004).[11]

2.2.4 **The problem of causation**

A view of human nature which acknowledges complexity, temporality and change makes the notion of determinism, based on the assumption of linear cause and effect relationships, a misnomer (Pickering, 2010). If we assume that psychological constructs have causal agency (e.g., confidence will have a positive effect on performance), establishing a linear relationship is dependent on separating the objective representation from other internal processes taking place (i.e., subject), and from the environment itself. Davids and Araújo (2010) have referred to the latter as "organismic asymmetry", which is the tendency in psychology to focus on "organism-centred mechanisms", whereby the role of the environment is overlooked, based on the implicit assumption that agency exists exclusively in the organism (also see Dunwoody, 2006). Yet as Araújo et al. (2006) point out with respect to decision making in sport, the process does not exist solely within the individual themselves but is an emergent response which exists on the performer-environment level.

Assigning agency to the construct itself, Vancouver (2005) has referred to a "system-level theorizing" (p. 41), in contrast to a sub-system level of analysis which acknowledges that multiple (typically unconscious) sub-systems provide the mechanism for outward appearances. In contrast to system-level theorising which is dependent on abstract generalisation and extrapolation, Powers (1973) described the focus on the sub-systems, and their interaction, as *model building*. Critically however, Powers (1973) suggests that psychological theory tends to confuse subdivisions of observed appearances with sub-systems inside the behaving system. Powers refers to such theories as *pseudo-models* given their habit of confusing observed symptoms with underlying explanatory properties. Consideration of sub-systems (i.e., internal systems that we are not aware of) is equivalent to what Dennett (1969) referred to as the "sub-

[11] The idea that psychological processes are temporal in nature will be considered more in-depth in chapter 7.

personal level", where cognitive processes are not accessible, or equivalent to conscious processes. The result is a tension between explanation and surface description because the processes which account for, and therefore explain behaviour are not discernable in conscious awareness (Varela et al., 1991). Writing on this tension between explanation and surface description in relation to cognitivist theories, Varela et al. (1991) observed that

> By this phrase, Dennett means that cognitivism postulates mental (not just physical and biolological) mechanisms and processes that are not accessible to the "personal level" of consciousness, especially self-consciousness. In other words, one cannot discern in conscious awareness or self-conscious introspection any cognitive structures and processes that are postulated to account for cognitive behaviour. Indeed, if cognition is fundamentally symbolic computation, this discrepancy between personal and sub-personal immediately follows, since presumably none of us have any awareness of computing in an internal, symbolic medium when we think. (p. 48-49)

This tension between explanation and description is part of the broader epistemological debate concerning empiricism and rationalism. In order to be "scientific", sport psychology has favoured empiricism, given the tendency for surface description over explanation. The former is evident in the emphasis on accumulating objectivist representations, over elucidating the unconscious mechanisms which shape thought and behaviour. The focus on system level theorising within sport psychology is perhaps not surprising, given past attempts to model the interrelation between hypothesised systems (i.e., cognitive structures) and their respective observed appearances (i.e., behaviour).

Indeed the starting point for this thesis was the personal observation that despite the goal of sustained peak performance levels, performance variation appeared to be inevitable for most if not all elite athletes. The question that emerged was: *Is there a psychological basis for this variation in performance, or can it be entirely accounted for through external/environmental change*? This question led me to consider an existing theory which aimed to account for performance variation in sport, namely catastrophe theory (Fazey & Hardy, 1988). This theory developed in response to a dissatisfaction with the existing models of the anxiety-performance relationship (Hardy, 1990) at the time – the inverted-U hypothesis (Yerkes & Dodson, 1908) and multi-dimensional anxiety theory (Martins et al., 1990) – yet as soon became apparent, did not offer a meaningful step forward. What the theory did offer was the realisation that theoretical problems, and therefore also theoretical developments, are primarily a function of engagement, or lack of, with the associated epistemological

assumptions. In this instance, catastrophe theory is predicated on the assumption that cognition (i.e., cognitive anxiety) was causally linked to performance and its variation.

Catastrophe theory attempted to predict the effects of cognitive anxiety and physiological arousal on performance in a three-dimensional model (Hardy, Beattie, & Woodman, 2007); and provided a series of four testable relationships between these three components. Namely:

1. There is a positive relationship between physiological arousal and performance when cognitive anxiety is low.
2. There is a negative relationship between cognitive anxiety and performance when physiological arousal is high.
3. There exists an inverted-U relationship between physiological arousal and performance when cognitive anxiety is low, and;
4. When cognitive anxiety is high, increased levels of physiological anxiety will lead to a sudden, catastrophic drop in performance (Hardy, Beattie, & Woodman, 2007).

Thus, beyond the predicted interactive effects of the multidimensional components of performance anxiety (i.e., physiological arousal and cognitive anxiety), catastrophe theory has two key features which distinguishes itself from the inverted-U hypothesis and the multidimensional model of anxiety:

1. Unlike the multidimensional model of anxiety (which assumes a negative relationship between cognitive anxiety and performance), catastrophe theory predicts that the direction of the relationship (i.e., whether it is positive or negative) between cognitive anxiety and performance is dependent on whether physiological arousal is high or low.
2. Unlike the inverted-U hypothesis (which assumes that there is a gradual decline in performance with increasingly high arousal), catastrophe theory predicts a sudden (or discontinuous) drop in performance (mediated by the "interactional effects" of cognitive anxiety and physiological arousal).

In light of these two key distinguishing features, it is worth returning to some of the original objections laid out by Hardy and colleagues (Fazey & Hardy, 1988; Hardy, 1990; Hardy & Parfitt, 1991), in order to critically examine to what extent catastrophe theory is a significant theoretical step forward.

The inverted-U hypothesis neither describes nor explains the relationship between arousal and performance; principally because it is based on a redundant stimulus-response explanation, which does not consider the role of cognition. In response to this criticism, Hardy and colleagues added the cognitive anxiety component to their catastrophe model of

performance, typically operationalised using the Competitive State Anxiety Inventory - 2 (CSAI-2; Martins et al., 1990). Given this is a descriptive tool, it is not clear how this provides an explanation for the "catastrophe effect"; especially given Hardy's (1996a) rather confusing observation that:

> [The catastrophe model] attempts to describe how cognitive anxiety and physiological arousal interact to determine performance. However, it should also be noted that the catastrophe model is *only* a model. It is not a theory, since it does not at this stage make any attempt to explain what causes cognitive anxiety and physiological arousal to interact" (p. 72).

In other words, the model assumes that this interaction exists, and its only claim is to describe the effect of the interaction on performance. Its value as a model therefore rests solely on whether it can describe or predict the anxiety-performance relationship.

Beyond the anecdotal observation that sudden drops in performance occur in sport, the assumption that it can be accounted for solely in relation to cognitive anxiety and physiological arousal appears questionable. Indeed, Hardy (1990) recognised this in observing "the model ignores several other potentially important meta-cognitive variables, such as perceived control…self-image…and self-confidence" (p. 99) as well as task difficulty (perhaps naming but a few), which led to speculation of "five-dimensional catastrophes", "bias factors" and "butterfly factors". Such developments led researchers (e.g., Gill, 1994) to question whether the model itself was too complex. An alternative view however is that the subject matter is itself simply too complex to be meaningfully captured by theory based on positivist epistemology (i.e., objectivity, a-temporality, linear causality). By neglecting the flaws in the epistemological assumptions, the absurdity of reducing complex phenomena down to a finite number of isolated cognitivist states becomes permissible; and there was no reason to stop the continued quest for empirical support.

Any explanation should be accompanied by causal evidence to support the meditational role of these components. Models developed within sport psychology have historically been poor at offering predictive power for performance levels (Mack, Huddleston, Dutler, & Mintah, 2000), given their tendency to isolate a limited number of interrelated "sub-systems", or objectivist representations, as the basis for the observed appearances. In relation to the original formulation of catastrophe theory (Fazey & Hardy, 1988), this amounts to accounting for sudden drops in performance solely based on the nature of the interaction between cognitive anxiety and physiological arousal. Hardy and colleagues (Hardy, 1996b; Hardy & Parfitt, 1991; Hardy, Parfitt, & Pates, 1994; Parfitt, Hardy, & Pates, 1995) speculated that physiological

arousal could influence performance in a number of ways: For example, high physiological arousal could affect the ability of performers to utilise cognitive and physiological resources; and high somatic anxiety could effectively act as a distraction (Hardy & Parfitt, 1991). Whilst these are plausible explanations for a sudden drop in performance, one cannot help but feel that this narrow focus overlooks the potential significance of other concomitant contextual, temporal, and individual factors.

It should be of no surprise that the quantitative studies which followed (i.e., Hardy, 1996a; Hardy, Parfitt, & Pates, 1994; Parfitt, Hardy, & Pates, 1995) were only able to offer weak support for the model. Despite citing a number of flaws in their methodology (i.e., small sample size, "wild" scores), replication of these particular studies – with these flaws removed – are conspicuous by their absence. Similarly, in a qualitative study where athletes were asked about their experiences of "catastrophic performances", Edwards, Hardy, Kingston, and Gould (2002) failed to provide clear support for a sudden drop in performance being associated with high cognitive anxiety and physiological arousal, and reduced confidence. This is despite confidence (or lack of) being identified as one of the most significant factors associated with performance[12]. The problem is further compounded by Edwards et al. (2002) recognition that performance is a dynamic, temporal process; and thus the suggestion that "ongoing performance needs to be examined when determining theoretical explanations for the patterning of performance and causal influences" (p.15). Similarly, in a bid to increase the predictive power of the model, additional factors[13] have been incorporated, or proposed, as well as considering performance as an ongoing process rather than a discrete event, based on the finding that the anxiety-performance relationship is a temporal process which emerges over time (Hardy, 1996a). Therefore, beyond the initial observation that drops in performance tend to be sudden rather than gradual, it is not clear what remains of the theory or model itself.

In sum, objective representations such as cognitive anxiety are little more than objectivist representations or abstractions, rather than possessing inherent explanatory

[12] Self-confidence has been cited several times by other researchers as being an important influence on athletic performance (e.g., Hays, Thomas, Maynard, & Bawden, 2009; Feltz, 2007; Vealey, 2001). A recent meta-analysis confirmed that there is stronger effect size between self-confidence and performance (r = 0.24), than for cognitive anxiety and performance (r = -0.10) (Woodman & Hardy, 2003).

[13] I.e., self-confidence (Hardy, Woodman, & Carrington, 2004); and effort (Hardy, Beattie, Woodman, 2007).

properties for observed performance phenomena. Adding more variables merely highlights the complexity of the subject, rather than increases the power of the model. We are back to where we started; the anecdotal observation that *performance drops dramatically rather than gradually;* but without any clear psychological explanation for it. Yet, the failure is not primarily down to the theory/model itself, or the methods used to provide causal evidence, but the absurdity of the underpinning epistemological assumptions on which it is conceived (i.e., objectivity, a-temporality, linear causality). Thus, it became clear that the task of understanding the psychological basis for performance variation is first and foremost establishing an epistemological framework capable of capturing complex and dynamic processes.

2.2.5 **The problem of induction**

Science owes its identity and value to being a counterpoint to mysticism. Specifically, the so-called scientific method is based and judged on its ability to produce tangible outcomes that have a distinctly different quality from those generated through pure subjective belief. For mysticism, ideas cannot be ultimately separated from the creator. In science, progress is implicitly tied in part to the appropriation of nature, whose creator is an external invisible force – be it a God or nature itself - to be understood. This is what gives science its authority, and *scientific realism*, the belief that a "reality" exists independently of our senses, is part of the ontological basis on which this authority rests.

Objectivity, a guiding principle of scientific enquiry is only possible at the expense of a dualism between subject and object. In an attempt to overcome this dualism, orthodox science generally owes its methods to empiricism, or *naive inductivism,* whereby science, and scientific knowledge, results from careful dispassionate observation, experimentation, and generalisation (Chambers, 1982). Thus, a connection is required between the observer and that which is being observed, in order for data to be recorded and described; as captured (not without irony) in Berkeley's principle: "Esse est percipi" ("To be is to be perceived").

In order for the empirical process to remain objective, science generally relies on inductive reasoning to establish laws and theories in association with a finite number of careful observations. Chambers (1982) summarises the process of inductive reasoning as follows: "If a large number of *A*s has been observed under a wide variety of conditions, and if all those observed *A*s without exception possessed the property *B*, then all *A*s possess the property *B*" (p. 13). An example of which might be:

(Premise)

37 footballers *(A)* report feeling confident (*B*) when they are playing well

(Conclusion)

Therefore all footballers feel confident when playing well

However, as Chambers (1982) points out, inductive arguments are not inherently logical, given that if the premises are true it does not necessarily follow that the conclusion (which results from the induction) must also be true. To use the previous example: If Footballer No.38 played well in a match; it is possible without contradiction that he/she was lacking confidence during that time. If the inductive process cannot be underwritten by logic, the alternative is an appeal to experience wherein generalisations, or "universal statements", are inferred from repeated observations. The latter approach too becomes unstuck in that it relies on circular reasoning:

> The argument purporting to justify induction is circular because it employs the very kind of inductive argument the validity of which is supposed to be in need of justification. The form of the justificatory argument is as follows:
>
> > The principle of induction worked successfully of occasion x_1.
> >
> > The principle of induction worked successfully of occasion x_2 etc.
> >
> > The principle of induction always works.
>
> A universal statement asserting the validity of the principle of induction is here inferred from a number of singular statements recording past applications of the principle. The argument is therefore an inductive one and so cannot be used to justify the principle of induction. We cannot use induction to justify induction. This difficulty associated with the justification of induction has traditionally been called "the problem of induction". (Chambers, 1982, p. 15)

David Hume first recognised this circularity over 250 years ago, and in doing so presenting a challenge to the foundations of empirical science. In response, some philosophers have countered by justifying the inherent validity of the empirical process based on its ability to account for natural processes, as well as stressing its undeniable predictive power (Earman & Salmon (1999). Yet, as Earman and Salmon (1999) point out, the logic of the scientist is uncannily similar to that of the mystic: Both justify the success of their method based on its previous success. Whilst this logic might acceptable for sciences where linear causation is a meaningful concept and outcomes are relatively stable, the replication crisis exposes the problematic nature of method of induction for a human science.

The problem of induction led Popper (2002) to suggest that "the various difficulties of inductive logic…are insurmountable" (p. 6). A consequence of these difficulties has been a *retreat to probability* (Chambers, 1982) wherein inductive inferences become *probable inferences* (Keynes, 1921; Popper, 2002). As such we settle for scientific knowledge which we assume is *likely* to be true rather than proven as such. Whilst the application of inferential statistics - which is assumed to provide this measure of certainty - continues to be an accepted basis on which hypotheses are accepted or rejected, the retreat to probability has not been without its critics.

Powers (1973) suggested that the reliance on statistics in psychology is a legacy of behaviourism, and the misplaced belief in linear cause and effect relationships. Furthermore, Powers suggests that statistics betray a denial concerning *nature's noise* which experimental psychology seeks to eliminate. Jung (2002) made a similar point when he observed that the desire for theories to have universal validity occurs at the expense of individual facts. By generating and working to an abstract mean, exceptions can only be viewed as exceptions, leading Jung (2002) to suggest that "[t]he statistical method shows the facts in light of the ideal average but does not give us a picture of their empirical reality…absolute reality has predominantly the character of irregularity" (p. 5).[14] Furthermore, Powers (1973) suggested that "statistics has become the mainstay of psychology, to the point where it is a *substitute for thought*, *creativity*, *and evaluation* (*my italics*; p.12).

As long as we implicitly maintain faith in the inductive process, we are also dependent on and implicitly trust statistical inference and the conclusions set by this. The crime is the continued faith placed in empiricism as the dominant means of conducting science. The scene is a discipline which appears to hold little place for genuine thought, creativity and evaluation which challenges such scientific orthodoxy. A change in approach or method ultimately starts with a change in our underlying assumptions concerning the basis on which the legitimacy of scientific knowledge is assumed. The proposition is that any such change will require individual intuition, judgment and insight to be afforded its rightful place. If sport psychology is to be a truly human science, the subject *and* observer have to be placed at its heart.

[14] This point is developed further in chapter 5, in relation to more recent developments in psychology (i.e., Idiographic science).

2.3 **Another way - The psychology of C.G. Jung**

Given the inherent logical flaws in the inductive process, Popper (2002) argued that there is no inherently logical means of developing scientific knowledge. Instead Popper suggested that "every discovery contains 'an irrational element', or 'a creative intuition'" (p. 8). In support, Popper cites Einstein's preference for pure deduction as a means of developing his universal laws, without an appeal to logic: "There can be no logical path…leading to these…laws. They can only be reached by intuition, based on something like intellectual love of the objects of experience" (Einstein, quoted in Popper, 2002, p. 8-9). By definition, deduction, as opposed to inductive logic doesn't allow for the appropriation generalised statements, or laws, from finite observations. Therefore, applying the principle of deduction alone doesn't allow for a law to be developed with a sense of absolute certainty (Harré, 1972). This led Harré (1972) to suggest, "we can only properly be said to have a *belief* in a law" (p. 10).

Indeed, it was the trust that Einstein placed in his own intuition, rather than established principles, which allowed him to see beyond the rules of "classical" physics. Famously, Einstein was working outside of academia in a patent office for new inventions during the period when he wrote his seminal scientific papers which would ultimately lead to his general theory of relativity. It has been suggested that Einstein's separation from academia during this formative intellectual period proved invaluable in protecting his creative independence and critical vigilance. Furthermore, it is evident that the radical and creative nature of Einstein's scientific endeavours, despite their universal significance, cannot be ultimately separated from the man himself (see Isaacson, 2007).

If, in sport psychology, we are concerned with understanding as well as the accumulation of facts, thinkers who have allowed their subjective voice to act as a looking glass on the psychology of human nature cannot be ignored. Even if the empirical process was inherently logical, it appears inconceivable that true insight into human nature can be directly gained through objectivity and method alone, which holds no true place for the observer. Rather than hide behind the doctrine of objectivity, paradoxically, by letting the subjectivity into the final analysis it is likely that the end result will be more objective: "By admitting subjective phenomena into the model, we shall end up being more objective, that is, more honest about the fact that we know only appearances" (Powers, 1973, p.59-60). Thus, a *better philosophy of the psyche* will only become possible once we look beyond restrictive scope of empirical science, towards an empirical *human* science which recognises that a subjective voice, not method alone, can transcend subjectivity. Whilst it is unlikely that any one approach would be

able to exclusively capture Giorgi's bold vision, its spirit is evident in the psychology developed by Carl Gustav Jung in the previous century.

The genesis of Jung's work owes much to his ability to combine the spirit of science and mysticism into an organised whole, to the extent that it has been described as "a complex and finally global vision of the human psyche that contains an integrated combination of layers and levels of influence." (Stein, 2005, p. 209). Rather than shirk the tough epistemological challenges associated with a dynamic, ethereal and complex subject matter, as will be shown, Jung's openness to himself, and human nature at large was at the heart of his work.

A central purpose of this chapter is to acknowledge and explore an additional criterion for a legitimate human science; that is the acknowledgement of the complementarity between the practitioner and the science that results (subject~object), which in turn provides the tension on which a critical epistemology can be established. Jung's own genius lies in his unwillingness to settle for epistemology which did not match his own experience, and his conviction in the necessity of science to accurately reflect *all* that was presented to him.

Jung primarily valued the "immediate experience with human beings" (Jung's foreword, in Jacobi, 1962), whilst also seeking a hidden, unifying order in the chaos that he had experienced during his own life (Fordham, 1966). Indeed, Jung was acutely aware that through his original observations and insights he was "necessarily speaking about myself" (Jung, 1975, p. 228), but in the process of doing so, made significant contributions to psychology and beyond. As I will now attempt to show, Jung's psychology grew out of the desire for a scientific understanding of his most private personal experiences.

2.3.1 **A very brief, (auto)biography of Jung's early life**[15]

Carl Gustav Jung was born in Switzerland in 1875 and spent much of his childhood lonely, albeit relatively content, in a rural home. His mother had a warm nature, but could be distant from him and spent several months in Jung's early years away in hospital with an unidentified physical ailment. In contrast his father was reliably present, but privately was a troubled clergyman struggling with his religious beliefs. Despite their incompatibility and unhappy private life, Jung's parents stayed together for outward appearance. These conflicts mirrored Jung's private world, and he described possessing two alternative personalities from an early age, and throughout his life: *Personality No.1*, his public, adaptive self, and *personality*

[15] The following sketch is particularly indebted to Jung's autobiography, *Memories, Dreams, Reflections* (Jung, 1995), in which a more detailed account can be found.

No.2, "old…skeptical, mistrustful, remote from the world of men, but close to nature"[16] (Jung, 1995, p. 61).

During adolescence Jung become increasingly skeptical about the religious doctrine espoused by his father, and found it to be increasingly at odds with his own relationship with God:

> There arose in me profound doubts about everything my father had said. When I heard him preaching about grace, I always thought of my own experience. What he said sounded stale and hollow, like a tale told by someone who knows it only by hearsay and cannot quite believe it himself. I wanted to help him but I did not know how. (Jung, 1995, p.59)

Around this time his father's own faith was becoming increasingly hollow, but he was unable to let it go, at least outwardly: "Not until several years late did I come to understand that my poor father did not care to think, because he was consumed by inward doubts. He was taking refuge from himself and therefore insisted on blind faith" (Jung, 1995, p. 92).

Jung's recognised that his own journey took on a compensatory nature away from pursuing external convention and creed. He could not find God represented in the egos of men, rather "…it seemed to me that the high mountains, the rivers, lakes, trees, flowers and animals far better exemplified the essence of God than men with their ridiculous clothes" (p.62). The undesirable qualities that Jung saw in pious men, he recognised in his personality No. 1, and as a result increasingly sought refuse in personality No. 2. In doing so, began a life long journey of exploration to his inner nature, and what began as a means of becoming closer to God, developed into a lifelong commitment to explore "the dark recesses of his own soul" (Stevens, 1990, p.5).

By finding God absent in the church, whilst still at school, Jung sought refuge in literature and philosophy with the hope that it might offer independent thought consistent with his own. Towards the end of adolescence a decision had to be made about what to study at university, and for a long time Jung was torn between science and comparative religion:

> What appealed to me in science were the concrete facts and their historical background, and in comparative religion the spiritual problems, into which philosophy also entered. In science I missed the factor of meaning; and in religion, that of empiricism. Science met, to a very large extent the needs of No. 1 personality, whereas the humane or historical studies provided beneficial instruction for No. 2. (Jung, 1995, p. 91)

[16] Jung also referred to personality No.2 as the "natural mind" (Jung, 1995).

Having settled upon medicine, this tension between the desire to understanding his immediate subjective experience and the requirements of an objective science, played out in his reluctance to settle upon a specialism, until he began to read a psychiatry textbook in preparation for an exam. This field offered the basis for an intellectual union of subject and object, but also on a personal level the basis for integration of the self:

> Beginning with the preface, I read: "It is probably due to the peculiarity of the subject and its incomplete state of development that psychiatric textbooks are stamped with a more or less subjective character". A few lines further on the author called the psychosis "diseases of the personality." My heart suddenly began to pound. I had to stand up and draw a deep breath. My excitement was intense, for it had become clear to me, in a flash of illumination, that for me the only possible goal was psychiatry. Here alone the two currents of my interest could flow together and in a united stream dig their own bed. Here was the empirical field common to biological and spiritual facts, which I had everywhere sought and nowhere found. Here at last was *the place where the collusion of nature and spirit become a reality*". (*My italics*; 1995, p.129-130)

On completion of his university studies in 1900, Jung took a post in a psychiatric hospital where he served his "apprenticeship". Jung describes the treatments administered to patients as an indifferent process of assessment, diagnosis of symptoms, and the use of drugs. Although he took it upon himself to do so, there was no precedent for talking to patients about their problems, as the general assumption appeared to be that it might make them worse.

On being appointed as a lecturer in psychiatry in 1905, Jung reputation grew following research based on Galton's word association test, as well as a book on schizophrenia in 1907. This led to a period of collaboration with Freud between 1907 and 1912, despite Jung being initially warned by fellow academics that an association with Freud would be ruinous for his career prospects.

His split with Freud, due in large part to not accepting the central role given to sexuality in psychological development, led to a period of sustained inner turmoil which Jung referred to as his "confrontation with the unconscious" – between 1912-1916. During this time Jung let himself succumb to his unconscious world, through the experience of dreams, fantasies and images. In doing so Jung gave way to experience whilst maintaining active curiosity as to their personal meaning. The unrestrained nature of this endeavour however was not matched at the time by Jung's ability to articulate that which had occurred to him and the wider significance as he saw it:

> I became aware that I had not yet found the right language, that I still had to translate it into something else. Therefore I gave up this æstheticising tendency in good time, in favor of a rigorous process of *understanding*. I saw that so much fantasy needed firm ground underfoot, and that I must first return wholly to reality. For me, reality meant scientific comprehension. I had to draw concrete conclusions from the insights the unconscious had given me – and that task was to become a life work. (Jung, 1995, p. 213)

During this period of personal upheaval Jung decided to stop working as a university lecturer. He was unable to reconcile his secure academic life with the internal doubts and uncertainty he was experiencing, and which were leading him towards a new personal and intellectual orientation. This new direction led Jung to recognise that the laws of nature governing the psyche could not be captured by the science of the time. He therefore took it upon himself to develop a new empirical basis on which to capture and articulate the language of the psyche.

2.3.2 **Introduction to Jung's depth psychology**

The purpose of what follows is not to offer a comprehensive introduction to Jung's original psychology[17]. A summary of Jung's ideas runs counter to the spirit of his work, and as such he himself was reluctant to do so. In particular Jung was keen to avoid presenting a doctrinal system, a position fundamentally inconsistent with his views on the human psyche (Jacobi, 1962). However, given the very limited consideration that has been given to his work in sport psychology, it is felt that a cursory description of some of his main contributions is necessary. Rather than focus primarily on the new language of the psyche that Jung created, the emphasis will be on how he endeavored to embrace complexity, interconnectedness and temporality. In his formative work on the psychology of the conscious, Jung created a typology of different personality types (see *Psychological Types*, Jung, 1971). By doing so Jung became interested in the "unity which must compensate for this diversity" (Jung, 1995, p. 234); that which connects us together, and makes us whole.

[17] Excellent, and more comprehensive introductions to Jung's psychology include, *An Introduction to Jung's Psychology* (Fordman, 1966); *The Psychology of C. G. Jung* (Jacobi, 1962); and *On Jung* (Stevens, 1990).

2.3.2.1 **The dynamic psyche**

Jung's separation between his inner and outer world during his formative years reached its zenith following the intellectual break with Freud and his subsequent "confrontation with the unconscious". Much of his future work can be viewed as a means to reconnect with the external world, as well as with himself. In doing so Jung recognised that different aspects of himself (i.e., inner/outer, unconscious/conscious) were defined by their complimentary, dialectical relationship; wherein one's sense of self, as expressed through personality, was not a fixed entity but an ongoing dynamic, evolutionary process.

Jung conceived of the psyche as a dynamic system in continual flux, wherein the regulatory function of opposites underpins psychic activity (Jung, 1966a). This can perhaps best be understood in relation to Jung's conceptualisation of the *libido*, which presents a clear illustration of the divergence between the theories of Freud and Jung. For Freud, the term "libido" exclusively represents a person's sexual energy, whereas for Jung it refers to the movement of psychic energy in general derived from the tension between a pair of opposites (i.e. conscious~unconscious, progression~regression; Fordham, 1966).[18]

2.3.2.2 **Energy versus causality**

Jung (1960) suggested that our understanding of psychic events requires consideration of both causal determinism and the energetic standpoint. As Rose (1997) observed, "we require epistemological diversity in order to understand the ontological unity of our world" (p. 296). According to Jung, energy "is a concept abstracted from relations of movement" (Jung, 1960, p.4), and the energetic standpoint is based on the *principle of equivalence* which states that "for a given quantity of energy expended or consumed in bringing about a certain condition, an equal quantity of the same or another form of energy will appear elsewhere" (p.18). Whereas causal explanations seek to establish linear determinism from "effect" to "cause", and so are governed by fixed laws, the energetic viewpoint according to Jung is teleological in nature, where finality[19] is ultimately bound by the principle of equivalence and by implication the

[18] Jung introduced two concepts, *progression* and *regression*, in order to account for the movement of the libido. A more in-depth exploration of the libido will be considered in chapter 4 with respect to our understanding of momentum in sports.

[19] It is important to note that finality doesn't exclusively imply design. Although design is a case of finality, the latter represents an intended outcome which doesn't necessarily correspond to what emerges (Bohn, 1980). In addition to *final cause*, Bohn (1980) argued

conservation of energy. Thus, despite changes taking place, energy is assumed to be constant throughout, with the system working towards a state of *general equilibrium* or entropy (Jung, 1960). This approach is also therefore based on circular logic: Optimal functioning is maintained through self-regulation (rather than linear determinism), and the functioning of elements is coordinated in such a way that driven by a tendency towards optimality (Lovelock, 2009). Thus, as with the circularity within the process of induction, an element of faith is required regarding epistemological value one places in either the assumption of causality or finality.

Jung himself was acutely aware that unlike physical energy, the concept of psychic energy holds little objective meaning beyond the idea that it is a useful concept to account for empirical findings that he arrived upon. As such, the term libido, and by association psychic energy, are *a posteriori* concepts used as a useful basis on which to account for the teleological nature of psychic activity (Jacobi, 1962). Specifically, that the functioning of the dynamic psyche is in part determined by the inherent need to regulate itself. The basis on which this self-regulation occurs forms one of the cornerstones of Jung's work.

2.3.2.3 **Regulatory function of opposites**

Given that Jung conceived the psyche as being dynamic rather than static in nature, a basis on which it organised itself was required. Jung postulated that the laws which govern the physical universe apply to the psyche, given that both are part of nature. In particular the principle of homeostasis which accounts for how biological organisms maintain a state of dynamic equilibrium in response to ever changing environmental conditions, via positive and negative feedback (Stevens, 1990).

Although net energy is assumed to be constant throughout the system, in order for this dynamic equilibrium to be maintained Jung (1966a) suggested that a system of opposites regulates psychic functioning. The regulatory function of opposites is not an original idea, and Jung (1966a) credits the ancient Greek philosopher Heraclitus for its discovery. Heraclitus called this process *enantiodromia*, which supposes that everything at some point must flow into its opposite (Jacobi, 1962). Given its value as an *a posteriori* concept, Jung believed that the libido, or psychic energy, when considered in this way has clear archetypal equivalence to

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that insights into nature should also represent *formative cause*: *"an ordered and structured inner movement that is essential to what things are"* (p. 16).

physical processes: "Just as metabolism maintains the balance in the physical economy of the organism, so…psychic energy determines various relations between the various elements of the psyche and, when it is disturbed, pathological phenomena result" (Jacobi, 1962, p. 53).

2.3.2.4 **Individuation**

A common theme which runs throughout Jung's work is the idea of opposing sides of one's nature, and the associated need to avoid one-sidedness for the sake of psychological health. With respect to the nature of the psyche, Jung considered everyone to be man (*animus*) *and* woman (*anima*), consciousness *and* unconsciousness, individual *and* collective. However, the requirement for directed action or adaptation inevitably results in one-sidedness (Jung, 1960), at the expense of individual growth and realisation of the *self*[20]. Through his work with patients, Jung observed that when "cured" therapeutically speaking, people would often continue their treatment in the form of an ongoing dialogue between the unconscious and the conscious mind (Jung, 1968). Jung believed the purpose of this dialogue was a quest for wholeness through integrating and "reconciling opposing trends in one's nature" (Fordham, 1966, p. 46). This tendency towards integration and wholeness Jung referred to as the *individuation process*.

True psychic growth is therefore not linear in nature but has a twofold dialectical character. Firstly, the adaptation to external conditions, which Jung (1960) called *progression*. "Regression on the other hand, as an adaptation to the conditions of the inner world, springs from the vital need to satisfy the demands of individuation" (Jung, 1960, p. 39). Whilst a tension exists between these two processes, satisfactory adaptation to external conditions ultimately requires being at harmony with one's inner self, and vice versa. Furthermore, adaption cannot be viewed as an end point in itself, but a means by which further ongoing successful adaptations are possible:

> Although progression and regression are causally grounded in the nature of the life-process on the one hand and in environmental conditions on the other, yet, if we look at them energetically, we must think of them only as a means, as transitional stages in the flow of energy. Looked from this angle, progression and the adaption resulting therefrom are a means to regression, to a manifestation of the inner world in the outer.

[20] "I have chosen the term 'self' to designate the totality of man, the sum total of his conscious and unconscious contents" (Jung, 1969b, p. 82).

> In this way a new means is created for a changed mode of progression, bringing better adaptation to environmental conditions. (Jung, 1960, p. 40)

Thus, the complimentary nature of progression and regression not only allow for adaptation to both external and internal conditions, but also the possibility of a continuous, emerging, and organismic process. This process not only seeks to embrace the totality of the self, including all parts that make the individual whole, but also the future possibilities associated with this. Although individuation requires both progression and regression as described above, it is the latter process which took precedence for Jung as the basis on which one establishes one's true center of personality (Stevens, 1990). As a result, in the adult stage of life, the immediate priority for growth is to become reconciled with that which was overlooked during the formative development of the ego-consciousness; namely, the unconscious.

2.3.2.5 **The unconscious**

> …the real and authentic psyche is the unconscious, whereas the ego-consciousness can be regarded only as a temporary epiphenomenon. (Jung, 1966b, p. 90)

Jung did not dispute Freud's position on the importance of the unconscious, but ultimately believed that its existence was subject to influence beyond the "principle of repression". Jung ultimately rejected what he saw as a one-sided mechanistic regression to the unconscious and sexuality inherent in Freud's approach, which he believed did not stand up to scrutiny (see Jung, 1966b). Instead, Jung (1966a) postulated that "unconscious processes stand in compensatory relation to the conscious mind" (p. 177). Or to put another way, rather than see the unconscious as a relatively passive repository for repressed parts of self, Jung viewed it as being actively engaged with and in part defined by consciousness. Furthermore, Jung believed that a retreat to the unconscious doesn't represent a one-directional regression to an infantile state, but a necessary step in the process of individuation.

Jung identified two strata in the unconscious: The personal unconscious and collective unconscious. The personal unconscious contains

> everything which I know, but of which I am not at the moment thinking; everything of which I was once conscious but have now forgotten; everything perceived by my sense, but not noted by my conscious mind; everything which, involuntarily and without paying attention to it, I feel, think remember, want and do". (Jung, 1960, p. 185)

Not only does the personal unconscious interact with the environment but also the collective unconscious "where the primordial images common to humanity lie sleeping" (Jung, 1966a, p. 65). A popular misconception is that Jung was suggesting that primordial images, or archetypes, represented the existence of inherited ideas or characteristics, shared by humanity. Rather, archetypes are considered to be blueprints or predispositions of the psyche which have adapted to the conditions of human existence shared by all (Stevens, 1990). Critically therefore, archetypes represent the *possibility* of certain modes of thought and behavior but not their preexistence[21], and in turn bestow some adaptive value. For example, regarding the archetypal figure of "God", Jung (1966a) wrote "…men have always needed demons and cannot live without God's…The idea of God is an absolutely necessary psychological function of an irrational nature, which has nothing whatever to do with the question of God's existence" (p. 71). Similarly, de Botton (2012) observed

> The apposite point is not whether the virgin exists, but what it tells us about human nature that so many Christians over two millennia have felt the need to invent her. Our focus should be on what the Virgin Mary reveals about our emotional requirements – and, in particular, on what becomes of these demands when we lose our faith". (p. 168)

In short, the archetypes that reside within the collective unconscious represent or reflect the *objective psyche,* that which is shared by all, whilst the personal unconscious and consciousness represents the *subjective psyche* (Jung, 1966a), that which is unique to the individual.

Activity within the objective psyche does not present itself to consciousness directly. As such, the objective psyche can only be indirectly inferred in the form of symbols and motifs. Conversely, the subjective psyche, whilst more likely to be observable remains unique to the individual. This presents an interesting epistemological challenge for the development of a scientific depth psychology regarding the nature and meaning of subjective and objective knowledge. As Jung (1960) wrote, the "more unconscious a man is, the more he will conform to the general canon of psychic behavior" (p. 160). Conversely, "the more conscious he becomes of his individuality, the more pronounced will be his difference from other subjects…Further, his reactions are much less predictable" (p. 160-161). The ability to infer objective, nomothetic statements about the psyche are therefore a function of the unconscious *depth* one is able to capture.

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[21] "I do not by any means assert the inheritance of ideas, but only the possibility of such ideas, which is something very different" (Jung, 1966a, p. 65).

Given that the further one descends into the unconscious psyche, the further one is required to move away from empirical science, there exists a direct trade-off between scientific objectivity and a nomothetic psychology. On the other hand, whilst empirical science might lend itself to establishing "facts" about a person, these facts ultimately remain subject to that person, and are therefore subjective. As long as subject and object remain separated, epistemologically speaking, an "objectified subject and a subjectified object" (Varela et al., 1991, p. 242) become unavoidable. Critically however this trade off only exists as long as one makes a choice between objectivity and subjectivity. As such, objectivity and subjectivity in isolation cannot ever hope to provide a means of working towards a more complete understanding of the human psyche. Only through the synthesis of subject and object, such as the psychology developed by Jung, does this become possible.

2.4 **Conclusions**

> By labeling it a psychology with the psyche, Jung implicitly positions its practitioner- not as someone who detachedly studies something called a psyche - but someone trained to apply his or her own psyche as a tool towards trying to fathom how human beings attune themselves to own (sic) existence. (Jones, 2013, p. 415)

If the purpose and spirit of science is to work towards a systematic description and/or explanation of nature, in *all* its forms, then a science which sets limits on what is permissible for study does not abide by its central goal. If we only concern ourselves with phenomena for which we assume proof or evidence can be sought, as well as neglecting natural phenomena which do not fit within our "scientific" assumptions; is it rational to say that the latter doesn't belong to science? Or do we reevaluate what science needs to be, that is our most basic epistemological assumptions, in order to include such phenomenon in our scientific enquiries. Does *normal science* (Kuhn, 1996) set the agenda, or the phenomenon under consideration? Or to put another way: Is it the job of orthodox science to say what nature is, implicitly captured within its assumptions, or is it the job of science to find the appropriate means to let nature speak for itself? Just because assumptions in alliance with observation might lead to an 'answer', doesn't mean that it speaks of nature.

Giorgi (2014) wrote: "Its [psychology] desire to be a natural science actually preceded an examination of its subject matter and by adopting and imitating the preexisting natural scientific methods, its methods preceded its problems" (p. 235). If ontological realism, the

philosophical foundation for positivist science, has any part to play in psychology then the methods have to be accountable on the basis that they are able to capture something meaningful and authentic about the subject matter itself. Accountability to method alone is not enough.

There is a self-evident circularity between one's assumptions, and the subsequent observations and conclusions drawn. If we belief that genetic superiority is in part determined by skin colour, our experiences and observations are likely to support this proposition. If we had believed the Earth was flat, it is highly likely that we would have also interpreted all "evidence" in line with this "fact". Observations are led by our assumptions *as well as* what the senses reveal. It is therefore ironic and fatal when a so-called empirical science overlooks the role of the scientific lens through which phenomena are observed, i.e., one's epistemology. To assume uncritically that observation or experience allows for assumptions to be challenged is to assume too much. Relativity in nature extends to our insights. Even to accept the limitations of a particular scientific creed does not justify sticking with it. The primary role of science ought to be to find the best lens, not to polish and defend that which already exists, and to leave the former to philosophy. The consequence, as Robinson (1986) suggested is that science becomes prone to adopting Kuhn's notion of *normal science*; and with it brings cultism, high priests and their respective commandments. Furthermore, Robinson (1986) observed that the "scientific literature is filled with studies of a replicative nature in which some little nuance has been added to an otherwise well-worn field of enquiry. Daring challenges to the authority of extant theories are rare" (p. 25-26).

Science without a critical consideration of epistemology is no more scientific than mysticism. In a so-called human science, concurrent consideration of deeply held beliefs, even those beyond the realms of current reasoning, provide an opportunity for a critical, mutable and non-dogmatic epistemology. Jung's own psychology was borne out of this critical tension of opposites, between scientific materialism and mysticism, recognising that individually they "lacked epistemological criticism as well as experience." (Jung, 1995, p. 114). The true significance of Jung's psychology is not just to be found in the objective fruits of his labours but also in its critical spirit.

What makes an approach truly scientific? Is it the prescription followed, or the spirit that guides it? If the two are connected, then the act of doing science cannot be separated from the intention. If the intention is to provide an explanation of nature, then an approach which takes us in the opposite direction, despite all that is gained along the way is surely anti-science conducted in the name of science. Alternatively, a path with allows us to connect with nature

– towards complexity, interconnectedness, and a-causality - requires science to let go of some of the need for certainty and the dogmatic aspiration of (naïve) objectivity.

The central argument presented in this chapter is that a human science does not have to choose between objectivity and subjectivity. Human science *should* be predicated based on a meaningful union of both, viewing them as complementary rather than conflicting in nature. Furthermore, in order for any form of human science to be considered rigorous and therefore legitimate, systematic engagement with epistemology is required. What is proposed is that subjectivity (in the form of individual reflection, intuition, judgment and insight) is an acceptable and possibly the only basis on which to evaluate the legitimacy and value of "objective" knowledge concerning the human subject. In this respect, the extent to which knowledge is derived via objective means is not a meaningful basis on which to judge its objective validity. Likewise, "subjective" knowledge belongs solely to mysticism as long as there is no objective basis for accountability. However, such accountability does not have to be limited to quantification or statistical inference.

The following extended quote by Russell (1912) perhaps best summarises the task and purpose of a truly all-encompassing human science:

> The true philosophic contemplation…finds its satisfaction in every enlargement of the not-Self, in everything that magnifies the objects contemplated, and thereby the subject contemplating. Everything, in contemplation, that is personal or private, everything that depends on habit, self-interest, or desire, distorts the object, and hence impairs the union which the intellect seeks. By thus making a barrier between subject and object, such personal and private things become a prison to the intellect. The free intellect will see as God might see, without a *here* and *now*, without hopes and fears, without the trammels of customary beliefs and traditional prejudices, calmly, dispassionately, in the sole and exclusive desire for knowledge – knowledge and impersonal, as purely contemplative, as it is possible for man to attain. Hence also the free intellect will value more the abstract and universal knowledge into which the accidents of private history do not enter, than knowledge brought about by the senses, and dependent, as such knowledge must be, upon exclusive and personal point of view and a body whose sense-organs distort as much as they reveal. (p. 160)

Although Russell (1912) wrote, "all acquisition of knowledge is an enlargement of the self" (p. 158), as the previous quote suggests, he was not advocating a truly personal knowledge. Instead Russell (1912) believed that knowledge "is a form of union of Self and not-Self; like all union, it is impaired by dominion, and therefore by any attempt to force the

universe into conformity with what we find in ourselves" (p.159). Russell was suggesting that we set unnecessary and unhelpful limits on our scientific endeavours when we pursue one (i.e., subjectivity or objectivity) at the expense of the other. Therefore, as well as subjectivity offering the necessary critical counterpoint to objectivity, and vice versa, as the basis for a critical epistemology; the epistemology of a human science becomes predicated on any subsequent union of subject and object. The purpose of human science then becomes to explore and articulate the meaning of this union. This was a task undertaken by Jung at the turn of the last century. It is the task of human science to continue in the spirit of Jung's endeavors.

Chapter 3

Towards an analytical sport psychology

> Analytical psychology is fundamentally a natural science, but it is subject far more than any other science to the personal bias of the observer. The psychologist depends therefore in the highest degree upon historical and literary parallels if he wishes to exclude at least the crudest errors in judgment. (Jung, 1995, p. 226)

3.1 **Introduction**

Although Jung, early in his career, openly questioned the possibility of psychology as a science (Jones, 2013), towards the very end of his life, he actively defended the scientific status of his own psychology, despite its lack of conformity to the traditional canons of science (Shamdasani, 2003). Specifically, Jung argued that the scientific credentials of a theory or hypothesis should be based upon careful observation, and its ability to provide explanation and stimulate future work. Jung stopped short of suggesting that the basis for scientific proof in psychology should be the same as for the natural sciences, suggesting that a relative criterion was required due to the trade-off between subjective understanding and objective knowledge (Shamdasani, 2003).

In the spirit that Jung developed his own psychology - in part, based on questioning the possibility of psychology's existence - a central idea developed in the introduction and previous chapter was that the development of psychology as a science cannot be separated from an on-going rationalisation with its epistemological foundations. This close relationship is evident in the observation that the existence of psychology, separate from philosophy, is dependent on "the claim that *properly gathered evidence* can answer questions about the nature of knowledge and experience" (Charles, 2013, p. 141). Given that the basis on which *properly gathered evidence* is assumed is reliant on ones' assumptions about the *nature of knowledge* (i.e. epistemology), the legitimacy of psychology is dependent on giving due attention to the latter. This is why Charles (2013) suggests that the current fragmentation within psychology can only be addressed by revisiting the fundamental questions concerning the nature of knowledge and experience which originally led to the split from philosophy:

> It is time to gather together, marshal our hard-won evidence, and see ourselves once again in terms of the foundational questions of the field. This requires, as a first step, that we understand the current divisions in our field as attempts to answer different parts of the same foundational questions. (p. 141)

As already suggested, serving the dominant epistemology dogmatically and uncritically, inevitably leads to the associated assumptions dictating whether or not the phenomena are legitimate for study, help frame the subsequent observations made, and shape the conclusions drawn. Furthermore, this thesis proposes that in sport psychology, there has been a tendency towards an explicit acceptance of object-subject separation, trust in scientific orthodoxy, and by association, an implicit distrust of individual insight and wisdom. Or to put another way, a belief that the science will allow the subject to speak for itself, rather than trust anyone who might speak on its behalf.

If our science is to be fundamentally shaped by epistemology in this way, then the development of psychological science necessitates the complimentary development of a critical understanding about what constitutes knowledge itself. Without the latter, developments within our science will inevitably correspond with an increasingly acute awareness of the shortcomings of the type of science being conducted. Similarly, Sternberg and Grigorenko (2001), arguing for a unified psychology, suggest that any paradigm can only offer a partial account of the subject under investigation. Unification is dependent on *convergent operations*[22] (Garner, Hake, & Erikson, 1956) between different approaches to overcome the limitations of any given methodology (see Sternberg and Grigorenko, 2001, for a review). In the first part of this chapter, I go further, arguing that the scientific legitimacy of psychology, and by extension sport psychology, as a separate discipline is also dependent and therefore should be predicated on integration and consistency with other branches of science (i.e., *conceptual integration*; Comides, Tooby, & Barkow, 1992).

The contribution that this chapter will make is to reflect on how Jung's analytical psychology, through its union of subject and object, offers one way of reconciling psychology with the idea of a human science. In this respect, an underpinning theme to be developed is the idea that that psychology as a separate discipline will be defined and judged by its attempt at the simultaneous realisation of separation *and* integration with the idea of science. Separation, by

[22] Defined as "the use of multiple methodologies for studying a single psychological phenomenon" (Sternberg and Grigorenko, 2001, p. 1071).

(a) Laying scientific claim to a subject matter that offers no clear subject/object demarcation, and

(b) In the form of an indigenous set of methodologies capable of capturing all the qualities of psychological related phenomena (Giorgi, 2000).

And integration,

(a) With respect to an indigenous philosophy of the psyche consistent with the idea of science, and

(b) In the form of the respective findings serving to unite psychology with other sciences, rather than to isolate.

Whilst the notions of separation and integration provide underpinning themes on which the issue of epistemological rationalisation will be explored, a fully developed consideration of each of the associated propositions goes beyond the scope of this chapter.

Based on the principle of unification it is proposed that ideas and approaches, such as Jung's analytical psychology, which offer the possibility of conceptual integration with other areas of science (e.g., Haule, 2011) should be afforded a more central role in the development of a maturing discipline. However, unification does not just extend to consistency with other scientific disciplines (i.e., *external integration*), but also to the principle of working towards reconciling seemingly disparate approaches within psychology (i.e., *internal integration*), to counter the well documented fragmentation. Indeed, it is likely that one cannot happen without the other. If the spirit of unification offers a guiding principle, even if its absolute realisation is potentially an improbable reality, ideas which offer the possibility of both internal *and* external integration become of primary importance.

In the second part of this chapter, developments in other areas of psychology will be briefly summarised on the basis that they represent an *emergent* common thread, consistent with two ideas fundamental to Jung's analytical psychology (i.e., consciousness~unconsciousness; psyche as a process). It is proposed that these ideas could form part of the foundation for the development of an analytical sport psychology which embraces a more dynamic view of the psyche. In turn, analytical sport psychology can escape the epistemological trap set by objectivist science, and the tendency to represent complex psychological processes in the form of static, objective abstractions[23]. To illustrate this point,

[23] This point will be further developed in the following chapter which explores the implications of Jung's libido theory with respect to a complex phenomenon within sport: momentum.

the consequence of the latter approach is briefly considered with respect to current research on two phenomena within sport psychology: flow and motivation.

In summary, in addition to the principle of subject~object reconciliation proposed in chapter 1, this chapter outlines the following epistemological criteria on which the development of an analytical sport psychology could be based: Separation~integration, consciousness~unconsciousness, and, the psyche as a process).

3.2 **The question of separation**

The origin of psychology as a separate discipline owes much to the need for individuals and institutions to legitimise psychological related phenomena as a valid area for study in their own right (Langenhove, 1995). As a result, "psychology has been far more concerned with being a science than with courageous and self-determining confrontation of its historically constituted subject matter" (Koch, 1961, p. 629). Thus, a truly scientific psychology will have to free itself from the conditions on which it originally sought legitimacy as a separate discipline, before that legitimacy can be claimed. Only when this occurs will psychology as a human science be able to engage in meaningful dialogue with other sciences. This is what Giorgi (2000) means by a "better philosophy of the psyche", one which is not bound by natural science or philosophy.

Schriven (1964) identified three limitations placed on psychology with respect to its ability to develop as a separate discipline. Firstly, rather than viewing psychology as relatively young field, Schriven argued that the study of human behaviour stretches further than any other discipline, and as such will struggle to escape the development of common sense. If psychology does have a youth, it is because, unlike the natural sciences, it cannot claim as yet to have its own universal laws or theories. Secondly, the territory of psychology cannot be considered mutually exclusive of sciences such as biology and genetics, and any complete explanation of behaviour is likely to have to yield to such disciplines. And thirdly, as explored in chapter 2, not all questions pertinent to psychology can be distilled to a finite and discrete number of psychological variables, which in turn leads to the problem of control and prediction (Schriven, 1964).

In the face of these limitations, mainstream psychology has traded off systematic exploration of epistemology in favour of dogmatic adherence to orthodox science, resulting in a vicious circularity between epistemological confusion and attachment to the idea of science (Smith, Harré, & Langenhove, 1995). Similarly, Koch (1961) wrote, "…in its search for scientific respectability, psychology has erected a widely shared epistemology, and a

conceptual language which render virtually impossible the exploration of the content of man in a differentiated way" (p. 630). In summarising Koch's work on the future of psychology, Smith et al. (1995) suggested that given the human component of "doing science", psychology is centrally placed to explore the idea of science beyond the Newtonian scientific paradigm. As such, by leading upon and establishing a new philosophy of science, psychology has the opportunity to not only stake claim to its own separation, but also to be part of the conversation about *what science is*. In turn, psychology as a human science can be integrated with the idea of science, rather than merely be led by it.

For example, since the 1960's a growing number of psychologists have begun to assert the scientific credentials of phenomenology as a tool for acquiring knowledge about the human subject (Wertz, 2014). The emergence of *Interpretative phenomenological analysis* (IPA; e.g., Smith, 1996) acknowledges the central role of *both* the researcher and subject in the appropriation of meaningful psychological data (Smith, Flowers, & Larkin, 2009). IPA, with its foundations in hermeneutics, views reality as being constructed through an interpretivist lens whilst at the same time recognising the potential for intersubjectivity – that (i.e., experience) which is shared between individuals (Smith, Flowers, & Larkin, 2009). Furthermore, hermeneutics, and by extension IPA, recognises that our shared histories go a long way toward shaping our individual experience of the world, thus allowing for the possibility of collective meaning. Similarly, Frias & Monfort (2015) wrote: "Given the nature of the factors that influence our interpretations of reality, interpretations are not subjective, but rather inherited from and largely shaped by the traditions and the context of which we are part" (p. 6). Thus, IPA represents a methodology which is theoretically consistent with analytical psychology, given the recognition it affords to the interrelation between the *objective psyche* (i.e., the collective unconscious/archetypes), and *subjective psyche* (i.e., consciousness/personal unconscious).

In contrast, by continuing to be led by so-called science predicated on subject-object separation - wherein the researcher's insight and wisdom is implicitly viewed as a threat – psychology, I believe, is potentially denying itself the possibility of becoming one. When psychology as a science acknowledges subjectivity and objectivity, yet does not directly address the nature of their relationship to one another, the end result is that its scientific status exists in an existential state similar to that of "the uncanny"; originally described by Jentsch (1906/1997) and elaborated upon by Freud (1919/1999). In characterising Jentsch's position on the uncanny, Freud wrote: "He ascribes the essential factor in the production of feeling of uncanniness to intellectual uncertainty; so that the uncanny would always be that which one

does not know where one is, as it were" (p. 221). As such the uncanny can be seen to represent the no-man's land between what is familiar and unfamiliar, what is subjective and what is objective, and what is science and what is mysticism. Similarly, as outlined in chapter 2, when an epistemology prioritises either objectivity or subjectivity, we are confronted with "the shiftiness, the instability of the entire subjective/objective polarity" (Varela, Thompson, & Rosch, 1991, p. 242).

3.3 **The question of integration**

> The behavioural and social sciences borrowed the idea of hypothesis testing and quantitative methodology from the natural sciences, but unfortunately not the idea of conceptual integration. (Cosmides, Tooby, & Barkow, 1992, p. 4)

At the beginning of the 20th century when Jung began lecturing in psychiatry, the discipline of psychology in general was already in a fragmented state (Robinson, 1986). This was despite those who initially fought to have psychology recognised as a separate discipline at the end of the 19th century conceiving psychology as a unitary endeavour, like that of physics and chemistry. The plethora of divergent psychologies that were emerging, resulted in the question of the need for unity, or at least some form of common language with which to proceed (Shamdasani, 2003). However, this early fragmentation within psychology has left a lasting legacy and has resulted in what many view as not one discipline but an umbrella term for multiple sub-disciplines (Goodwin, 1999). Whilst it could be argued that increasing specialisation represents a healthy maturing science, Jung firmly believed that establishing a basis on which psychology could be unified within, and with other sciences was of central importance for the attainment of scientific status (Shamdasani, 2003).

Kuhn (1996) clearly outlines the characteristics of a discipline when it is still maturing. For example, in the pre-paradigm stage the accumulation of "facts" occurs with no clear basis on which to assess the scientific importance of any given contribution. Such activity does not represent science but rather what James (1892) referred to as "the hope of science" (p. 468). When a synthesis emerges attracting a critical number of followers, *normal science* can commence:

> Mopping-up operations are what engage most scientists throughout their careers. They constitute what I am here calling normal science. Closely examined…that enterprise seems an attempt to force nature into the preformed and relatively inflexible box that

> the paradigm supplies. No part of the aim of normal science is to call forth new sorts of phenomena; indeed those that will not fit the box are often not seen at all. (Kuhn, 1996, p. 24)

According to Kuhn (1996) normal science is not interested in genuine discovery and will typically dismiss phenomena which cannot be accounted for by the dominant epistemology, as not being a legitimate subject for scientific study. Polanyi (1958) referred to this aspect of science as *destructive analysis*, and as he points out, it can serve an important function to expose irrational and groundless endeavours. Yet

> to deny the feasibility of something that is alleged to have been done or the possibility of an event that is supposed to have been observed, merely because we cannot understand in terms of our hitherto accepted framework how it could have been done or could have happened, may often result in explaining away quite genuine practices or experiences. (Polanyi, 1958, p. 51)

As these quotes suggest, science runs the risk of overlooking important areas for study if one blindly and without question adheres to the pervasive means of doing science (i.e., scientism). Furthermore, the explanatory power of any theory is ultimately bound by the limitations in the underlying epistemology, as a basis on which to uncover empirical reality. For example, as explored in the previous chapter, theory (i.e., catastrophe theory [Fazey & Hardy, 1988]) developed on the epistemological assumption that performance in sport can be reduced down to a finite number of psychological variables (i.e., epistemological reductionism) is ultimately limited by the assumption that reductionism can meaningfully applied to complex sporting phenomena (Balague, Torrents, Hristovski, Davids, & Araújo, 2013). By not questioning the underlying epistemology, unwarranted longevity is afforded to such theories in the absence of a coherent critique. Up until recently, a lack of deeper critical review appeared systemic within the discipline of sport psychology and has not been helped by the fact that undergraduate textbooks typically offer only cursory consideration of epistemology, if at all. This seems to have happened under the, I believe, mistaken assumption that the accumulation of facts rather than the critical process, is the primary basis on which to do science. The end result of which has been many false starts.

As well as the need to explore alternative epistemologies, this chapter proposes that an additional benchmark of any endeavour resulting from new philosophy of the psyche will be the extent to which it offers the possibility of connections with other branches of science. This has been referred to as the principle of *conceptual integration,* which requires all disciplines within the human sciences to be *mutually consistent*, as well as to be consistent with the natural

sciences (Comides, Tooby, & Barkow, 1992). Although the natural sciences contain many seemingly disparate disciplines, this has not resulted in disintegration and incoherence with regards to the underpinning laws. On the contrary, these "disciplines are becoming integrated into an increasingly seamless system of interconnected knowledge and remain nominally separated more out of educational convenience and institutional inertia than because of any genuine raptures in the underlying unity of the achieved knowledge" (Tooby & Cosmides, 1992, p. 19). Furthermore, the objective importance of any theory is also dependent on its ability to extend beyond the realm in which it is conceived (Polanyi, 1958). To illustrate this point, Polanyi (1958) uses the example of Copernican theory, which not only removed the earth from the centre of the universe, but also inspired Kepler's discoveries on planetary motion and Newton's subsequent work on gravitation. As such, the legitimacy in any scientific discovery extends beyond its appeal to objectivity, to include the possibilities it creates for further scientific work.

In contrast, in psychology the issue of fragmentation and lack of unity is an enduring concern. Koch (1961) argued that the primary task of psychology to *be* the basis on which science and the humanities are unified. However, writing over 30 years later, Koch questioned whether it is possible for psychology to be coherent and integrated, based on developments within the discipline to date (Koch, 1993). On this point I subscribe to the view that whilst specialisation is necessary to allow for the diversity of interests to be recognised, the associated risk of fragmentation needs to be countered by grounds for integration being actively explored. The latter should be a defining feature of the maturing discipline, and in itself recognises that the purpose of a psychology as a distinct discipline transcends personal interest and specialism.

Although in themselves, many cornerstones of the scientific method (e.g., subject-object seperation) would not be compatible, the natural sciences provide important guiding principles which do not compromise the development of a robust and authentic scientific paradigm for psychology. Judging work based on its potential for conceptual integration and the extent to which it scaffolds future discoveries, are two possible hallmarks, and could provide part of the basis on which to establish a more suitable epistemology.

Whether such interconnected knowledge is possible for all the human sciences appears to be a distant dream given the inherent personal component of knowledge and knowing (Polyani, 1958). This matter is further complicated by the possibility that unlike the natural sciences, arguably there is ultimately nothing fundamental to discover (Schriven, 1964), and the view that knowledge should be viewed as a process, thus not lending itself to *a priori* forms (Piaget, 1972).

Using Polanyi's idea of *tacit knowledge*[24] as a guide, Martens (1987) suggested that as an alternative to orthodox science, a *heuristic* paradigm should be adopted within sport psychology, embracing idiographic approaches and experiential knowledge, and placing the scientist at the centre of the *process of knowing*. Martens (1987) alludes to the need for synthesis between research and knowledge but stops short of offering how an idiographic approach and the associated methods would allow for a union of subject and object. Writing more generally, Langenhove (1995) observed that despite being largely submerged in the methods of the natural sciences, psychology in places has not lost connection with the *model of hermeneutics*, which suggests that psychological insight into qualities such as intentionality and meaning can be gained from the analysis and interpretation of another person's written word:

> …the natural sciences model is aimed at seeking causality, favours quantitative forms of analysis in so-called 'extensive designs' that generate universal knowledge, and is related to a positivist philosophy of science. The hermeneutic model is aimed at the search for meaning, favours qualitative analysis that generate knowledge of particulars, and is related to non-positivist philosophies of science. (Langenhove, 1995, p. 15)

I do not disagree with the value of learning from others' experience, focusing on the individual, and carefully analysing the meaning of any respective qualitative data. However as explored in the previous chapter, I believe that a human science is setting unnecessary and unhelpful limits if (a) an epistemological choice is assumed to be necessary, between so-called subjective or objective knowledge, and (b) too much emphasis is placed on the importance of collecting empirical data at the expense of personal insight. A better philosophy of the psyche *will require intuition, judgment and insight to play more a central role*. Historically, these skills are more likely to be associated with philosophers, writers and artists, and as already identified the study of the psyche did not start with the formation of psychology as a distinct discipline, but dates back to the beginning of human history. Concerning the neglect of history in this respect Collingwood (1972) writes:

> To regard [psychology] as rising above the sphere of history, and establishing the permanent and unchanging laws of human nature, is therefore possible only to a person

[24] Tacit knowledge refers to the personal dimension to knowledge and its acquisition. In contrast to the doctrine of objectivity, Martens (1987) describes tacit knowledge as our *subsidiary awareness* or *intuition*, which allows the person to organize and integrate information into wholes (i.e., knowledge).

> who mistakes the transient conditions of a certain historical age for the permanent conditions of human life. (p. 224)

Thus, to avoid becoming merely a legacy of our scientific age and reflecting the current cultural epoch, psychology will need to embrace its *historically constituted subject matter*. Psychological questions that are pertinent today often have precedence in centuries of received wisdom and ideas. The answers to these questions are likely to be limited as long as we seek answers within a pre-existing notion of science and overlook the lessons from history (Robinson, 1986). Given Jung's vision for psychology to be the discipline with which to unite all the sciences, Jung sought inspiration and precedent from all areas of human endeavour (Shamdasani, 2003). For example, with respect to one of his most well-known contributions, the collective unconscious, Jung famously looked for and referred to common elements within mythology and comparative religion as evidence of shared pre-dispositions within the psyche (Stevens, 1990). As well as looking backwards, there is value in how ideas, psychologically based or otherwise, offer the possibility of connections with other branches of science, and thus allow for future conceptual integration. Stevens (1990) wrote that for an idea to become established, first it has to be *conceivable*, then *topical*, and finally *effective* if it stands the test in time. For Jung these shared pre-dispositions were represented in the form of *archetypes*[25] which find expression irrespective of time and place. Although this scheme in itself does not represent a valid criterion for doing science, transcending the conditions of time and place in which an idea develops could be one important criterion for judging the fruits of a human science (Polyani, 1958). That is, it might allude to some form of objective truth rather than solely reflect subjective bias. What will be explored in the following section is how some of Jung's personal insights are now clearly evident in recent developments in psychology and cognitive science.

3.4 **Unconsciousness~consciousness**

> Freud's original idea of the unconscious was that it was a sort of receptacle or storehouse for repressed material, infantile wishes, and the like. But the unconscious is far more than that: it is the basis and precondition of all consciousness. (Jung, 1966b, p. 34)

[25] "It seems to me that their origin can only be explained by assuming them to be deposits of the constantly repeated experiences of humanity" (Jung, 1966a, p.69).

> …a philosophical opponent of the unconscious makes the very illuminating remark: "Once this be admitted, one finds oneself at the mercy of all manner of hypotheses concerning unconscious life, hypothesis which cannot be controlled by observation." It is evident that this thinker is not out to recognise the facts, but that for him the fear of running into difficulties is decisive. (Jung, 1960, p.163-164)

The idea that we misattribute conscious thought as the primary cause of decision-making, and by association behaviour, has received considerable support in the psychology literature (see Wegner & Wheatley, 1999, for a review). In a challenge to Humean causality, Wegner and Wheatley (1999) conclude that "the real causal mechanisms underlying behavior are never present in consciousness. Rather, the engines of causation are unconscious mechanisms of mind. Much of the recent research suggesting a fundamental role for automatic processes in everyday behavior" (p. 490). Furthermore, the question of causation is further complicated by the fact that research since the 1940's has demonstrated that from soon after birth, onwards, in order to produce mental schemas, we have a tendency to seek and assume linear causal associations based on limited evidence (Kahneman, 2011).

The unconscious was famously introduced into psychology by the psychoanalytic movement, but the idea that the unconscious functions as a complimentary counterpoint to consciousness is a central tenet of Jung's analytical psychology and presents an important point of departure from the work of Freud. Although the unconscious itself is increasingly been recognised by psychologists as playing a central role in cognitive processes (e.g., Hassin, Uleman, & Bargh, 2005; Kihlstrom, 1987; Western, 1998), the relationship between conscious and unconscious processes as a basis for thought and behaviour has been neglected until only recently (Baumeister & Bargh, 2014). The primacy of the unconscious, or non-conscious systems, in this relationship is now being increasingly recognised. Indeed, in a recent review, Oakley and Halligan (2017) concluded:

> The proper focus for both research and theory going forward is those neuro-psychological processes that underlie the personal narrative, which represents a continuously updated, self-related, meaningful, and selective account of on-going activity created by and within non-conscious systems. (p.13)

Despite this recent growth in interest, a review of the literature for this chapter suggests that psychoanalytic ideas, and in particular those developed by Jung, are rarely cited in articles concerning conscious and unconscious processes. It seems, historically speaking at least,

psychodynamic thought has not been seen to be compatible with the "cognitive revolution". Reflecting a similar theme, Robins, Craik and Gosling (1994) reported that in the four leading general psychology journals, on average psychoanalytic articles were cited a mere 0.015 times per year (see Robins & Craik, 1994); which led the authors to conclude in 1999 that "psychoanalytic research has been virtually ignored by mainstream scientific psychology over the past several decades" (Robins, Gosling, and Craik, 1999, p. 117) . Rather than being merely marginalised however, Bornstein (2005) suggests that psychoanalytic ideas have not gone away, having been unwittingly adopted and reframed to suit the sensibilities of cognitive psychology. An example of which is unconscious memory, now referred to as implicit memory (Schacter, 1987).

In the past 30 years there has been a clear repackaging of the unconscious in the language of cognitive science, and more recently a convergence of opinion suggesting that conscious and unconscious processes *both* play a role in cognitive functioning (e.g., Bargh, 2011; Cleeremans, 2014; Dijksterhuis, & Aarts, 2010)[26]. What follows are 5 examples of different work, all concerned with the dynamic interplay between conscious and unconscious processes in psychological functioning; much of which has clear resonance with Jung's own theorising. Whilst not exhaustive, the examples demonstrate the potential importance of understanding this relationship for different domains within psychology, including sport psychology.

Neuroscientist David Eagleman has outlined the idea of a "dual process brain" described by psychologists:

> In this view, the brain contains two separate systems: one is fast, automatic, and below the surface of conscious awareness, while the other is slow, cognitive, and conscious. The first system can be labeled automatic, implicit, heuristic, intuitive, holistic, reactive, and impulsive, while the second system is cognitive, systematic, explicit, analytic, rule based, and reflective. These two processes are always battling it out. (Eagleman, 2011, p. 109)

Eagleman's view is based on extensive experimental work on neurological activity associated with cognitive functioning, and which represents a collaboration "with thousands of scientists and historians over the course of centuries" (2011, p. 228). Interestingly, rather than viewing the brain as a system of parts acting in coordinated flow; Eagleman views brain activity based

[26] See Masters (2012) for a literature review of the role of conscious and unconscious processes, and their hypothesised impact on learning and performance.

on conflict between completing agents, "a team of rivals" (2011, p.109), inevitably leading to variability or *oscillations* in an attempt to satisfy our multiple selves. Indeed, the notion of oscillation, or a coordinated biological rhythm, is recognised as an important unifying principle for different disciplines interested in the study of complexity and represents a key defining feature of a complex system (Stogatz, 2003).

Similarly, the eminent psychologist Daniel Kahneman (2011) has given a detailed exposition on the idea of an unconscious[27] *system 1* (which "operates automatically and quickly, with little or no effort and no sense of voluntary control" [p. 20]) and conscious *system 2* (which "allocates attention to the effortful mental activities that demand it" [p. 21]) building upon years of work by the author and his collaborators. Both system 1 and 2 serve a purpose in tasks requiring quick intuitive judgments or more deliberate attention respectively. Yet rather than always function in harmony with one another, conflict between the two is a defining feature, given that one is the negation of the other (Kahneman, 2011).

Dijksterhuis and Nordgren (2006) introduced *Unconscious Thought Theory* which "*proposes* that there are two modes of thought, conscious and unconscious" (*My italics*; Nordgren et al., 2011, p. 509), able to influence judgment and the decision-making process. According to the theory, conscious thoughts are more likely to be rule based, suitable for logical decision making (Nordgren & Dijksterhuis, 2009), and unconscious thoughts are considered effective in organising different sources of information (Dijksterhuis et al., 2006).

Research into the effect of attentional focus on motor performance has consistently shown that an external focus of attention is superior to an internal focus of attention (Kal, Kamp, & Houdijk, 2013; Marchant, 2008) as predicted by the *constrained action hypothesis* (Wulf, McNevin, & Shea, 2001). The hypothesis suggests that this is due to an external focus reducing the conscious control over movement control processes, thus allowing for increased automated and reflexive control. Thus, efficient motor performance is said to be dependent on unconscious processes overriding conscious control.

Similarly, peak experiences in sport, as described by *flow* (Csikszentmihalyi, 2002), are associated with automatic functioning and less conscious control over movement (Hayslip, Petrie, MacIntire, & Jones, 2010). Interestingly, although flow states are associated with increased automation, this does not mean an absence of conscious processes altogether. Rather, the nine dimensions of flow, including *complete focus/concentration of the task* and *sense of control* (Csikszentmihalyi, 2002), suggest that conscious and unconscious processes cooperate

[27] My word; Kahneman (2011) avoids using this term.

in facilitating peak performance states. Blackmore (2003) has taken this proposition a step further in suggesting that flow should be considered "as a state in which the distinctions between conscious and unconscious processing disappear" (p. 284).

Taken together, these developments represent an increasing acknowledgement within mainstream psychology concerning the important role of the unconscious. Albeit with a reliance on abstract generalisation (or objective representations) for its elucidation, the prioritising of adherence to paradigm over adherence to nature (i.e., subject), and the assumption of causal relations. Or, to put another way, configuring our understanding of conscious and unconscious in an "attempt to force nature into the preformed and relatively inflexible box that the paradigm supplies" (Kuhn, 1996, p.24).

The repackaging of the unconscious for cognitivist sensibilities in this way exposes the tension (and subsequent trade off) between the desire for scientific objectivity and the possibility of capturing dynamic and complex psychological phenomena. For example, in response to a warning by Bem (1972) that recognising unconscious processes within psychology risks an epistemological abyss, Bargh observed that this view, when originally written, reflected the fact that there were no "objective methods to study unconscious influences" (2011, p. 635). Interestingly, both positions, I think, are scientifically flawed for a similar reason. The former assumes that restricting the subject matter to ensure scientific respectability should be prioritised over lived experience and empirical reality. Specifically, this position assumes that even if one accepts the existence of the unconscious, it cannot be accepted as a legitimate subject for study because it cannot be accounted for by the chosen epistemology. This position is flawed, because the basis for progress and discovery are inevitably bound by the diktats of normal science, as opposed to discovery resulting from challenges to the paradigm (Kuhn, 1996). Similarly, the latter argument is flawed because it implicitly assumes that objective accountability is the only epistemological basis on which to accrue scientific knowledge. At least when the unconscious was generally overlooked by cognitive psychology it was due to a recognition that it didn't readily lend itself to objective study.

The doctrine of objectivity becomes further problematic by the fact that, since the Cartesian separation of mind and body, there has been ongoing speculation and uncertainty to this day about *what consciousness is* (Dennett, 1993; Masters, 2012). If a science struggles to define its subject, it will struggle to integrate the subsequent fruits produced by normal

science[28], with fragmentation an inevitable consequence due to differences in interpretation. Furthermore, as chapter 2 considered, the potency of discovery associated with so-called objective generalisations is also curtailed by their surface, descriptive nature (i.e., *abstract generalisation,* Powers, 1973). Descriptions which

> begin with observations of the visible symptoms of an inner organization and progress outward from the organism and upward into verbal abstraction, going farther and farther from the source of the symptoms and having less and less to say about any one instance of behavior. They represent, in my opinion, at best a temporary measure for improving predictions when en masse predictions are needed, and at worst a mechanism for creating the illusion of understanding. (Powers, 1973, p. 14)

A warning which resonates with the observation made by Varela et al. (1991), that when we overlook the role of experience, in favour of an insistence of subject/object separation, we are left with "the scientific study of ourselves without a subject matter" (p. 13). As a result, as outlined in chapter 2, this form of theory building represents a self-serving surface description of the phenomena, at the expense of meaningful explanation and mechanism (Powers, 1973)[29]. This view has more recently been acknowledged by Swann et al. (2012) concerning the study of *flow*. Recognising that literature to date has focused on descriptive correlates of flow, Swann et al. (2012) suggest that "for knowledge to progress…research should move from such description to explaining flow, and explicitly searching for its underlying causal mechanisms" (p. 818; also see Kimiecik & Stein, 1992).

Humean positivist science, assumes causality based on the regularity of relations between events. However, Sayer (1992) argues that the social sciences have an unsuccessful record at establishing regular, lawful relations, and instead advocates a realist philosophy which seeks to establish the qualitative nature of causal processes, as well as acknowledging irregularity. Furthermore "critical realism", as this position is generally known, maintains the view that reality exists independently of the perceiver (i.e., ontological realism), but rejects the possibility of any form of objective representation resulting from method (i.e., epistemological relativism; Maxwell, 2012).

Albeit at the expense of the maintaining subject and object separation, critical realism therefore provides one basis on which to acknowledge both the subjective and objective quality to lived experience and has been used to justify a "mixed-methods" approach to research.

[28] I am indebted to my director of studies for this observation.

[29] This argument will be developed further in chapter 5.

Specifically, experimental methods provide the opportunity to establish the existence of causal relationships in the form of a *casual description*, whilst non-experimental/qualitative methods provide the opportunity to clarify the *causal explanation* (Shadish, Cook, and Campbell, 2002). In this view, qualitative research is therefore assumed to provide the basis on which any mechanism associated with a causal process can be elucidated. For example, in response to Swann et al.'s (2012) call to focus on explaining flow, Swann et al. (2015) aimed to explore *how* factors, assumed to facilitate flow states, influence the occurrence of flow in elite golfers. Based on a realist ontology, and using a thematic and "connecting analysis" methodology (see Maxwell, 2012), the study identified six "facilitators" (Psychological skills; the caddie; effective practice and preparation; high quality performance; optimal environmental and situational conditions; commitment), with the caddie, and effective preparation and practice reported by participants as having the highest number of connections to the characteristics associated with the experience of flow. In order to consider the possible mechanisms underlying these connections the authors drew upon the narrative accounts of the players, and existing literature into flow. For example, reporting on the connection between the caddie and high confidence, Swann et al. (2015) wrote:

> The caddie was helpful for maintaining the player's confidence throughout the performance which, again, could facilitate flow states. This was especially relevant after setbacks: "You hit a wayward shot, or you just 3 putted…that's where a caddie helps you…he tries to keep your confidence levels up and he's like "next hole, next hole is fine"" (Player 2). Lavallee, Bruce, and Gorely (2004) reported that the role of the caddie included building and maintenance of the player's short-term confidence, and in this way, caddies seem to be important for maintaining and maximising flow states. (p.64)

Although, as the quote suggests, the caddie was viewed as an important source of confidence for the player, and therefore a potential facilitator of flow, it is not made clear what mechanism allows this to happen, beyond the hypothesised relationship between confidence and flow. The example provided identifies one contextual scenario in which the caddie might influence a player's confidence, but the mechanism is not clearly evident, and it is not made clear *how* any such mechanism might facilitate flow. Even if one was to assume that the example provided did allude to a mechanism, it would be at the expense of contextual regress. Specifically, speculating on the link between facilitators of flow, characteristics of flow and the existence flow states inevitably risks an *informal fallacy*, because the hypothesised causal relationships is predicated on the assumption that the premises (i.e., [1] the caddie can help improve

confidence, [2] confidence helps facilitate flow states) will support the conclusion (i.e., therefore the caddie can help facilitate flow states). Because the premises in this instance are not necessarily true in all cases, one's ability to extrapolate (in the form of a more general mechanism) beyond the individual and context in which the premises is found to be true, becomes inherently problematic. For example, in a similar study, Jackson (1992) was interested in the antecedent factors associated with flow states experienced by elite figure skaters. Of the five "factors perceived as most important for getting into flow" (p. 170) identified by the study, only "physical readiness" could be viewed as nominally equivalent to a "facilitator" identified by Swann et al. (2015; i.e., effective practice and preparation). This is perhaps not surprising given the inherent differences between golf and figure skating, and in turn reveals the challenge of identifying what Swann et al. (2015) refer to as "consistent connections which underlie flow occurrences across settings" (p. 66). Thus, it would appear that attempting to extrapolate, or find "consistent connections", based on pre-defined abstract generalisations is likely to fail, not least due to the role of contextual variables. If contextual variables provide the "rock", the "hard place" could be the suggestion that in instances where stable connections are assumed between two events (i.e., confidence is positively associated with positive affect [Vealey & Chase, 2008][30]), such normative propositions are typically little more than common sense truths, and so do not require empirical testing for their discovery and elucidation (Smedslund, 1991).

Another example of the tension between description and explanation, is provided by a recent series of qualitative studies into motivation in sport by Keegan and colleagues (Keegan, Harwood, Spray, & Lavallee, 2009; Keegan, Harwood, Spray, & Lavallee, 2010, Keegan, Spray, Harwood, & Lavallee, 2010; Keegan, Harwood, Spray, & Lavallee, 2014). In a critique of the considerable body of quantitative research into the motivational climate in sport, Keegan et al. (2014) observed that the reliance on questionnaires has exposed (a) between–stakeholder variation in the perception of the motivational climate; (b) the reliance on "generalised and abstract perceptions, separated from the reality of what social agents actually do to influence athlete motivation" (p. 98); and (c) the difficulty in comparison between different motivation questionnaires due to issues with standardisation. In recognising that the motivational climate in sport presents itself as a complex phenomenon, Keegan and colleagues have pursued a program of qualitative research to identify what they call the "raw ingredients". The results are highly detailed descriptions of the sources and themes associated with the motivational climate,

[30] The confidence-performance relationship will be considered further in chapter 6.

reflecting the multi-faceted nature of the construct. However, in response to the 28 interviews conducted with elite athletes regarding how coaches, parents and peers are perceived to influence their motivation, Keegan et al. (2014) concluded that

> …there was no discernable one-to-one correspondence between specific behaviours and their impact on motivation. Instead, the findings suggest complex contextual interactions between the immediate behaviours of social agents and the impact on athlete's motivation. If supported, this finding would necessitate *new and novel approaches in future research* in order to facilitate a more advanced understanding of athlete motivation in elite sport. (p. 97; *my italics*)

As proposed in this thesis, our understanding of psychological phenomenon such as flow and motivation will be fundamentally hindered, as long as a reductive epistemology with no reconciliation of subject and object is adopted. As long as there is a disconnect between the two, it should be of no surprise that the outcomes of scientific research (i.e., the object) are simply incapable of adequately representing its subject matter. In other words, deriving knowledge through abstract generalisation resulting in "detached, action-independent, highly detailed, [and] static" (Clark, 1997, p. 472) outcomes, is not capable of capturing the essence of such complex and dynamic phenomenon, let alone any underlying mechanism(s). If knowledge is based on its ability to represent a complex process, and as such cannot be adequately theorised in the form of static generalisations, the epistemological basis on which such complexity is captured is of primary scientific concern.

Jung was acutely aware that viewing psychological processes through the lens of positivist science was in itself an act of destruction. Specifically, Jung recognised that if the subject of psychology represents a separate, indigenous domain to the natural sciences, a different means of scientific understanding is required:

> [T]he human psyche is neither a psychiatric nor a physiological problem; it is not a biological problem at all but - precisely – a psychological one. It is a field on its own with its own particular laws. Its nature cannot be deduced from the principles of the other sciences without doing violence to the idiosyncrasy of the psyche…The phenomenology of the psyche contains more than the measurable facts of the natural sciences: it embraces the problem of mind, the father of all science. (Jung, 1966b, p. 17)

Therefore, rather than concede to natural science epistemology, psychology's defining project is to address two fundamentally related projects, namely the nature of human experience and the nature of knowledge (Charles, 2013). Rather than scientific dogma placing limits on what

is possible to study, and permitting the continued destructive analysis of psychological phenomenon, the task is to develop our understanding about what science *can become* in order to allow for human nature to speak for itself. When the failure reflects the assumptions being made (e.g., linear casuality, a-temporality), the solution cannot be found through more of the same or continual refinement of method, but engagement with the foundations on which science is assumed (i.e., ontology and epistemology). This requires a radical re-imagining of what science is, and what there is to study.

3.5 **Jung's psyche as process**

Although it is unlikely that any one approach alone is capable of addressing the epistemological challenges associated with a human science, analytical psychology, provides one new and novel basis for sport psychology to reconcile the development of psychological theory with lived experience, and epistemology. In turn it is proposed that, Jung's wholistic, teleological conception of the psyche could make a more prominent contribution to our understanding of established phenomena associated with sport psychology, as well as stimulate future discovery.

Echoing William James's observations on the ephemeral nature of the mind, Jung conceived of the unconscious and consciousness (i.e., psyche), as a dynamic process (Jung, 1995), which therefore cannot be represented as a static entity (Haule, 2011). As such, consciousness and unconsciousness primarily represent a teleological rather than deterministic system, which does not allow for discovery via reduction and abstract generalisation. The mechanism that Jung based the process of the psyche upon was that of individuation, which provides the "theoretical background against which all psychic phenomena are interpreted" (Haule, 2011, p. 83). Namely the inherent tendency of the psyche towards integration of opposing yet complimentary sides of self (i.e., unconsciousness~consciousness) as a means towards wholeness. The individuation process is countered by a psychic tendency towards equilibrium (see chapter 2) – one is both being *and* becoming. Whilst notions of individuation and wholeness might be jarring for psychologists who favour the scientific method, the principle that the psyche represents a purposeful and emergent process has found a voice in several areas of psychology and related disciplines:

- Maslow (1968) thesis on the psychology of being and becoming assumes *a priori* the tendency towards growth as a counterpoint to homeostatic self-regulation. In his early work on motivation, Maslow (1943) adopted the term self-actualisation from *organismic theory* (Goldstein, 1939) to capture the tendency or desire "to become more

and more what one idiosyncratically is, to become everything that one is capable of becoming" (Maslow, 1954, p. 46). The *organismic viewpoint,* which regards the person as an organised whole, has been applied in a number of human sciences, including biology. Regarding the development of personality, the organismic approach stresses the defining role of consistency and the tendency towards integration (Roeckelein, 2006).

- Similarly, the eminent biologist Steven Rose argues that organisms exist in a continuous state of being and becoming. Rose (1997) observes that all complex organisms are purposeful and "active players in their own fate" (p. 17), rather than purely homeostatic systems. As such, Rose (1997) proposes the term *homeodynamics* to represent the dynamic interplay between self-regulation and change.

> We need…to be concerned with process, with the paradox of development by which any organism has simultaneously to be and become…and with the continuous interchange between organisms and their environments. (p. 18)

Regarding the dynamic nature of the organism, Rose later asks "Why this ceaseless flux? Why not build bodies like houses: constructed once, altered, maintained and repaired as necessary, but basically unchanging until finally demolished?" (p. 158). The answer, according to Rose, is that the ability to adapt to external variation paradoxically allows the organism to maintain its integrity, and is therefore fundamental to its survival (Rose, 1997).

- Evolutionary psychology, founded as an attempt to make psychology compatible with the natural sciences based on the shared connection to evolution (Haule, 2011), also implicitly acknowledges our existential requirement for being and becoming. Predicated on the synthesis of evolutionary biology and our understanding of the architecture of the mind, evolutionary psychology posits that (a) universality in human nature primarily extends to evolved psychological mechanisms; (b) such mechanisms are viewed as adaptations which bestow evolutionary advantage; and (c) the evolved architecture of the mind is a product of the pre-historic hunter-gather world (Cosmides, Tooby, & Barkow, 1992).[31]

[31] See Haule (2011) for an excellent review of how Jung's conception of the psyche is compatible with many recent developments within the natural sciences and the theory of evolution.

- Self-determination theory (SDT; Deci, & Ryan, 1985; Ryan & Deci, 2000) has attracted a significant following from researchers interested in the study of motivation in sport and exercise environments (Hagger & Chatzisarantis, 2007). Albeit framed in the language of humanistic psychology and empirical science, SDT has striking similarities with Jung's notion of the individuation process:

  > SDT is an approach to human motivation and personality that uses traditional empirical methods while employing an organismic metatheory that highlights the importance of humans evolved inner resources for personality development…Thus, its arena is the investigation of people's inherent growth tendencies and innate psychological needs that are the basis for their self-motivation and personality integration. (Ryan & Deci, 2000, p. 68)

  As such, SDT is an attempt to reconcile humanistic and psychodynamic theories, with behavioural and cognitive approaches to psychology (Ryan & Deci, 2002). A combination which appears to represent a zeitgeist for our current theoretical understanding of motivation in sport.
- Sport psychology's interest in performance is concerned with understanding both *actual* performance (e.g., why an athlete performed poorly) and *potential* performance (e.g., what can be done to allow an athlete to fulfill their potential). Rather than actual and potential performance representing separate notions, Culbertson (2005) suggests that an athlete represents both actuality and potentiality; or, using the terminology appropriated from Sartre: *facticity* and *transcendence*. The totality of an athlete requires an understanding of their being (i.e., facticity) and what they are capable of (i.e., transcendence); and, more importantly, their interdependence (i.e., facticity~transcendence).

In addition to the assumption of the innate tendency towards growth, the notion of the wholeness has found a clear voice in the sport psychology literature. Specifically, the idea that performance is not merely a function of the athlete, but also the whole person. On the one hand, it has been shown that for managing multiple roles (i.e., mother, husband, student etc.) presents significant challenges for athletes (e.g., Gledhill & Harwood, 2015; O'Neil, Allen, & Calder, 2013). On the other hand, many sport psychologists have suggested that a close relationship exists between athletes sporting and non-sporting domains. In charting sport psychology's historical focus on developing "performance excellence", Miller & Kerr (2002) identified a philosophical shift in the 1990's towards acknowledging the personal dimension associated which athletic endeavours. Miller and Kerr (2002) suggested that sport psychology needs to

adopt a philosophy wherein "sport itself is conceptualized as an experience where personal excellence occurs alongside performance excellence" (p. 145). The importance of nurturing a "dual career" (i.e., an athletic career together with non-sporting activity, such as education and personal relationships) have received recent support. For example, based on semi-structured interviews with retired elite athletes from a range of sports, Debois, Ledon, and Wylleman (2015) explored the effect of non-sporting developmental domains on athletic development through the lifespan. Athletes reported close reciprocal links between their sporting and non-sporting domain (both facilitative and constraining) throughout the lifespan of an athletic career. All athletes where picked for the study based on having a long and successful sporting career, with the researchers concluding that the associated good and bad periods were "indivisible from other concurrent domains of life development" (Debois et al., 2015, p. 15)[32]. It is perhaps not surprising therefore that a number of sport psychologists report the value of adopting a "holistic" approach to consultancy, recognising the reciprocal links between sporting performance and non-sporting domains (e.g., Andersen, 2009; Bond, 2002; Gardner & Moore, 2006; Nesti, 2004; Friesen & Orlick, 2010; Miller & Kerr, 2002; Ravizza, 2002; Tod & Bond, 2010).

Furthermore, if the performance is viewed as a subset and function of the whole person, all that constitutes the latter is of primary concern for a more complete understanding of performance itself. As well as mapping the potential contextual factors that mediate between the person and the performance, there is an evident need to explore psychologies which offer a potential basis on which the intrapersonal level and sporting performance are related to one another[33]. It is one thing to say that there is a relationship between performance and the person. It is a wholly different task to outline the psychological basis on which the two are inseparable. The latter requires the prioritisation of a more complete understanding of the psyche itself, one which seeks to recognise its totality (i.e., conscious *and* unconscious processes), in order to offer the possibility of identifying more general mechanisms underlying the person-performance relationship. Furthermore, if the function of performance represents something greater than the needs of the athlete (i.e., the needs of the person in the form of the individuation

[32] Similar findings have also been reported in a study by Tekavc, Wylleman, and Erpič (2015) concerning elite swimmers and basketball players.

[33] A Jungian account of the relationship between the intrapersonal level and sporting performance will be considered in chapters 4 and 8.

process), then performance itself has to be viewed as part of a wider process occurring within the psyche, not solely bound and serving the demands of the sport.

As such, I believe that in addition to an unhelpful reliance on the epistemology and methods of the natural sciences, a general neglect of depth psychologies, which includes Jung's analytical psychology, in the development of theory in sport psychology has resulted in a clear deficit in our understanding of the *intrapersonal dimension* of performance. Ironically, as long as we continue to adopt the epistemological principles of nomothetic (normal) science, we are likely to be continually confronted with increasingly ideographic contextual outcomes. The subject (i.e., psyche) will not conform to the *preformed and relatively inflexible box*, as long as the totality of the psyche (i.e., Unconsciousness~consciousness) conceived as a process does not form the basis for our discoveries. Thus, what is proposed is that the development of an analytical sport psychology presents one basis on which to explore the underpinning basis for the dialectical relationship between personal excellence and performance excellence.

3.6 **Conclusions**

In addition to the idea of subject~object complementarity introduced in the previous chapter, the first part of this chapter explored another epistemological basis for an analytical sport psychology. Namely, the proposition that an analytical sport psychology ought to be guided by the complimentary principles of *separation,* from scientific orthodoxy (i.e., positivism), and *integration,* with the idea of science (e.g., conceptual integration). In light of this, the second half of this chapter identified emergent threads within psychology and associated disciplines which are consistent with two theoretical contributions made by analytical psychology: (1) A dynamic psyche regulated by the complementarity of opposites (i.e., consciousness~unconsciousness), and (2) the view that the psyche operates as a process (i.e., being~becoming), and so cannot meaningfully be accounted for based on static objective representations. Furthermore, limitations associated with attempting to capture psychological processes in sport based on the latter (i.e., abstract generalisations) were briefly considered with respect to two phenomena within sport: flow and motivation.

With respect to sport psychology, this position would suggest that an understanding of the psychological basis for performance necessitates a fuller understanding of psychic functioning itself. Performance is viewed as representing *part of a bigger psychological process*, rather than merely an end in itself. Whilst the notion that other aspects of an athlete's life will have an impact on performance is already recognised in the literature (i.e., dual career), the theoretical implications of this position have yet to be fully realised. Specifically, because

if performance is viewed, in part, as a function of the person, then an understanding of performance necessitates an understanding of the nature of the intra-psychic world. What is being proposed is that an analytical sport psychology offers one additional basis on which to explore the intra-psychic world, and by extension the relationship between person and athlete based on a more dynamic conceptualisation of the psyche.

In the previous chapter it was proposed that the development of a mature psychology, and by extension sport psychology, necessitates a more active rationalisation of lived experience and epistemology, subject and object. By acknowledging the unique position of the psyche as both the object *and* subject of study (Jung, 1969b), Jung knew that its path towards becoming a science was not clear-cut, Yet, rather than shirk the unique challenge associated with psychology's subject matter, Jung's psychology embraced it; and in doing so questioned scientific orthodoxy rather than being led by it.

Recognising whether or not the inner dynamic structure of the psyche can be captured scientifically, perhaps goes to the heart of the argument concerning the legitimacy of analytical psychology as one basis on which to construct scientific knowledge. To concede that the psyche represents a holistic, complex and dynamic process is, in itself, to suggest that change is the only constant. Should we concede that such subject matter does not lend itself readily to orthodox scientific analysis and therefore give up on the hope of a science? Or should we stay faithful to what the subject is and challenge our science to find the most appropriate epistemological basis for its representation?

As a behavioural scientist, Jones (2013) echoes the doubts Jung had regarding the seemingly non-scientific basis on which his analytical psychology was developed and suggests that his legacy be best judged based on the applicability rather than its scientific credentials. I agree with the central importance of applicability and conceptual integration but disagree with the implication that the idea of science, which emphasises subject/object separation, isolation, control and prediction, is the gold if not defining standard for doing human science. I recognise the apparent contradiction between Jung's search for the organisation of the psyche, and his understanding that "this inner structure is in constant flux like the proverbial river" (Jones, 2013, p. 412). However, I concur with Smith et al. (1995) that the notion of science, within the human sciences, cannot be based on "the limited and static premises of a Newtonian scientific paradigm" (p.2). For a truly human science, the conversation between subject and method would require the latter to recognise all aspects of the phenemona (Giorgi, 2000); including the role of the unconscious and the psyche as a process rather than a static entity. The alternative is the veneer of science which masks a continued *destructive analysis* of the subject.

Through my lived experience, I subscribe to the view of the psyche as a system engaged in a continual process of dynamic self-organisation[34] *and* emergent, adaptive change – being and becoming - which in turn can manifest itself in a multitude of ways. In the work of Jung, I have found a voice for this view, and in his approach I recognise what I consider to be an authentic attempt at representing the psyche for what it is, rather than be restricted to what scientific orthodoxy allows us to see.

Clearly, scientific consensus cannot be predicated solely on individual judgment and insight of one or a few people. The question therefore becomes, on what basis should such a consensus be arrived upon? If it is accountability and faith in the methods, then one has to ask, to what are the methods accountable? As proposed in the previous chapter, accountability should extend to the subject - the extent to which the methods are capable of capturing its true nature – and not just to the hope of a science. As proposed in this chapter, such scientific accountability should in part be tied to the extent to which individual judgment and insight is consistent with future work, and in turn promotes conceptual integration (Polanyi, 1958).

Underpinning this new approach is idea that the development of legitimate knowledge within sport psychology cannot be restricted to serving the dominant epistemology, with its tendency for subject and object separation, and the conflation of derivative developments with discovery. Instead, analytical sport psychology necessitates knowledge to be based on a commitment to a critical ongoing rationalisation of theory with epistemology and lived experience. An increased appreciation of epistemology, in order to improve the quality of methodological and theoretical developments within the sport sciences is not a new idea (e.g., Mcfee, 2010). What is being proposed in this thesis is that the development of robust psychological science requires a dialogue with epistemology to be placed at its heart. From this perspective, so-called discovery is not an end in itself but just another step in this process.

Viewing performance as only one part of an ongoing psychological process (i.e., being~becoming; individuation) suggests that constructs such as flow, anxiety, confidence, and motivation, cannot be meaningfully understood in isolation, and represented as static cognitivist states. Rather, their elucidation is dependent on situating such constructs in relation to the superordinate processes to which they belong. In addition to the brief consideration of current work into motivation and flow in this chapter, the remaining chapters will begin to

[34] This notion will be explored further in chapter 6 ('The psychology of performance variation in sport: correction theory').

explore in more depth the implications of the epistemological and theoretical position outlined in chapters 2 and 3 with respect to the development of an analytical sport psychology,

In order to demonstrate how Jung's dynamic view of the psyche offers an original perspective on established psychological phenomena, the next chapter will examine the implications of libido theory (Jung, 1960) with respect to momentum, a poorly understood phenomenon in sport (Crust & Nesti, 2006). The chapter will begin by considering how limitations in the theoretical accounts of this phenomenon are primarily a function of the underpinning epistemological assumptions made (e.g., linear causality), which fail to capture the nature of a dynamic and complex phenomenon. In contrast, the Jungian account of momentum in sport outlined is based on the epistemological criteria outlined in these first two chapters (i.e., subject~object, consciousness~unconsciousness, psyche as a process). Whilst a number of different phenomena currently being discussed in the sport psychology literature would be suitable for such consideration, momentum was chosen primarily because it offers a clear example of how the development of theory is a function of, and limited by, the epistemological assumptions made.

Chapter 4

The psychology of momentum in sports: A Jungian analysis

The way up and the way down are one and the same. (Heraclitus)

4.1 Introduction

Despite Martens (1987) call to look beyond the dominance of positivism within sport psychology, Whaley and Krane (2011) argue that the field has since moved little in this respect. In part, this could be due to the observation that Martens call was largely interpreted by the sport psychology community as a methodological, rather than epistemological challenge (Dewar and Horn, 1992). Dewar and Horn (1992) suggested that alternative epistemologies were needed to counter what has more recently been referred to by Stelter (2005) as a "a theoretical and methodological monoculture, which is still too dominant in our field" (p. 15).

Given the privileged position afforded to positivism and post-positivism within sport psychology as the gold standard for doing science (Whaley and Krane, 2011), the reliance on quantifying subjective cognitive processes creates "a false dichotomy between quantitative and qualitative approaches in psychological research" (Brustrad, 2008, p. 35). False, because any understanding of so-called objective quantitative data, ultimately relies on subjective interpretation (Brustrad, 2008), and the observation that "humans are both the objects and the subjects of inquiry" (Nesti, 2004, p. 56). Nesti (2004) advocates the need to explore alternate approaches with respect to our understanding of psychological phenomenon in sport and suggests that existential phenomenology offers "a middle ground between purely objective and purely subjective approaches" (p. 55). However, beyond the work of Nesti and colleagues (e.g., Nesti, 2004; Ronkainen & Nesti, 2017; Ronkainen, Tikkanen, Littlewood, & Nesti, 2015) on the application of existential phenomenology within sport, a review of the sport psychology literature for this thesis suggests that, to date, there is limited engagement with respect to exploring the relationship between subjectivity and objectivity. The perceived choice between qualitative and quantitative research methods reflects an implicit acceptance of subject and object separation as the basis for good science.

This thesis in part represents a personal frustration with a discipline that adheres to an epistemology still overly influenced by the natural sciences, and largely intent on subject and

object separation. In response, I believe that analytical psychology, originated by Jung, offers a fruitful alternative, and a meaningful basis on which to further explore subject-object reconciliation within sport psychology. Despite the strong historical dominance of positivism and, by association, the cognitive-behavioural paradigm within sport psychology (Nesti, 2004), the discipline has already been influenced and shaped to some extent by other traditions such as Humanistic psychology and Psychoanalytic theory (Hanrahan & Andersen, 2010; Hill, 2001; Poczwardowski, Sherman, & Ravizza, 2004). Theoretical contributions of analytical psychology have also been considered elsewhere within the sport literature[35] (e.g., Beauchamp, Maclachlan, & Lotian, 2005; Stein & Hollwitz, 1994). However, to my knowledge, within European and American academia, the systematic exploration of the implications of analytical psychology, founded on the epistemological considerations outlined in this thesis, has yet to be undertaken within the discipline of sport psychology.

In chapters 2 and 3, part of the epistemological and theoretical foundation for an analytical sport psychology has been briefly considered. Namely:

- An approach based on the complementarity of subject and object (subject~object)
- An approach based on the complementarity of consciousness and unconsciousness (consciousness~unconsciousness)
- An approach wherein the psyche is conceived as a dynamic, teleological process, rather than static entity (being~becoming)

Furthermore, this thesis proposes that these foundations can provide a new basis on which to address the epistemological challenges facing sport psychology. Namely, that human psychology is complex, dynamic, and non-linear, which cannot be adequately captured through objectivist, and static, representation (Clark, 1997; Varela et al., 1991).

In the previous chapter it was proposed that sport psychology, as a maturing science, necessitates the exploration of integration with other disciplines (i.e., *conceptual integration*, Comides, Tooby, & Barkow, 1992), as part of the basis for the establishment of its own domain (i.e., differentiation~integration). Therefore, the value of any new approach is dependent on the contributions made being inclusive and consistent with ideas from other associated disciplines. This consistency cannot be predicated on method alone, particularly if the method is at best, limited in scope, and at worst, unfit for purpose. A further contribution of this thesis

[35] Psychoanalytic theory commonly refers to the Freudian school, whereas analytical psychology commonly refers to the Jungian school (Jacobi, 1962).

is the proposition that a human science (e.g., Giorgi, 1970), based on subject-object reconciliation, requires the appropriation of suitable methods to be balanced with the elevation of value afforded to ideas derived from personal insight, thought and wisdom. Belief in the importance of the human dimension, as a necessary counterpoint to method, is based in part on the recognition that the study of psychological phenomena did not begin with the advent of the discipline (Robinson, 1986; Chung & Hyland. 2012; Walsh, Teo, & Baydala, 2014). Basing the value of personal contributions on the potential for conceptual integration, in turn provides an alternative basis on which to judge so-called objective value.

Whilst Jung's analytical psychology represents a clear epistemological departure from mainstream approaches adopted in sport psychology (i.e., predicated on subject~object reconciliation), many of his central ideas have been shown to be compatible with other associated areas of science (e.g., Haule, 2011). Furthermore, Jung viewed the fault lines between psychology and other areas of science as ultimately arbitrary and unhelpful, and whose own psychology was predicated on the realisation of his dream of moving "towards a synthesis of sciences" (Shamdasani, 2003, p. 17). Because Jung himself sought inspiration from a wide range of disciplines, as well as believing that psychology could be the basis on which all the sciences could be united; to work in his spirit requires that psychological phenomena are considered and explored beyond arbitrary academic borders, rather than being confined and defined by them. In other words, an analytical sport psychology requires that scientific differentiation is in part dependent on conceptual integration, with the conversation between disciplines providing one basis on which to establish and nurture a credible discipline in its own right.

Given the broad scope of the previous two chapters, in which part of the epistemological and theoretical underpinnings of an analytical sport psychology were outlined, this chapter will explore in greater depth the implications of one aspect of Jung's work with respect to a well-established phenomenon in sport – momentum. Specifically, libido theory (Jung, 1960) will be considered as a new basis on which to account for this lived experience which, as will be shown, is poorly understood. As well as representing an important departure from Freud, libido theory has been chosen as it provides the basis for Jung's account of the *process* of the psyche. In order to examine the expediency of this theory for psychological processes in sport, momentum has been chosen because it represents a dynamic and complex phenomenon (e.g., Gernigon, Briki, & Eykens, 2010). Secondly, because a shift towards understanding the psychological basis for performance variation provides a meaningful

departure from the general failure to isolate linear cause and effect relationships between psychological variables and performance itself[36].

Having considered current conceptualisations of momentum in the sport psychology literature, *libido theory,* based on the recent observation that psychological momentum is likely to represent a circular process (Moesch & Apitzsch, 2012), will then be examined as a new basis on which to account for this poorly understood phenomenon. In the final part of this chapter, the broader implications of libido theory will be considered with respect to the relationship between athlete and person.

Although the initial focus of this chapter is to illustrate the efficacy of Jung's ideas for our understanding of complex processes within sport, the rationale for broadening the discussion away from momentum itself is to illustrate how such phenomena, cannot be fully understood from within – i.e., an understanding of the ultimate value of abstract representations cannot be achieved by continued elucidation and refinement of the concepts themselves. Instead, the dynamic conceptualisation of the psyche developed by Jung suggests that momentum, like other abstractions appropriated by sport psychology, represent *part* of a superordinate, teleological process; wherein psychological processes and goals associated with sport ultimately cannot be separated from the process of the psyche itself (i.e., individuation). Thus, the goals of sporting endeavour are assumed to be inextricably linked with other developmental plains, as has been recently suggested by current sport psychology literature into the notion of *dual career* (Wylleman & Lavallee, 2004). Associated themes, such as identity and anxiety, provide a starting point to explore the process of the psyche, and by extension the lived experience of momentum. However, what is being proposed is that by primarily focusing on the nature of the superordinate processes themselves, a new perspective is possible with respect to the lived experience of psychological phenomenon within sport. Thus, as well as the recognition of subject~object, and consciousness~unconsciousness complementarity, a holistic sport psychology requires consideration of the basis for psychic growth (i.e., individuation) to be placed at its heart.

4.2 **Current conceptualisations of momentum in sport**

The perception of momentum in sport is an enduring part of players, coaches and commentators lived experience (Den Hartigh, Van Geert, Van Yperen, Van Yperen, Cox, & Gernigon, 2016), and is frequently associated with winning and losing (Stanimirovic &

[36] The psychology of performance variation will be further explored in chapter 6.

Hanrahan, 2004). Academic interest into momentum in sports spans over thirty years, yet it still remains an elusive phenomenon (Crust & Nesti, 2006; Jones & Harwood, 2008; Moesch & Apitzsch, 2012; Taylor & Demick, 1994). Iso-Ahola & Mobily (1980) defined psychological momentum as, "an added or gained psychological power which changes a person's view of himself or of others" (p. 392), which Adler and Adler (1978) suggested was initiated by "momentum starters", or key moments during a competition. Adler (1981) developed the concept further, stressing its fragility, and recognising the possibility of negative momentum (failure leading to further failure) as well as positive momentum (success leading to further success). More recently, momentum has been described as "an unpredictable and ethereal force" (Taylor & Demick, 1994), and "…the force which dictates the flow of a match…invisible because it comes from the flow of energy between competitors" (Higham, Harwood, & Cale, 2005, p. 5).

Moesch, Bäckström, Gráner & Apitzsch, (2014) identified the development of two distinct approaches to understanding and operationalising momentum in sport: The first has considered the individual psychological responses associated with perceived winning and losing streaks (*psychological momentum*). Specifically, whether athletes attribute the perception of fluctuations in performance to either positive or negative momentum. The perception of momentum is a consistent finding and has been found amongst soccer players (Jones & Harwood, 2008), basketball players (Gilovich, Vallone, & Tversky, 1985), spectators (Burke, Aoyagi, Joyner, & Burke, 2003) and coaches (Moesch & Apitzsch, 2012). The second approach has attempted to provide empirical support for the associated behavioural indicators (*behavioural momentum*); and which operationalises momentum based on the dominance of *reinforces* (e.g., winning, confidence) over *disrupters* (e.g., improved opponent performance; see Moesch et al., 2014).

If success primes the athlete for further success, and failure increases the likelihood of subsequent failure, one would expect to observe long winning and losing streaks over the course of a season (Vergin, 2000). Yet consistent and conclusive empirical support for the momentum-performance relationship has not been forthcoming (Bar-Eli, Avugos, & Raab, 2006; Avugos, Köppen, Czienskowski, Raab, and Bar-Eli 2013). Furthermore, research has shown that the perception of momentum is not significantly associated with its occurrence (Kerrick, Iso-Ahola, & Hatfield, 2000; Miller & Weinberg, 1991). Where behavioural momentum has been identified, low prevalence and short duration has been found (Moesch, Bäckström, Gráner & Apitzsch, 2014). All of which is inconsistent with the theoretical premise

that success, or momentum starters, will lead to further success, theoretically resulting in extended winning streaks beyond that which might be expected by chance.

Early definitions have been criticised for being vague and inadequately operationalised (Stanimirovic & Hanrahan, 2004; Taylor & Demick, 1994). In response, Taylor & Demick (1994) introduced the multi-dimensional model of momentum, which incorporated cognitive components (i.e., self-efficacy, motivation) of psychological momentum. The model assumes that changes in cognitions leads to changes in behaviour, and therefore performance. Thus, cognitions are afforded casual properties which are assumed to influence the ebb and flow of a match. Research (e.g., Stanimirovic & Hanrahan, 2004; Cornelius, Silva, Conroy, & Peterson, 1997) however has shown that whilst success and failure can influence affect and the perception of momentum, as suggested by the multidimensional model (Taylor & Demick, 1996), cognitions were not significant predictors of subsequent performance. This led Cornelius et al. (1997) to suggest that psychological momentum, as conceptualised, merely serves as a labelling process to describe fluctuations in performance around a mean level. A view supported by Gilovich, Vallone, & Tversky (1985) who suggested that there is a tendency to infer a pattern (i.e. a winning streak) in what can ultimately be a random, independent sequence of events.

The failure to provide consistent empirical evidence, based on existing conceptualisations, has led to researchers questioning whether or not psychological momentum is a real phenomenon or a cognitive illusion (Bar-Eli, Avugos, & Raab, 2006; Moesch et al., 2014). Moesch et al. (2014) suggested that the inconsistent and inconclusive nature of evidence surrounding momentum in sports exposes a gap between belief and reality. One has to question however, on what basis is this reality constructed. What will be explored in this chapter is the idea that this failure to find empirical evidence is in part due to the inadequate conceptualisation of momentum in sport based on flawed epistemological assumptions. Specifically, the reliance on abstraction and extrapolation, based within a cognitive-behavioural paradigm, which does not allow for the possibility of *theoretically* capturing the dynamic and complex nature of psychological processes (Clark, 1997; Powers, 1973). Thus making it unsurprising that momentum continues to be recognised as one of the least understood phenomena in sports.

Commenting on the failure to find support for the "hot hand" phenomena – a term to describe the perception in basketball that a string of successful shots makes the player more likely to succeed with the following shot (Gilovich, Vallone, & Tversky, 1985) – Bar-Eli et al. (2006) suggested that the focus on actual or simulated data has been almost entirely at the expense of theoretical developments. Furthermore, given the failure of statistical testing to

adequately detect the phenomenon (Bar-Eli et al., 2006), one is compelled to revisit the underlying epistemological assumptions on which our conceptualisation of psychological momentum is based and to reflect on the value afforded to different forms of empirical evidence, be they statistical or phenomenological in nature (Hales, 1999). In particular, whether the absence of evidence reflects the non-existence of the phenomena, or a fundamental failure in the epistemological assumptions and empirical methods used to reflect athletes, spectators and coaches lived experience. Writing in relation to the hot hand phenomenon in sports, Hales (1999) observed that by "making 'success breeds success' a requirement for having hot hands, the critiques have established a previously undefended and barely articulated account of hot hands, only to demolish it" (p. 85). Instead, Hales (1999) suggested that the failure of the empirical data to verify the *a priori* criteria for its existence does not preclude the possibility that it is a real phenomenon. Rather we are required to explore our assumptions concerning the basis for this lived experience. If the assumption of linear causal relations between events (i.e., success breeds success) falls short in providing a basis for this phenomenon, it is the assumptions themselves which need to be considered.

Thus, the construct of momentum in sport becomes primarily an epistemological concern, given that question of its existence is dependent upon the underpinning assumptions made which provide the criteria for its potential elucidation. Scientific understanding is bound, limited, and therefore shaped by one's epistemological assumptions; which if not critically examined is likely to place destructive limits on the scope of science (i.e., *destructive analysis*, Polanyi, 1958). As such, the importance of asking epistemological, alongside methodological questions (e.g., Crust & Nesti, 2006), becomes essential in order to allow for the opportunity to better understand what is likely to be a complex psychological phenomenon.

An epistemology which defines psychological phenomena as being theoretically static and linear, obeying cause and effect regularity, will inevitably be unable to capture the true nature of dynamic, complex psychological processes (Boker, 2002). With recent research suggesting that psychological momentum has properties associated with nonlinearity[37] (Briki, Den Hartigh, Markman, & Gernigon, 2014; Gernigon, Briki, & Eykens, 2010), it is likely that performance variation, as well as the maintenance of success or failure (i.e., positive

[37] I.e., Associated with fluctuations which do not conform to linear, cause and effect hypothesised relationships. Instead momentum, due to the associated complexity, is assumed to have properties associated with a dynamic system (i.e., emergent behaviour; see Gernigon et al., 2010).

momentum and negative momentum respectively), represent important components of this phenomena. On this basis, psychological momentum cannot represent a fixed state but is likely to be part of a complex dynamic process, which Moesch & Apitzsch (2012) suggested is likely to be circular in nature, not attributable to any single causal mechanism, and thus conclude that future research should reflect this. In the next section I will explore some of the implications of these propositions in relation to Jung's analytical psychology, paying particular attention to his work on the *energetic standpoint* and *libido theory* (Jung, 1960).

4.3 **Libido theory**

> …every process is a phenomenon of energy, and…all energy can only proceed from the tension of opposites. (Jung, 1966a, p. 29)

4.3.1 **Psychic and physical energy**

Jung viewed the psyche (consciousness~unconsciousness) as a system in constant flux, with psychic energy used as a concept to represent and account for the activity that occurs within. Unlike Freud who limited libido to sexuality, for Jung the term libido represented psychic energy in general (Storr, 1998). Jung recognised that the concept of psychic energy is fundamentally different to physical energy - the former, an invention to account conceptually for *relations of movement* in the psyche (Jung, 1960), whereas the latter has a direct relationship with matter. Thus, whilst in physics, energy and matter are equivalent, energy represented to Jung an expedient theoretical basis on which to account for the dynamic nature of psychic activity: "The idea of energy is not a substance moved in space; it is a concept abstracted from relations of movement" (Jung, 1960, p. 4). In other words, rather than conceive of the psyche as static - captured in the form of abstract representations – psychic activity *is* the observation of change that occurs, as symbolically represented by the movement of energy.

The difference between physical energy and psychic energy can also be understood in terms of their epistemological basis. Jacobi (1962) distinguishes between what he calls the *formative principle* of energy in physics (i.e., the laws of thermodynamics which represent immutable premises), and the "a posteriori principle of order" (p. 52; i.e., a concept used to represent experience) which applies to the term *libido*. In other words, despite Jung recognising that psychic energy does not clearly equate to any form of objective truth, the principle offers heuristic value with respect to our understanding of psychological processes. Furthermore, Jung believed that the concept of energy represents an archetype which resides in the collective unconscious (Jung, 1966a, see p. 68) – an idea, the meaning of which transcends time and

place. Despite these differences between physical and psychic energy, Jung believed that there were similarities in the laws which govern them (Robinson, 2005).

4.3.2 **The principle of equivalence**

The energetic standpoint developed by Jung, is based on the conservation of energy, or the principle of equivalence; which states that in a closed system, energy can be transformed, but not destroyed. Unlike the Freudian view wherein the principle of equivalence is evident in relation to concepts such as "repression" and "sublimation", Jung understood it as the basis for psychic transformation and growth (i.e., individuation; Robinson, 2005). Jung viewed the psyche as a "relatively closed system" (Jung, 1960, p. 7), and believed *a posteriori* that psychic energy conformed to this principle. The way the principle of equivalence manifests itself within the psyche can be understood in terms of the tendency towards one-sidedness, which refers to psychic energy being directed towards one half of a pair of opposites at the expense of the other. For example, at any given time, the tendency to express one's masculine side (i.e., animus) at the expense of one's feminine side (i.e., anima).

"Compensation by opposites" (Jung, 1966a p. 54) is a prominent feature of Jung's work, and serves to maintain overall balance within the system. The psyche is thus viewed as a self-regulating system based on the observation that "sooner or later everything runs into its opposite" (Jung, 1966a, p. 72). Furthermore, given that "these opposites, may, in fact, be facets of the same reality" (Storr, 1998, p. 25), one can only deny a complimentary opposite for so long: "Whoever builds up too good a persona for himself naturally has to pay for it with irritability" (Jung, 1966a, p. 193). In sport, just as rest and recovery will be required following an extended period of activity, any extreme state (e.g., peak performance, euphoria), necessitates a counter-state (e.g., non-peak performance, quiet reflection) to maintain the equilibrium of the system[38]. This principle is also evident in the practice of *Periodization* (Bompa & Haff, 2009) used by coaches and athletes to manage the cyclical nature of training prescription.

[38] The regulatory function of opposites in relation to performance variation will be further considered in chapter 6.

Given the necessity of one-sidedness, in the form of an attitude or an adaptation, in order for directed action to occur (Jung, 1960)[39], a tension between one-sidedness and the individuation process (i.e., being~becoming) becomes inevitable: "The point is not conversion into the opposite but conservation of previous values together with recognition of their opposites. Naturally this means conflict and self-division" (Jung, 1966a, p.76).

4.3.3 **Entropy**

The law of entropy provides the complimentary principle to the conservation of energy; both of which Jung based the movement of the libido (Jacobi, 1962; Robinson, 2005). Entropy represents the tendency of complimentary opposites in the system to move towards a state of equilibrium, or balance. Thus, the law of entropy provides the theoretical basis for the movement of energy and the self-regulation of the psyche, given that "[t]ransformations of energy are possible only as a result of differences in intensity" (Jung, 1960, p. 25). Jung theorised that a potential difference between a pair of complimentary opposites (i.e., consciousness~unconsciousness; extraversion~introversion; external~internal) results in a movement of energy based on the *gradient*, or potential difference, between the two (Jacobi, 1962). Rather than end up in a state of absolute entropy, a healthy psyche, conceived as a *relatively* closed system, necessitates the continual engagement with the external world. The complimentary tension between the need for adaption to the external world on the one hand, and "adaptation to the conditions of the inner world" (Jung, 1960, p. 39) on the other (i.e., *Personality No.1*, and *personality No.2* respectively), provides the basis for the continual circular flow of energy[40].

The teleological nature of the energetic standpoint means that a functional or adaptive value of any given part of the process is assumed (i.e., final cause), as well as the belief that such tendencies attributed to these processes constitute part of the essence of the *being-in-itself* (i.e., formative cause) given "the vital need for such adaption" (Jung, 1960, p.39). In the following section, the basis on which this *inner movement* occurs will be considered. With regard to the energetic standpoint, Jung proposed two fundamental concepts, central to his libido theory, which in part account for the dynamic organisation (formative) and adaptive

[39] The paradox of being, associated with the necessity of one-sidedness is beautifully reflected in the following epigraph by Oscar Wilde: "The man who sees both sides of a question, is the man who sees absolutely nothing at all".

[40] Or *life movements* of the libido (Jung, 1960).

nature (final) of the psyche: *Progression* and *regression* (Jung, 1960). What will now be considered is the idea that these terms, as conceptualised, provide an expedient basis on which to capture the *formative* and *final* nature of momentum in sports.

4.3.4 **Progression and Regression**

Jung (1960) defined progression as "a continual process of adaptation to environmental conditions", and regression as "an adaptation to the conditions of the inner world" (p.39). Whereas, progression represents our capacity to accommodate and adapt to our external world, regression "confronts consciousness with the problem of the psyche as opposed to the problem of outward adaptation" (p. 36). By addressing our inner needs, regression provides a necessary energetic counter-pole to progression, thus serving a restorative homeostatic function (Fordham, 1966). Taken together, they represent the dynamic tension between the tendency towards self-organisation or "psychic equilibrium" (i.e., being), *and* the tendency towards growth (i.e., the individuation process; or becoming).

4.3.4.1 **Progression**

According to Jung, progression requires the '(1) attainment of an attitude, [and] (2) completion of adaptation by means of the attitude' (p.32, 1960). From this perspective, *attitude-types* represent an individual's particular response to internal and external experiences (Jacobi, 1962). Jung (1971) identified two attitude-types: *Extroversion,* wherein the individual "lives in a way that is directly correlated with the objective conditions and their demands" (p. 333), and *introversion* wherein the individual "thinks, feels and acts in a way that clearly demonstrates that the subject is the prime motivating factor" (p. 452). Thus, extroversion and introversion represent an individual's tendency to either direct psychic energy towards the external (objective) world or internal (subjective) world respectively.

When the task of sport is defined, in part, by the mastery of an external environment, progress within is predicated on an extroverted attitude type which affords this outward focus. If one assumes that the athlete has the pre-requisite skill, emphasis is placed on the ability to be able to react, and adapt, most effectively to that which is presented to the athlete by the outside world. Progression is therefore made possible, at least initially, by means of an extroverted attitude at the expense of introversion.

When performance is viewed as part of a dynamic process, the value of an attitude, or a so-called optimal psychological state, becomes a function of the adaptive advantage it bestows on a continually changing *fitness landscape* (Kauffman, 1995). Given the dynamic,

complex environments in which most athletes compete, the inevitable transient value of these states makes it very difficult to determine in advance what, at any given time, an optimal strategy might be (Davids & Araújo, 2010). Thus, the prediction and thereby prescription of an optimal strategy (i.e., fitness peak) to be aimed for becomes a relative misnomer, given the need to adapt to the continually changing fitness landscape. From this point of view, psychological states become little more than causal bystanders in a competition for limited resources, wherein optimality is defined by the ongoing interaction between the performer and the environment (Araújo, Davids, and Hristovski, 2006; Davids & Araújo, 2010).

However, Jung suggested that an "attitude" is extraordinarily persistent, whilst at the same time recognising that "…it may easily happen that an attitude can no longer satisfy the demands of adaption because changes have occurred in the environmental conditions which require a different attitude" (Jung, 1960, p.32). For example, a player or team may arrive upon and therefore stick with a winning (macro) strategy, which proves to be successful over successive matches. The dilemma then becomes, for how long should one persist with this strategy given the trade off against the need for subsequent adaptations? Even if one has a successful strategy, in dynamic sporting environments, skilled and successful performance is also predicated on the ability to make continual micro adjustments or adaptations (Jackson & Csikszentmihalyi, 1999; Ravizza, 2002) in response to the changing fitness landscape.

Writing in relation to momentum, Cornelius et al., (1997) observed that "[c]ompetitors will often adjust to opponents extremely good or poor performances. They may change coverage, alter tactics, or increase concentration in reaction to opponents unusually good performance" (p. 483). Similarly:

> Passing the ball to the player that is "hot" is a common strategy endorsed by basketball players. It is also anticipated by the opposing team who can concentrate on guarding the "hot player". If another player, who is less "hot" on that particular day, is equally skilled, then the less guarded player would have a better chance of scoring. Thus the belief in the "hot hand" is not just erroneous, it could also be costly' (Gilovich et al., 1985, p. 313)

The coupling between the athlete and their environment reveals a performance paradox: Whether to stick with a successful strategy in the knowledge that it might lead to short term gains, or twist, knowing that the longer the strategy is maintained the more time your opponents have to adapt and gain competitive advantage.

Early theories of skill acquisition (e.g., Fitts and Posner, 1967) suggest that performance is a function of practice because the latter allows for increasing specialisation or

automation, which in turn bestows competitive advantage[41]. However more recently, theorists have suggested that the relationship between performance and automatic processing is more complex, in part, because skilled performance is dependent on both conscious and unconscious processes. For example, Toner, Montero, and Moran (2015) argue that an over-reliance on automatic processing impairs "performers' ability to react flexibly in dynamically unfolding performance environments" (p. 432). Instead, the authors conclude that "skilled performance requires the dynamic interplay of automatic processing and cognitive control in order to avoid performance errors and to meet the contextually contingent demands that characterise competitive environments in a range of skill domains" (p. 432). Even in sports which involve the execution of closed skills it has been shown that effective performance is still dependent on the need to make continual corrective adjustments. For example, Hauw and Durand (2004) analysed the routines of elite trampolinists, and unsurprisingly found that the quality of the performance was in part dependent on the ability to make temporal adaptations to avoid errors (also see Hauw & Durand, 2007).

Thus, whilst automation provides speed and energy efficiency in the form of efficient neural models of the external world (Eagleman, 2011), in dynamic environments, success requires the ability to adapt which requires flexibility (or plasticity) within our neural circuitry. On this basis there exists a direct trade-off between the speed and efficiency of a mental model, and its ability to be flexible in the face of an ever-changing environment (Kahneman, 2011). Given that automation (allowing for speed and energy efficiency) requires unconscious mental processing (Eagleman, 2015), and flexibility also requires conscious awareness, a dynamic interplay between efficiency and flexibility results (Kahneman, 2011).

Kahneman (2011) wrote that "skill and heuristics are alternative sources of intuitive judgements and choices" (p.11). We oscillate between the two, continually trading one off against the other. We work hard to develop skill associated with successful performance and turn it into a heuristic (for greater efficiency) potentially at the expense of adaptability: "In the economy of action, effort is a cost, and the acquisition of skill is driven by the balance of benefits and costs. Laziness is built deep into our nature" (Kahneman, 2011, p. 35). On this basis, success isn't just defined by gaining competitive advantage, or winning, but also in the increased efficiency in the act of doing so: Evident in the phenomena of *coasting*, wherein the perception of being close to a goal results in a reallocation of resources to other perceived needs (Carver, 2003; Louro, Pieters, & Zeelenberg, 2007).

[41] See Williams & Ford (2008) for a review in relation to sporting domains.

In summary, it is evident that the variability in the environments experienced by athletes means that successful performance is dependent on an exquisite balance between the effective utilisation of specialist automatic processes *and* flexibility (Christensen, Sutton, & McIlwain, 2016; Toner, Montero, & Moran, 2015). In the following section, the idea to be developed is that sustained performance excellence (i.e., progression) cannot be predicated on an 'extroverted' attitude type alone but requires the coordinated expression of conscious *and* unconscious processes (i.e., consciousness~unconsciousness) that occur within the subjectivity of the individual. The direct implication for sport psychology is that a more complete understanding of performance itself requires it to be situated in relation to the dynamic intra-psychic, subjective world (i.e., performance~person).

4.3.4.2 **Regression**

> The deliberately bad decisions are made in a dark place, far below the surface. You don't do those tiny things you need to do. You don't run the extra few feet, you don't lunge. You're slow to come out of stops. You hesitate to bend or dig. You get handsy, not using your legs or hips. You make a careless error, compensate for the error with a spectacular shot, then make two more errors, and slowly but surely you slide backward. You never actually think, I'm going to net this ball. Its more complicated, more insidious. (Agassi, 2009, p. 227)

When the individual becomes unable to adapt to the existing environment due to the failure of the dominant attitude, a stoppage occurs, the libido ceases, and psychic tension ensues (Jung, 1960). This "tension leads to conflict, the conflict leads to attempts at mutual repression, and if one opposing force is successfully repressed a dissociation ensues, a splitting of the personality, or disunion with oneself" (p. 33).

If winning represents a successful coupling between the athletic and the respective environment in the form of successful adaptations, the significance of losing extends beyond just the competitive loss itself. Losing represents the realisation that the sense of completeness associated with success, based on progression, is one-sided, partial, and therefore does not constitute the totality of self. Losing, in part, represents a neglected *inferior function* (Jung, 1971); that is, psychic activity which resides in the unconscious and has been overlooked during the process of progression. Critically, this activity is "momentarily useless from the

standpoint of adaptation, and for this reason…(is) invariably kept at a distance by the directed psychic function" (Jung, 1960, p. 34).

However, the addition of this unconscious psychic material results in a struggle between opposites (i.e., progression and regression) which in turn has the effect of de-potentiating their respective values: "This loss of value steadily increases and is the only thing perceived by consciousness" (Jung, 1960, p. 33). In sport, a phenomenon evident in an athlete or team who experiences the momentum slipping, is in "the doldrums", feels flat, stuck, or has lost drive and direction.

Despite the individual not being immediately aware as to the significance of the exposed inferior function, it "contains not merely incompatible and rejected remnants of everyday life…but also the germs of new life and vital possibilities for the future" (Jung, 1960, p. 34-35). This is because progression requires an "inner consistency" that excludes all psychic contents which might compromise the "integrity of direction" (Jung, 1960 p. 35). Yet:

> If we remember that the stoppage of the libido was due to the failure of the conscious attitude, we can now understand what valuable seeds lie in the unconscious contents activated by repression. They contain the elements of that other function which was excluded by the conscious attitude and which would be capable of effectively complementing or even of replacing the inadequate conscious attitude. (Jung, 1960, p. 35-36)

In other words, as already stated, there is a direct trade-off between consistent directed action (i.e., progression) which requires a narrowing of being (i.e., for heuristic value), and the ability to adapt. One cannot easily do both at the same time, if at all. Instead, a period of relative stillness is required to counter the forwards movement of the libido, and in such time, a potentially superior directed function can be established. Thus, true growth and transformation is ultimately dependent on the backwards movement of the libido (i.e., regression).

In summary, in contrast to the one-sidedness of progression, Jung (1966b) equates one's true nature to being in "a state of fluidity, change, and growth where nothing is eternally fixed and hopelessly petrified" (p. 46). The resolution, according to Jung, occurs due to the process of regression, the backwards movement of the libido, which amounts to a reallocation of energy to previously neglected unconscious psychic processes, in which "transformations of energy leads to an equalization of differences" (Jung, 1960, p.26). Rather than seeing such developments as divisive, Jung (1960) recognises "the possibilities of new life that lie in the repressed contents" (p.35). More specifically, rather than focussing on the "problem of outward

adaptation" (offered by progression), regression allows the client to focus on the "problem of the psyche" neglected during the process of progression.

4.3.5 **Positive momentum~negative momentum**

Within sport psychology literature, the idea that there are regulatory forces acting upon positive momentum and negative momentum is not a new one. Silva, Hardy, and Crace (1988) introduced the construct *positive inhibition* to describe "the process whereby success may actually result in the loss of momentum and thus increase the possibility of subsequent failure" (p. 346); and *negative facilitation* which "defines those situations whereby failure increases the probability of subsequent success" (p. 347). The Projected Performance Model of momentum (Cornelius, Silva, Conroy, & Peterson, 1997) also suggests that performances above and below mean levels are subject to inhibitory and facilitative "forces" respectively (see figure 1). Furthermore, Cornelius et al. (1997) speculate that the "momentum effect" itself represents the resistance to these forces resulting in the prolonged maintenance of extreme levels of performance. On this basis, momentum can be viewed as representing greater consistency in extreme performance levels (Cornelius et al., 1997) where one might usually expect greater variation around a mean level.

From the energetic standpoint, the characteristic ebb and flow associated with momentum in sport (see Higham, Harwood, & Cale, 2006) is viewed as an inevitable and necessary periodic cycle. In the same way that biological rhythms can cycle from periods ranging from seconds to years, the same is evident with respect to the trajectory of performance over time, given that one can witness these shifts within a match, or over the course of an athlete's career. Thus, the energetic standpoint has an important implication for our understanding of momentum, and the notion of finality requires us to reassess our understanding of performance variation itself. Specifically, changes in performance levels are viewed as the manifest result of self-organisation and therefore can be considered to be a functional part of an on-going cyclical process (Cowen, Nesti, & Cheetham, 2014)[42]. Whilst much of the variation can be attributable to objective factors such as injury and a change of strategy, libido theory would suggest that the subjective perception of momentum (i.e., psychological momentum) and the objective indicators of momentum (i.e., behavioural momentum) are also by-products of an on-going teleological process.

[42] This point will be considered further in chapter 6 ('The psychology of performance variation in sport').

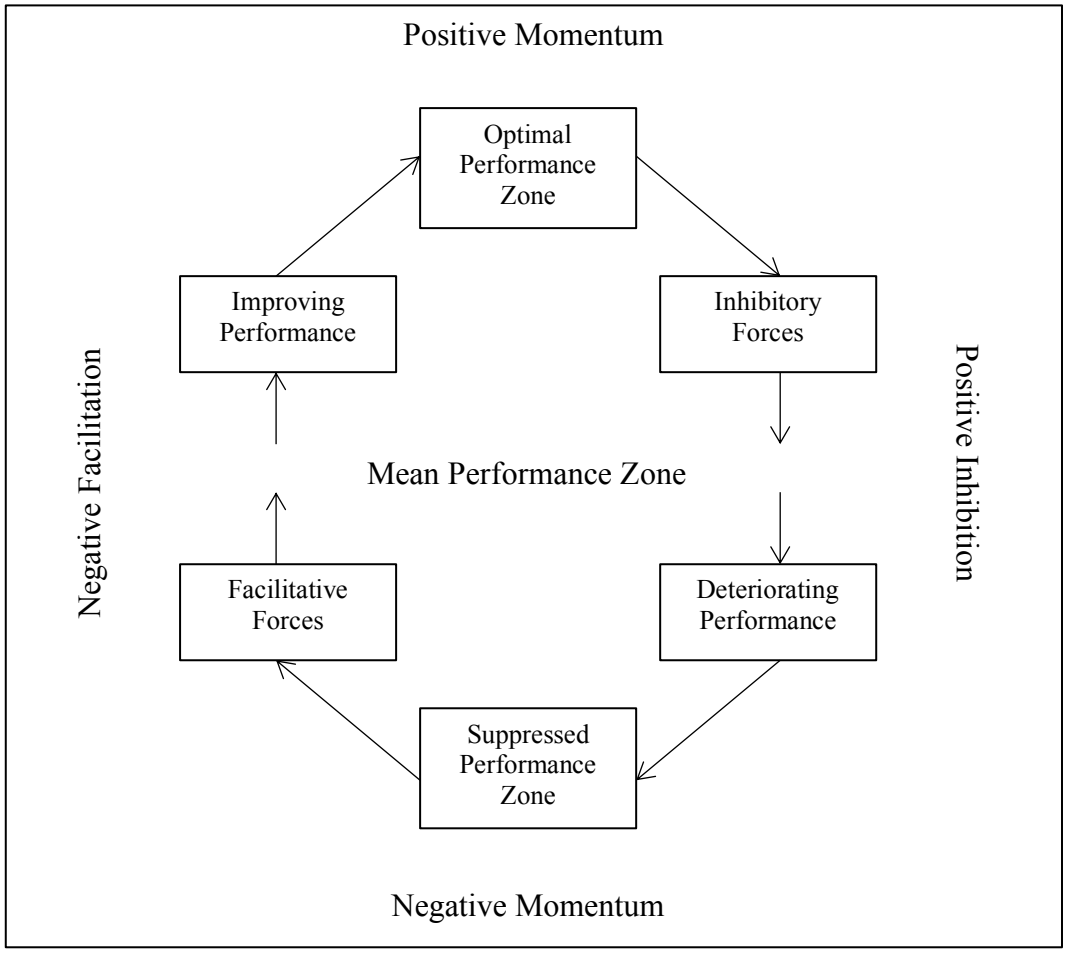

Figure 1. The Projected Performance Model (Cornelius et al., 1997)

This alternate epistemological position allows for questions such as *"what is the purpose of performance fluctuation?"* (i.e., *Performative epistemology*, Pickering, 2010) to complement the questions concerning what causes performance fluctuation. For the former question, the goal of the directed action in effect becomes the cause, but based on a different meaning (i.e., means to an end)[43]. From this perspective, positive inhibition and negative facilitation are both assumed to represent a functional part of an on-going process, wherein a

[43] However, it is also important to be mindful that any subsequent answer is framed by, and is in part a function of, the question we ask. This compels us to consider, when making epistemological choices, our reason for asking the question in the first place, given that "the reason for asking the question will ultimately determine the most useful type of answer" (Rose, 1997, p. 14).

drop in performance represents the self-organisation of the system (Cowen, Nesti, & Cheetham, 2014); as well as contributing towards the maintenance and growth of the person *and* athlete. In the final section of this chapter, the implications of the view that performance itself is a purposeful, emergent phenomenon will be considered with respect to current literature which assumes a close relationship between the athlete and other developmental domains.

4.4 **Person~Athlete**

This new approach to our understanding of performance, and its variation, is based on the assumption that there exists an intrapersonal, subjective dimension to performance, given the central role afforded to the principle of regression. In response, one might reasonably ask: Does sustained success in sport necessarily require ongoing consolidation with the subjective intrapsychic world, given the objective nature of competitive sport? The response to that question is very much dependent on whether one feels that such subjective and objective processes are connected or not, and if so, to what degree? Are subjective and objective processes separate but casually connected, or two sides of the same process? If one assumes the latter, then our understanding of psychological phenomena in sport, such as momentum, necessitates a greater appreciation of the intra-psychic world; if for no other reason than the fact that the *objective purpose* (i.e., to win) of elite sport is not generally in question, at least for most sport psychologists! Whereas, an analytical sport psychology would suggest that the *subjective purpose* of sport (i.e., what psychological function does it serve to the individual) is worthy of further consideration. Furthermore, analytical sport psychology is ideally placed to examine this subjective, personal component (i.e., the intrapsychic processes) of performance, and its variation, in order to better understand its relation to the associated objectivity (i.e., the performance itself).

The central importance of subjectivity in accounting for performance and its variation is now being recognised. As outlined in the previous chapter, recent literature has embraced the idea that an athlete's professional career is tied up in the holistic development of the person. For example, the importance of nurturing both an athlete's personal and professional life is captured in the concept of the *dual career* (Wylleman & Lavallee, 2004), which also acknowledges the interaction between sporting endeavours and other areas of development. Research by Debois and colleagues (Debois, Ledon, Argiolas, & Rosnet, 2012; Debois, Ledon, & Wylleman, 2015; Debois, & Leseur, 2013) into the role of dual careers in elite sport has found that athletes personal development interacts directly with their sporting career (Debois

et al., 2012), to the extent that the experience of an athletic career is "indivisible from other concurrent domains of life development" (Debois, Ledon, and Wylleman, 2015, p. 15). Taken together, dual career research suggests the existence of reciprocal links between an athlete's career development, and the multiple other developmental domains, as reflected in recent literature into athlete development (e.g., Collins and MacNamara, 2012 Gledhill and Harwood, 2015; Stambulova, Engström, Franck, Linner, & Lindahl, 2015; Ronkainen, Tikkanen, Littlewood, & Nesti, 2015; & Wylleman, Reints, & De Knop, 2013). The holistic links between athlete development and other developmental domains will be of no surprise to anyone who has worked closely with athletes over a period of time or read autobiographical accounts of their histories. What has been proposed in this chapter is that libido theory, and by association the process of individuation, offers an additional theoretical basis on which to explore the inter-dependence of both person and athlete development.

4.4.1 **Individuation (being~becoming)**

Jung viewed *the process of individuation* as the centrepiece of his analytical psychology (Jung, 1995). Individuation itself represents the transformation of personality into the "complete actualization of the whole human being" (Jung, 1966b, p. 160), and accordingly represents one's defining project. As outlined in chapter 2, the individuation process is characterised by the dialectical interplay between opposing sides of our nature (e.g., extroversion~introversion; anima~animus) – the purpose of which is to move towards greater integration of self and wholeness. Thus, the process of individuation requires recognition of who we are now (i.e., being) and who we can become in the form of self-realisation (i.e., becoming) – we are *both* being and becoming.

Similarly, Maslow (1968) wrote, "…the greatest attainment of identity, autonomy, or selfhood is itself simultaneously a transcending of itself, of going beyond and above selfhood" (p. 105), alluding to a paradoxical, two-fold nature of being. Considered by European existentialism, humanistic psychology, and the psychology of Jung, the person can be conceived as being *simultaneously both* who they are (actuality) and who they could become (potentiality; Maslow, 1968). Thus, from this perspective, a full consideration of human psychology requires any consideration of *who we are* to be in part based by *who we can become*; whilst avoiding any arbitrary separation between the two.

This dynamic conceptualisation of being offers a radical departure from positivist psychology (Maslow, 1968). Yet, support for the notion that our psychology is defined by both *being* and *becoming* is evident in recent discoveries in neuroscience which have demonstrated

that the brain exists in a state of plasticity, based on a dynamic interplay between biology and experience (Eagleman, 2015). Plasticity, which recognises the brains ability to adapt through the formation of new neural connections, is a clear representation of the idea that who we are (i.e., being) isn't fixed, but can develop and adapt. Sport itself provides a medium for people to realise potential through adaptation, whilst at the same time reminding us of that within ourselves which limits us.

4.4.2 **Athlete development**

With respect to athlete development, a central implication of a holistic perspective is that an athletes career and their respective performances is ultimately inseparable from *all* that constitutes the athlete (e.g., Henschen, 2001). An athlete has dreams which transcend sport, yet sport offers a potential means for their realisation. For example, Andersen and Speed (2010) suggest that most of their applied sport psychology work, even that concerned with performance enhancement, is ultimately concerned with the realisation of love, be it self-love (e.g., increased self-esteem) or receiving love from others (e.g., from coaches, parents). Furthermore, literature into the spiritual dimension of sport participation (e.g., Mosley, Frierson, Cheng, & Aoyagi, 2015; Parry, Robinson, Watson, & Nesti, 2007; Watson & Nesti, 2005) stresses the importance of the personal component of performance – specifically, the idea that the person and performance are often viewed as one and the same thing. As Andersen (2006) observed on his work with athletes: "Performance is a deeply personal issue, and counselling athletes on performance touches areas of their lives that go to the core of their being" (cited in Andersen & Speed, 2010, p. 6)

If one assumes *a priori* an organismic tendency towards growth, then sport offers one basis on which personal growth can be realised. Yet growth, through the lens of the individuation process, is represented as the continual process of integration of the personality (Moacanin, 2003). Thus growth, and by extension fulfilment, is dependent and predicated on the coordinated expression of different parts of oneself, which cannot be represented by the realisation of athletic potential alone, unless one assumes that athletic potential represents the totality of self. On this basis, true success within sport doesn't represent the realisation of athletic potential, *but athletic potential allowing for and expressing the realisation of self*[44]. When performance is assigned this *purpose* – as opposed to focusing upon its reductive causal basis - it then goes without saying that true athletic success is also co-dependent on healthy

[44] This point will be explored further in chapter 7.

development of other parts of self. Equally, a lack of athletic success is deemed to have purpose when it allows for the possibility of new potential to be realised.

According to libido theory, the "inferior function" contains within it the seeds for future growth, as well as representing part of one's totality[45]. Yet, the subjective component of performance (i.e., its subjective purpose) is in stark contrast to the degree of specialisation ultimately needed to be successful in elite sport. Furthermore, within elite sport, losing is generally considered to be an anathema - fundamentally inconsistent with any goals set - but, as suggested by libido theory, it potentially represents an important facilitator of personal *and* professional growth. Thus, there appears to be a potential conflict between the objective demands of elite sport (where winning is the defining project), and the subjective demands of individuation (where realisation of self is the defining project).

To ultimately triumph in this conflict is to avoid the one-sidedness which goal directed behaviour typically demands of us (i.e., progression). Rather than the goal becoming transcendence itself - in the name of becoming "super-human"- the true goal is for *all* that is associated with progression to become reconciled with the opposites within ourselves (i.e., regression). Indeed, libido theory suggests that *how we work through* such conflicts helps define who we are and who we can become[46]. For example, an athlete's response to the inevitable challenges they will face (e.g., losing, injury, deselection, retirement) represents part of their defining project, rather than a problem to be negated. The full realisation of self cannot exclude that which appears as an obstacle to the realisation of athletic potential, but requires it to be integrated into the whole.

How the "problem of opposites" expresses itself in sport can find many forms (e.g., motivation~amotivation, anxiety~confidence), and is clearly evident in the ongoing performance of an athlete. As outlined in this chapter, the Jungian account of momentum suggests that variation in performance can in part be attributed to the complimentary expression of *progression* and *regression*. Progression accords with the objective demands of sport, whereas regression allows for the more complete expression of subjectivity. Yet, in elite sport, when winning represents the defining goal, the pressure on one-sidedness in the form of

[45] "How can I be substantial without casting a shadow? I must have a dark side too if I am to be whole" (Jung, 1966b, p. 59).

[46] "The problem of opposites, as an inherent principle of human nature, forms a further stage in our process of realisation" (Jung, 1966a, p. 59).

progression becomes seemingly inevitable. This apparent necessity for such one-sidedness cannot be without consequences.

4.4.3 **Identity foreclosure and fear of success**

Ideally, sporting excellence would always correspond with personal excellence (e.g., Miller & Kerr, 2002). Yet, particularly during the early stages of an athletic career, sacrifice is inevitable given the pressure to specialise being viewed as increasingly important for athletic success (Côté, 2009). A seemingly inevitable result is that for those aspiring to become elite athletes, the focus on their athletic identity will take priority over exploring alternate identities during adolescence (see Petitpas and France, 2010).

Marcia (1966) recognised 4 identity statuses (see table 1) with can result from the identity crisis experienced during adolescence (Erikson, 1959). Of these statuses, athletes could be forgiven for viewing identity foreclosure as being a seemingly necessary developmental step in order for athletic success to be realised. In comparison, Erikson (1959) suggests that the healthy development of identity (i.e., identity achievement) is dependent on the active exploration of different identities during adolescence (i.e., identity moratorium; Marcia, 1966). Interestingly, there now exists a wealth of research which suggests that early specialisation, before puberty, is not necessary to become an elite athlete (see Hastie, 2015, for a review). Instead, it has been found that delayed specialisation and participating in multiple sports from an early age is a better predictor of a future career in elite sport (e.g., Bridge & Toms, 2013; Ginsberg et al., 2014). Furthermore, athletes with a one-dimensional identity resulting from too much focus on sport from an early age can lead to burnout (Coakley, 1992), and are more prone to anxiety and mental health problems (Carless & Douglas, 2013).

Identity statuses	Description
Identity achievement	When an individual has gone through an exploration of different identities and made a commitment to one
Moratorium	The status of a person who is actively involved in exploring different identities, but has not made a commitment.
Foreclosure	When a person has made a commitment without attempting identity exploration.
Identity diffusion	When there is neither an identity crisis or commitment

Table 1: Adapted from Marcia (1966)

Athletic success, when perceived to be predicated on identity foreclosure, is likely to lead towards athletic success or failure itself becoming the primary, if not sole basis for determining one's identity, and by implication one's sense of self-worth. In the absence of the development of a *dual career*, the perception of progression will become increasingly tied to the relatively uncontrollable ebb and flow of performance over time. To counter this perceived lack of controllability, an athlete might see no other choice but to keep digging and increasingly invest in their athletic role in an attempt to mitigate against the deeply painful subjective consequences of failure. In the end however, when identity is tied to the athletic role, the dichotomy of failure *and* success, when conceived as such, represent the limits and one-sidedness associated identity foreclosure. Specifically, the athlete is confronted with the paradox that failure and success, when considered separately, *both* potentially represent an obstacle in the way of the individuation process. Whilst an athlete might experience great joy following success, this joy is ultimately contingent on the association of success with failure. For if failure was not possible, are strong positive emotions associated with success as likely? Thus, success and failure, and the emotions associated with them, are mutually dependent constructs. As well as the seemingly inevitable *fear of failure*, we are therefore confronted with the vexing phenomena of *fear of success*, given that both success and failure in their own right represent the same one-sided state.

The term "fear of success" is generally credited to Horner (1968), but accounts within the psychoanalytic tradition are suggestive of a complex aetiology (see Klafter, 2018, for a review). One of the first accounts in the sport literature was a paper by Ogilvie entitled "The unconscious fear of success" (Ogilvie, 1968). Based on 12 years of clinical practice with elite

athletes, Ogilvie (1968) identified 5 different sources of stress (or "syndromes") associated with "physical excellence" (see table 2).

Syndrome	Summary
A	Social and emotional isolation
B	Unconscious guilt in response to the requirements for athletic success
C	The use of rationalisation to avoid the reality of one's true potential
D	Unconscious resentment in response to the exaggerated external demands imposed
E	Unconscious fear of the responsibility associated with maintaining excellence

Table 2: 5 syndromes associated with success (adapted from Ogilvie, 1968)

Although all of the sources of stress identified by Ogilvie resonate with the one-sidedness associated with success, of particular interest here is syndrome C:

> Syndrome C is the most subtle form of fear of success and has its roots deep in developmental history…Basically his social conditioning over-emphasized the pain of failure at the expense of the pleasure of success. Rewards or recognition for partial success or moderate improvement are absent from his life experience. The only social reward or positive parental recognition has been for winning or for showing excellence. Any performance short of these standards has been treated as failure. Often the parent communicates this attitude by his failure to respond to any performance which has not reached the parents arbitrary standard of achievement. The end effect of such social conditioning is a personality structure with an inordinate fear of failure. The athlete unconsciously internalizes the unrealistic standard for human performance, and he studiously avoids the conscious experience of failure. He, therefore, learns to overdevelop his powers of rationalization and unconscious denial. He becomes expert at avoiding the ultimate truth by developing self-deceptive ways of justifying the quality of his performance. This is frequently expressed by falsely denying the meaning

> of success or victory. Somehow, in some way, the "moment of truth" is avoided in order not to have to face the reality of an absolute test of ability and then to be made to feel unworthy. (Ogilvie, 1968, p. 37)

This rather perplexing passage raises a number of questions concerning our relationship to success and failure. According to Conroy, Poczwardowski and Henschen (2001) this syndrome results from athletes generalising the fear of failure, associated with the "unrealistic standard for human performance", onto success, given that both are two sides of the same coin. Furthermore, beyond the more obvious interpretation that the "ultimate truth" refers in some way to the introjected unrealistic standard for human performance:

- Is the "ultimate truth" also referring to the idea that in the experience of pleasure associated with success, the pain of losing is created, and vice versa, given that they are viewed as two sides of the same coin?
- Based on a Jungian interpretation, is the "ultimate truth" recognition that performance excellence alone does not represent the totality of self? That is, basing personal growth solely on sporting success paradoxically reflects the fact that sporting success is often at the expense of personal growth. A fact which could be subject to "unconscious denial".
- Does the "moment of truth" also refer to being confronted with an opportunity to demonstrate one's true potential, which in turn raises to consciousness the "unrealistic standard for human performance"? In other words, the polarisation of success and failure ultimately results in a reality gap between introjected beliefs/values concerning what it means to be an athlete (and by extension a person), and a more realistic appraisal which acknowledges that totality of being is based on *all* of who we are and what we do.

Whatever one's interpretation of the second half of this passage, it would appear that fear of failure and fear of success, when taken together, ultimately represent fear of the same thing. Namely, an awareness that defining one's identity primarily on such polarised outcomes represents a polarisation, rather than integration, of self. The end result is "a splitting of the personality, or disunion with oneself" (Jung, 1960, p. 33). Integration of self has been described

from an existential perspective as *ontological security,* by the psychoanalyst and psychiatrist R.D Laing in *The Divided Self* (1959)[47], someone who

> may experience his own being as real, alive, whole; as differentiated from the rest of the world in ordinary circumstances so clearly that his identity and autonomy are never in question; as a continuum in time; as having an inner consistency, substantiality, genuineness, and worth (p. 41).

In contrast, according to Laing, the ontologically insecure person is subject to three forms of anxiety:

Anxiety type	**Description**
Engulfment	"In this the individual dreads relatedness as such, with anyone or anything or, indeed, even with himself, because his uncertainty about the stability of his autonomy lays him open to the dread lest in any any relationship he will lose autonomy and identity" (p. 44)
Implosion	"The individual feels that, like the vacuum, he is empty. But this emptiness is him. Although in other ways he longs for the emptiness to be filled, he dreads the possibility of this happening because he has come to feel that all he can be is the awful nothingness or just this very vacuum" (p. 45-46)
Petrification and depersonalisation	"The dread, that is, the possibility of turning, or being turned, from a live person into a dead thing, into a stone, into a robot, an automaton, without personal autonomy of action, *an it without subjectivity* (*emphasis added*; p. 46)

Table 3: Types of anxiety associated with ontological insecurity (Laing, 1959)

If the expression of individuation is *a state of fluidity, change, and growth where nothing is eternally fixed and hopelessly petrified*, then ontological insecurity can be viewed

[47] Although the premise of the book is to provide a study on schizophrenia, the description of the process of alienation from one's real self has much to offer those interested in identity and anxiety in sport.

as the antithesis of this position. When one's identity is based on an introjected ideal, then anything associated with this, be it success or failure, has the potential to provoke a deeper sense of existential insecurity. Within sport, *success becomes as much of a threat as failure*, when it comes to represent a "disunion with oneself". The internal agency contributing towards performance variation (i.e., progression~regression, positive momentum~negative momentum), or "momentum shifts" is then viewed as an ongoing attempt at reconciliation between one's objectivity and subjectivity. In this context, objectivity represents the objective rules which govern the sport played, the imposed demands of others (i.e., parents, coaches, teammates, competitors), and the performance outcomes (success, failure). Whereas subjectivity represents the "being for oneself" (Laing, 1959, p. 47) as opposed to a being-for-others. Laing (1959) acknowledges that objectivity and subjectivity are in tension with each other given that

> [I]f one experiences the other as a free agent, one is open to the possibility of experiencing oneself as an *object* of his experience and thereby of feeling one's own subjectivity drained away. One is threatened with the possibility of becoming no more than a thing on the world of the other, without any life for oneself, without any being for oneself. (p. 47)

Taken together, in the context of sport, athletic potential allowing for and expressing the realisation of self is therefore dependent on a union of:

- subjectivity and objectivity
- being-for-oneself and being-for-others
- person and the athlete

In summary, the goal is not success itself, but, at least as far as the individuation process is concerned, for success to represent another step in the path towards individuation, based on a union of subjectivity and objectivity. When there exists a trade-off between one's commitment to one's athletic role (i.e., identity foreclosure) and the individuation process, sporting success will be at the expense of personal growth, anxiety and performance variation. In contrast, sporting success predicated on the reconciliation of subjectivity and objectivity allows for athletes to use sport as a basis on which to make individuation possible.

4.5 **Conclusions**

This chapter can be considered in two parts. In the first, implications of Jung's Libido theory for our understanding of momentum in sport were considered. From this perspective,

the characteristic ebb and flow of performance can be seen to symbolically represent the dynamic tension between the desire for outward adaptation (i.e., progression) and the requirement of consolidation with the intra-psychic world (i.e., regression). Therefore, this approach is based on the assumption that momentum represents a circular process (Cornelius et al., 1997; Moesch & Apitzsch, 2012), of which the ultimate, superordinate goal is individuation. In the second part of the chapter, the discussion was broadened to consider the implications of this circular process with respect to the one-sided objective purpose of elite sport. Specifically, the apparent trade-off between the ability to satisfy the objective demands of elite sport, and the ability to acknowledge the *inferior function*; the latter necessary in the process of regression (and by extension individuation itself). Implications of this trade-off were considered briefly with respect to identity and anxiety within sport.

Taken together, this chapter suggests that performance itself, and its variation, can be legitimately viewed as symbolically representing both the person and the athlete. In other words, from an analytical sport psychology perspective, performance represents the person's subjectivity in that it is an expression of intrapsychic processes. In addition, performance represents in its purest form the athlete's objectivity (i.e., their behavioural response to the objective demands their sport). Thus, rather than be viewed merely as an object measure, performance itself offers an important intersection between subject~object, and person~athlete, wherein the associated variation represents the oscillation between these opposing poles.

Another contribution of this approach is the proposition that the psychological basis for performance variation would be better understood based on the assumption of circularity rather than linear causation. It has been suggested that the recognition of circularity is an epistemological necessity that implies interdependence between mind, body and environment (Varela, Thompson, & Rosch, 1991). In contrast, linear causation implies separation and linear (or sequential) dependence, a consequence of separating "causes" from "effects". Conceptualising psychological momentum based on its relationship to performance results in the issue of causation, given that psychological momentum can be viewed as both the cause *and* effect of improved performance (Vallerand, Colavecchio, & Pelletier, 1988). Furthermore, Spaulding (1995) suggested that focusing on isolated relationships allows for the possibility of linear causality to be established, but on a systems level exist as an "explanatory fiction", given that (a) other processes are overlooked, and (b) the interactive and reciprocally causal nature of systems. Spaulding (1995) goes as far as to observe that "observed temporal contiguity of a predictable sequence among arbitrarily selected events doesn't prove 'cause'…We label it causality when it suits our purposes" (p. 281).

Varela, Thompson, & Rosch (1991) suggested that a circularity, or *structural coupling* exists between cognitive processes, behaviours and the environment. That is, one can never extricate mental processes and behaviours from the affecting and effected environment of which they are a part (Bohm, 1980). In this chapter it has been proposed that momentum is best conceptualised as a complex dynamic process which is circular in nature (Moesch & Apitzsch, 2012) based on a structural coupling between opposing, yet complimentary processes: Positive momentum~negative momentum, progression~regression, and person~athlete. Furthermore, it has been suggested that the energetic standpoint provides an effective epistemological basis on which to account for this process. In the previous chapters it was suggested that a credible psychological science necessitates more active rationalisation with epistemology. By adopting the energetic standpoint, this chapter has demonstrated how theoretical developments are ultimately derived from the epistemological assumptions made.

In the next chapter I will consider two theoretical developments within psychology - *Idiographic science* (Molenaar, 2004) and the *cybernetic-systems paradigm* (Vancouver, 2000) - which have responded to the epistemological challenges identified in this thesis. Furthermore, these developments have been chosen as they offer a point of convergence with analytical psychology (e.g., subject~object), and prove important implications for the future of sport psychology as a science. In doing so I will build upon an idea that sport psychology can make a more meaningful contribution to our understanding of the nature of performance variation itself, rather than the epistemologically flawed quest to document the psychological correlates (e.g., mental toughness, confidence etc.). Taken together these developments suggest a shift towards an "ontology of becoming" (Pickering, 2010, p. 107) to reflect the dynamic, temporal nature of psychological processes.

Chapter 5

Towards an epistemology of being and becoming

5.1 Introduction

Husserl (1970) observed that the *problems of reason* (i.e., what can be considered true, rational knowledge) and the associated meta-physical questions belonged to philosophy. In contrast, facts, or, that-which-is, were the domain of the natural sciences. Yet, Husserl (1970) asked "*[c]an reason and that-which-is be separated, where reason, as knowing, determines what it is?*" (p. 11). Thus, the "history of crisis" which Husserl believed has defined the history of psychology (Husserl, 1970), owes much to the separation from philosophy (Mammen & Mironenko, 2015). Ironically therefore, if psychology aspires to become a mature science, it is required to confront the philosophical (i.e., epistemological) challenges it faces as the basis for its development.

In the previous two chapters, I have explored some of the philosophical challenges that I believe psychology, and by extension sport psychology faces if it is to become, in the Kuhnian sense, a mature science. Namely, a move away from the reliance on positivist epistemology, subject and object separation; and in turn the necessary development of a paradigm capable of capturing the unique nature of the subject matter which is consistent with other branches of science (i.e., conceptual integration). This view has been strongly influenced by Jung's analytical psychology, to which this thesis is indebted. However, I do not believe that a paradigm can be created merely by following the vision of one person alone. To do so would repeat the mistake of the pre-paradigm stage wherein the tendency is to "force nature into the preformed and relatively inflexible box" (Kuhn, 1996, p. 24) - that in this instance analytical psychology offers. I have no doubt that analytical psychology, in itself, can make an important contribution to our understanding of sporting phenomena, as I attempted to demonstrate in the previous chapter with respect to our understanding of momentum in sport. However, it is important to acknowledge that these ideas represent in part the situated, personal knowledge of the originator. Thus, any application risks objectifying a personal vision rather than working in its spirit.

The more pressing task is to learn from the *epistemological method*, or methodology it provides, in order to determine how nomothetic knowledge can be generated in such a way that

it can potentially rise above the personal, idiographic dimension. In other words, to establish what are the lessons that can be learnt with respect to the development of a legitimate psychological science. In this respect a number of epistemological criteria have already been identified in this thesis which could form part of the basis for this method:

- Placing personal ontology (i.e., one's subjectivity) at the centre – by elevating the role of individual judgement, insight and wisdom, as a complimentary counterpoint to method.
- Determining the value of subjectivity based on (a) its potential to reconcile subject and object; (b) its ability to promote conceptual integration; and (c) its ability to stimulate future work.

In this chapter, an additional criterion will be proposed:

- The prioritisation of theory, as a complimentary counterpoint to data – given the idiographic nature of psychological processes

In light of the epistemological challenges outlined in the previous two chapters, this chapter will consider two separate developments within psychology which stress the importance of epistemology for the development of psychology as a science, and place great importance on the role of subjectivity. Acknowledgment of the personal, subjective component of knowledge (e.g., Polanyi, 1958), precludes the possibility of discovery as ever being final. Rather, for a psychological science, the next section will introduce idiographic science, developed by a core of distinctly non Anglo-American psychologists who have proposed that discovery, or knowledge creation, can be viewed as the ongoing complimentary process of understanding what makes us individual *and* what we have in common (*idiographic* subjectivity~*nomothetic* objectivity). This represents an important departure from the dominant historical view that in order to position itself as a true science, psychology is required to conform to the nomothetic, empirical, and inductivist tradition (Salvatore & Valsiner, 2010).

In the second section of this chapter I will introduce the cybernetic-systems paradigm which emerged in the same era as cognitivism but developed in parallel, due to their irreconcilable epistemological differences (Varela, Thompson, & Rosch, 1991). I believe that these more recent developments in psychology offer an important point of convergence with analytical psychology, and therefore offer one basis on which to address a defining epistemological challenge identified in this thesis. Namely, the emergence of a theoretical position predicated on subject and object complementarity (subject~object).

5.2 **Towards a new epistemological method**

> Scientific education is based in the main on statistical truths and abstract knowledge and therefore imparts an unrealistic, rational picture of the world, in which the individual, as a merely marginal phenomenon, plays no role. The individual, however, as an irrational datum, is the true and authentic carrier of reality, the *concrete* man as opposed to the unreal ideal or normal man to whom the scientific statements refer. (Jung, 2002, p. 7)

> Psychology has become an arena for a complex social game of a fashion of appearing "scientific" at the expense of alienation of the data from the phenomena and the data makers from the theoretical and philosophical issues that were fundamental concerns for their predecessors. (Valsiner, 2014, p. 4)

The terms idiographic and nomothetic were introduced over a century ago by Windelband (1894/1980) to differentiate between sciences "concerned with the unique, immanently defined content of the real event", and sciences "concerned with what is invariably the case" (p. 175) respectively. Despite Windelband conceiving these perspectives as complimentary, in psychology they have been largely interpreted as an oppositional dyad which has contributed towards the fragmentation of modern psychological science (Salvatore & Valsiner, 2010). This fragmentation is reflected in the assumed choice between doing human science and natural science; interpretivism and positivism; and qualitative and quantitative methods as means of acquiring knowledge.

Instead Salvatore and Valsiner, (2010) point out that, as conceived, both perspectives are ultimately concerned with developing generalised knowledge. Why, because

> … remembering the inevitability that any experience of anything is a singular phenomenon (as it unfolds for the living individual in irreversible time), the basis for all human knowledge is inevitably idiographic – all that is *is experienced once*…Thus, *all science is idiographic* as it strives towards generalization about its phenomena through time – yet the outcomes of such efforts can become nomothetic in the sense of generalisation based on evidence that "once was" and "another time as well". (p. 819)

Furthermore, Salvatore and Valsiner (2010) argue that given the human sciences are concerned with self-organising, open systems, no two individuals will ever present in the same way, yet it is the *general laws governing the system* which make this possible: "*Generality in*

uniqueness is not a contradiction in terms, but the basic operating principle in all nature, *psyche*, and society" (p. 4, *italics original*).

This new approach, termed *idiographic science* (Molenaar, 2004), rejects the use of inductive reasoning used by empirical science to make generalisations because it overlooks the fundamentally idiographic nature of the observed events (Salvatore & Valsiner, 2010). In other words, "evidenced based" aggregation does not provide a meaningful route to generality (Lamiell, 1998), and any attempt at allocating individuals into discrete populations or samples will result in an infinite regress, due to the fundamentally idiographic nature of psychological processes[48]. Therefore, the epistemological position of idiographic science is that general knowledge is only possible by studying the singularity of psychological phenomenon (Salvatore & Valsiner, 2010), with the emphasis on temporal variation unique to each case (Molenaar, 2007). In contrast, inductive science assumes that meaningful generalisations can be made based on the aggregation of data from a finite sample. The difference concerning the level on which variation needs to be understood is therefore epistemological in nature: Inductive science assumes that variation can be meaningfully understood on the inter-individual (i.e., group) level, whereas idiographic science argues that variation can only be understood on the intra-individual (i.e., individual) level (Molenaar, 2004; Salvatore & Valsiner, 2010).

The current "replication crisis" in psychology is at least in part attributable to the denial of the idiographic quality (i.e., intra-individual variability) of psychological processes; and as such, the "crisis" is epistemological rather than methodological in origin. Why, because when individuals are viewed as self-organising open systems, variation, not aggregation becomes the defining feature (Maruyama, 1963; Powers, 1973). To rely on central tendency of an assumed representative group for knowledge construction (i.e., inductive generalisation) conveniently overlooks the *non-ergodic*[49] nature of psychological processes (Molenaar, 2004; Molennar & Campbell, 2009; Salvatore & Valsiner, 2010). The criteria for *ergodicity* are that (a) each person within a defined group should act according to the same governing dynamical laws, and (b) the dynamic laws will manifest in the same way over time (Molenaar, 2007). However most

[48] The problem of infinite regress has been demonstrated with respect to current research into motivation in sport in chapter 3.

[49] Ergodicity relates to individual phenomena which does not vary as a function of time. Where variation occurs on an individual level and as a function of time (i.e., irreversible) then non-ergodicity is assumed (Valsiner, 2014).

psychological processes are considered non-ergodic because they do not conform to these criteria (Molenaar, 2004). Specifically, the behaviour of one person over time (intra-individual variation), cannot be used to determine the behaviour of a group of people over time (inter-individual variation), and vice versa (Molennar & Campbell, 2009; Salvatore & Valsiner, 2010). Yet research continues to be based on these flawed assumptions. Namely, that psychological processes do not manifest as a function of time, and inter-individual variation can be extrapolated from intra-individual variation.

For example, say you want to determine whether a group of athletes' performances are affected by a new coach, one could either compare the average groups performances in the period before and after their arrival (i.e., between person/inter-individual variation). Alternatively, one could track the performances of one or a few individuals over time (i.e., within person/intra-individual variation), with a view to generalising the pattern of variation to the group. However, when such behaviour (i.e., performance) is considered to be non-ergodic, by definition any observed temporal variation on the between person level cannot be used to accurately determine temporary variation on the within person level, and vice versa.

An example as to what happens when researchers attempt to extrapolate from the intra-individual to the inter-individual level was considered in chapter 3 concerning a recent series of qualitative research studies undertaken by Keegan and colleagues. In attempting to address, amongst other things, the inter-individual variation in the perception of the motivational climate revealed by the previous reliance on questionnaire based studies, Keegan et al. (2014) suggested, rather tenuously, that the adoption of the interview method (i.e., intra-individual) would help overcome some of the issues identified with the previous reliance on inter-individual, quantitative based research into motivation (e.g., inter-individual variation, low ecological validity). Despite providing a highly detailed and extensive account of the intra-individual "raw ingredients", the researchers inevitably found no motivational sources which consistently impacted on motivation in the same way on the inter-individual level.

These findings do not represent a failure of method - the method did its job - but a failure to appreciate how the results obtained also reflect the flaws in the epistemological assumptions made (in this case the lazy assumption that intra-individual variation can be generalised to the inter-individual level, and therefore behaviour can be meaningfully represented as being ergodic). In the end the subject will resist conformity to the inflexible box provided by the paradigm, when the paradigm is unable to accurately represent it – nature, not science, holds all the cards!

In sum, idiographic science rejects the assumption "according to which the individual's variability of the psychological flow over time is structurally identical to the inter-individual variation within a given population" (Salvatore & Valsiner, 2010. p. 5). Given the *a priori* assumption that humans are self-organising open systems, taking generality (i.e., nomothetic) as the starting point, overlooks intra-individual temporal variation that occurs (Molenaar, 2004). In contrast, psychology in its recent history has primarily focused on variation between individuals or populations (i.e., inter-individual variation; Molenaar, 2004) - an approach which implicitly assumes that a data set can be extrapolated to make predictions about an equivalent future event (i.e., ergodic). This allows researchers to study a group without having to consider the role of time, process or context on the intra-individual level (Molenaar & Valsiner, 2009), To accept this assumption requires one also to assume that individuals can be meaningfully subsumed within a *population* or representative sample (Salvatore & Valsiner, 2010). One of the problems with the notion of a population is that one is required to assume *a priori* a shared set of characteristics which define it (i.e., essentialism), and in turn will determine the nature of psychological processes over time on the inter-individual level.

The consequence of relying on discrete populations for empirical testing has far reaching consequences for empirical psychological science. Firstly, to assume the possibility of discrete population requires the assumption of essentialism - that is, each group are assigned set of *essences* which in turn define it. Secondly, populations are chosen for study on the basis of their pre-determined essences. When the study is conducted, either (a) not everyone conforms to the set of essences which was assumed to define them, resulting in the need for another subgroup, or (b) the results merely confirm that which was already known about the population, thereby "pretending to prove empirically what is already presumed in the conceptual framework of the researchers" (Salvatore & Valsiner, 2010. p. 6).

By placing faith in a different method over a different epistemology, and implicitly assuming ergodicity over non-ergodicity, psychology researchers will inevitably be confronted with the same outcome - infinite regress. The problem is not whether qualitative or quantitative methods will best elucidate psychological phenomena. Rather, the problem is how we can *best understand the underlying nature psychological phenomena itself* – this requires knowledge to be more closely wedded to the assumptions (concerning its nature) themselves, rather than the products thereof.

5.2.1 Do psychological processes have an underlying (sub-personal) nature?

If one assumes there is no underlying nature, or theoretical general laws which govern the human psyche, then it is likely that the hope of a science is lost, as, rather than searching for general laws, we become limited to ultimately documenting individual events – as suggested by idiographic science. Paradoxically therefore, the hope of a science requires researchers to be less concerned with serving a science which values the arbitrary accumulation of data (i.e., normal science), and more concerned with the more fundamental questions about the *underlying nature* of such phenomena. Questions such as: Is the psychological phenomena under consideration ergodic or non-ergodic in nature? Is it best to think about psychological phenomena as relative bystanders in an ongoing superordinate process (i.e., an epiphenomenon)? Or, is it fair to assume that abstractions, such as *motivation*, have any objective characteristics (i.e., essentialism) and causal properties, which in turn allow for generalisation (i.e., the *cognitivist hypothesis*; Varela, Rosch, & Thompson, 1997)? And, which of these positions would constitute a more legitimate basis on which to assume scientific knowledge?

Such questions are inevitably epistemological in nature and are unlikely to be addressed when one is led primarily by method. Indeed, a central contribution of idiographic science is the recognition that the development of psychology as a scientific discipline will be predicated on a closer dialogue with epistemology: "the idiographic imperative moves research from the logic of the confirmation to the logic of the construction of the knowledge" (Salvatore & Valsiner, 2010, p. 14). Addressing epistemological questions therefore requires a shift away from the primacy of data, towards a renewed emphasis on the development of general theory as the basis for knowledge construction (Toomela, 2007):

> The social practice of methodology has lost its conceptual status as the theoretical bridging between the general theory and the procedures of data construction. Contemporary psychology conceives of methodology in technical terms: as a repertoire of procedures of measurement and data analysis. And in doing so legitimates its empiricism…pretending as if the findings produced by the studies had an inherent and self-evident theoretical meaning. In sum, the population-*ization* of psychology has paved the way to the system of mass production of data of which contemporary psychology consists. (Salvatore & Valsiner, 2010, p. 6)

If interviews are effective in capturing rich descriptive data concerning subjective experiences - what do they have to offer the researcher who views the associated structure (or underlying nature) of psychological phenomena as belonging not solely to experience itself,

but to an interplay of conscious *and* unconscious processes based within a teleological self-organising open system? When one assumes the latter, subjective experience provides potentially useful raw material, but will not alone, in-itself, elucidate the respective nature to which it is assumed to belong. When the mind is conceived as a self-organising system, the unconscious processes or mechanisms associated with it belong to the *sub-personal level* (Dennett, 1969), or hypothesised sub-systems (Powers, 1973), which are outside of conscious awareness. Idiographic science itself is predicated on establishing the general laws associated with these systems which make *generality in uniqueness* possible (Salvatore & Valsiner, 2010).

To assume the existence and explanatory importance of this sub-personal level, precludes the possibility of empiricism alone being the starting point for its elucidation. Rather, knowledge concerning the nature of the sub-personal level is dependent in the first instance on the development of an accurate representation in the form of theory:

> We might assume that perceptual experiences of some kind are directly accessible to an observer, but observation statements certainly are not. The latter are public entities, formulated in public language, involving theories of various degrees of generality and sophistication. Once attention is focused on observation statements as forming the alleged secure basis for science, it can be seen that, contrary to the inductivists' claim, theory of some kind must precede all observation statements and observation statements are as fallible as the theories they presuppose. (Chambers, 1978, p. 28)

Thus, if explanatory reality (in this case the sub-personal level) is not directly observable, then knowledge is dependent on a progressive circularity between theory and observed events (Salvatore & Valsiner, 2010) in order to verify it. This process is known as *abductive reasoning*:

> Guided by evolving research problems…sets of data are analysed in order to detect robust empirical regularities, or phenomenon. Once detected, these phenomena are explained by abductively inferring the existence of underlying causal mechanisms. Here, abductive inference involves reasoning from phenomena, understood as presumed effects, to their theoretical explanation in terms of underlying causal mechanisms. (Haig, 2005, pp. 372-373)

Abductive reasoning shifts the emphasis of knowledge construction away from a reliance on methods and the accumulation of data, towards a dialogue between "empirical regularities" and theory. This dialogue requires what Mirza, Akhtar-Danesh, Noesgaard, Martin, and Staples (2014) call a *creative inference*, as the basis for knowledge construction. Whereas method and data appeal almost exclusively to the desire for objectivity, the emphasis

on the development of theory, via abductive reasoning, requires an increased acknowledgement of the subjective component of knowledge for phenomena not directly observable (i.e., sub-personal level) – both for that which is being observed, and the theoretical interpretation made by the observer. Whilst a renewed emphasis on theory might appear like psychological science having to concede to subjectivism, Polanyi (1958) suggested that knowledge which relies more on theory offers the possibility of greater objectivity than knowledge which relies more on sensory experience (i.e., empiricism); because (a) a theory can be seen to exist outside its creator and offers a potential map for others to verify or correct; (b) when articulated a theory becomes impersonal given its rigidity is not affected by subjective fluctuations; and (c) theories can be developed which look beyond "one's normal approach to experience" (Polanyi, 1958, p. 4).

Taken together, if one assumes *a priori* in the idea of the sub-personal level (i.e., the unconscious), then theory in itself offers a potentially more objective basis for its elucidation. It is perhaps no surprise therefore that the pioneers of the psychodynamic movement (i.e., Freud and Jung), unencumbered by the "science envy" that is pervasive in modern psychological science, valued the primacy of theory as the basis on which to account for their experiences in order to objectify the sub-personal level. An important contribution of this movement was the idea that scientific knowledge about psychological phenomena, in order to acknowledge its idiographic (non-ergodic) nature, is predicated on subject/object reconciliation (i.e., empirical observations~theory, idiographic~nomothetic), and wherein insight in the form of theorising is afforded its rightful place. It seems that parts of contemporary psychological science are beginning to come full circle.

5.2.2 **Variables in psychology: An epistemological dead-end?**

Implicit within the current form of scientism that pervades psychology and by extension sport psychology is the continued faith placed in the primacy of variables or abstract representations (i.e., confidence, motivation, mental toughness…) as a meaningful basis on which to develop our understanding of complex psychological phenomenon. This is despite warnings from within sport psychology that a continued emphasis on the measurement and elucidation of such variables represents a dead-end for the discipline (e.g., Nesti, 2004, Salter, 1997). In this section I will briefly explore the proposition that the current reliance on this form

of objectivist representation is hindering the development of sport psychology as a science due to the flawed epistemological premise on which this type of theorising is based[50].

In the previous section I outlined a proposition made by *idiographic science* that grouping people into populations (population-*ization*; Salvatore & Valsiner, 2010) is a futile enterprise because it is unable to account for the non-ergodic nature of psychological processes, and the associated intra-individual variation that occurs. An associated challenge to nomothetic science is the observation that psychological variables, and their measurement, offers merely surface descriptions of the observed effects of the sub-personal level (variable-*isation*?). Variables have clear heuristic value for psychological science, given their ability to allow for measurement and comparisons to be made; as well as to allow researchers to collect data and draw statistical inference on an endless array of psychological phenomenon. Yet, the proposition to be considered herein is that variables are typically based on little more than common-sense assumptions which offer no real explanatory power.

Implicit within the process of induction is that variables can be constructed based on existing notions of a phenomenon, and which in turn can be measured in order that inductive generalisations can be made (Valsiner, 2014). Yet Smedslund (1988, 1991, 1995, 2016) has consistently argued that this approach to psychological science is *pseudo-empirical* because it relies on drawing inferences based on common-sense assumptions which does not therefore require data to be collected for their verification:

> Take, for example, the following observation: a person has a certain facial expression and bodily stance leading to the interpretation that the person is surprised. One may assume that the person is surprised because something unexpected has happened, and one may test this hypothesis empirically by determining whether or not surprised persons have in fact experienced something unexpected. If the hypothesis is confirmed, this could be regarded as an empirical finding. However, the inference from being surprised to having experienced something unexpected is also logically necessary (you cannot be surprised without having experienced something unexpected) and this is knowable without collecting data. The described example is what I have labeled pseudo-empirical, that is, a finding falsely treated as empirical. (Smedlund, 2016, p. 190)

Given mental processes cannot be directly observed, their measurement is necessarily based on a construction (i.e., abstract representation), which in turn is based on a shared version

[50] A brief critique of the use of abstraction as a form of theorising was outlined in chapter 2.

of common-sense for their development. The flaw in this form of theorising according to Valsiner (2014) is the assumption that the observed phenomena have actually been operationalised for the purpose of empirical testing. Instead Valsiner points out that

> [i]n reality, we have not ‘‘operationalized’’ the concept—that does not exist other than in common language—but we have created the concept based on our common sense, through the ‘‘objective’’ act of ‘‘measurement.’’ The process is precisely the reverse—we have entified a common language notion, turned it into a thing—and projected as a presumed entity into the minds of the ordinary persons. (2014, p. 5)[51]

The consequence of objectifying common-sense notions for the sake of homogeneity and generalisation, is that one ultimately finds heterogeneity and variation (i.e., infinite regress) on the inter-individual and intra-individual level. Take, for example, the recent academic interest in the notion of *mental toughness*, which continues to be an elusive phenomenon for sport psychology researchers (Gucciardi, Gordon, & Dimmock, 2009). Jones, Hanton, and Connaughton (2002) in attempting to seek a more coherent conceptualisation of the construct suggested that the "lack of scientific rigor that has been applied in addressing mental toughness may be the key to the general lack of conceptual clarity within this area" (p. 206). To address this scientific and conceptual deficit, the researchers conducted focus-groups and interviews with "ten international performers" in order to establish a definition and identify the attributes of mental toughness (12 were identified). Quite how this study addresses the issue of scientific rigour is not made clear. The paper refers to personal construct theory (Kelly, 1955) as the theoretical justification for the qualitative methodology used; but exactly how asking ten elite athletes to solve the mental toughness riddle equates to a scientific advance is left to the imagination:

> Initially this approach does not sound like a bad idea, but what task are the researchers really asking the experts to do? They are asking them to construct fantasies (socially constructed cultural ideals), and then come up with definitions and attributes that stem from those fantasies. And this is where the problem of absolute language comes in. For example, some descriptions of mental toughness contain the words "unshakable belief," insatiable desire," fully focused," and so forth. That's the problem when you ask "ideal" sort of questions. You get an ideal (not real, not human) result. Absolute fantasy

[51] See Kristjánsson (1993) and Smedlund (1978) for consideration of this argument with respect to cognitive-evaluation theory (Deci & Ryan, 1985) and self-efficacy theory (Bandura, 1977) respectively.

language is not science; it may be the language of imagination, but it is not science". Andersen (2011, p. 73)[52]

In his thoughtful and sustained critique of the mental toughness literature, Andersen (2011) lists 76 (and counting) attributes, behaviours, cognitions etc. identified by researchers as being associated with mental toughness, and surmises that the process involves "reifying popular phraseology into suspect psychological constructs…[which are] used substantiate what has probably been established, in other terms, years ago" (p. 70).

Even if one assumes that "mental toughness" is *a thing* in its own right, and is associated with high levels of performance, are we therefore to believe that it manifests in the same way at all times on the intra- and inter-individual level? As Crust (2008) points out, "ignoring such differences is to the detriment of knowledge development, and this is dangerous as it might lead researchers down a metaphoric "blind alley'" (p. 578). If we accept that mental toughness manifests ideographically, is it possible to believe that when represented in any objectivist form, it is an actual part of the *lived experience* of athletes when things are going well? Or does it represent, as Andersen (2011) suggests, the fantasy language of the researcher's collective imagination? Associating the language of mental toughness with fantasy might appear far-fetched, but as Caddick and Ryall (2012) suggest, the term belongs to the romantic ideals of the researchers rather than having any sound epistemic basis. Why, because as conceived mental toughness can only be assigned in hindsight and on the basis of winning: "An athlete who has unshakable self-belief (and therefore according to the description, is mentally tough) but who ultimately fails in her sporting goal is considered self-deluded or arrogant" (p. 140).

The conceptualisation of mental toughness, or any other sport related construct, will remain flawed *as long as the epistemological basis for its elucidation remains flawed*. Specifically, the assumption that there is even an objective *thing* to be captured - a thing which resides solely in the psyche of the subject, as opposed to in the collective imaginations of all concerned. As suggested by this thesis, any meaningful understanding of mental toughness requires it to be situated within a robust epistemological framework, not one that merely panders to the notion of objectivity.

Without a sound epistemological footing, constructs such as mental toughness will ultimately rest on shifting sands due to methods incapable of accounting for individual

[52] Similarly, Caddick and Ryall (2012) have described mental toughness as a "pseudoscientific rhetorical construction, characterized by romantic notions of sporting idealism, elitist values, and metaphorical images of triumph and victory" (p. 139).

differences and temporal variation, but inadvertently reflecting it. How can it be any other way as long as researchers attempt to represent fluid and dynamic subjectivity in the form of static objectivist representations that are independent of context, time, or process? Yet such practice represents a form of blind obedience, the following of assumed scientific orders - taking the lead from the guiding principles, language and tools of psychological science (i.e., objectivity, causality, operationalisation, generalisation etc.) which offer no help with respect to the idiographic, non-ergodic nature of psychological phenomena. In direct contrast to non-ergodicity is the notion of *ontological invariance* which assumed that observed phenomena are independent of space and time. A principle which, whilst the natural sciences is beginning to relinquish, psychology has been historically reluctant to do so (Greenwood, 2009). To give it up, would lead to the redundancy of many of the tools which psychological science has so heavily invested in order to stake its claim for scientific legitimacy.

When the guiding epistemological principles are inconsistent with the nature of psychological phenomena under consideration, and when the idea of science is lost, an unbridgeable gap is created between the associated methods used, be they qualitative or quantitative, and subject. And when bound by these conditions, it should come as no surprise that the researchers themselves will continue to attempt to fill the void between the subject itself and objective science - in the form of limitless variables and data which continue to preoccupy psychological science (see Valsiner, 2014).

What will be explored in the remainder of the chapter is the proposition that an understanding of the psychological basis for performance, and its variation, requires a move away from the reliance on variables, or abstract representations, towards a renewed focus on theory associated with the sub-personal level.

5.3 Cybernetics – an alternate epistemology and ontology[53]

The development of the "scientific" half of psychology (i.e., natural-science as opposed to the human-science branch) can be viewed as attempts (e.g., introspectionism, behaviourism, and more recently cognitivism) to square the subject of psychology with the object of science. Whereas introspectionism and behaviourism represented the dream of an empirical science, cognitivism, with its increased emphasis on subject (i.e., the mind), was "more concerned with the kind of science psychology was to be" (Fuchs & Milar, 2003, p. 20).

[53] For excellent and more comprehensive introductions to cybernetics and its place in the history of psychology, see François (1999), Pickering (2010) and Scott (2016).

Although sport psychology is being increasingly influenced by alternative paradigms and disciplines within psychology, a cursory review of literature reinforces the suspicion that a theoretical monoculture (e.g., Stelter, 2005) still exists, with cognitive-behavioural psychology the default, go-to approach for (pseudo-) scientific respectability (Nesti, 2004). More specifically, the continued reliance on abstracting cognitive representations (i.e., confidence, mental toughness, anxiety) of psychological phenomena within sport, at the continued expense of systematic epistemological debate. If so much academic endeavour within sport psychology is (seemingly unquestionably) grounded in cognitivism, then the necessity of critique becomes even more acute, in order to examine the efficacy of this approach for the development of the discipline. Epistemological challenges to cognitivism are evident in the psychology (e.g., Varela, Thompson, & Rosch, 1991) and philosophy of sport literature (e.g., Moe, 2005), yet are noticeable by their absence within sport psychology itself.

Cognitivism, which emerged from the formative years of the "cognitive revolution", assumes causal relations between cognitivist states and behaviour, and that "cognition consists of acting on the basis of representations that are physically realised in the form of symbolic code in the brain or a machine" (Varela et al., 1991, p. 40). However, cognitivism itself represents only one part of the early cognitive revolution. The movement from which cognitivism emerged was *cybernetics-systems paradigm* (Vancouver, 2000) - "the science of the adaptive brain" (Pickering, 2010, p. 8) - which commenced over a decade before. Cybernetics adopts a *functionalist* position, given the assumption that mental processes are "functions of the biological organism in its adaptational efforts to influence and control its environment" (Sullivan, 1984, p. 12). In contrast, cognitive psychology is less interested in the regulation or purpose of behaviour, and more concerned with how knowledge structures are organised (Carver & Scheier, 1981). Furthermore, cybernetics is based on a "non-modern ontology of unknowability and becoming" (Pickering, 2010, p. 390). *Non-modern*, because it avoids the positivist tendency to reduce, enframe and thereby capture. *Unknowable*, because cybernetics views humans as being an *exceedingly complex system* (Beer, 1959), not bound by linear cause and effect relations and subject to reductionist laws. And *becoming*, because cybernetics views humans as purposeful, adaptive systems, wherein behaviour itself is *emergent*, and where "nothing present in advance determines what entities will turn out to be in the future" (*ontology of becoming*; Pickering, 2010, p. 107). This is not to suggest an ontology without rules and guiding principles; rather Pickering (2010) goes as far as to suggest

that the cybernetic viewpoint requires a fundamental reassessment of what is there for science to study with respect to what he calls *situated knowledge*[54]:

> The shift from a representational to a performative idiom for thinking about science, and from epistemology alone to ontology as well, is the best way I have found to get to grips with the problematic of situated knowledge. (Pickering, 2010, p. 26)

In other words, by believing *a priori* that humans are complex, adaptive, and purposeful in nature, also requires the development of an alternate ontological language - one which is teleological, based on a performative epistemology (Pickering, 2010). Thus, first and foremost the task becomes one of finding the most suitable archetypes, *formal language* and *metaphors*[55] (Sullivan, 1984), which in turn offer the starting point for the representation of complex and dynamic sub-personal psychological processes. Furthermore, as proposed in chapter 3, any such language is also required to be compatible, both ontologically and epistemologically, with other areas of science in order to promote conceptual integration.

5.3.1 **The language of cybernetics and beyond**

As conceived, cybernetics was premised on being an *interdisciplinary* movement, with the goal of *transdisciplinary unity* (Scott, 2016). Thus, the language of cybernetics is not only accountable to subject, but is also required to help bridge the gap between psychology and the other sciences.

As proposed in their seminar paper, "Behavior, purpose and teleology", Rosenblueth, Wiener, & Bigelow (1943) conceived behaviour, and its variation, as being either *purposeful* or *non-purposeful*. Whereas non-purposeful behaviour from this perspective is viewed as being random, purposeful behaviour implies action which is goal directed (i.e., teleological). *Goals* or *reference values* represent that which the system is working towards. For cybernetics therefore, goals are not arbitrary aims but, as with biological systems, determine the continued

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[54] Which "…seeks to recognize that the scientific observer is part of the system to be studied, and this in turn leads to the recognition that the observer is situated and sees the world from a certain perspective, rather than achieving a detached and omniscient 'view from nowhere'" (Pickering, 2010, p. 25-26).

[55] Sullivan (1984) used the terms *formal language* and *metaphor* (rather than *paradigm*) to reflect the observation that "[t]hough there are many attempts at systematic formalization of theory in psychology, none of these adds up to or commands the allegiance of the paradigm in the Kuhnian sense" (p. 2).

existence of the system in its current form. The realisation of goals requires the system to provide information about the current state in relation to the goal itself, in order that adjustments can be made. This information provided by the system which potentially results in a change of behaviour is termed *feedback* (Richardson, 1991). Feedback that results in a structural coupling between states and goals is known in cybernetics as *circular causality* (Scott, 2016) which in turn allows for the self-regulation of the system.

For cybernetics, given the complexity of the human system (i.e., hierarchical interconnected, open, and dynamic) - feedback, and by extension circular causality, offers the ontological basis on which existence itself becomes possible. Thus, an account of cybernetics cannot be complete without an acknowledgment of its biological precursor – *homeostasis*. This term, originally coined by Cannon (1932), refers to "the notion that living organisms can apparently react automatically to counter disturbances from a preferred or normal status quo" (Richardson, 1991, p. 48). In turn, homeostasis therefore allows for the stability of the system to be maintained in the face of variable internal and external conditions (Richardson, 1991).

Although cybernetics became marginalised in the 1970's as a distinct discipline (Scott, 2016), the language of cybernetics continues to find a voice in different areas of science. For example, in complexity science, feedback now is recognised as a fundamental ingredient which allows for complex systems to exist. To illustrate this point Johnson (2007) uses the example of balancing a ruler upright in the hand:

> …the only reason that you can balance the ruler on your hand as opposed to the desk, is because your eye notices the movements of the ruler, and then feeds this information to your brain which then *feeds back* the information to your hand in the form of a movement. (*Italics original*; p. 26)

Indeed, the centrality of feedback to the emergent behaviour of complex systems, cannot be overstated: "It is this intrinsic feedback generated by these objects both individually and as a whole, which ultimately is the source of the Complexity which arises in collections of all living objects" (Johnson, 2007, p. 68).

Furthermore, the use of information by the system to adjust and adapt to variable external conditions is central to the idea in complexity science that order in nature is a product of *self-organisation* of the system (Kauffman, 1995). In contrast to Newtonian mechanics, complexity science acknowledges the uncertainty, irregularity and disorder inherent within nature (i.e., chaos). Self-organisation represents the tendency for life (or complex non-linear systems), in the face of chaos, to display *emergent* order in a seemingly spontaneous manner (Kauffman, 1995).

For some physicists the acknowledgment of chaos requires a fundamental realignment concerning what there is to study, towards a "science of process rather than state, of becoming rather than being" (Gleick, 1997, p. 5). Similarly, with respect to biological systems, Rose (1997) wrote "[w]e need instead to be concerned with process, with the paradox of development by which any organism has to be and become…and with the continuous interchange between organisms and their environments (p. 18).

Because living systems exist as a function of their environment *and* self-organisation, as well as being active agents rather than passive responders, Rose (1997) argues that homeostasis has to be replaced by *homeodynamics* to account for the ability of living systems to be able to maintain themselves in the face of environmental variation. Self-organisation therefore does not represent a state of equilibrium, but a dynamic, and fluid ongoing response to variation (internal and external). The paradox being that at any point in time a complex dynamic system is said to be in a state of *disequilibrium* (or *instability*; Strogatz, 2003), yet it is this very state which allows for the emergence of ordered behaviour. Thus, the existence of life, including all that is associated with it (i.e., psyche), is dependent on its ability to self-organise in response to dynamic environments in which they are situated. The responses themselves can be viewed as both who we are and what makes life possible.

5.3.2 **William Powers' control theory**

> ...the comprehensive understanding of the human mind requires an organismic perspective; that not only must the mind move from a nonphysical cognitum to the realm of biological tissue, but it must also be related to a whole organism possessed of integrated body proper and brain and fully interactive with a physical and social environment. (Damasio, 2006, p. 252)

A common thread that runs throughout the development of the cybernetic movement is the attempt to understand how systems in dynamic environments *self-reference*, *self-organise* and *self-change* (Richardson, 1991). C*ontrol theory* (Powers, 1973) outlines a conceptual model of processes in the brain which allowed for these self-governing processes to take place. Critically, Powers model was principally based on the concept of feedback, but unlike previous efforts within the cybernetics movement which applied feedback in order to model behaviour, control theory represents an attempt to develop a conceptual model of the brain which makes

observable behaviour possible; whilst at the same time being consistent with neural physiology (Richardson, 1991):

> [T]here is a certain amount of confusion extant about the difference between a model for *cause* of behaviour and a model for *consequences* of organization…One often sees block diagrams of behavioral organization, but a close inspection usually shows that blocks are not sub-systems inside the behaving system, but subdivisions of its externally observable behaviour. As long as one is only dividing observable behavior into units that seem to hang together in some way, he has the problem *that many different ways of subdividing the same whole will result in a self-consistent description*. What is needed to build a compelling model of internal causes of behavior is some hint from nature, some suggestion that will point the theorist in the right direction and tell him how to look at what little of the insides of the nervous is known. (Powers, 1973, p. 17; *latter italics inserted*)

In other words, by not focusing on the internal organisation of the system (i.e., sub-personal level), one is confronted with an infinite regress with respect to its manifestation. The consequence being that all descriptive accounts of psychological phenomena are, in themselves, valid, but will offer little explanatory power. Why, because the multitude of outward manifestations reflect but do not reveal the mechanisms (i.e., sub-personal level) which make cognition and behaviour possible. This premise is consistent with idiographic science which views variability on the intra-individual level as one of its defining features (Salvatore & Valsiner, 2010). Because intra-individual variation cannot be generalised to the inter-individual level, idiographic science, like control theory, is concerned with *general laws governing the system* which make this possible (Salvatore & Valsiner, 2010).

Powers (1973) is deeply critical of previous attempts in psychology which develop theory based on the conflation of abstract generalisations and extrapolation with model building. Specifically, as the basis for theory development, abstraction and extrapolation in themselves (a) do not allow for theory to extend beyond the description of observable behaviour; (b) are unable to account for the effect of internal and external variation and change; and (c) are unable to provide a basis on which to account for the inner organisation (i.e., sub-personal level) which makes the observable behaviour possible.

In other words, theoretical abstraction unrelated to a mechanism represents a separation from the inner workings of its source (i.e., the nervous system), rather than providing a basis for integrating our understanding of psychological processes with respect to their biological counterparts. This is not to argue for the necessity of a fundamental materialist position. Rather,

to suggest that an epistemological criterion for the scientific credibility of a theoretical position within psychology is predicated on consistency with other domains on which the existence of psychology relies (i.e., conceptual integration; Comides, Tooby, & Barkow, 1992). If the brain itself can be meaningfully characterised as an exceedingly complex, self-organising system, it stands to reason that a scientific account of any hypothesised psychology processes (and associated subsystems) are subject to the same ontological criteria.

As with idiographic science, Powers (1973) believed that models were required to represent the inner organisation of the system which allows for the associated outward manifestations in the intra-individual level. The concept of negative feedback is one of the hints from nature that Powers (1973) draws upon to account for the underlying properties of the sub-personal level. A negative feedback loop is described by Vancouver (2005) as "one that through its operation reduces the difference between the level of a variable and the reference (i.e., goal) level for the variable" (p. 49). Critically, according to control theory, *feedback occurs on a perceptual rather than behavioural level* wherein the purpose of the system is to reduce error between a desired state (i.e., performance goal) and the current perceived state (W. Powers, 1973).

To illustrate how feedback is best understood on the perceptual rather than behavioural level, Powers (1973) uses the analogy of a control task wherein the person is required to track a moving target using a cursor. If the task was simply to keep the cursor as close to the moving target as possible, then error reduction (i.e., using negative feedback) alone would explain the associated behaviour (i.e., its purpose). However, if the person then decided to keep the cursor just to the left of the moving target, they would be able to do so not based solely on the notion of error per say, but due to the difference between the perceived current state of the system in any given moment (i.e., where the cursor is in relation to the target), and the desired state which Powers calls the *reference condition*. Critically, what this analogy demonstrates is that:

(a) On a purely objective level, error reduction per se is not a given. Error becomes relative to the reference condition as the *person* understands it. A person who successfully keeps the cursor just to the left of the target would see no error, therefore;

(b) the reference condition represents an interplay between the subject and the object - which by definition is the perceived state which requires no response (Powers, 1973). For example, if one was required to balance a ruler on their hand, wherein the reference condition is for the ruler to be perfectly horizontal, a response is only required when the person perceives the ruler deviating from this position.

(c) The internal organisation that determines the reference condition, goes relatively unnoticed compared to the perceived errors manifest in the detail of the situation as it develops (Powers, 1973). Thus, the internal organisation represents unconscious processes guiding goal-directed behaviour. This position is consistent with the "constrained action hypothesis" (McNevin et al., 2003; Wulf, McNevin, & Shea, 2001) which contends that conscious control disrupts automatic movements necessary for the successful execution of complex motor skills.

(d) The purpose of behaviour is not primarily as a response to the objective conditions that one is presented with, but the perception of the current state of the system in relation to the reference condition. For example, a defending football player makes adjustments based on their perceived optimal strategy (e.g., staying close to the player they are marking), but for an observer who perceives a different optimal strategy (e.g., keeping a bit of distance from the player they are marking) will view the errors, and by association the behaviours, differently.

(e) Thus, as Powers (1973) eloquently summarises: "behaviour is the control of perception" (p. xi).

As an example of how this process works, take another exceedingly complex system: the financial markets. As Johnson (2007) points out, financial markets operate as complex systems because, like the weather, there is no perfect model of prediction which can inform decision making. Instead, variations within stock markets results from localised decisions on whether to buy or sell, which is dependent on perceptual feedback from within the system regarding whether stock is over or undervalued. Inherent within the system is a degree of uncertainty on the part of the individual agents (i.e., brokers) regarding the decision whether to buy or sell. The paradox being that if there was a perfect prediction model every agent would be using it, resulting in the system breaking down – all agents would sell in response to stock being overvalued making it worthless (Johnson, 2007). Thus, when viewed as a complex system, the financial markets existence, like the organisation of the brain, is predicated on not just feedback but also localised perceptual error.

Furthermore, the behaviour of the stock market itself (i.e., fluctuations in stock value) is a function of a self-perpetuating cyclical process between the fluctuations being fed back to the agents and the decision to either buy or sell (Johnson, 2007) - wherein the behaviours of the agents become both the cause *and* effect of the market fluctuations (i.e., circular causality). What this analogy reveals therefore, is that for a complex system, reference conditions cannot by definition be fixed states because that would result in the breakdown of the system. Rather,

reference conditions and by association behaviour, are necessarily dynamic, subject to circular causality, external variations and perceptual error.

In sum, rather than represent little more than a mechanistic view of human psychology akin to the principle of *homeostasis*, as suggested by some psychologists (e.g., Bandura & Locke, 2003), the appropriation of feedback by Powers as a perceptual mechanism represents a meaningful attempt to account for the process of becoming (being~becoming; subject~object) of self - more consistent with the notion of *homeodynamics*. Whereas feedback itself represents the objective mechanism, its function according to Powers (i.e., the control of perception), results in a dynamic structural coupling (i.e., circular causality) between behaviour and perception: "What an organism senses affects what it does, *and what it does affects what it senses*" (1973, p. 41, italics original). Thus, *feedback* serves as one theoretical basis for the regulation *and* development of self (i.e., being and becoming respectively) in the face of being situated in complex and dynamic environments.

5.4 **Conclusions**

> Every other science has so to speak an outside; not so psychology, whose object is the inside subject of all science (Jung, 1960, p. 223)

The psychology of becoming outlined in this chapter suggests that attempts to model psychological processes based on static, abstract representations is ontologically and therefore epistemologically flawed. Within this frame, the purpose of examining psychological processes is to help towards elucidating the objective structures which help to shape subjective experience (i.e., sub-personal level); structures which are consistent with other branches of science in order to allow for conceptual integration. It is this basis (i.e., subject~object) on which a hope of a science is based, not the continued mining of psychological constructs associated with lived experience; constructs which don't require science for their elucidation.

In this chapter I have considered theoretical developments in psychology consistent with notion of the psyche as a dynamic process based within a teleological system. Jung centred his ontology of becoming on the idea of *individuation*, a holistic term used to represent the total project of the psyche: the integration and realisation of "self" through the paradox of becoming who we are (being~becoming). Influenced by the natural sciences, Jung believed that psychic activity was based on rules which had equivalence in nature (Stevens, 1990), wherein the regulation of psychic activity, and by association the individuation process, is

based on maintaining a dynamic equilibrium between opposing parts of oneself (i.e., being) - whilst at the same time engaging in continual synthesis between the "adaptations to the conditions of the inner world" (Jung, 1960, p. 39), and adaptation to the environmental conditions (i.e., becoming).

Control theory (Powers, 1973), attempts to model the inner organisation of the brain based on the concept of feedback, wherein behaviour occurs in response to a perceptual error between the so-called *reference condition* (i.e., what the system is working towards) and the perceived current state of the system. Rather than represent a relatively closed system, analogous to homeostasis, feedback regulates an emergent thread between the structural coupling of behaviour and perception in the face of environmental variation (i.e., homeodynamics).

The language of control theory has distinctly non-humanistic quality, to which Powers himself was acutely aware. In the preface to his book, Powers (1973) argues that the elucidation of a mechanism does not deny the idiographic quality associated with psychological processes. Rather, in anticipating this potential challenge to his theory, Powers (1973) argues that equating mechanism with a view that humans are little more than automatons reflects the implicit acceptance of a dualism between the idea of a mechanism and humanism. Instead, Powers suggests that the seemingly irreconcilable views of humanists and mechanists can be overcome by the reciprocal process of understanding how *mechanism* in itself allows for understanding the totality of what it means to be human (i.e., experience), and vice versa:

> This process puts experience before theory but paradoxically shows that much which seems uniquely human is after all only acquired mechanism. The human remainder, the factor distinguishing man from animal or machine, is visible in the model only as a ghost, through its transcendent effects on the model itself…Whatever its nature, and I am sure it has a nature, it is adequately understandable through its effects on experience – and incidentally, on learning. Adequately, that is, for any purpose I can now conceive (1973, p. x).

Thus, Powers epistemological position is consistent with the premise of idiographic science. Namely, to study the interdependence of what makes us individual *and* what we have in common (i.e., *idiographic* subjectivity~*nomothetic* objectivity; experience~nature;

person~subpersonal; empirical regularities~theory; subjective~objective), and to base theory thereon[56].

Furthermore, Powers (1973) offers one basis on which to capture the intra-individual variability of psychological processes. This basis is not primarily the mechanism itself, despite its importance, but the suggestion of an interface between subjectivity and objectivity, which in turn offers an approximation towards their reconciliation. When knowledge is viewed as a process rather than state (e.g., Piaget, 1972), no theory in psychology can ever be considered final and therefore should not be held to that account. To do so would be absurd, as it would suggest that all questions concerning psychology can be reduced to a single formula. Rather, mechanisms such as perceptual feedback, should be judged on the extent to which they contribute towards the development of psychology as a mature science. As suggested in this chapter, this contribution relates to (a) the extent to which it develops the possibility of establishing general laws concerning a deeper underlying nature; (b) its ability to account for empirical regularities (i.e., abductive reasoning); and (c) its consistency with other developments in science (i.e., conceptual integration). Taken together, all are ultimately concerned with the reconciliation of subject and object.

Jung believed that the establishment of psychology as a science was predicated on unity within, and with the other sciences (Shamdasani, 2003). This establishment should not be understood as "catching up" but, as we begin to lose the certainties associated with classical theories of knowledge, being part of the dialogue about what science is (Piaget, 1972). Thus, to consign to history the perpetual state of crisis in psychology requires epistemology to be placed at its heart. When knowledge cannot be considered final, the process of continual clarification concerning what knowledge is, as opposed to the unquestioning accumulation of data, becomes central to the process of doing science. Only then is it likely that the conditions be right for a unifying paradigm to emerge out of disciplinary fragmentation driven by vested self-interest.

Despite apparent differences in language, scope and perspective, a closer reading of the work of Jung and Powers reveals that the spirit of unification underpins their respective

[56] The fundamental epistemological importance of circularity has been recognised in cognitive psychology (Varela et al., 1991), complex systems theory (Füllsack, 2016), and, cybernetics and general science (L. Kauffman, 2016). The time seems right to consider the implications of circularity with respect to the theory and practice of sport psychology (see chapter 7 for some preliminary consideration).

psychologies. Furthermore, what emerged from both is a shared set of theoretical assumptions which help define their work and which could guide the way towards a theory of being and becoming:

- The psyche functions as a teleological self-regulating system, governed by a dynamic inner organisation.
- Experience is, in part, shaped by the inner organisation of the psyche (i.e., sub-personal level/unconscious), and vice versa (i.e., circular causality).
- The organisation of the system, and any associated mechanisms, cannot be understood based on abstract generalisations due to their idiographic quality. Thus suggesting that when viewed *a priori* as a teleological system, the manifestations represent epiphenomena unique to the individual.
- Consistent with the premise of idiographic science, it is the establishment of general laws, consistent with the other sciences, and capable of capturing experience which are of primary concern for the establishment of a mature discipline.

The implications of these epistemological and theoretical developments will be considered in the next two chapters with respect to sport psychology. Based on the notion that the psyche represents a dynamic system, in the next chapter a new approach to our understanding of peak performance and dysfunctional performance in sport - *Correction theory* (Cowen, Nesti, Cheetham, 2014) - will be outlined. The central idea to be developed is that with respect to performance, understanding the psychological basis for its variation, rather than establishing the psychological correlates, is of primary concern for future developments within sport psychology.

Chapter 6

The psychology of performance variation in sport[57]

Life is like riding a bicycle. To keep your balance you must keep moving (Einstein)

The finish line at the end of a career is no different to the finish line at the end of a match. The objective is to get within reach of that finish line, because then it gives off a magnetic force. When you're close you can feel that force pulling you, and you can use that force to get across. But just before you come within range, or just after, you feel another force, equally strong, pushing you away. Its inexplicable, mystical, these twin forces, these contradictory energies, but they both exist. I know, because I've spent much of my life seeking the one, fighting the other, and sometimes I've been stuck, suspended, bouncing like a tennis ball between the two. (Agassi, 2009, p. 7)

If you can meet with Triumph and Disaster
And treat those two impostors just the same (Kipling, 'If…')

6.1 **Preface**

The theory to be outlined in this chapter was the result of an ongoing reflection into my own ontology. Specifically, the idea that the notion of balance offers a useful conceptual and metaphorical basis on which to account for order/existence on all levels. On a macro level I viewed the so-called "Goldilocks zone" for planets – the requirement of a planet to be not too far or too near to its star in order to support life – as evidence for the interdependence of human existence and balance. Similarly, on a micro, or psychological level, I repeatedly observed how psychological processes, and the associated states were dependent on, and defined by, the

[57] The wording and content of this chapter is a modified version of the paper entitled "The psychology of dynamic balance and peak performance in sport: correction theory" (Cowen, Nesti, & Cheetham, 2014).

dialectical interplay of opposing poles. For example, the experience of happiness does not just represent the negation of unhappiness, but also is dependent on it. In other words, I could only make sense of a psychological state, through its structural relationship with its complimentary opposite. What emerged was a fundamental belief in the regulatory function of opposites as the basis for the organisation and manifestation of psychological functioning. This position represents my subjectivity, or the "personal equation", and therefore in itself, cannot make a claim to objectivity. Whilst my thoughts on this matter were in their infancy, I was interested in whether this idea had found expression within science and philosophy. Frustration with the dominance of positivist thought within psychology during my undergraduate studies led me to read more widely upon graduation. What quickly came apparent was that there was no originality in my position.

I learnt that interest in the regulatory function of opposites was a fundamental aspect of Eastern philosophy. Furthermore, the Eastern worldview recognised that nature was intrinsically dynamic, subject to change as a function of time (Capra, 1975; Lent, 2017). In pre-Socratic philosophy, Heraclitus held similar views about the laws of nature, and again, recognised the regulatory function of opposites a fundamental ordering principle in nature. Reading about Heraclitus led me to Frieda Fordham's *An Introduction to Jung's Psychology* (Fordham, 1966), and the following passage in the introduction:

> Jung's conception of the psyche is of a system which is dynamic, in constant movement, and at the same time; he calls the general psychic energy libido…The libido flows between two opposing poles…Jung usually refers to the opposing poles as 'the opposites'. The greater the tension between the pairs of opposites the greater the energy; without opposite there is no manifest energy…The opposites have a regulating function (as Heraclitus discovered many hundred years ago), and when one extreme is reached libido passes over into its opposite…To Jung the regulatory function of opposites is inherent in human nature and essential to an understanding of human nature (p. 17-18)

On subsequently reading *Two Essays on Analytical Psychology* (Jung, 1966a) I was struck by how Jung's view of the psyche, based on the regulatory function of opposites, underpinned all of analytical psychology. Jung already had developed a highly sophisticated global vision of the psyche, and beyond, based on ideas that I had only started to grapple with!

Although the constructs outlined in this chapter were initially derived from the notion of balance within an open system (i.e., *dynamic balance*, *imbalance*, *correction*), they have already been explored throughout Jung's extensive collected works (i.e., *equilibrium*, *disequilibrium*, *compensation*) as the basis for understanding the dynamics of the psyche and

its manifestation. Rather than give up on my thesis (my first inclination), it became apparent the importance of ideas which appeared to transcend individuals time and place[58], and this led to one of the epistemological criteria considered in this thesis. Namely, there is a the need for ideas and theoretical developments to transcend individuals, and be consistent with developments across difference scientific disciplines (i.e., conceptual integration, Comides, Tooby, & Barkow, 1992).

6.2 **Introduction**

> A psychological theory, if it is to be more than a technical makeshift, must base itself on the principle of opposition; for without this it could only re-establish a neurotically unbalanced psyche. There is no balance, no system of regulation without opposition. The psyche is just such a self-regulating system. (Jung, 1966a, p. 61)

Aphorisms such as *success out of failure* and *triumph over adversity* are commonplace within sport. One regularly hears coaches and players talk about expecting a reaction following defeat, and warning against complacency after victory; alluding to a possible interdependent relationship between success and failure rarely explored within the academic literature. The pursuit of achieving sustainable peak performances in competition is arguably one of the defining goals and challenges for elite athletes (Nesti, Littlewood, O'Halloran, Eubank, & Richardson, 2012), and for those who seek to support them. Yet variation in performance is a certainty for athletes, including at elite levels, making success *and* failure an inevitable part of elite athletes lived experience (Gilbourne and Richardson, 2006)[59].

Privette (1981) defined peak performance as "behaviour in any activity that transcends what normally could be expected in that situation" (p. 51). Based on this definition, peak performance refers to a higher level of functioning within any given activity (Privette, 1983), which is by definition quantitatively and/or qualitatively different to a "normal" level of performance.

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[58] Jung used the term *archetypes* to describe universal pre-dispositions for patterns of thought.

[59] The final version of this paragraph is indebted to input by one of the co-authors.

The qualitative nature of the subjective experiences associated with peak performance in sport has attracted significant attention in the literature (i.e., Csikszentmihalyi, 1975; Jackson, 1992, Privette, 1981; Ravizza, 1977, 1984). Many of these findings suggest that peak performance is an *ego-transcending experience* (Maslow, 1968) consistent with the construct of *flow* (Young & Pain, 1999), which Jackson et al. (2001) described as an *optimal mental state* theoretically associated with *optimal athletic performance*. Csikszentmihalyi (1990) identified 9 characteristics of flow, including total concentration, a sense of personal control, and the merging of action and awareness. Jackson & Csikszentmihalyi (1999) give the following account of a runner reportedly in a state of flow: "I felt very in control…I felt very strong. I was able to run as I had planned…I felt really focused. I just felt like, you know, like athletes say, 'It clicked'; it felt great the whole way" (p. 4).

However research into the association between flow and performance in sport settings reveals an inconsistent picture (see Schuler & Brunner, 2009). Even if one is to assume that flow is positively associated to performance, research has suggested that it is not experienced frequently by athletes (Jackson, 1992) despite a relatively high proportion of athletes reporting to have perceived control of factors affecting flow occurrence (see Swann, Keegan, Piggott, & Crust, 2012, for a review). Ravizza (1977, 1984), however, found that most athletes interviewed reported that peak performance states were involuntary and temporary in nature.

As considered in chapter 3, Swann et al. (2012) concluded that whilst we have a fairly comprehensive understanding of what it is like to experience flow, "research should move from such description to *explaining* flow" (p. 818). If one is not to confuse description with explanation, it is likely that any explanation of optimal mental states will require an approach which moves away from static taxonomy, or abstraction, towards acknowledging the dynamic, temporal nature of performance itself.

Idiographic science would suggest that theoretical attempts to understand peak performance in sport have been impaired by focusing on its qualitative nature based on a between-person (i.e., inter-individual) level of analysis. A between-person level of analysis allows researchers to assess cross-sectional (single time point) variation on a particular measure; and has typically been used to capture the subjective experience of peak performance states such as flow (i.e., Jackson, 1992; Ravizza, 1977). However Vancouver, Thompson, and Williams (2001) proposed that within-person (i.e., intra-individual) level of analysis is better able to conceptualise change in performance levels over time, and thus allow for the possibility of temporal precedence to be established (Curran & Bauer, 2011).

For example, confidence is considered by many researchers as one of the most important psychological influences on athletic performance (e.g., Bandura, 1997; Jones & Hanton, 2001; Vealey, 2001). According to Bandura (1986, 1997), confidence, conceptualised as self-efficacy, is most strongly influenced by previous accomplishments. In turn, self-efficacy is assumed to exert a positive causal influence on future performance (Bandura & Locke, 2003). Indeed, there is considerable empirical support for a positive linear relationship between self-efficacy and performance on a between-person level of analysis (e.g., Moritz, Feltz, Fahrbach & Mack, 2000; Stajkovic & Luthans, 1998). However, Vancouver and colleagues (Vancouver, Thompson, & Williams, 2001; Vancouver, Thompson, Tischner, & Putka, 2002; Vancouver & Kendall, 2006) have suggested that the significant effect of previous performance on self-efficacy could conceal a negative effect of self-efficacy on future performance. In support of this Vancouver et al. (2001) reported that studies which utilise a within-person approach suggest that a successful performance increases the probability of poorer subsequent performance.

For example, Mizruchi (1991) studied National Basketball Association playoff data between 1947 and 1982, and found that "winning the previous game increased the probability of losing the present game by about 12%" (p.186). Mizruchi (1991) hypothesised that in team competition, success breeds failure because it can lead to overconfidence which reduces the urgency for future success. Furthermore, Mizruchi (1991) also suggested that prior failure could increase the likelihood of success because it increases the motivation for achievement in the future.

In order to account for the temporal, idiographic nature of performance variation in sport, a new theoretical framework will be outlined – correction theory. Correction theory is based within a dynamic systems perspective, in an attempt to capture the variable, complex nature of athletic performance. When judged from this perspective, the individual is viewed as a non-linear open system of which one of the defining characteristics is the spontaneous emergence of self-organisation (Kauffman, 1995; Strogatz, 2003) and indeterminacy on the cognitive-behavioural level (Schall, 2004).

In relation to the development of research and theory within the sport sciences over the last three decades, Balague, Torrents, Hristovski, Davids & Araújo (2013) observed that a mechanistic view of human organisms has dominated the development of research and theory. Given the tendency within sport science to overlook the dynamic organism-environment relationship in favour of reductive internal (mental) mechanisms (Davids & Araújo, 2010), Balague et al. (2013) suggested that complex systems approaches provide a more ecological

basis on which to conceptualise sport related phenomena. Furthermore, I believe that a dynamic systems approach is a promising way to develop theory with regard to the psychological basis for sporting performance.

Correction theory also utilises control theory (W. Powers, 1973), based within a class of theories referred to as the *cybernetic-systems paradigm* (Vancouver, 2000, 2005). As outlined in the previous chapter, control theory theorises that in complex environments, control is exerted on the system based on the concept of negative feedback, which W. Powers (1973) viewed as the "central and determining factor in *all* observed behavior" (p. 44).

Based on these perspectives, two constructs, or metaphors, are outlined which form the basis of correction theory:

- *Dynamic balance* - A state in which a robust complex system will self-correct in response to imbalance (resulting from perceived variation/challenge) in order to maintain functional organisation; or, a naturally occurring phenomenon which occurs due to the necessity of robust, stable complex systems to self-organise through correction; or, the individual *and* coordinated expression of balance and imbalance[60]
- *Correction* - The response of the system to a source of imbalance or challenge

Correction theory views the individual as a system, and assumes that dynamic balance underwrites individual functioning. It will be argued that such a view of balance allows a new perspective on our understanding of peak performance and performance variation in sport. The central thesis is that we can no longer view peak performance[61] and dysfunctional performance[62] as unrelated occurrences. Thus, instead of viewing dysfunctional performance as an anathema, it paradoxically forms a necessary part of or understanding of peak performance in sport. Peak performance and dysfunctional performance are viewed as two sides of the same naturally occurring phenomenon; a dynamic self-correcting system.

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[60] The latter is based on Kelso's (2008) notion of *meta-stability*, which is described as "the simultaneous realisation of two competing tendencies: the tendency of the components to couple together and the tendency for the components to express their intrinsic independent behavior" (p. 186).

[61] For consistency, the term *peak performance* will be used in this paper to describe any performance which is significantly above what can normally be expected (Privette, 1981).

[62] Conceptualised as a below average performance.

6.3 **Balance – Conceptual meaning**

The ubiquitous nature of the term *balance* opposes a universal definition. The *Concise Oxford English Dictionary* (Soanes & Stevenson [Eds.], 2008) lists seven definitions for balance (noun), not including related terms such as *balanced* and *on balance*. Definitions include "a counteracting weight or force" and "mental or emotional stability" (p. 100). The metaphor of the weighing scales has endured, and is reflected in Aristotle's *golden mean*, and Camus' philosophy of limits. Metaphysically, balance can also be considered in terms of recognition and/or acceptance of both sides of a particular dichotomy, and their inter-relation. As outlined in chapter 2, Jung developed a model of the psyche governed by the principle of dynamic opposition (Stevens, 1990) between opposing, yet complimentary systems (e.g., consciousness~unconsciousness; progression~regression). When reflecting on the lessons from history with respect to the boundaries of human existence, van Deurzen (2002) suggested that the "struggle between opposites" (p.52) is one of the defining characteristics, in which the existential goal is to avoid one-sidedness.

Considered dynamically, balance cannot be seen as a stable ideal, but a constant shifting of sand, taking on new forms. In relation to a non-equilibrium self-organising (open) system, absolute balance is a misnomer which doesn't allow and account for imbalance, and therefore variation and change. Non-equilibrium ordered systems are said to be maintained and regulated by the continuous dissipation of energy, where the constant flux of energy through the system allows for order (Kauffman, 1995). Thus for a dynamically balanced system, and in light of Kelso's (2008) notion of meta-stability, *balance necessitates imbalance,* and *imbalance necessitates balance*.

Although the idea of the *complementarity of opposites* is a new departure for sport psychology, it has lineage within the parent discipline of psychology (e.g., Jung's depth psychology), as well as in the natural sciences (see Kelso & Engstrøm, 2006) and philosophy (e.g., Heraclitus's notion of the *unity of opposites*). In reviewing such developments, Kelso & Engstrøm (2006) suggested that Neils Bohr's notion of complementarity could be a starting point to consider broader human concerns. Kelso & Engstrøm (2006) introduced the term *complementary nature,* which they defined as "a set of mutually dependent principles responsible for the genesis, existence, and evolution of the universe relating to or suggestive of complimenting, completing, or perfecting relationships and being complimented in return" (Kelso & Engstrøm, 2006, p. 39). This definition implies that the existence of the universe, and that which inhabits it, is dependent, and defined by its ability to organise itself based on the

complementarity of opposites. Thus implying that the study of any phenomenon is incomplete without a consideration of its relationship with its complementary opposite.

6.4 **Balance and sport performance**

Within elite sport, temporal variation in performance is a reality for all athletes. This chapter will argue that these different performance levels are inter-related, and that peak performances are dependent on psychological and systemic sources of imbalance within elite sport. For example, Balague (1999) has observed that elite athletes have to make major sacrifices in other aspects of their lives in order to fulfil the demands of their sport, as well as being required to give an extreme level of commitment to the activity itself. Similarly, Miller and Kerr (2002) have suggested that there is a cost of pursuing *performance excellence* at the expense of the overall development of the person, which they suggest could be due to over-identification with their athletic role.

From a more philosophical perspective, the work of Loland (2000) considered the effect of the *logic of quantifiable progress*, whereby progress is characterised by quantification of performance, and the breaking of records. The flaw that Loland identifies within this logic is that the goal of being *citius*, *altius*, *fortius* (faster, higher, stronger) doesn't take into account our limitations as biological beings. Our "phylogenetic potential is stable" (Loland, 2000, p. 43), but this is ultimately incompatible with our insatiable appetite for improvement. Whilst peak performance is a defining goal of elite sport, the possibility of continuous peak performances appears an elusive dream. Ravizza (1977) found that peak performances are viewed by athletes as the exception rather than the norm, suggesting that athletes rarely perform to their full potential. Furthermore, Loland (2000) suggested that there could be a human cost for the pursuit of continual improvement, including the use of doping and genetic engineering within sport.

Culbertson (2005) suggested that such logic also has psychological implications for the athlete that can be encountered on an almost daily basis. Culbertson (2005) argued that to take part in record sports where quantifiable progress is the goal, promotes the need for self-deception on the part of the athlete. Drawing upon Sartre's notion of bad faith, Culbertson (2005) suggested that there is a fundamental contradiction between the endless pursuit of records (striving for transcendence), and human facticity. The latter he describes as "their past, their current situation, and their body – in short, that which is a given fact of their existence" (Culbertson, 2005, p. 67).

> An athlete in pursuit of progress denies this contradiction yet is fully aware of it. The athlete believes that continual progress is possible (and conducts his or her life entirely in accordance with this belief) yet knows that it is not. This self-deception is bad faith. (Culbertson, 2005, p. 73)

In short, for those who strive for perfection, bad faith or imbalance is the price that most elite athletes will pay. Miller & Kerr (2002) alluded to this imbalance when they suggested that performance excellence is often at the expense of *personal excellence*, compromising the development of the whole person, and arguably increasing the likelihood of athlete burnout and/or psychopathology. This imbalance has also been considered within research investigating the deleterious effects of perfectionism in sport (e.g., Gould, Udry, Tuffey, & Loehr, 1996; Lemyre, Hall, & Roberts, 2008). What hasn't been considered is the possibility that notions of balance and imbalance, in relation to a dynamically balanced system, might provide a new theoretical framework to help develop our understanding of performance variation and peak performance in sport.

6.5 **Correction theory**

> The psyche is a self-regulating system that maintains its equilibrium just as the body does. Every process that goes too far calls forth compensations, and without these there would be neither a normal metabolism nor a normal psyche. In this sense we can take the theory of compensation as a basic law of psychic behavior. (Jung, 1966b, p. 153)

The genesis of correction theory is in part indebted to Jung's dynamic view of the psyche, which assumes that the regulatory function of opposites underpins psychic functioning (Stevens, 1990). Jung based his *theory of compensation* on the *principle of equivalence* which states that "for any given quantity of energy expended or consumed in bringing a certain condition, an equal quantity of the same or another form of energy will appear elsewhere" (Jung, 1960, p. 18).[63]

It is worth noting that the principle of compensation has been discussed in relation to sport psychology by Ravizza (2002). Drawing on humanistic and existential psychology to explain his role with professional athletes over many years, Ravizza claims that teaching skills

[63] See chapters 2 and 4, and Jung (1960) for a more detailed outline of his ideas concerning the *energetic standpoint*.

that allow performers to compensate and adjust mentally has been a cornerstone of his applied work. The notion of compensation, or correction, is also an implicit element in W. Powers (1973) control theory.

Correction theory is based on the central assumption that *dynamic balance is a naturally occurring phenomenon which occurs due to the necessity of robust, stable complex systems to self-organise through correction.* Two associated propositions will be considered in relation to sport, as well as with respect to the implications for performance variation and peak performance in sport.

6.5.1 **Proposition one**

Challenges will require corrections in order to maintain the robustness of a dynamically balanced system.

We view a correction as the response (accommodation) of the system to a source of imbalance or challenge; the mechanism of which is to retain function, and allow for the required oscillations driven by the tension between balance and imbalance.

With few exceptions, corrections are evident in athletes who continually strive for peak performance within their sport, and can present on different levels (i.e., physical, psychological, interpersonal etc), but will typically manifest in the form of a cost to another aspect of the athletes' lived world (Balague, 1999). These costs can include constraints placed on social life, added pressures in relationships with coaches, family and friends, and physical fatigue. In psychological terms, costs may involve emotions such as anxiety and anger, and cognitions about failed expectations, confidence issues and doubt (Nesti, 2011). Whether a correction can manifest in the form of a *performance correction* is yet to be explored in the literature, but some potential evidence will be considered later in the chapter.

Whilst an athlete might not show any outward consequences of their endeavour, the necessity for redress means they, and/or others, will almost always pay a personal price. This interrelation between the person and athlete makes it unsurprising that an increasing number of applied sport psychologists report using a holistic approach to consultancy (e.g., Andersen, 2009; Bond, 2002; Friesen & Orlick, 2010; Henschen, 2001; Lindsay, Breckon, Thomas, & Maynard, 2007; Nesti, 2004; Ravizza, 2002; Simons & Andersen, 1995; Tod & Bond, 2010).

6.5.2 **Proposition two**

Imbalance is a requisite aspect of dynamic balance.

Human systems are continuously being exposed to external influences, resulting in a dynamic form of self-organisation (Bertalanffy, 1950). At any given point in time, a dynamically balanced system will be in a state of imbalance, but is considered robust as long as it maintains the ability to correct itself. On this basis, negation rather than imbalance is diametrically opposed to balance. Imbalance represents a challenge to the balanced system but not a total negation of the existing state. Therefore imbalance represents an open system in a state of flux, but the system is (paradoxically) considered balanced because of its inherent tendency to correct itself, and its capability to adjust. Rose (1997) recognised this paradox in observing that the stability and self-organisation of an open system is dependent on the individual components being in a state of constant flux: "Change is virtually the only constancy. Stasis is death" (Rose, 1997, p. 140). If the stability of an open system is dependent on continual change, or variation, this has important implications for our understanding of the nature of performance variation and peak performance in sport.

6.5.2.1 **Implication one**

This proposition provides a theoretical basis for observation that peak performances are intermittent and temporary in nature (Ravizza, 1977, 1984). A central tenet of this approach is that there is a dynamic tension between the tendency of the system to self-organise in order to remain robust (balance), and the desire to achieve continual peak performances (imbalance). On this basis, peak performance states by their very nature are considered inherently unstable and therefore unsustainable.

6.5.2.2 **Implication two**

This proposition supports the observation that athletes have limited conscious control over the psychological states associated with peak performance (Jackson, 1992). Jackson (1992) gives the following account of a figure skater commenting on the perceived controllability of flow:

> Yeah, I think you can increase it…It's not a conscious effort. If you try to do it, it's not going to work. I think maybe through trying you turn off the switch so it can't happen…I think there are things, factors you can lessen, to make it happen more often. I don't think it is something you can turn on and off like a light switch. (p. 174)

The idea that we misattribute conscious thought as the primary cause of behaviour, has received considerable support in the psychology literature (see Wegner & Wheatley, 1999, for a review). Wegner and Wheatley (1999) conclude that "the real causal mechanisms underlying behaviour are never present in consciousness. Rather, the engines of causation are unconscious mechanisms of mind." (p. 490). If peak performance states are subject to unconscious as well as conscious processes, it is likely that deterministic predictability is an impossible dream. When viewed as a feature of a complex system, we suggest that peak performance states are an emergent phenomenon; order at the edge of chaos (Kauffman, 1995; Waldrop, 1992), and therefore not subject to mechanistic laws.

6.5.2.3 **Implication three**

This proposition suggests an interdependent relationship between peak performance and dysfunctional performance states. As previously stated, corrections are viewed as the response of a system to a challenge (proposition 1). Given that the tendency of any dynamic system is to maintain its robustness and integrity through self-organisation (Kelso, 1995), the response to any form of imbalance is to compensate (correct) to avoid negation. It is therefore theoretically possible that, in some instances, a dysfunctional performance could be, in part, a self-regulatory (involuntary) response to peak performance(s); and a peak performance could be, in part, a self-regulatory (involuntary) response to dysfunctional performance(s). One would therefore expect to find the foundation for a peak performance in the psychological response to dysfunctional performance(s); and the seeds of a dysfunction performance in the psychological response to peak performance(s).

6.5.3 **Dysfunctional performance and peak performance: An interdependent, circular relationship?**

Although correction theory is a new departure for sport psychology, there is a growing body of literature which suggests that a circular relationship exists between dysfunctional and peak performance states. As outlined in chapter 4, Silva, Hardy, & Crace (1988) introduced two constructs to describe how momentum can be lost or gained:

Positive inhibition - "the process whereby success may actually result in the loss of momentum and thus increase the probability of subsequent failure" (p. 346).

N*egative facilitation* - "whereby failure increases the probability of subsequent success" (p. 347).

Cornelius, Silva, Conroy, Petersen (1997) developed the *Projected Performance Model*, based around these two constructs, to explain how shifts in momentum could be related to the perception of increased or decreased performance levels. Specifically, the Projected Performance Model suggests that performance fluctuations around the mean are in part due to inhibitory forces (e.g., over-confidence and complacency) when the athlete has a positive perception of the performance, and facilitative forces (e.g., increased motivation) when the athlete's perception of the performance is negative (Cornelius et al., 1997).

Poczwardowski and Conroy (2002) interviewed eight elite athletes and eight performing artists about their coping responses to success and failure. Interestingly, it was found that coping responses to failure included facilitative steps to improve future performances. For example, 69% of participants reported enhanced motivation after failure; and 69% of participants reported to having learnt from previous failures, and had subsequently improved (Poczwardowski and Conroy, 2002). Similarly, in a study of academy football players, Sagar, Busch, and Jowett (2010) found that all players interviewed, adopted at least one problem-focused coping strategy in response to failure, including increased effort and determination to prove their ability.

Carver (2003) suggested that the feelings associated with things going well on a specific task (i.e. winning) can result in a shift of resources to other perceived needs; a process Carver (2003) referred to as *coasting*. In three studies involving multiple goal pursuit, Louro, Pieters, & Zeelenberg (2007) found that positive emotions associated with being close to achieving a goal did result in a reallocation of effort towards other goals. Similarly, W. Powers (1991) suggested that when an individual has optimistic beliefs about their current performance level (i.e., overconfidence), the perceived discrepancy between the observed level and desired level diminishes, resulting in less resources being allocated. On the other hand, optimism in relation to higher goals being set, results in an increase in effort due to the perceived discrepancy between current performance level and goal level (W. Powers, 1991). Thus, according to control theory (W. Powers, 1973), it is not psychological variables (e.g., self-efficacy) themselves which determine the level of effort, but discrepancies between perceived current and ideal states. This proposition has been supported in a recent study by Woodman, Akehurst, Hardy, & Beattie (2010) who found that inducing self-doubt in participants perceived ability, resulted in higher performances on a skipping task. Woodman et al. (2010) concluded that "a decrease in self-confidence (i.e., an element of self-doubt) may increase participants' perceived discrepancy between their current performance standard and their goal (potential) standard, which leads them to increase on-task effort" (p. 469).

Even if high levels of motivation are maintained, an athlete's internal world cannot always match the external reality (the desire to win alone is not enough). Positive thinking, generally believed to be essential for peak performance, cannot control variations in external factors, such as weather, playing surface, and opponents ("He played better than me. There's not a whole lot more to it." - British tennis player Andy Murray, on his third-round exit to Stanislas Wawrinka in the 2010 US tennis open). Such factors will inevitably vary, and so therefore will the performance and the outcome. Positive emotions in sport are therefore in themselves unstable because they do not entirely reflect all aspects of an athlete's lived reality (Nesti, 2004). Inevitable challenges to this state potentially result in the experience of emotions such as anxiety and possibly depression. In turn, subsequent feelings of joy and adulation are duly heightened. Similarly, a football coach, who compromises the balance of the team in favour of attack, increases the likelihood of scoring a goal; but also increases the likelihood of conceding a goal. As long as an athlete lives in bad faith, and aspires to produce a peak performance in every competitive event (here facticity is affirmed as being transcendence), performance corrections in the form of *choking* (Baumeister, 1984), *catastrophe* effects (Fazey & Hardy, 1988), and *yips* etc. are inevitable.

Whilst negative performance corrections might appear to have little value, Vealey and Chase (2008) suggest otherwise:

> Successful people often reduce their attention because they have no reason to change strategies or standards. Thus self-correcting spirals are more beneficial than upwards spirals because a person who analyses performance can make adjustments in future efforts and reverse the previous decrease (or increase) in performance. (p. 95)

6.6 **Concluding remarks**

In this chapter I have considered some of the implications of W. Powers (1973, 1991) control theory and dynamic systems approaches for our understanding of peak performance and performance variation in sport. Cybernetic models of self-regulation and dynamic system approaches offer the complementary principles of feedback and self-organisation (Carver & Scheier, 2002); both of which form the theoretical basis of correction theory. More importantly, we believe that the holistic notion of dynamic balance, as outlined in this paper, offers researchers a basis on which to explore performance variation in sport with regard to its interrelation to the person. When judged from this perspective, peak performance is not viewed as an end in itself, but part of an on-going dynamic process. Rather than viewing the inevitability of performance variation as a defeatist position, we believe that embracing its

reality will paradoxically free athletes and those who support them, to work towards a higher frequency of peak performances in their sport. As M. A. Powers (1994) observed: "variability…(is) the essence of behavior: the phenomenon to be explained, not explained away" (p. 1).

Chapter 7

Theoretical implications for sport psychology: The role of time

> When god is dead, human beings – much to their detriment – are at risk of taking psychological centre stage. They imagine themselves to be commanders of their own destinies, they trample upon nature, forget the rhythms of the earth, deny death and shy away from valuing and honouring all that slips through their grasp, until they must collide catastrophically with the sharp edges of reality. (Botton, 2012, p. 200)

7.1 Introduction

Appropriation of a Newtonian epistemology (i.e., the general linear model) with respect to psychological processes implies that such processes do not fundamentally manifest as a function of time. The assumption being that if one were to conduct a study based on the isolation and control of all pertinent variables (including time as an independent variable), the resulting observed phenomena will theoretically repeat ad infinitum irrespective of when the experiment was conducted. In other words, any measurements taken can be meaningfully extrapolated over time. Critically, with respect to the psychological sciences this assumption has consistently not held up to empirical scrutiny, as demonstrated by the ongoing "replication crisis" referred to in the introduction. Furthermore, as suggested by this thesis, the denial of the non-ergodic quality of psychological processes will inevitably lead to an infinite regress with respect to the associated findings[64]. Despite psychological processes existing by definition as a function of time, time seems to rarely take centre stage when it comes to their elucidation.

Rather than being viewed as another independent variable, Tateo and Valsiner (2015) have suggested that "time…needs to be taken into account as a fundamental dimension of every psychological theory" (p. 357). Yet, as these authors observe, "considering time as a 'variable' implies a stance that is about to eliminate time from psychology whilst talking precisely about time. Considering time as a 'variable'…creates a misfit between psychology's axiomatic stance and the nature of psychological phenomena" (p. 357). As a response to the ongoing "crisis" in

[64] The problem of infinite regress has been demonstrated with respect to current theorising in *flow* (chapter 3), *motivation* (chapter 3) and *mental toughness* (chapter 5) in sport.

psychological science which abides by the general linear model, temporality represents part of the epistemological criteria for idiographic science.

Idiographic science "which emphasizes the time-based variability within each unique case" (Molenaar & Valsiner, 2005, p. 2) places temporality back at the centre of our understanding of psychological process. Accordingly, general laws only become possible when it is acknowledged that psychological processes are non-ergodic, and therefore do not possess "time-invariant statistical characteristics (stationarity)" (Molenaar, 2007, p. 36). Thus, time becomes a fundamentally confounding factor, when it does not represent an axiomatic *contextual dimension* in psychological theory construction (Tateo & Valsiner, 2015)[65].

In contrast, when the general linear model is adopted, time becomes a variable which is theoretically reversible - a position which is clearly a misnomer for human experience itself. Thus, Tateo and Valsiner (2015) advocate an epistemological shift towards its non-linear equivalent - a position actively explored over 100 years previously by Jung, whose psychology was in part an attempt to understand the role of non-linear time in relation to psychological processes (Yiassemides, 2014). It is therefore not without irony that Jung's attempt to understand the complex relationship between time and psychological processes could be one of the reasons why his work has historically sat outside of mainstream academia.

Jung is not alone in recognising the fundamental role that time plays in our understanding of psychological processes. The acknowledgement of relative and absolute time, which manifests in the interaction of past, present and future, is a defining aspect of the psychoanalytic tradition as a whole (Yiassemides, 2014). William Powers – a psychologist shunned by mainstream academia - argued that the reliance on abstract generalisations as the basis for theory building in psychology fails because one is unable to meaningfully extrapolate, due to the *change of conditions* (internal and external) over time (Powers, 1973). The problem of extrapolation is particularly pertinent in sport, where athletes operate in dynamic environments, and wherein success is, in part, dependent on flexibility and adaptability. When time becomes part of the analysis; environments, psychological processes, and their manifestation are a picture of variability, which betrays the "detached, action-independent, highly detailed, [and] static" (Clark, 1997, p. 472) character of any respective objectivist representation.

Further back, at the end of the 20th century, William James recognised that psychologists tended to rely on common-sense language for the elucidation of psychological

[65] See chapter 5 for a more detailed consideration of this point.

phenomena (see Valsiner, 2014), yet as Valsiner (2014) points out, the "naming of psychological state is not the same as the state itself" (p. 7)[66]. Critically, conflating *process* with *state* has far reaching epistemological consequences for theory development beyond the lack of associated temporality itself. Firstly, by assigning an objectivist representation to a state, subject and object separation becomes enshrined within theory. Secondly, in order to legitimise objectivist representations researchers are compelled to search for their elusive causal properties. And thirdly, capturing states in the form of an objectivist representation serves to appropriate into consciousness, processes which are typically sub-personal and unconscious.

7.2 **Objectivist representations, independent of time, enshrine subject-object separation**

By its very nature, being, and by association experience, is by definition dependent on the passage of time. Experience is ephemeral, in that it is, in part, a function of the time during which the experience occurred. Although experience has the potential for individual meaning for the subject which extends beyond the experience itself, any attempt to capture the objective meaning, in the form of a theme, is typically at the expense of its temporal dimension. Let's say, for example, that *identity confusion* represents an emergent (objective) theme which captures part of the "experience" of recently retired professional athletes. If carefully appropriated via the phenomenological method, we might accept that this theme is a meaningful objective representation, or essence, of shared experiences associated with retirement from professional sport. But does it capture the universal quality of the experience *as lived through time*? Can there even be a universal objectivist representation - on which an associated theme is dependent on - as lived through time? When time, and by association context, becomes part of the analysis, one is inevitable confronted with the multitude of forms and manifestations that identity confusion can take. The lived experience of identity confusion, for those that experience it, will inevitably be a function of time – history, and *all that happens*

[66] The very act of naming a state using common-sense language might appear harmless for psychological science, but, as suggested in chapter 5, it serves to (falsely) legitimize the scientific credibility of encoding states as variables (Toomela, 2008), and in turn promotes pseudo-empiricism (Smedlund, 1991, 2016).

within the experience itself. Thus, when viewed temporally, the idea that a theme, or essence, can meaningfully capture the experience itself *as lived* becomes absurd[67].

The reliance on themes to capture lived experience highlights what Varela et al. (1991) referred to as "the shiftiness, the instability of the entire subjective/objective polarity" (p. 242), which results from an objectified subject and a subjectified object. Whilst a theme such as identity confusion has the potential to represent shared experience up to a point (i.e., objectified subject), it is only when the individual imposes their own unique temporal association with the theme that it becomes alive (i.e., subjectified object). Part of this shiftiness results from an epistemological frame which conflates process - which necessitates temporality - with state, which does not.

Does this matter? No, if one accepts subject-object separation as part of the epistemological frame. If, however, as proposed by this thesis, one adopts an epistemology predicated on subject-object reconciliation, such findings are at best meaningless, and at worst, harmful to the discipline's scientific prospects. Thus, as this thesis suggests, the scientific value of any empirical findings is primarily dependent on the epistemological frame adopted, rather than how exactingly a methodological protocol is followed.

The consequence of not prioritising epistemology as the basis for the development of a legitimate psychological science is that we risk the continued *destructive analysis* of the subject matter. When time is not part of the epistemological frame, capturing psychological processes as static states becomes legitimate, given that the idea of states is consistent with non-temporality. In sport psychology, descriptive constructs such as motivation, confidence, anxiety, mental toughness, flow etc. do not in themselves require time for their elucidation, but become relatively meaningless in themselves when trying to *explain*, as opposed to describing, lived experience. Given the transient and variable nature of any moment of experience, such associated constructs cannot be prescribed in advance. Rather, their meaning can only be assigned *retrospectively* in the form of an objective representation, which unwittingly creates a separation from the subjective experience as lived. When time becomes part of the analysis of any given state, one recognises a picture of variability – states become viewed as transitory, ephemeral - of which the retrospective elucidation of the state itself offers no explanation for their temporal (subjective) manifestation.

[67] See chapter 5 for consideration of the proposition made by idiographic science that psychological processes are non-ergodic in nature when viewed over time.

For example, an athlete might report that he or she had high levels of "motivation" leading up to a competitive event. Whilst this construct might represent an appropriate objective representation of part of their lived experience, this labelling process is dependent on separating the objective representation from its source. Furthermore, by denying the temporal dimension, one is confronted with infinite regress with respect to the subjective manifestation due to the non-ergodic nature of psychological processes. At any given point in time the particular experience of motivation is not least the manifest result of past, present, and possible futures, and will therefore vary as a function of time and context. From this perspective, the idea that motivational states can be anticipated in advance becomes absurd. It is not therefore surprising that recent attempts to establish linear nomothetic relationships between behaviour and motivation has failed. On this point it is worth being reminded of Keegan et al.'s (2014) conclusion with respect to their programme of research into motivation in elite sport:

> …there was no discernable one-to-one correspondence between specific behaviours and their impact on motivation. Instead, the findings suggest complex contextual interactions between the immediate behaviours of social agents and the impact on athlete's motivation. If supported, this finding would necessitate new and novel approaches in future research in order to facilitate a more advanced understanding of athlete motivation in elite sport. (p. 97)

A recent review of sport motivation research between 1995 and 2016 (Clancy, Herring, MacIntyre, and Campbell, 2016) observed that the majority of research designs employed have been cross-sectional rather than longitudinal. The authors proposed that in future, more longitudinal research is required to understand how motivation varies, in part as a function of time. Indeed, the limited amount of longitudinal research that has been done is suggestive of a more complex picture. For example, Stenling, Lindwell, and Hassmén (2015) studied over the period of a season the "intraindividual" interactions between variables, which included motivation and wellbeing, in young elite athletes. The authors concluded that "the relations between these variables are complex, dynamic, and that more attention should be given to potential reciprocal effects between the variables in the motivational sequence" (p. 50). To their credit, Clancy et al. (2016) also acknowledge that "motivation is not a fixed trait but rather a dynamic construct that influences and is influenced by numerous factors" (p. 240). However, given the authors proposal that we therefore need to consider yet more variables associated with motivation, we again run the risk of falling into the trap of infinite regress. More of the same might be the template for Kuhnian *normal science*, but does not, in itself, represent scientific process. In addition to temporality, the reported reciprocal links between factors

associated with motivation would suggest that circularity and non-linearity, not linearity, would represent a more expedient epistemological basis on which to develop our understanding of this complex phenomenon. Yet Clancy et al. (2016) give no explicit consideration to the epistemological implications of the research considered.

The temporal, dynamic nature of psychological processes necessitates longitudinal research in order to study intra-individual variation. Furthermore, the non-ergodic nature of psychological processes require that they are studied first and foremost on the individual level, as suggested by idiographic science. In comparison to group-based designs, within sport psychology there still remains a lack of single-case research being published (Barker, McCarthy, Jones, & Moran, 2011). Motivation is clearly an important construct which represents part of the individual athletes lived experience. The failure to establish one-to-one correspondence, or empirical regularities, is a failure of the underpinning epistemological assumptions (e.g., linearity, ergodicity, a-temporality). Continued destructive analysis can only be avoided if the discipline engages in a robust and systematic examination of the assumptions underpinning the methods used. With respect to our understanding of motivation, or any psychological construct associated with sport; methodology need to be cognisant of epistemological criteria outlined in this thesis (e.g., non-linearity, teleology, non-ergodicity, temporality), and prioritise the use of single-case research, in order to avoid continued subject and object separation.

In sum, when time is removed from the analysis reducing psychology down to states (i.e., being) becomes permissible, without any consideration needed for how the current state is both an emergent function of our individual and shared pasts, and our future potential (i.e., being~becoming). Furthermore, subject/object shiftiness becomes the norm, if not inevitable, given that it does not represent a threat to the assumption of non-temporality of psychological processes. The end result, is so-called empirical findings which are lifeless exhibits, robbed of their essential human qualities: “To deny the truth of our own experience in the scientific study of ourselves is not only unsatisfactory; it is to render the scientific study of ourselves without a subject matter” (Varela et al., 1991, p. 13).

As outlined in chapter 2, Jung based his own psychology on establishing an intellectual union of subject and object, and whose “methodology was in search of a universal principle, one that would bridge the gap between physical laws and inner psychological reality” (Yiassemides, 2014, p. 38). The union of physical and psychological reality was fundamentally important for the development of an analytical psychology, given his view that the “psyche and body are not separate entities but one and the same life” (Jung, 1966a, p. 115). This search

led Jung to propose the notion of the archetypes: Universal inherited predispositions within the objective psyche, or collective unconscious[68], which organise conscious experience (Papadopoulos, 2006), and manifest as "ever reoccurring patterns of psychic functioning" (Jung, 1958, p. xvi). In the same way, our biology is the legacy of our shared history and evolution, the collective unconscious represents our shared ancestral past - which manifests in the form of archetypes, and in turn helps shape our individual subjective psyche. Furthermore, as with biological adaptations, archetypes can be viewed as patterns of psychic functioning which have developed by virtue of bestowing evolutionary advantage (Fordman, 1957).

It is a mistake however to assume that archetypes represent mere biological drives, or objective representations (i.e., themes) of psychological states. Rather, archetypes represent "some sort of structuring principle that lies outside of everyday consciousness" (Haule, 2011, p.11). Furthermore, archetypes capture the temporal dimension to their origin and manifestation, given they are, by definition, shaped by shared history, as well as serving to shape our experience in time. For example, Greene (1994) has suggested that sport itself represents a "profound psychological experience" (p. 34) with a clear archetypal heritage, which cannot simply be explained away based on associated infantile experience and emotion. Rather, sport can be viewed as the manifestation and expression of our shared ancestral past, wherein the energy associated with playing and spectating "touches that archetypal layer and therefore evokes from many people a numinous quality of feeling and experience" (p. 37).

As well as representing an important theoretical contribution, the proposed existence of the collective unconscious and the archetypes makes a clear epistemological statement: Objective knowledge is possible concerning the psyche, but it is dependent on looking all the way back through our history in search of the unconscious "patterns of instinctual behavior" (Jung, 1969a, p. 44).

One of the patterns or structuring principles which Jung refers to throughout his work is the self-regulating nature of the psyche which functions in a state of *dynamic equilibrium* (Stevens, 1990); akin to the principle of *homeodynamics* (Rose, 1997)[69]. In contemporary

[68] Jung (1969a) has described the collective unconscious as "a common psychic substrate of a suprapersonal nature which is present in every one of us" (p. 4), and therefore represents "sheer objectivity…There I am the object of every subject, in complete reversal of the ordinary consciousness, where I am always the subject that has an object" (p. 22).

[69] The implications of the notion of *dynamic equilibrium* where considered in chapter 5, in relation to the psychological basis for performance variation in sport.

parlance, this proposition is comparable to the *self-organisation*[70] of the system, a necessary feature of any system wherein multiple parts are interacting, and a fundamental tenet of complexity science (Haken, 1988). Although complex systems are ubiquitous in nature, it is the brain - the basis on which psychological processes become possible - which is viewed by many as *the* most complex system that we are aware of due to the vast number of interconnected neurons (Haken, 1988). Thus, if psychology is to be based on conceptual integration - by bridging the gap between subject and object, psychological reality and physical laws – such shared principles are of primary importance. For psychological science, notions of self-regulation and self-organisation require a fundamental shift away from abstracting causal relations (i.e., linear causality) towards viewing the person as a *purposive* system (i.e., the system is defined by the functions, or goal[s] it is working towards; Pickering, 2010). Not only does the teleological viewpoint overcome the fallacy of linear causal relations, it offers a basis on which psychic activity can be understood as a function of time.

From the teleological viewpoint, psychic activity is not understood primarily in terms of abstracting the current state of the system (which does not require time for its elucidation), but as a function of what the system is working towards. In other words, the greater objective meaning of psychic processes can only be understood when "causes are understood as a means to an end" (Jung, 1960, p. 23) – which Jung referred to as the *energetic standpoint*. Furthermore, as a complementary position to the mechanistic standpoint *"*which conceives an event as the effect of a cause" (Jung, 1960, p. 4), the energetic standpoint provides a structuring principle wherein psychological processes are understood as a function of the energetic system itself – namely the tendency of an energetic system to be working towards a state of equilibrium (Jung, 1960).

For example, *correction theory* (Cowen, Nesti, & Cheetham, 2014) proposes that temporal variation in sporting performance is a necessary consequence of a dynamically balanced system (i.e., balance~imbalance) working towards successive peak performances over time (i.e., imbalance). The concept of *dynamic balance*[71] as a structuring principle

[70] Which Haken (1988) defines as "a spatial, temporal or functional structure without specific interference from the outside" (p. 11).

[71] Defined as "a state in which a robust complex system will self-correct in response to imbalance (resulting from perceived variation/challenge) to maintain functional organization, or the individual and coordinated expression of balance and imbalance" (Cowen et al., 2014, p. 423).

governing the ongoing self-organisation of the system, reframes performance variation as a necessary "means to an end" rather than just an unwanted phenomenon. Alternatively, accumulating objectivist representations of psychological states (i.e., casual standpoint) is complicit in the deceit that performance itself can be temporally isolated and causally influenced through the isolation and control of psychological variables. Although the objective of elite sport might be sustainable peak performances, the energetic standpoint suggests any psychological influence requires an understanding of how this goal interrelates with temporal, subjective and sub-personal processes. In other words, future research into the psychology of performance, and its variation, is required to prioritise the theoretical basis for this interrelation between the person (i.e., the structural dynamics of the psyche) and the performance. Encouragingly, this close relationship is now beginning to be articulated and explored in the *dual career* literature[72], which represents a promising development within sport psychology.

Furthermore, the energetic standpoint is consistent with the central premise of idiographic science which stresses that humans are governed by general laws (e.g., self-organisation), but which manifest uniquely in every individual: "*Generality in uniqueness is not a contradiction in terms*, but the basic operating principle in all nature, *psyche*, and society" (Salvatore and Valsiner, 2010, p. 4). Thus, the energetic standpoint and idiographic science suggests that an objective understanding of the psychology of performance over time requires a focus on intra-individual variation (i.e., object~subject).

In sum, psychological science which prioritises the accumulation of objectivist representations (i.e., themes, variables, measurements) independently of time, perpetuates subject-object separation. Integration is dependent on focusing on the structuring principles which govern *both* subject and object, psychological processes and nature itself. Given the ubiquity of complex systems throughout nature, conceptual integration is dependent on establishing principles which apply at all levels (Haken, 1988). Conceiving the psyche as an energetic system, governed by laws equivalent in nature (i.e., laws of thermodynamics), provides one avenue for conceptual integration to be established. For the psychological sciences, this means understanding the (teleological) structural principles which govern how experience manifests over time (e.g., dynamic equilibrium/balance). Subjectivity is then understood, in part, based on the development of these structuring principles. Thus, subject-object integration is inseparable from understanding the general laws which govern the psyche.

[72] See chapter 4.

7.3 **Meaningful objectivist representations do not conform to linear causal, reductive explanation**

> A truly scientific philosophy will be more humble, more piecemeal, more arduous, offering less glitter of outward mirage to flatter fallacious hopes, but more indifferent to fate, and more accepting of the world without tyrannous imposition of our human and temporary demands. (Russell, 1963, p. 30)

In searching for a universal principle which integrated our understanding of the physical and psychic level, Jung repeatedly challenged the *one-sidedness* of the casual, reductive and positivist scientific approach: In part, because the causal standpoint excludes the epistemological significance of time as a fundamental dimension concerning psychological processes (Yiassemides, 2014). Science predicated on a Newtonian epistemology assumes linear temporality which in turn allows for causal relations to be established at the reductive level of analysis. However, when non-linearity is accepted as part of the epistemological frame, linear causality becomes an *explanatory fiction with respect to the pattern of the whole* (Spauling, 1995).

In situating time as an axiomatic contextual dimension, Tateo and Valsiner (2015) ask: "Shall all psychology be a *developmental* science?" (p. 357), given the unfolding rather than fixed nature of human experience. In contrast, by adopting the causal standpoint, lived experience becomes petrified as a result of being robbed of this essential quality. Similarly, Jung wrote

> The symbolic interpretation of causes by means of the energetic standpoint is necessary for the differentiation of the psyche, since unless the facts are symbolically interpreted, the causes remain immutable substances which go on operating continuously…Cause alone does not make development possible. For the psyche the *reduction ad causam* is the very reverse of development; it binds the libido to the elemental facts. From the standpoint of rationalism this is all that can be desired, but from the standpoint of the psyche it is lifeless and comfortless boredom. (1960, p. 24)

Jung understood that incorporating time into the epistemological frame necessitates a teleological approach, in order to account for the totality of psychological processes as manifest through time. To do otherwise would be to petrify the subject into a timeless state; a clear absurdity when psychological processes are understood as being organismic and purposeful.

Jung did not dismiss the causal standpoint altogether[73], but teleology, or the energetic standpoint, in order to capture the vibrant, complex nature of the subject, was a more defining characteristic of his epistemology (Papadopoulos, 2006).

From the energetic standpoint, *lived experience is understood based on that which structures it rather than the products thereof*. For example, if we attempt to understand and isolate the psychological mechanisms associated with a period of dysfunctional performance, one might consider abstract representations of the associated psychological experience (e.g., loss of confidence, anxiety). However, from the energetic standpoint, such abstractions would represent little more than psychological concomitants or epiphenomena, which do not require time for their elucidation. In contrast, the energetic standpoint requires lived experience to be understood based on the current state of the system in relation to that which the system is working towards. Thus, experience (e.g., anxiety) is placed within a temporal context wherein its meaning is understood as a function of its structural purpose.

This tension between energetic and causal accounts of psychological phenomena, was evident in a debate which took place towards the end of the last century, between those who believed in the linear causal efficacy of cognitions, and those who did not. A leading advocate of the former position was Albert Bandura who consistently argued that individuals can affect control over their thoughts and thereby actions (e.g., Bandura, 1989, 1991, 1995, 1997; Bandura & Locke, 2003). For example, in his paper entitled "Comments on the crusade against the causal efficacy of human thought", Bandura (1995) argues that self-efficacy itself has functional explanatory value with respect to motivation and behaviour:

> I am using the term causation in this context as functional dependence between perceived self-efficacy and other events. This issue has been extensively investigated by a variety of experimental strategies in which perceived self-efficacy is systematical varied, whereupon its effects on subsequent performance are measured. (p. 180)

In particular, Bandura was keen to differentiate his theories from "control theories rooted solely in a negative feedback control system aimed at error correction" (Bandura & Locke, 2003, p. 87). Instead, Bandura consistently asserted the primacy of human agency as

[73] Jung recognised that both the causal and energetic standpoint merely offered a different perspective. The former recognises reductive causal relations (i.e., linear epistemology), whilst the latter acknowledges the ongoing interaction between different factors (i.e., circular epistemology; see Papadopoulos, 2006).

the psychological basis for our understanding of performative behaviours (e.g., Bandura, 1989, 1991, Bandura & Locke, 2003).

Yet, as Vancouver and colleagues (Vancouver, Thompson, & Williams, 2001; Vancouver, Thompson, Tischner, & Putka, 2002; Vancouver & Kendall, 2006) have repeatedly observed, the nature of the relationship between self-efficacy and performance is dependent on whether or not *time* is assumed to be a fundamental component to its elucidation. Specifically, if time is assumed to play a role in this relationship, a within-person rather than between-person approach is required to establish temporal precedence (Curran & Bauer, 2011). As outlined in chapter 6, when the former approach is adopted, self-efficacy has been shown to be either unrelated or negatively related to future performance (e.g., Vancouver & Kendall, 2006), in direct opposition to the wealth of evidence which suggests a positive relationship between the two (see Bandura & Locke, 2003, for a review).

Should this be possible? Should we simply accept that two different designs, yield two opposing yet valid conclusions in their own right concerning the relationship between self-efficacy and performance? What these different outcomes reveal is not primarily a failure in method, but a failure in the underpinning epistemological assumptions which permit contradictory outcomes. In both cases, *faith* in an epistemology which places faith in method; and in turn faith that the derived results are correct! The fact that the results are indeed correct for each design (i.e., within or between subjects) reveals the flaw in this means of doing science. As Valsiner observed, "[m]ethodology cannot be reduced to method" (Valsiner, 2014, p. 24); yet in the absence of epistemological debate, we settle by default for faith in method, ironically for the sake of epistemological clarity. Why, because *normal science* requires no systematic engagement with epistemology which might bring the efficacy of any given method into doubt. The consequence is that findings primarily serve method rather than subject. The failure of subject to conform to flawed epistemological assumptions is all too evident in the aforementioned debate concerning self-efficacy and performance.

Firstly, when the sheer complexity of psychological processes and the associated behaviours becomes part of the epistemological frame, any supposed reductive linear relationships will inevitably struggle to conform to this non-linear view of nature (e.g., Spaulding, 1995). Secondly, even if one assumes a meaningful relationship between self-efficacy and performance, it is unlikely to be ergodic in nature (i.e., each person will not respond in the same way at any given time to their self-efficacy beliefs – see Molenaar, 2007). Therefore, the decision concerning whether time represents an axiomatic dimension or not – not least as determined by the design used (i.e., within or between subjects) - will have a

significant if not fundamental influence on the outcome. And thirdly, speculation concerning any such relationship presupposes that constructs such as self-efficacy in their own right have causal agency. This assumption is scientifically questionable because the existence of self-efficacy in-itself relies on a circularity between the construct and its assumed effects[74]. Thus, rather than offer any explanatory power, abstractions such as self-efficacy *in themselves* are little more than self-serving pseudo-empirical, common sense notions of limited scientific value (Smedlund, 1978).

Taken together, we are again confronted with the conclusion that our epistemological assumptions will fundamentally serve to shape our findings, as well as the subject matter itself. Indeed, Dougher (1995) has argued that the debate concerning the causal efficacy of cognitions is fundamentally ontological and epistemological in nature and is therefore "*not resolvable by data*" (*my italics*, p. 215).

It is a distinctive feature of Bandura's work to cite the numerous empirical studies which support his theoretical proclamations concerning the causal efficacy of human thought. As an empiricist, Bandura clearly derived confidence for his theoretical position based on the sheer weight of supporting empirical data, and in his writing regularly challenged others who questioned his work, based on their lack of supporting "evidence". This reliance on data as the bedrock for theory itself, inevitably leads to shifting sands and confusion with respect to the description of the key constructs (see Corcoran, 1995), in part due to an epistemology which conflates complexity with linear causality. As the discipline of psychology became cognisant of what Clark (1997) referred to as *the dynamical challenge*[75], the notion of isolating cause and effect relationships between cognitions, abstract representations, and behaviour becomes redundant when the whole pattern of the system is apprehended (Powers, 1973; Spaulding, 1995). To put it bluntly: All the data in the world will not compensate for the futility of conflating linearity with non-linearity, and a-temporality with temporality. When non-linearity and temporality is accepted into the epistemological frame, theory and data which denies this fundamental quality is at best arbitrary and at worst harmful to psychology's scientific prospects.

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[74] See chapter 5 for a brief discussion on the pseudo-empirical nature of such constructs.

[75] Which posits that psychological phenomena "are best understood as the emergent products of the complex, often non-linear and temporarily rich, interplay between a variety of forces" (Clark, 1997, p. 465)

At its heart, Bandura's social cognitive approach represents a rudimentary form of cognitivism (i.e., classical cognitivism) in which cognitions, such as self-efficacy, are assumed to mediate between stimulus and response (Dougher, 1995). As such, associated research is predicated on the assumption that the mind operates as an information processing system, wherein the cognitions themselves are afforded agency with respect to associated behaviour. The consequence is that "[p]ersonal history is generally neglected in this type of research, and behavior is seen as resulting from an internal, independent causal agent or system" (Dougher, 1995, p. 218).

In a paper entitled "Waking up from the cognitivist dream", Ilundáin-Agurruza (2014a) argues that the mind, conceived as a reductive, rule based information processing machine, is simply incapable of accounting for how complex, dynamic bodily movements associated with high performance are executed, either on a phenomenological or biological level. Rather, we are required to acknowledge "a seamless continuity and overlap between body(mind) and (body)mind as we kinetically work our way through the world, perhaps with aspirations of an integrated bodymind" (p. 344).[76]

The alternative is:

> Body–brain dualism [which] reifies the mind (and cognition, and movement) as a substance, thereby committing to an ontological quagmire. Positing a substance and reducing animate dynamics to stuff, to the brain and its neural and motor structure and processes, stultifies the very living and energetic qualities we wanted to study. It turns them into dead specimens much as taxidermy, in stuffing the animals, cannot but give an ersatz impression of the animated and beautiful creatures they once were. (Ilundáin-Agurruza, 2014a, p 354)

Rather than let mind-body dualism dictate the development of theory and research, more representative accounts of psychological processes necessitate an understanding of how the lived experience is inseparable from its physical embodiment (i.e., mind~body; Varela, Thompson, & Rosch, 1991). If mental representation is to make a meaningful contribution to our understanding of expert performance in sport, it is likely to be on an intermediary *unconscious* level between the phenomenological and the biological given the automatic nature of skilled action (Moe, 2005). Thus, it would seem that Jung's notion of the objective psyche (i.e., collective unconscious and the archetypes) – the bridge between our phenomenology and

[76] Also referred to as "thick holism" (Ilundáin-Agurruza, 2014b)

our biology - is ideally suited as a starting point on which to understand the manifestation of embodied cognition within sport or any other human domain.

Does the notion of embodiment mean that we renounce the importance of cognitions and consciousness altogether, in favour of the study of the unconscious? On the contrary; as Jung recognised, a dialectical relationship exists between consciousness and unconsciousness (consciousness~unconsciousness), and therefore one is needed for the elucidation of the other:

> The unconscious processes stand in compensatory relation to the conscious mind. I expressly use the word "compensatory" rather than "contrary" because conscious and unconscious are not necessarily in opposition to one another, but complement one another to form a totality, which is the *self*. (Jung, 1966a, p. 177)

Rather than merely representing the subjective manifestation of unconscious processes, consciousness is part of the *seamless continuity of being*. Any understanding of the self therefore requires an exploration of the structural coupling that exists between mind and body, conscious and unconscious processes (i.e., consciousness~unconsciousness). To focus on unconsciousness alone is a form of one-sidedness which Jung spent his intellectual life seeking to avoid. Furthermore, from the energetic standpoint, any attempt to understand the teleological value of cognitivist states becomes inseparable from its structural purpose. This purpose requires associated theory to embrace the union of conscious and unconscious processes into a whole.

For example, if we return to the debate concerning the causal properties of cognitivist states, the notion of complementarity, or thick holism, offers a new perspective on which to begin to understand the role of cognitions within performance related domains. Indeed, a closer inspection of the respective arguments between control theorists and social cognitive theorists reveals the potential for complementarity, rather than merely presenting diametrically opposed views. Bandura and colleagues have argued in favour of causal properties inherent within cognitions such as self-efficacy (e.g., Bandura, 1997; Bandura & Locke, 2003) and the rejection of feedback, or discrepancy reduction, as the primary basis for motivation and behaviour (Bandura & Locke, 2003). Yet despite this, at other times, Bandura (1991) has observed that "self-motivation…involves a hierarchical dual control process of disequilibrating discrepancy production (proactive control) followed by equilibrating discrepancy reduction (reactive control)" (p.158), wherein the agency can be understood in terms such as *beliefs*, *motivation* and *optimism*, rather than error reduction per se. In response, Powers (1991) argued that the supposition of causal properties being attributed to cognitions such as self-efficacy, is to prioritise ambiguous common-sense language over the possibility of mechanism. Instead,

Powers (1991) suggests that by firstly elucidating mechanism, we have the possibility of addressing the ambiguity associated with pseudo-empirical constructs. Constructs, such as motivation and confidence, have a place in our understanding of goal directed behaviour, but their purpose can only be properly understood when framed in relation to any associated mechanism.

Thus, in place of the choice between asserting the causal agency of cognitions (causal standpoint) or asserting that behaviour is a function of a system working towards equilibrium (energetic standpoint), complementarity suggests a structural coupling between the two. Rather than cognitions, such as self-efficacy beliefs, having no place at all in our understanding of goal-directed behavior, I propose a structural coupling between manifest states (i.e., beliefs/cognitions), goals (i.e., feedback systems) and the current state of the system (i.e., current performance level), with each dependent on the other for its elucidation.

Consistent with control theory (Powers, 1973), cognitions such as *anxiety* and *confidence* potentially represent feedback via consciousness regarding the current state in relation to the *reference condition* (i.e., goal). Consistent with social cognitive theory (Bandura, 1986), goals are shaped, and can vary, in part, as a function of cognition. Thus, rather than representing a choice in the form of a dichotomy between conscious agency or unconscious mechanistic control, this position suggests that cognitivist states are not merely the manifest effect of sub-personal processes (i.e., an epiphenomena), but also have the potential to shape the form that such sub-personal processes take (i.e., consciousness~unconsciousness). In the language of analytical psychology, mechanisms associated with the sub-personal level (i.e., feedback, dynamic balance) refers to the *objective psyche* (i.e., that which we all have in common), and the manifestations thereof (i.e., cognition) refer to the *subjective psyche* (i.e., that which is unique to the individual; Jung, 1966a). Both exist, in energetic complementary relation to one another, and are thus not governed by linear causal laws.

From this new perspective, two important yet poorly understood phenomena within sport - self-fulfilling prophesies and placebo effect - become necessary epistemological realities in order to account for consciousness~unconsciousness, and mind~body.

Self-fulfilling prophesy refers to the observed influence that perceived expectations of others can have on individual behaviour (Rosenthal & Jacobson, 1968). External expectations are introjected, and in turn are assumed to result in behaviours consistent with the expectations. Horn, Lox, and Labrador, (2010) have suggested that this occurs in a 4-step process (see table 4).

Step 1	An expectation develops which predicts athletes' level of performance
Step 2	These expectations shape how the athlete is treated, the way they are coached etc.
Step 3	The way the athlete is treated affects how they develop and their performance levels
Step 4	The performances confirm the expectations placed on the athlete, and the process continues

Table 4: Adapted from Horn et al. (2010)

Central to the idea of self-fulfilling prophesies is that expectations *in themselves* can have a direct influence on behavioural outcomes. One of the most famous examples within UK sport is Roger Bannister breaking the 4-minute mile with a time of 3:59.40 in 1954, when many thought it was not possible. Bannister, a medical student at the time recalled in a recent interview what his coach said to him before the race: "'I think you can do 3:56 and if you had this potential chance and you didn't take it you'd never forgive yourself, maybe for the rest of your life.' And I think that idea stuck in my mind." (Wallop, 2014). Critically, Bannister's record was broken 46 days later, and the following year more than a dozen runners achieved a sub-4-minute time when the expectation of its possibility was evidentially realistic. It is hard to imagine how this could have happened without beliefs, in some way, having an influence on these performances. Yet it is self-evident that beliefs or expectations alone are not enough for the realisation of goals - one can theoretically believe in the possibility of anything, but that alone will not make it real. Beliefs exist in part based on a dynamic tension between one's current situation (i.e., facticity) and the goals set (i.e., transcendence); and in part mediated by behaviour (i.e., training). For if one does not believe in the possibility of a sub 4-minute mile it is unlikely they will train accordingly. Equally, if the training does not suggest that a sub 4-minute mile is possible then it is unlikely that belief in its possibility will remain stable[77]. Thus,

[77] As Powers summarised, "behaviour is the control of perception" (1973, p. xi).

self-fulfilling prophesies is reliant on a structural coupling between beliefs ("A sub-four-minute mile is possible"), goals (a training prescription which makes this possible), and behaviour (the training)[78] – mind~body.

Alternatively, if one assumes linear causal relationships between these variables, one is confronted with the question of reverse causality – did the belief cause a change in the training, or did the training cause a change in the beliefs? Following the 4-minute mile being broken, a new precedent was set with respect to what was perceived possible, and in turn resulted in others goals/behaviours being adjusted accordingly. This empirical observation, as with other goal directed phenomena, can only be accounted for based on the premise of epistemological circularity as opposed to causal linearity. For if goal directed phenomena could be attributed to the latter, running a sub 4-minute mile would be merely subject to introjecting the right set of beliefs.

Similarly, the placebo effect, which describes "the positive outcome, resulting from the belief that a beneficial treatment has been received" (Beedie & Foad, 2009, p. 314) represents an additional challenge to the linear, causal view of cognitive processes. Placebo effects are historically associated with medically related treatments (i.e. sugar pills), which might go some way to explaining the general lack of consideration in the sport psychology literature to date. In comparison to the relatively limited research into the placebo effect in sport (Beedie & Foad, 2009), there exists a plethora of empirical studies extolling the positive effects of mental skills interventions (e.g., self-talk, imagery etc.) on sporting performance.

Rarely in sport psychology intervention studies is the placebo effect acknowledged as an equally plausible explanation for the observed effect, or that the intervention itself could theoretically be conceived as a placebo, at least with regards to the mechanism. One reason for this could be that placebo effects represent a threat to an epistemology based on the notion of linear causality. Such studies are implicitly wedded to the medical model approach which assumes linear causal relationships between the intervention and its intended effects. Indeed, it is the very intention of randomised controlled trials, the gold standard of experimental design, to determine whether or not the intervention was more effective than a placebo (Di Blasi, 2003). The tacit implication being that a positive scientific finding cannot be predicted on placebo being *the* effect (i.e., circularity between mind and body), but the intervention or experimental

[78] "What an organism senses affects what it does, and what it does affects what it senses" (Powers, 1973, p. 41).

manipulation *in itself*. In other words, agency for the effect belongs to what the experimenter has done rather than the "recipient" themselves, at least on the epistemological level.

Whilst this might appear a rather benign observation, the implications are insidious. Assuming an experimental effect based on linear causation implies a relative passivity on the part of the recipients, who are reduced to deterministic entities. In the name of objectivity, agency is attributed to the intervention rather than subjectivity of the recipient. Data which doesn't conform to this objective, deterministic view can therefore be dismissed as "natures noise" or "natural variation". Furthermore, attributing agency to the intervention itself situates power, place and purpose in the researchers, and by extension validates applied practitioners who use interventions such as mental skills as part of their work: Something tangible is being offered, seemingly for the benefit of the recipient. Just as the biomedical model is premised on providing treatments for physical ailments, such cause and effect relationships are seductive because they allow objectivity *and* power to become complicitous. As Di Blasi (2003) observed, accepting placebo as *the* effect is a threat to this position, because it "exposes the paradoxes and fissures in our own self-created definitions of the real and active factors in treatment" (Harrington, 1997, p. 1; cited by Di Blasi, 2003).

In sum, when linear causality is assumed, the tacit implication is that it is the interventions themselves, and by extension the experimenters, which possess the agency. In turn, the subject, in which the effect is observed, represents little more than a passive specimen: an entity used for the purpose of reflecting the interventions power, in the name of objectivity and at the expense of individual subjectivity. The implicit message sent to the recipient is that improvement is tied to the external agency of the intervention, rather than autonomous processes happening within the individual. In turn, as with any sort of intervention, one risks a sense of dependency, rather than a process which emphasises self-determination. This is not to suggest that interventions in their own right cannot influence intrapsychic processes. Rather, it is a question of whether, when making a judgement about the determinants of change, one assigns primary agency to the intervention or the individual. When one is guided by objectivity alone, the choice of assigning power to the intervention becomes seductive. Furthermore, one has no reason to challenge this status quo, and more importantly to acknowledge its self-serving nature.

Yet when one takes a step back from the imposition of objectivity and reflects on where the true agency is in any psychological process, it becomes hard to look beyond the self-determining, teleological nature of the psyche itself. When a child learns to master the profoundly complex computation required to catch a ball, who do we primarily credit? When

an elite athlete performs a near miraculous feat of seamless mind~body, spatial and temporal integration, where is the real expertise? Do we consider development primarily as a manifestation of accumulative external interventions (i.e., external agency), or a function of processes already taking place within the individual?

It is ironic that sport psychology, in which self-determination theory (Ryan & Deci, 2000) is one of the most widely applied theories to motivation (Hodge, 2017), continues to be wedded to an epistemology (i.e., causal standpoint, subject-object separation) that robs the subject of this essential quality. In the name of science, this part of the lived experience has been objectified, dissected (i.e., autonomy, relatedness, competence), and operationalised - an activity which amounts to little more than pseudo-empiricism (Smedlund, 2016). In other words, objectifying human qualities such as self-determination for the purpose of "operationalisation" results in everyday language notions becoming *entified* (Valsiner, 2014) - disembodied from their subjective form and nature. Only when subjectivity~objectivity complementarity, complexity and non-linearily become part of the epistemological frame, can theory bear testament to the seemingly spontaneous *emergence* of self-organising behaviour within dynamic sporting environments (e.g., Davids and Aruájo, 2006). When theory is built on a set of epistemological assumptions which denies these fundamental qualities of human experience, only the theorist themselves are being served. As has been shown with self-efficacy theory, just because we have a wealth of "empirical" data supporting the self-serving assumptions, does not, in itself, determine scientific legitimacy. Constructs, such as self-determination, only become meaningful when the respective epistemology is able to capture its true nature.

Rather than relying on objectifying lived experience, if sport psychology is to make a more meaningful contribution to our understanding of psychological processes associated with skilled performance, understanding the role of self-determining intrapsychic processes already taking place should be of primary concern. Furthermore, as the above discussion suggests, this will only become possible when the respective epistemology avoids objectification of the subjective experience itself. Clearly, acknowledging the role of irrational, subjective, teleological, and intrapsychic processes in developmental feats does not lend itself to straightforward objective scrutiny[79], but this is no reason to overlook them. Continuing to prioritise the doctrines of objectivity and positivism (in the absence of critical epistemological

[79] As Jung observed: "Our famous scientific reality does not afford us the slightest protection against the so-called irreality of the unconscious" (Jung, 1966a, p. 217).

debate) will maintain divergence in thought between those who work with athletes and academic sport psychology (Martens, 1987; Nesti, 2010).

Inseparable from Jung's theoretical work is his method, or apparent lack of, for working with clients. Given the dynamic, teleological nature of the psyche as conceived by Jung, his approach was distinctly non-prescriptive and un-systematic. Instead, placing faith in the process of the psyche rather than any particular model of practice. Even if the psyche does share a set of organising principles which serves to influence experience, Jung understood that any subjective manifestation will be unique to each individual:

> Naturally, a doctor must be familiar with the so-called "methods". But he must guard against falling into any specific routine approach. In general one must guard against theoretical assumptions…In my analysis they play no part. I am unsystematic very much by intention. To my mind, in dealing with individuals, only individual understanding will do…The crucial point is that I confront the patient as one human being to another. Analysis is a dialogue demanding two partners. Analysist and patient sit facing one another, eye to eye; the doctor has something to say, but so does the patient. (Jung, 1995, p.153)

The seed for this non-directive approach was planted early on in his medical training. As Jung observed: "I had the feeling that I knew nothing whatsoever about what psychiatry purported to be. I felt extremely uncomfortable beside my chief and my colleagues, who assumed such airs of certainty while I was groping perplexedly in the dark" (Jung, 1995, p. 146).

Humility in the face of overwhelming complexity was one of the hallmarks of Jung's approach to working with his patients. Rather than following reductive theories which offer "great service to the doctor" (Jung, 1966a, p. 168), Jung argued that we "must follow nature as a guide, and what the doctor then does is less a question of treatment than of developing the creative possibilities latent within the patient themselves" (Jung, 1966b, p.41). As such, Jung's approach to working with patients involved minimal interference on his part, but guided by the experience itself, the relationship[80], and the process of individuation (Moacanin, 2003). When

[80] "…the personalities of doctor and patient are infinitely more important for the outcome of the treatment than what the doctor says or thinks" (Jung, 1966b, p. 71). Similarly, with respect to applied practice, Tod and Andersen (2005) have observed "The sport psychologist is the primary consulting tool and the practitioner-athlete relationship is the main intervention" (p. 309).

one conceives of the psyche as an energetic system which is relatively autonomous and self-determining, how could it be any other way?

Up until recently, applied sport psychology has been predominantly informed by the medical model (Poczwardowski, Sherman, & Ravizza, 2004), and research has focused on the contributions made by practitioners in the consulting process (Sharp & Hodge, 2014). Yet, the idea that the athlete is also an expert in their own development has already been recognized within the literature (e.g., Pates, Cowen, & Karageorghis, 2012, Ravizza, 2002; Rotella, 1990). In a recent series of studies by Sharp and colleagues (Sharp & Hodge, 2011, 2014; Sharp, Hodge, & Danish, 2014, 2015), factors associated with consulting effectiveness from both the athletes and practitioner perspective were explored. In all studies, the relationship itself, not the effectiveness of an intervention, was found to be of primary importance for both athletes and practitioners. In addition, it was found that athletes valued consulting experience, and an athlete-centred approach, in order to help facilitate development (Sharp & Hodge, 2014). Clearly, given its infancy, we have to be cautious about drawing conclusions from this programme of research. Yet taken together, this research supports the idea that conceiving healthy growth to be primarily based on self-determination (as opposed to bending to the will of external forces), requires development to be primarily understood in terms of relatively autonomous intrapsychic processes that allow for this to happen. On this basis, it is hard to theoretically conceive of the athlete and practitioners as a static, deterministic entities, governed by linear causal laws. If theory and practice are to converge, then theoretical developments are required to acknowledge the true nature of the psyche: A "state of fluidity, change and growth where nothing is eternally fixed and hopelessly petrified" (Jung, 1996b, p. 46).

Given the significant theoretical and applied contributions made by Jung, it is perhaps surprising that his work has not been considered within the applied sport psychology literature to date. However, although analytical psychology has not been referenced, the spirit of some of Jung's key ideas are evident within the applied literature. For example, in addition to the work of Sharp and colleagues, there is a wealth of applied literature reporting the value of a more holistic, athlete-centred model of practice which acknowledges the importance of personal growth and its role in the development of the athlete (e.g., Bond, 2002; Collins, Evan-Jones, O'Conner, 2013; Lindsay, Breckon, Thomas, & Maynard, 2007; Frieson & Orlick,

2010; Tod, Andersen, & Marchant, 2009; Tod & Bond, 2010). As will be shown in the final section of this chapter, Jung's conceptualisation of *individuation* offers a novel basis on which to account for the inter-relation of person and athlete (i.e., person~athlete; subject~object), and has important implications for our understanding of working with athletes. Similarly, with respect to the development of the practitioners themselves, Tod, Hutter, and Eubank (2017) have used the term "individuation" to account for the ongoing process of reconciling the practitioners *self* with their work, and the environment within which they operate. Given the recognition that the development of the practitioner is an ongoing process intimately connected to their personal histories (e.g., McCarthy & Jones, 2013), it is hard to conceive of the reductive *causal standpoint* being able to meaningfully account for such idiographic narratives. In order to begin to bridge the gap between theory and practice, Jung's *energetic standpoint* and the associated psychological processes (e.g., teleology; individuation; personality 1~personality 2; consciousness~unconsciousness; persona~shadow), offers an original basis on which to theoretically explore the complex, dynamic and temporal nature of practitioner and athlete development.

For the medical model approach to practice (i.e., causal standpoint), which emphasises the importance of the intervention itself (Poczwardowski, Sherman, & Ravizza, 2004), the idea that the practitioner is little more than a witness to the athlete's own individuation process is understandably unsettling. Effecting change within the medical model presupposes agency and expertise to be associated with the intervention and practitioner respectively. Yet, how can one conceive of the psyche as a teleological, self-organising system whilst at the same time holding objective dominion over the associated subjectivity? As will be explored in the next section, this question is key to understanding not only Jung's approach to working with his patients, but also to understanding his own science of the psyche.

7.4 **Objective processes in the psyche are fundamentally sub-personal and unconscious in nature**

> There is no arising of consciousness without conditions. (Buddha)

> At the heart of [Jung's] metaphysical system of inquiry lies the premise that all psychological processes are necessarily conditioned on innate universal structures of subjectivity that allow for human experience to transpire, and that these processes

> participate of a greater cosmic organizing principle that transcends all levels of particularity or individuality. (Mills, 2014, p. 120)

If time represents a fundamental unit of analysis, then consideration of the implications of time in relation to psychology processes is of primary importance for the establishment of a scientific psychology (Molenaar, 2004; Tateo and Valsiner, 2015). In this thesis it has been argued that reliance on establishing linear cause and effect relationships – what Jung referred to as the *causal standpoint* – as the basis for doing science has significantly contributed to the so-called crisis which continues to beset psychology.

Linear causality, as applied to psychological processes, requires the assumption of fixed relationships that exist in absolute time (Yiassemides, 2014). Yet, as suggested by idiographic science, most psychological processes are fundamentally non-ergodic in nature wherein stationarity cannot be assumed (Molenaar, 2007). When it does not become possible to establish linear cause and effect relationships, non-linearity or relative time is assumed (Yiassemides, 2014), which by definition requires the intra-individual or subjective dimension of time to be acknowledged. According to Jung, time only acquires an absolute quality in relation to psychological processes as a consequence of appropriation in consciousness. Yet, this is to betray the non-linear nature of the psyche (i.e. consciousness~unconsciousness) which necessitates absolute *and* relative time to be acknowledged (Yiassemides, 2014):

> For Jung, space and time in the psyche are elastic and only become fixed in consciousness because we measure things. As we do this, repressed unconscious dimensions constellate and break through as affect. Two things happen here: and unconscious image come into consciousness and we experience an objective image which coincides with the image. (Karcher, 1999, p. 289)

If one assumes an individual dimension to psychological processes, which manifests in the form of intra-individual variation, there is therefore a direct trade-off between our ability to develop nomothetic, objective theories, and our ability to account for the true nature of psychological processes (i.e., account for their associated subjectivity). The result is "a mismatch between what we may want psychology to do for us…and what the scientific method permits us to do. The history of psychology in general could be viewed as an ongoing struggle with that dilemma" (Jones, 2013, p. 412).

In order to be credible, the future development of psychology is dependent on the appreciation of this tension between objectivity and subjectivity (Klempe, 2012). In other words, a credible human science is required to account for the idiographic quality of human

experience, whilst at the same time understanding the general laws which make this possible (Salvatore and Valsiner, 2010). Rather than represent an epistemological threat, subjectivity~objectivity represents *the* basis on which an indigenous science can be assumed. Within psychology, this is the project that Jung started over 100 years ago, and idiographic science represents one of the most recent iterations.

As already outlined, the objective psyche - as conceived by Jung - refers to the sub-personal level (i.e., collective consciousness, archetypes) and the subjective psyche refers to the manifestations thereof (i.e., personal unconscious, consciousness, cognition). Whilst the subjective psyche is therefore unique to every individual, it is the unconscious sub-personal level which mediates between our biology and experience (Moe, 2005), and therefore offers one basis for the establishment of general laws governing subjectivity~objectivity. Thus, given a science of the psyche, as conceived by analytical psychology, is dependent on articulating the nature and form of the objective psyche, a brief discussion about its scientific legitimacy is warranted. This is particularly important because, as will be shown, any associated conclusion will ultimately depend on whether one is primarily led by epistemological or methodological considerations.

If individuation represents the defining project of the psyche, it is the theory of the archetypes and the collective unconscious which represents the bedrock of Jung's analytical psychology (Haule, 2011). Yet, more than any other theoretical contributions made by Jung, it is these latter concepts which have attracted the most criticism.

The theory of the archetypes and the collective unconscious polarise opinion and have been frequently challenged for their non-scientific quality (Shamdasani, 2003). This challenge is evident on two fronts: (1) Jung's failure to provide a clear and consistent definition of these terms, providing numerous different versions throughout his collected works (Haule, 2011); and (2) The flawed reliance on inductive logic to make the jump from self-analysis, clinical observations and the interpretation of mythical material, to fully formed universal archetypal structures (Jones, 2007; Neher, 1996).

When judged by the benchmarks of the modern psychology, the way Jung developed such ideas is fatally flawed on methodological grounds given its deeply subjective and overtly unsystematic nature (Jones, 2013). The personal approach that Jung adopted to formulating theory means that the apparent lack of objectivity is an easy charge to make. As a consequence, it is of no surprise that historically Jung's psychology has been viewed as belonging to the realm of mysticism not science (Jones, 2013). As Jones (2013) observed, "the way Jung develops his ideas is not recognizably science as scientists know it" (p. 412).

Yet a critique of the scientific validity of ideas cannot be based on methodological considerations alone. Methodology is ultimately the application of any given epistemological assumptions concerning what constitutes valid knowledge (Papadopoulos, 2006). Science, in all its forms, cannot be reduced to a singular scientific method (Chambers, 1982). Given methodology is inseparable from epistemology, knowledge itself has to be viewed as a process between the ongoing refinement of one epistemological assumptions and the fruits thereof (Piaget, 1972). Unless, one assumes that any given epistemology represents the final word on the matter. If so, one is required to also assume that science itself has an absolute nature. Chambers (1982) suggests otherwise:

> [To presume] that there is a single category "science"…implies that various areas of knowledge, physics, biology, history, sociology and so on, either come under that category or do not. I do not know how such a general characterization of science can be established or defended…there is no general category "science" and no concept of truth which is up to the task of characterizing science as a search for truth. Each area of knowledge is to be judged on its merits by investigating its aims and the extent to which it is able to fulfil them. (p. 166)

If science itself has this relative quality, engagement with epistemology is essential to ensure that the type of methodology being conducted, in the name of science, is the best fit with respect to the subject matter. For psychology, it seems implausible that an epistemology which prioritises objectivity - defined by its separation from subjectivity - would represent this best approximation to the idea of science. Objectivity in-itself presupposes the finality of facts and data assigned to retrospective events, as if independent of time and context (Valsiner, 2014). In psychology, the process of doing science requires a human subject and a human scientist, and their respective subjectivity. Hence Valsiner's (2014) conclusion that

> The scientist in that process is central—the intuitive grasp of phenomena can turn in the hands and minds of creative scientists into general knowledge. The complexity of psychological phenomena includes self-reflexivity of the meaning-maker as a complicated condition that needs to be considered explicitly. Psychology has avoided doing so for a century—but cannot continue that practice any longer. (p. 25)

When the subjectivity of both subject and scientist is acknowledged as playing a central role in knowledge construction, working towards an indigenous basis on which valid knowledge can be assumed is of primary importance. The alternative, holding on to the notion of pure objectivity will at best permit the continued destructive analysis of the subject matter, and at worst leave the discipline without a subject (Varela et al., 1991). In the absence of a

clear epistemological frame within which the development of psychology as a science can be assumed, psychology requires closer ties to epistemology itself. In sum, the idiographic dimension of psychological processes requires developments in psychology to be closer to developments in epistemology (Salvatore & Valsiner, 2010).

In light of the preceding discussion, I will now return to challenges made to Jung's theory of the archetypes and the collective unconscious. As suggested, when judged by the canons of positivist science, Jung's methodology is difficult to defend. Yet, Shamdasini (2003) suggests two modes evident throughout Jung's collected works: (1) the development of theory, and (2) the "ongoing questioning concerning the possibility of a psychology" (p. 16). Furthermore, Shamdasini observes:

> When considering Jung's strictures on the possibility of psychology and his statements about the premature status of general theories in psychology, it is important to realize that he is including his own work in this assessment. It is precisely this mode of thinking which tends to be filtered out. *These two modes thread themselves throughout his work*. (p. 17, *my italics*)

Thus, when viewed as a whole, Jung's psychology cannot be judged on methodological grounds alone, given its aim was also to question the possibility of a psychology. The merits of contributions such as the theory of the archetypes and the collective unconscious ultimately have to be judged on these terms:

> While the theory of the collective unconscious is generally dismissed as being non-scientific, one of the reasons he advanced it was precisely to secure the scientificity of psychology, through positing a level of universality in the personality which underlay individual differences. (Shamdasani, 2003, p. 88)

By positing the idea of archetypes and the collective unconscious, Jung was drawing his line in the sand: Psychology, if it is to be a science, requires the existence of a sub-personal level, in order to rise above documenting individual events. Lived experience is then not viewed solely as a function of the individual, but also a function of *that which structures it*. Whether one believes or not in the theory of the archetypes or the collective unconscious, as the basis for how experience is structured is to miss the point. The language and the description of these ideas represent in part Jung's own subjectivity. The point is that if one accepts that a science of the psyche is dependent on establishing general laws which govern it, the basis on which this occurs is of primary importance. Jung chose to articulate his own vision in his own way, it is up to others who work in the same spirit to do the same.

When epistemology acknowledges this personal dimension to knowledge construction "[m]ethodology cannot be reduced to method" (Valsiner, 2014, p. 24). In a similar vein, Polanyi, a chemist and philosopher wrote: "It seems reasonable to describe this fusion of the personal and the objective as personal knowledge (1958, p. viii). By definition, methodology becomes as much a function of the process of the individual which allows for the possibility of novel insight to form - The creative independence that led Einstein to his theory of relativity is as much a reflection of his genius as it is the theory itself, given the latter is dependent on the former. Thus it would be a mistake to assume that the development of an analytical sport psychology should be reduced to the appropriation of Jung's theoretical contributions in relation to sport related phenomena. To do so would be to repeat the mistakes of *normal science* wherein sport related phenomena is endlessly forced into the box supplied by the paradigm, in the name of "fact finding" (Kuhn, 1996). This is not to say that the language of Jung does not have a role to play in our understanding of sport related phenomena – as demonstrated in chapter 4 in relation to momentum in sport – but it should not form the basis for the development of an analytical sport psychology. Rather, *an analytical sport psychology is primarily accountable to the advancement of psychology as a science*. Specifically, sport related phenomena, particularly performance itself, offer a unique window into the conceptual laws which organise, or regulate the psyche.

By definition, *normal science* has no reason to challenge the status quo, thus in part perpetuating the ongoing crisis, and the general absence of epistemological debate within psychology[81]. In the name of orthodoxy, researchers are paradoxically entitled to carry on in their *locally reflective ways* without any clear accountability to the idea of science; as highlighted in the aforementioned debate concerning the relationship between self-efficacy and performance. An analytical sport psychology, as with all sciences, necessitates systematic collaboration between individual contributions and collective goals, in order to establish empirical regularities. These collective goals do not simply amount to strengthening the paradigm, but consolidating sport psychology with the idea of science.

In addition to proposing a set of epistemological criteria as a starting point for the development of an analytical sport psychology (i.e., subject~object, conceptual integration, circularity, temporality), and developing an original theoretical account of momentum in sport,

[81] As Valsiner (2014) observed, as "the empirical enterprise of contemporary psychology moves ahead in its usual locally reflective ways, so the constructive critiques of the epistemic practices in the field are easily passed by" (p. 4).

the main theoretical contribution of this thesis is the introduction of new theoretical perspective which attempts to account for the psychological basis for performance variation in sport. *Correction theory* (Cowen, Nesti, & Cheetham, 2014), based on the *energetic standpoint*, attempts to account for the organisation of unconscious sub-personal properties (i.e., *dynamic balance* and *correction*), which are hypothesised to be, in part, responsible for performance variability.

Furthermore, correction theory is an attempt to provide a complementary counterpoint to psychology's general reliance on theory based on what Vancouver (2005) called "a theory of systems" (p. 41). Namely, the development of theory based on the assumption that explanation can be based on the generalisation of abstract relations between cognitivist states and behaviours. Correction theory also belongs to the *cybernetic-systems paradigm* which is primarily concerned with the subsystem level (i.e., mediators understood as mechanisms), in contrast to *social cognitive theory* which focuses on the systems level (i.e., mediators understood as constructs, such as *perceptions* and *beliefs*; Vancouver, 2000, 2005). Whilst acknowledging they exist as relative entities, Vancouver (2005) argues, that the former exclusively offers explanatory power, whilst the latter is concerned with "terms [which] have little meaning beyond being mere labels for the results of the underlying processes" (p. 42). Rather than suggest a binary choice between description and explanation, system and sub-system, Vancouver (2005) suggests that a renewed focus on subsystem processes will in turn help further elucidate system level processes. Interestingly, and consistent with the premise of idiographic science; rather than such a programme of research relying on conventional experimental methods and observational studies, Vancouver, (2005) suggested that with respect to our understanding of sub-system level properties "it makes more sense to measure these properties within an individual, usually over time, to assess the relationships among properties as well as whether they can account for individual-level properties" (p. 44). Thus, future work on the hypothesised sub-personal properties outlined in chapter 6 (i.e., dynamic balance, correction) would require an intra-individual level of analysis as the basis for any potential verification and further elucidation.

Sport is only one aspect of a rich tapestry of human experience, yet a sub-personal level of analysis implies that psychological mechanisms which help structure human experience transcend context. To my knowledge, Jung did not explicitly refer to sporting endeavour in his work, at least not in any systematic way. Sport psychology as a discipline did not exist at the time when he completed his major works. Yet, the deep themes which Jung touches upon

throughout his work resonate in any activity which reflects in some way the nature of the psyche. Sport is undoubtedly one of those activities.

Valsiner (2007) observed that human sciences are typically concerned with their own domain "[y]et behind these different contents are the same general ideas – of maintenance of the given state of *organisation*, its *variability*, and its *potential for transformation*" (my italics; p.3). With respect to theory, this thesis has primarily focused on how, according to Jung, the psyche is dynamically organised; and the implications of this position with respect to our understanding of performance variation in sport. In the remainder of this chapter I will consider how performance itself, offers not only a window into the psyche, but also a basis on which to understand its transformation.

7.5 **Reframing performance**

When time becomes a fundamental dimension in the psychological analysis of performance, a picture of variability emerges. Performance levels, and the associated cognitive states, become fleeting and relatively uncontrollable (e.g., Ravizza, 1977, 1984); as though they have a life of their own. Momentum becomes as much defined by the shifts, as the sustained performance levels. Elite athletes are not just defined by their superior athletic prowess, but also the inherent vulnerability that this brings: The more athletes push themselves physically and psychologically, the greater the risk of burnout (Gould & Dieffenbach, 2002); in any given season, successes and failures, highs and lows, are inevitable for most if not all; the whole course of a career becomes defined and shaped by successive "critical moments" in the form of inevitable threats, challenges and transitions, as well as the opportunities, rewards and successes (Nesti, Littlewood, Halloran, Eubank & Richardson, 2012). Taken together, the challenges and demands of elite sport not only provide the conditions for excellence, but also represent a threat to the mental health of athletes (MacIntyre et al., 2017).

Rather than merely representing some of the ideals of competition - *citius*, *altius*, *forties* – athletes equally reflect our flaws and shortcomings. In response, it is tempting, perhaps necessary, to place such individuals on a pedestal and assume that this special group of people have more than we do, beyond the athleticism itself: Resilience, mental toughness, confidence, self-determination. But what does it say about us that we choose to bestow upon athletes such heroic psychological characteristics? Is the performance itself not enough? And, are such attributes really a fundamental component of athletic prowess?

Or is something else occurring? Could it be that sport psychology as a human and social enterprise runs the risk of unwittingly reflecting a desire, fantasy even, for what we would like

to see in ourselves, or our cultural ideals, but we know is unrealistic in any controllable form? Is this why success and failure are generally treated as unrelated occurrences? Successes represent cultural ideals, embodied in the archetype of an athlete; failures, the inconvenient truths?

The alternative position is that rather than representing a dualism, we experience this tension of opposites (success~failure, facticity~transcendance) within ourselves and that allows us to relate to this part of the athlete's lived experience through our own. Whilst we might wish that failures could be eliminated - as projected onto the athlete - deep down we know that this aspect of lived experience, and its relation to its opposite, belongs to the human condition[82]. The seeming contradiction of the flawed athlete is relatable, because it resonates with our collective nature (see Culbertson, 2005).

If sport offers a unique perspective on our collective nature, the latter can equally be used to help elucidate the deeper meaning of sport. Looking beyond the doctrines of positivism provides an opportunity to apply the wisdom that has been acquired over the centuries to ideas which concern psychologists in our current age (Robinson, 1986). If current theorising on the psychology of athletic excellence is culturally situated and reveals as much about our collective imaginations (e.g., Andersen, 2011) as it does about reality, there is a clear need to look outside the discipline given that any collective nature will transcend time and context. Sport psychology has historically been led by its parent discipline (Kontos & Feltz, 2008), at the expense of systematic engagement with closely related academic disciplines (e.g., philosophy of sport). If the differentiation of sport psychology as a distinct discipline is justifiable, it has no reason to avoid this dialogue in the future.

Overlooking the lessons from history risks conflating culturally situated knowledge with the development of permanent laws governing human behaviour (Collingwood, 1972). An authentic dialogue requires an acknowledgment that more established systems of thought not only have the potential to offer new insights, but can also inform the development of the respective epistemology. In searching for universal principles governing the psyche, Jung turned to the more established Eastern philosophies of mind in an attempt to see beyond the cultural traditions which influenced his thought (Clarke, 1994). Eastern philosophies, as Jung understood well, are rich in their value and meaning but their contribution can only be fully

[82] I am indebted to one of my supervisors for this observation. See Harford (2011) and Syed (2015) for consideration of the intimate relationship between success and failure in different domains.

realised once it is acknowledged that they also challenge many of our tacit assumptions about human nature. Equally, dialogue does not equate to abandoning the western notion of science in the face of seemingly incompatible ideas. Rather, Jung believed that western intellectual thought "would have so much greater possibilities if he would remain true to himself and develop out of his own nature all that the East has brought forth from its inner being in the course of the centuries" (Wilhelm & Jung, 1931, p. 82).

In the past 15 years there has been an increasing academic interest in Eastern approaches, in particular with respect to the application of Buddhism in applied sport psychology (e.g., Jenkins, 2008; Thompson & Andersen, 2012; Zizzi & Andersen, 2010). Developments such as this are encouraging as they provide an opportunity to re-evaluate the philosophical and theoretical basis which frames the relationship between psychological processes and performance in sport.

For example, Gardner and Moore (2012) have proposed the introduction of mindfulness-based interventions within sport, given that "none of the traditional sport psychology interventions had been demonstrated to be efficacious for enhancing competitive athletic performance among actual competitive performers" (p. 312). Mindfulness, defined as "the state of being attentive to and aware of what is taking place in the present" (Brown & Ryan, 2003, p. 822), offers an alternative to interventions which seek to influence and control internal processes (e.g., PST), in favour of acknowledgement and acceptance of the "natural ebb and flow of 'positive' and 'negative' internal experience" (Sappington & Longshaw, 2015, p. 234).

With respect to applied sport psychology, the move towards a focus on organismic processes and the development of deeper self-awareness is a necessary counterpoint to interventions which emphasise self-control. As outlined in chapter 4, it also highlights a fundamental tension between the need to adapt to external demands and the needs of our internal world (i.e., *progression* and *regression*). What this tension reveals is that the psyche is not solely a mechanistic entity which exists to bend to external demands, but is also autonomous in its functioning: Dynamic internal sub-personal and personal processes are already taking place, regardless of the external demands. Yet at the same time these internal processes will inevitably influence how we adapt to environmental conditions, and vice versa (i.e., progression~regression). Thus, a more complete understanding of the relationship between psychological processes and performance requires a deeper understanding of the "conditions of the inner world" (Jung, 1960, p.39). In other words, the *person* behind the performance.

7.5.1 **What is the nature of the relationship between performance and the person? A Jungian perspective**

> It's about self. I've always said it's not about the belts, even though they are great. Even Mike Tyson said, 'What are these? They don't mean nothing any more.' I'm not doing it for them. It's about where can I take myself? Because, if it's for the belts, certain people have won them and then derailed because they set out to become heavyweight champion of the world; they did it and then there was nothing because that's all they set out to do. I'm challenging myself. The unifications and undisputed [recognition] are just titles on the shelf. This is an everlasting battle and bigger than any unification. (Anthony Joshua, [Mitchell, 2018])

> Life is a tennis match between polar opposites. Winning and losing, love and hate, open and closed. It helps to recognize that fact early. Then recognize the polar opposites within yourself, and if you can't embrace them, or reconcile them, at least accept them and move on. The only thing you cannot do is ignore them. (Agassi, 2009, p.383-384)

When performance is viewed a-temporally, values and meaning become linear and dualistic. At any given point in time, only one level of performance is possible. As such, winning/peak performance is framed as the goal, success, and becomes the motivational drive. Losing/dysfunctional performance represents an anathema, failure, and all we want to avoid. For athletes who introject this fatally flawed dualistic viewpoint, the end result is a *disunion of the self*.

The appropriation of science as a means of enhancing performance in sport is a relatively recent phenomenon. In its earliest form, "sport served the ends of scientific research rather than the other way around" (Hoberman, 1992, p. ix). The consequence of this development is that most professionals who support athletes is to draw upon their specialism to contribute towards increasing the number of times winning occurs, at the expense of losing. In doing so, Holowchak and Reid (2011) argue that elite sport has lost touch with many of the human qualities and values which defined it in the past - creativity, cooperation, aesthetics, ethics, and virtue – in favour of winning at all costs. In turn, the notion of excellence has become high-jacked to encapsulate a narrower meaning, primarily associated with performance itself (Miller & Kerr, 2002). For those who also work in academia, and who collude with this one-dimensional premise, do so in the name of science and/or progress: The body is reduced

to a mechanical system to be "optimised", and the mind becomes reduced to a controllable, deterministic entity to be manipulated for performance ends (Hoberman, 1995). Within this frame, how could progress equate to anything else?

One consequence of this cultural frame is that the study of sport as a window into the nature of the psyche *itself* becomes an after-thought; overlooked, in favour of accumulating objective representations of psychological states assumed to be associated with performance and therefore progress. Where the autonomous self-governing psyche (i.e., person) fits within this frame is generally left to the imagination.

Jung (1960) suggests that a focus on tangible achievements (i.e., performance outcomes) as the basis for progress serves a deeper psychological purpose. To focus on psychological growth itself is to embrace the confusion and difficulties associated with higher levels of consciousness; what Jung referred to as the "problematical state":

> …society does not value these feats of the psyche very highly; its prizes are always given for achievement and not personality…These facts compel us to a particular solution: we are forced to limit ourselves to the attainable, and to differentiate particular aptitudes in which socially effective individuals discovers his true self…Achievement, usefulness and so forth are the ideals that seem to point the way out of the confusions of the problematical state. (p. 394)

Problems, Jung (1960) argued, is what makes growth possible, but equally are what take away the certainties that we seek. Thus, development of the psyche is dependent on a paradox: Growth offers the hope of greater certainty or clarity, yet in order to grow we have to be prepared to embrace confusion that accompanies higher levels of consciousness:

> We wish to make our lives simple, certain, and smooth, and for that reason problems are taboo. We want to have certainties and no doubts – results and no experiments – without even seeing that certainties can only arise through doubt and results only through experiment…When we must deal with problems, we instinctively resist trying the way that leads through obscurity and darkness. We wish to hear only of unequivocal results, and completely forget that these results can only be brought about when we have ventured into and emerged again from the darkness. (p. 389)

Indeed, writing in relation to talent identification in sport, Collins and MacNamara (2012) have argued that rather than representing a threat, adversity or "trauma" is a necessary developmental tool for the realisation of talent. This should come as no surprise given the wealth of anecdotal evidence from high performing athletes that adversity, in its many forms,

was an integral part of their formative development. For example, in a recent interview the golfer Gary Player observed

> My mother died when I was eight, and my father worked 8000 feet down the mine. My brother went to war at 17 to fight with the British, while my sister went to boarding school. I'd come all the way home from school each night, by bus and tram, to a dark house, nobody there. I was eight. I've got to cook my food, iron my clothes, get up in the morning at five. I lay in bed every night wishing I was dead, crying. It's the reason I became a champion: because I knew what it was to suffer. (Murrey, 2017)

Drawing on 9 years of experience working with Premier League footballers, Nesti and colleagues (Nesti, 2010, 2011; Nesti and Littlewood, 2009; Nesti, Littlewood, Halloran, Eubank & Richardson, 2012) have observed that players are subject to numerous negative situations throughout their careers. Rather than just representing challenges to overcome, Nesti et al. (2012) has argued that if appropriately utilised, adversity "can provide an opportunity for psychological growth and development" (p. 26). This should perhaps not be surprising, given the wealth of aphorisms and inspirational quotes from within sport which points towards an interdependent nature between challenge and achievement[83].

Achievement, it seems, offers not only a path away from "trauma" and "confusion", but can also be dependent on it. Yet when achievement becomes conflated with psychological growth we are, as Jung suggests, risking the development of the self. If sport psychology is going to be committed to understanding the interrelation between the person and the athlete, *finding the mechanisms for their complementarity is of primary concern*.

Albeit on a rather cursory, descriptive level, there have been recent attempts in the sport psychology literature to articulate this relationship between the person and the athlete. As outlined in chapter 4, the notion of *dual career* acknowledges the important role that *both* the athlete's personal and professional life has on athletic development (Wylleman & Lavallee, 2004). Similarly, *Holistic sport psychology* is predicated on the principle that "improving an athlete's capabilities in sport begins, and is facilitated by, the growth and improvement of the athlete as a human being" (Frieson & Orlick, 2010, p. 227). If so, what is it about the

[83] See chapter 4 for an analysis of the interdependent nature of challenge and achievement on the intrapsychic level (i.e., regression~progression). Chapter 6 provides an original theoretical basis (i.e., correction theory) for the interdependent nature of success and failure within sport.

development of the person which fundamentally impacts on the development of the athlete, and vice versa? Or should performance be viewed as solely the function of the athlete?

When performance is viewed as a function of the athlete, the assumption that the "athlete" executes the performance is to implicitly assume a separation between the person and athlete. The "person", represented by the natural ebb and flow of internal experiences (i.e., the *inferior function*), needs to be controlled or managed in order to free up the "athlete". The athlete represents a subset of the person, a form of specialism, and what is possible when this path is clear. In other words, the person potentially represents a threat or barrier to athletic excellence. By dealing with the needs of the person, these threats can be removed, making peak performances possible.

Alternatively, if we accept the premise of holistic sport psychology, articulating the meaning of performance based on its complementarity to the person is of primary concern. This can be understood on two levels. Firstly, performance can be understood in relation to the individual subjectivity which accompanies it (i.e., subjective psyche)[84]. *Descriptive* idiographic accounts could be documented, revealing the individual meaning and/or dimension of performance. Whilst this level of analysis is temporally rich and informative, a focus on subjectivity alone will inevitably lead to an infinite regress with respect to the findings. Alternatively, performance can be understood based on hypothesised general laws governing the way the psyche is organised (i.e., objective psyche)[85]. Organising principles (e.g., self-organisation, dynamic balance) and structures (e.g., archetypes, collective unconscious) could be used to provide an *explanation* of the underlying processes governing the complementary relationship between the person and the performance. The latter overcomes the problem of regress but given the associated objectivity, does not, in itself, capture any of the visceral immediacy of lived experience. Is it right to continue accepting this trade off - resulting from the separation of subjectivity and objectivity - as a necessary sacrifice in order to "do science"? Or, as suggested by this thesis - lived experience results from the interaction of *both* subjective and objective processes - it becomes necessary to state their complementarity as an epistemological assumption underpinning an indigenous science of the psyche.

On the face of it, the latter approach represents a problem for the development of sport psychology as a science, given the apparent lack of certainty which would result from taking this path. When subjectivity and objectivity are viewed as necessarily separate, progress feels

[84] Or "system" level (Vancouver, 2005).

[85] Or "sub-system" level (Vancouver, 2005).

tangible: so-called “objective” and “subjective” data becomes relatively easy to collect from a limitless source. Furthermore, the sense of confusion and difficulty that wrestling with the complexity of the psyche brings, becomes attenuated - So why challenge this status quo?

By placing epistemology at the heart of the development of a psychological science is to step away from the seeming comfort and protection of positivism, with its emphasis on objectivity and the scientific method, and onto shifting sands. Yet as observed in chapters 2 and 3, to prioritise objectivity and the scientific method over subject is to overlook the epistemological challenges that this presents: “You can make a model more complex and faithful to reality, or you can make it simpler and easier to handle” (Gleick, 1998, p. 278). A discipline which makes a claim to the idea of science has to ask itself, which is its biggest priority: nature or method, truth or certainty. If we acknowledge the complexity of the subject matter we are also required to confront the epistemological challenge of avoiding its continued destructive analysis. To do anything else is to ultimately reflect the present intellectual and cultural epoch, rather than the subject itself.

Embracing the complexity of the subject matter requires letting go of the protectionism of positivist science and entering the *problematical state*. Historically, those who have done so, such as Jung, sit outside of mainstream “scientific” academia on the charge of lacking scientific credentials (Jones, 2013). The tragic irony being that progress, through the advancement of *normal science*, implicitly condones the problematic task of understanding on an epistemological level what would make such an endeavour scientifically legitimate. For psychological science Falzeder (2016) has summed up this problematic task as follows:

> Anything humans say about themselves is self-referential and remains the heart of the problem. We lack an outside “Archimedean point,” from which objective conclusions can be drawn, as Jung stated numerous times. In other words, in psychology (as in philosophy) the observer and the observed coincide. (p. 17)

Rather than merely representing a defining problem on which subject/object separation is justified, the uniqueness of this challenge offers a basis on which to develop an indigenous science of the psyche, and the knowledge which emerges (Saben, 2014). Understanding the relationship between the person and the performance based on subject and object complementarity offers a clear illustration of this close relationship between developments in epistemology and knowledge.

Writing in relation to sport, there are few writers who have systematically explored the complex, dynamic and paradoxical relationship between the subject and the object, the person and the performance. In this respect, an important contribution has been made by Gallwey

(1986) in his seminal book *The Inner Game of Tennis*. Similar to Jung, Gallwey describes two selves: Self 1 the "conscious ego-mind" (p. 44), and Self 2 the unconscious mind, or "automatic doer" (p. 18)[86]. It is Self 2 which is associated with effortless performance, whereas Self 1 is more likely to represent the internal barriers to performance (i.e., conscious processes which disrupts fast, automatic unconscious processes associated with high performance)[87]. Thus, *quieting the mind*, or Self 1, is necessary in order to avoid "interference with the natural doing processes of Self 2" (p. 22).

Critically however, rather than suggesting that performance itself represents the prize and the basis on which progress can be assumed, Gallwey (1986) observes that this merely reflects a *cultural pattern*. A pattern wherein winning and losing becomes polarised, the sense of self becomes conflated with how well we perform in relation to others, and where "the development of many other human potentialities is sadly neglected" (p. 107). In other words, in order to achieve athletic excellence, athletes must make sacrifices not just with respect to the life choices made, but also with respect to *the self*. Instead, Gallwey (1986) argues that the true objective of competitive sport is to be presented with challenges which allow us to *realise our limits* (i.e., facticity) as well as to discover out true potential (i.e., facticity~transcendence; see Culbertson, 2005). Rather than viewing competitors as simply adversaries or threats, they also represent facilitators in an ongoing process of the development of self:

> So we arrive at the startling conclusion that true competition is identical with true cooperation. Each player tries his hardest to defeat the other, but in this use of competition it isn't the other person we are defeating; it is simply a matter of overcoming the obstacles he presents. In true competition no person is defeated. Both players benefit by their efforts to overcome the obstacles presented by the other…both grow stronger and each participates in the development of the other. (Gallwey, 1986, p. 111)

Thus, rather than conceive of performance as an end, a function of the athlete, defined by its separation from the person, performance can equally be viewed as a means for the development of self:

> When a player comes to recognize, for instance, that learning to concentrate maybe more valuable to him than a backhand, he shifts from being a player of the outer game to being a player of the Inner Game. Then instead of learning concentration to improve

[86] See chapter 1 for consideration of Jung's *Personality No. 1* and *Personality No. 2*.

[87] I.e., *Constrained action hypothesis* (McNevin, Shea, & Wulf, 2003).

his tennis, he practices tennis to improve his concentration…Thus, there are two games involved in tennis: one is the outer game played against the obstacles presented by an external opponent…the other, the Inner Game, *played against internal mental and emotional obstacles for the reward of increased self-realization*. (Gallwey, 1986, pp. 114-115; *italics inserted*)

Gallwey (1986) recognises that this inner and outer game both play a role in most human activity to the extent that they can potentially be viewed as complementary processes[88]. As outlined in chapter 2, Jung spent his intellectual life attempting to reconcile his public adaptive self with his private self - *Personality No. 1* and *Personality No. 2* respectively (Jung, 1995) – and developed the notion of *individuation* as the theoretical basis on which seemingly opposing parts of one's nature can potentially become whole. Indeed, as previously suggested, when the psyche is viewed as a teleological system, individuation is *the* defining project of the psyche, as well as the "theoretical background against which all psychic phenomena are interpreted" (Haule, 2011, p. 83).

Whilst the notion of individuation might sound far removed from the language of contemporary sport psychology, the idea has found favour in Csikszentmihalyi's work into human creativity (Csikszentmihaly, 1996). Through studying highly successful creative people, Csikszentmihalyi (1996) identified one personality characteristic above others which differentiated creative and non-creative people: Complexity.

By this I mean that they show tendencies of thought and action that in most people are segregated. They contain contradictory extremes – instead of being an "individual," each of them is a "multitude". Like the color white that includes all the hues of the spectrum, they tend to bring together the entire range of human possibilities within themselves.

These qualities are present in all of us, but we are usually trained to develop only one pole of the dialectic. We might grow up cultivating the aggressive, competitive side of our nature, and disdain or repress the nurturant, cooperative side. A creative individual is more likely to be both aggressive and cooperative, either at the same or at different times, depending on the situation. Having a complex personality means being able to express the full range of traits that are potentially present in the human repertoire

[88] E.g., "The main job of Self 1, the conscious ego-mind, is to set goals, that is, to communicate to Self 2 what it wants from it and then let Self 2 do it." (pp. 44-45), in order that one can become "consciously unconscious" (p. 17).

but usually atrophy because we think that one or the other pole is "good," whereas the other extreme is "bad". (p. 57)

For elite athletes, expressing ones complexity requires reconciling the development of an athletic identity founded on strengths and based on a relatively simple goal (i.e., winning), with other more complex aspects of their lived experience such as career transitions, relationships and parenthood[89]. For the latter, there is no simple goal guiding the way; yet as the literature on dual careers suggests, effectively navigating through other developmental domains is fundamental to the development of the athlete (e.g., Debois, Ledon, and Wylleman, 2015; Wylleman & Lavallee, 2004). Reflecting on applied practice, Uphill & Hemmings (2017) observed how addressing issues of *mental toughness* raise questions regarding the role of *vulnerability*, and their relationship to each other. Yet, as the authors point out, when applied practice prioritised the development of mental toughness and resilience, the coexisting vulnerability is likely to be silenced, despite its importance.

Similarly, Jung viewed one-sidedness as a fundamental inhibitor to psychological growth - based on the view of a dynamic psyche, whose nature is regulated through the tension of opposites (Jung, 1966a). To assign value to any aspect of our nature represents little more than a cultural pattern: Nature itself is value free. Jung viewed the *self* as representing one's totality (Jung, 1969b). To deny the value of any part of self, however "inferior" it might appear to be, is therefore to create a disunion: *The* antithesis of psychological growth. The functioning of self - being and becoming - requires a dynamic tension between opposing parts of our nature based on their co-existence, in order to maintain a "state of fluidity, change and growth where nothing is eternally fixed and hopelessly petrified" (Jung, 1966b, p. 46). Performance variation therefore not only reflects the fact that athletes compete in dynamic environments, but also the dynamic nature of the psyche itself. Thus, rather than representing a threat to self, performance variation, and in particular "under" performance, represents its autonomous expression.

> …losing on purpose isn't easy. It's almost harder than winning. You have to lose in such a way that the crowd can't tell, and in a way that *you* can't tell - because of course you're not wholly conscious of losing on purpose. You're not even half conscious. Your mind is tanking, but your body is fighting on. Muscle memory. It's not even all of your mind that purposely loses, but a breakaway faction, a splinter group. The deliberately

[89] Nesti et al. (2012) has referred to this as *identity as synthesis,* to stress the importance of elite footballers not only acknowledging their different identities, but also their role in the development of the whole person.

> bad decisions are made in a dark place, far below the surface. You don't do those tiny things you need to do. You don't run the extra few feet, you don't lunge. You're slow to come out of stops. You hesitate to bend or dig. You get handsy, not using your legs or hips. You make a careless error, compensate for the error with a spectacular shot, then make two more errors, and slowly but surely you slide backward. You never actually think, I'm going to net this ball. Its more complicated, more insidious. (Agassi, 2009, p. 226-227)

When viewed temporally, the archetype of an elite athlete ultimately represents the realisation of exquisite talent, coupled with human frailty and limitation (transcendence~facticity). We all possess the potential to display extraordinary feats of skill, in whatever form that might take, but for most there is a tendency to see the possibility of such feats in others. Everyday life has a habit of reminding us of our own limitations as well as stressing what is possible. This finds its expression in our indulgence of the failures of athletes, alongside the celebration of success. Thus, part of the deeper appeal of elite sport is that however exceptional an athlete might be, the associated feats are understood as symbolising only one side of the human condition. At its heart, the appeal of elite sport therefore rests on a paradox: We are both disconnected and connected to the exceptional achievements of others, reminding us of our limitations *and* what is possible. As Culbertson (2005) observed:

> Humans are their facticity (their past, their current situation, and their body-in short, that which is a given fact of their existence), but they are also more than that. They also have a transcendental existence insofar as they freely project possible futures and conceive of action to achieve goals. (p. 67-68)

If we accept the premise that *all* humans, athletes and non-athletes, are both facticity and transcendence - being and becoming - the full expression of human nature requires the avoidance of any such one-sidedness. The defining project of the psyche, according to Jung, is the process individuation whereby through reconciling opposing sides of our nature we become who we truly are. For if *self,* is as much defined by the problems and challenges encountered as by the personal milestones and achievements, its expression necessarily encapsulates both strengths and weaknesses. Hence the observation that "[p]erformative endeavors whose *telos* centrally involves physical performance…are privileged ways for a holistic cultivation of our talents *and* limitations" (Ilundáin-Agurruza, 2014b, p. 224)[90]. Only when time is part of the

[90] Similarly, Corlett (1996) observed that sport offers "undistracted absorption in which the player may explore fully her or his personal limits and find ways to transcend them" (p. 444).

epistemological frame can such critical moments be understood in relation to this structural purpose.

In sum, the purpose of sport is not to prioritise the development of *self* over *performance*, or vice versa. Rather sport offers one basis on which individuation becomes possible; through the union of subject and object, person and performance. When viewed temporally, performance and its variation represent this totality.

Chapter 8

Conclusions

The "crisis" that has defined the history of psychology as a science is epistemological, and therefore existential in nature. Given psychology is the parent discipline of sport psychology, questions raised by this crisis cannot be avoided indefinitely by the latter. The questions are more fundamental than a debate over methods and concern the bedrock on which any science of the psyche can be assumed. These questions include: Does the existence of a discipline, in-itself, justify its current and future status as a science? Is it even possible to consider the idea of scientific truths with respect to the psyche? Or, do we concede to relativism and be left documenting individual events and/or cultural phenomena, framed within the researcher's personal onto-epistemological position?

In this thesis it has been argued that the future of sport psychology as a science is dependent on more directly confronting the challenges posed by epistemology. By doing so, we have the opportunity to make a legitimate claim to the idea of science, through asserting the basis on which scientific status can be assumed. As suggested, this can only happen when theoretical and methodological developments within the discipline become more closely tied to ongoing rationalisation with epistemology. This argument is not without precedent. As outlined, the development of Jung's analytical psychology is inseparable from the "ongoing questioning concerning the possibility of a psychology" (Shamdasini, 2003, p. 16). More recently, idiographic science has grown out of the acknowledgement that general knowledge concerning the idiographic nature of psychological processes is primarily dependent on epistemology, rather than the accumulation of data (Salvatore & Valsiner, 2010).

Although historically, sport psychology has adopted positivism as the basis for "doing science" (Martens, 1987; Whaley & Krane, 2011), we are currently witnessing an increased interest in post-positivist and non-positivist epistemologies in sports related research (Giardina, 2017)[91]. Indeed, it seems that the theoretical and methodological monoculture identified by Stelter (2005), is beginning to be replaced by a kaleidoscope of epistemologically diverse methodologies being employed by sport psychology researchers. On the one hand, the sense

[91] See Krane and Baird (2005) for a summary of these different epistemological approaches.

that positivism no longer holds a monopoly over the practice of science within sport psychology is to be welcomed. On the other, we have to be cognisant of what this increasing fragmentation means for the future of the discipline as a science. As Giardina (2017) asks, "how do we come to terms with the idea that many self-identified 'qualitative researchers' are engaged in vastly different epistemological, ontological and axiological forms of research within these fields?" (p. 259-260).

Despite the increasingly diverse range of epistemologies being adopted within sport psychology research, this has happened paradoxically at the expense of systematic engagement with epistemology itself. In turn, this gap has been replaced with the misnomer that is the so-called *qualitative versus quantitative debate* (Whaley & Krane, 2011). A misnomer, because as Whaley and Krane observe: "The conflict among scholars who debate this issue is not grounded in qualitative vs. quantitative methods; rather, the issue is one of ontology and epistemology" (2011, p. 395). When methodology becomes conflated with epistemology in this way, to what does a fragmented science become accountable to?

On this question, scholars (e.g., Cresswell, 2011) have observed that researchers typically adopt one of two stances: Purism and pragmatism. For purists, the different philosophical paradigms (i.e., interpretativism and positivism) which underpin qualitative or quantitative methods are by their very nature incommensurable[92]. Thus, purists tend to favour single methods rather than a mixed-methods approach to research (Onwuegbuzie and Leech, 2005). Pragmatists however contend that ontology and epistemology are not required to inform the choice of method(s) adopted: "This approach sees no necessary connection between knowing and how we know thereby redirecting our attention away from concerns to do with ontology and epistemology and moving it towards method" (Sparkes, 2015, p. 51). Given the general lack of direct engagement with epistemology itself within the sport psychology literature it would appear that researchers, unwittingly or otherwise, favour pragmatism over purism. Indeed, McGannon & Schweinbenz (2011) suggest that the appeal of pragmatism for sport and exercise psychology is the real-world context within which it operates. Thus, pragmatism can be justified because the discipline is primarily concerned with addressing outward concerns rather than inward questions of science. For example, Giacobbi, Poczwardowski and Hager (2005) have argued that because sport related research is more concerned with utility and context, the philosophical assumptions which underpin any given methods used are of secondary importance.

[92] Otherwise known as the "incompatibility thesis" (Howe, 1998).

As someone who favours purism over pragmatism however, I believe that a pragmatic approach to research ultimately represents a sleight of hand (i.e., it is a philosophy of science which suggests that ontology and epistemology are not, in themselves, required to guide scientific research). By research, in the name of science, not being answerable to epistemology itself, it ceases to be accountable to the necessary "checks and balances" which separate science from non-scientific enquiry; and "to argue otherwise is both naïve and fraudulent". (Sparkes, 2015, p. 52). Naïve, because epistemology not method provides the standards by which true knowledge can be assumed (Harre, 1972). Fraudulent, because without engaging in this most fundamental step in the process of knowledge creation, any type of research can make a claim to science in the name of method.

Because method and data alone does not provide the critical vantage point from which to judge empirical work, epistemology becomes inseparable from methodology as the basis for doing science (Salvatore & Valsiner, 2010). The alternative, uncoupling philosophy and method, is to adopt a non-paradigmatic position which, in effect, allows pseudoscience to be conducted in the name of science (Lincoln, 2010; Sparkes, 2015). Although this unfettered form of science allows for an abundance of data led research, it also contributes to the inevitable fragmentation which occurs as the discipline develops. In the name of ontological pluralism, researchers are able to frame their work within an increasingly diverse range of epistemologies, with little accountability to epistemology itself. When significant parts of a discipline develop a-philosophically in this way, to challenge this methodology on philosophical grounds is, by definition, an existential threat. Thus, data breeds more data, and the connection to that which gives the data scientific credibility (i.e., epistemology) becomes more distant and seemingly more irrelevant. In turn, fragmentation in the name of diversity becomes the norm.

The current importance placed on data is perhaps not surprising given that the discipline is still in its infancy and arguably still in the pre-paradigm stage. As Kuhn (1996) observed, when a discipline has very little pre-established theory[93] to draw upon, emphasis is placed on the accumulation of "facts" or data, rather than epistemology itself. Furthermore, when facts cannot readily be derived from the subject matter itself, there is a tendency for the development

[93] One might point to established theories, such as self-determination theory (Deci & Ryan, 1985) and self-efficacy theory (Bandura, 1977), that are employed within sport psychology. However, as discussed in chapter 5, the constructs on which they are based are little more than abstract generalisations (Powers, 1973) or pseudo-empirical constructions which offer no real explanatory power (Smedlund, 2016).

of a discipline to be profoundly shaped by external forces (i.e., institutional, political, cultural). Thus, rather than pre-paradigm science being informed by established, objective structures (i.e., natural laws and accepted principles) which critically guide a discipline, developments become tied to factors beyond the subject itself, making fragmentation inevitable:

> This is the situation that creates the schools characteristic of the early stages of development. No natural history can be interpreted in the absence of at least some implicit body of intertwined theoretical and methodological belief that permits selection, evaluation and criticism. If that body of belief is not already implicit in the collection of facts – in which case more than "mere facts" at hand – it must be externally supplied, perhaps by a current metaphysic, or another science, or by personal or historical accident. No wonder, then, that in the early stages of the development of any science different men confronting the same range of phenomena, but not usually all the same particular phenomena, describe and interpret them in different ways. *What is surprising, and perhaps also unique in its degree to fields we call science, is that such divergences should ever largely disappear.* (*italics inserted*; Kuhn, 1996, p. 16-17)

As proposed by this thesis, the future of sport psychology as a science is dependent on theoretical developments being judged on their potential for *conceptual integration* within the discipline itself (i.e., internal integration), and other branches of science (i.e., external integration). Jung's analytical psychology drew upon the notion of equilibrium or balance as a point of convergence between the physical world and the psyche (Stevens, 1990). Indeed, the tendency for a complex, open system to be able to maintain a state of dynamic equilibrium has been shown to be an important structuring principle in biological organisms (Rose, 1997) and complex systems in general (Kauffman, 1995; Strogatz, 2003). Furthermore, with respect to sport related phenomena, Vázquez, Balagué, and Hristovski (2017) have proposed that the language and concepts of complexity theory (e.g., stability~instability, non-linear dynamics) offer a potential unifying framework for not only the increasingly fragmented sport sciences, but also for science in general. Exploring such points of convergence offer a basis on which to deepen our understanding of psychological phenomena within sport. For example, as demonstrated in this thesis, notions of self-organisation and feedback, ubiquitous in nature, offer an original basis on which to understand performance variation in sport (Cowen, Nesti, & Cheetham, 2014). Equally, studying phenomenon such as performance variation, provides an opportunity to refine and clarify our understanding of how such principles help structure the psyche itself.

In addition to the principle of conceptual integration, closer ties with epistemology require an analytical sport psychology to determine the basis on which it can be considered a separate discipline in its own right. Although no one individual (not even Jung!) can determine exactly what this basis should be, drawing predominantly upon the work of Jung I have proposed a provisional set of epistemological criteria upon which an analytical sport psychology could be based (i.e., subject~object, conceptual integration, being~becoming, teleology, temporality). Furthermore, by becoming primarily accountable to epistemology rather than method, creativity and innovation become possible through the tension between personal/collective insight and collective goals. For the former, the emphasis is on valuing the process of thought, creativity, and criticality which drives innovation, over faith in any given established method of science (Powers, 1973). For the latter, this requires ongoing clarification of our epistemological framework which taken together offers the hope of a science.

A renewed commitment with respect to ontology and epistemology allows for a closer examination of personal dimension to knowledge construction, as we become compelled to ask more fundamental, self and structurally reflexive questions concerning the process of doing research. As Giardina (2017) suggests, prioritising ontological and epistemology requires researchers to critically question more broadly their personal motivation for pursuing the research they do. Such questions include, "why we do it, how we do it, for what purposes is that research done and how are we implicated in or worked over by a politics of research that is governed by those structures which are (often) outside of our control." (p. 264). By acknowledging how research is both personally and structurally situated, we have the chance to critically question the extent to which work can make a contribution towards science, or stands in the way (Valsiner, 2014). As a rare example from the sport psychology literature, Andersen (2011) asks: "What is "usefulness" of a mental toughness inventory (besides getting it published and meeting university productivity quotas)?" (p. 81).

In contrast, by prioritising utility and context over ontology and epistemology, the role of the researcher in the process knowledge construction becomes overlooked. Not in the name of objectivity – pragmatism, by definition, does not require a position on any such aspect of science – but in the name of practicality. In turn, researchers are not required to critically examine how their own assumptions, agendas and biases shape their work, and thus reduces the need for accountability to science in the name of 'getting the job done' (Sparkes, 2015): "All of which diminishes the role of researcher to that of competent technician as opposed to that of a creative and innovative scholar" (p. 52).

It would be a mistake however to replace faith in method with faith in epistemology. Epistemology is not a fixed set of dogmas, but an ongoing enquiry in its own right; and therefore, in itself, does not provide solid ground on which to conduct science. In contrast to methods and data, which offer a sense of progress, solidity and tangibility, there is a need to embrace what Jung called the "problematical state"; or to experience the "getting lost" which accompanies questions of ontology and epistemology (Giardina, 2017). By positivism becoming subsumed into a plethora of epistemologies it acquires a relativistic value and any sense of certainties becomes removed. The consequence is fragmentation, which Lincoln and Denzin (2005) predict will further intensify in the social sciences in future. Furthermore, the over-reliance on data and method at the expense of dialogue with epistemology legitimises the ongoing fragmentation, as accountability is directed to one's onto-epistemological position, not epistemology itself.

Given the reliance on positivism for so long as the gold standard for doing science in sport psychology, reorienting the discipline with the philosophy of science will inevitably require a period of moratorium and more inward questioning (i.e., regression). During this period, longer-term collective goals need to be established which re-positions the discipline as an autonomous science; and which resists a short-term pragmatic approach to research, heavily incentivised by our current neo-liberal model of higher education (Sparkes, 2013). Prioritising scientific quality over quantity requires greater importance placed on students of science being taught the value of 'bigger picture problems' over productivity, philosophy and critical thinking over rote knowledge (Bosch, 2018; Giardina, 2017). As Bosch suggests, a broader education necessitates the "need to put the philosophy back into the doctorate of philosophy: that is, the 'Ph' back into the PhD" (p. 277).

With too few exceptions (e.g., Martens, 1987; Nesti, 2004; Salter, 1997; Andersen, 2009, 2011) there has been a distinct lack of critical, dissenting voices to prevent normal science in sport psychology carrying on in its *locally reflexive ways*. Yet the roots of this are not just born out of the legacy of sport psychology's historical ties to its parent discipline, psychology, but also in the increasingly metric driven and unstable climate that the discipline is operating in (Sparkes, 2013). When science is increasingly being reduced to metrics (e.g.,

number of publications) inconsistent and disconnected with the idea of science, there is little incentive to take risks and to challenge the status quo[94].

Although the "publish or perish" phenomenon is nothing new, its effects could be particularly acute for the future of a discipline still in its infancy. Sport psychology could in theory claim dominion over a range of sport related psychological phenomena (e.g., mental toughness, competitive anxiety) but there are no reasons that I am aware of as to why the discipline can assume any form of exclusivity with respect to the associated science. The risk of becoming scientifically redundant or being subsumed into related disciplines is made even greater when such phenomenon in their own right are of dubious scientific value[95]. Thus, if sport psychology wants a future "seat around the table", it has to be able to demonstrate what it is able to offer the development of science itself.

The legacy of Jung's work is evident in the language he introduced, the theoretical contributions still discussed, and its application (e.g., psychotherapy). However, his psychology was primarily an epistemological endeavour, intent on creating a discipline which could unite all sciences. Psychology's very legitimacy as a science was predicated on there being no separation between psychology and other sciences. Furthermore, Jung believed that psychology was uniquely placed to establish this synthesis, given that "it was the only discipline which could grasp the subjective factor that underlay other sciences" (Shamdasani, 2003, p. 15). When reflecting on his life's work however, Jung acknowledged his attempt to develop such a psychology, in order to counter the increasing fragmentation in science and psychology itself, inevitably fell short (Shamdasani, 2003). Perhaps in part because of the "personal equation" associated with a science which offers no Archimedian point - which Jung consciously wrestled with throughout his career - makes it impossible for any one person to grasp the nature of the universal principles and structures which make lived experience

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[94] Indeed, this is clearly not a new phenomenon. As Einstein observed: An "academic career in which a person is forced to produce scientific writings in great amounts creates a danger of intellectual superficiality" (quoted in Isaacson, 2008, p.79).

[95] As Mammen & Mironenko (2015) have observed:

> For the time being it seems that psychology has very little to offer which could not on the one hand be offered by biological sciences such as neuroscience or—on the other hand—by a spectrum of cultural-humanistic sciences. Psychology as a scientific discipline is in danger of being cannibalized from two sides". (p. 682)

possible. Indeed, it has been suggested that the personal equation was one of the reasons Jung stopped his early experimental work into word associations due to the unmanageable variation in outcomes which this factor introduced (Shamdasini, 2003).

Jung rejected the methods of the natural sciences, but he did not abandon empiricism altogether. By acknowledging the personal dimension to knowledge construction, Jung's post-experimental work became dependent on both empirical observations and theory, whilst recognising that neither in themselves could capture the elusive objective nature of psychological processes. Rather, Jung understood that a circularity exists between what is observed (i.e., experience) and what is known (i.e., theory). In other words, the theoretical structures hypothesised to organise experience (i.e., archetypes) shape our understanding of that which we observe/experience, and vice versa (Papadopoulos, 2006). Thus, the consequence of acknowledging this personal equation in an epistemology of the psyche is that knowledge itself can never be viewed as complete, but in itself represents a finite part of an indefinite process in its own right. Within this frame, knowledge becomes *in the making*, rather than an end in itself (Papadopoulos, 2006). The position adopted by Jung is remarkably similar to the process of abductive reasoning in which "theory and evidence are circularly bonded within an open-ended cycle" (Salvatore & Valsiner, 2010, p. 12). Rather than placing faith in method and data for generating knowledge, abductive reasoning is based on a critical tension between the observation of "empirical regularities" and theory, with each being accountable to the other. Given the addition of the personal dimension, in respect to both the observer and the observed, theory offers an objective counterpoint from which to assess any given interpretation of an underlying structure (Polanyi, 1958).

In addition to the primacy of theory over data as a counterpoint to subjectivity, the personal equation necessitates the need for collaboration - on both an intra and inter-disciplinary level - as the methodological basis on which knowledge concerning the psyche can be developed. On the inter-disciplinary level, collaboration is needed because when knowledge is viewed as a process, and cannot be reduced to facts, epistemological validity is dependent on collaboration with associated disciplines in order to be accountable to the real world (Piaget, 1972). When the discipline is only accountable to itself, the circularity between the epistemological assumptions adopted and the associated methods forgo the critical tension required for scientific development (i.e., normal science; Kuhn, 1996). On the intra-disciplinary level, collaboration is needed to overcome individual subjectivity associated with the very act of doing science. Ideas need to be "inter-subjectively tested" (Popper, 2002, p. 22), in order to work towards objectivity in our science. Furthermore, it is theory which offers the

possibility of objectivity within science, given its potential to be examined and tested by others (Polanyi, 1958; Popper, 2002).

Given the circularity which exists between, epistemology and knowledge, what is observed and what is known, the objective value of theory is dependent on *others* challenging, verifying and/or developing both the premises/assumptions and the associated (personal) language used to account for the empirical regularity observed. In other words, the value of a theory or personal insight is not just based on its potential to offer explanation and stimulate future work (Polanyi, 1958), but also its potential to account for shared lived experience, independent of time or context. In sum, despite Jung's belief that all knowledge about ourselves being born out of personal experience (Papadopolous, 2006), the personal equation necessitates the need for any associated objectivity to be verified by a collective process. Human science and the knowledge associated with it are therefore predicated on the tension between collective verification and personal insight.

Many of Jung's most important insights followed his "confrontation with the unconscious", a sustained period of creative exploration, introspection and self-analysis which followed his split with Freud. In response to this period, Jung became concerned with rooting deeply personal experiences in reality or science, in order to connect the "inner" with the "outer":

> I saw that so much fantasy needed firm ground underfoot, and that I must first return wholly to reality. For me, reality meant scientific comprehension. I had to draw concrete conclusions for the insights the unconscious had given me – and that task became a life work. (Jung, 1995, p. 213)

The paradox underpinning Jung's work was that he drew upon deeply personal experiences in an attempt to connect with universal truths. Without the deep and sustained commitment that Jung had with respect to understanding his self and the individuation process, we would not have the epistemological and theoretical insights which continue to inform developments within science and the arts. In addition to the fundamental necessity for collaboration as the basis for doing science, the personal equation requires that research is underpinned by a commitment to self, and its role in knowledge construction. For Jung, the ultimate project was to understand and work towards what makes us whole. That task is dependent on a commitment to that which is greater than any one individual yet is shared by all. The idea of science offers this possibility.

References

Adler, P. (1981). *Momentum: A theory of social action*. Beverly Hills, CA: Sage.

Adler, P., & Adler, P. A. (1978). The role of momentum in sport. *Journal of Contemporary Ethnography, 7*, 153-176. doi:10.1177/089124167800700202

Agassi, A. (2009). *Open*. London, UK: Harper Collins.

Andersen, M. B. (2006). It's all about performance…and something else. In J. Dosil (Ed.), *The Sport Psychologist's handbook: A guide for sport-specific performance enhancement* (pp. 687-698). Chichester, England: Wiley.

Andersen, M. B. (2009). Performance enhancement as a bad start and a dead end: A parenthetical comment on Mellalieu and Lane. *The Sport and Exercise Scientist*, *20*, 12-14.

Andersen, M. B. (2011). Who's mental? Who's tough and who's both? Mutton constructs dressed up as lamb. In D. F. Gucciardi, & S. Gordan (Eds.), *Mental toughness in sport: developments in research and theory* (pp. 69-88). Oxon, UK: Routledge.

Andersen, M. B., & Speed, H. D. (2010). Therapeutic relationships in applied sport psychology. In S. J. Hanrahan, & M. B. Andersen (Eds.), *Routledge handbook of applied sport psychology* (pp. 3-11). Oxon, UK: Routledge.

Araujo, D., Davids, K., & Hristovski, R. (2006). The ecological dynamics of decision making in sport. *Psychology of Sport and Exercise*, *7*, 653-676. doi:10.1016/j. psychsport.2006.07.002

Avugos, S., Köppen, J., Czienskowski, U., Raab, M., & Bar-Eli, M. (2013). The "hot hand" reconsidered: A meta-analytic approach. *Psychology of Sport and Exercise*, *14*, 21–27. doi:10.1016/j.psychsport.2012.07.005

Balague, G. (1999). Understanding identity, value and meaning when working with elite athletes. *The Sport Psychologist*, *13*, 89-98. doi:10.1123/tsp.13.1.89

Balague, N., Torrents, C., Hristovski, R., Davids, K., & Araújo, D. (2013). Overview of complex systems in sport. *Journal of systems science and complexity*, 26, 4-13. doi:10.1007/s11424-013-2285-0

Beedie, C. J., & Foad, A. J. (2009). The placebo effect in sports performance: A brief review. *Sports Medicine*, *39*, 313-329. doi:10.2165/00007256-200939040-00004

Bompa, T. O., & Haff, G. G. (2009). *Periodization: Theory and methodology of training*. Champaign, Il: Human Kinetics.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NY: Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, *44*, 1175-1184. doi:10.1037/0003-066X.44.9.1175

Bandura, A. (1991). Self-regulation of motivation through anticipatory and self-regulatory mechanisms. In R. A. Dienstbier (Ed.), *Perspectives in motivation: Nebraska Symposium on Motivation* (Vol. 38, pp. 69-164). Lincoln: University of Nebraska Press.

Bandura, A. (1995). Comments on the crusade against the causal efficacy of human thought. *Journal of behaviour Therapy and Experimental Psychiatry*, *26*, 179-190. doi:10.1016/0005-7916(95)00034-W

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. *Organizational Behavior and Human Decision Processes*, *38*, 92-113. doi:10.1016/0749-5978(86)90028-2

Bandura, A., & Jourden, F. (1991). Self-regulatory mechanisms governing social comparison effects on complex decision-making. *Journal of Personality and Social Psychology*, *60*, 941-951. doi:10.1037//0022-3514.60.6.941

Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology*, *88*, 87-99. doi:10.1037/0021-9010.88.1.87

Bar-Eli, M., Avugos, S., & Raab, M. (2006). Twenty years of "hot hand" research: Review and critique. *Psychology of Sport and Exercise*, *7*, 525-553. doi:10.1016/j.psychsport.2006.03.001

Bargh, J. A. (2011). Unconscious thought theory and its discontents: a critique of the critiques. *Social Cognition*, *29*, 629-647. doi:10.1521/soco.2011.29.6.629

Barker, J., McCarthy, P., Jones, M., & Moran (2011). *Single-case research methods in sport and exercise*. Oxon, UK: Routledge.

Barrett, L. F. (2015, September 1). Psychology is not in crisis. *The New York Times*. Retrieved from http://nyti.ms/1htGBo2

Baumeister, R. F. (1984). Choking under pressure: Self-consciousness and the paradoxical effects of incentives on skilled performance. *Journal of Personality and Social Psychology, 46*, 610–620. doi:10.1037/0022-3514.46.3.610

Baumeister, R. F., & Bargh, J. A. (2014). Consciousness and unconsciousness: Toward an integrative understanding of human mental life and action. In J. W. Sherman, B.

Gawronski, & Y. Trope. (Eds.), *Theories of the social mind* (pp. 35-49). New York, NY: The Guildford Press.

Beauchamp, M. R., Maclachlan, A., & Lothian, A. M. (2005). Communication within sport teams: Jungian preferences and group dynamics. *The Sport Psychologist*, *19*, 203-220. doi:10.1123/tsp.19.2.203

Beer, S. (1959). *Cybernetics and management*. London, UK: English Universities Press.

Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 1–62). New York, NY: Academic Press.

Bertalanffy, L. v. (1950). An outline of general systems theory. *The British Journal for the Philosophy of Science*, *1*, 134-165. doi:10.1093/bjps/I.2.134

Blackmore, S. (2003). *Consciousness: An introduction*. Abingdon, UK: Hodder and Stoughton.

Boker, S. M. (2002). Consequences of continuity: the hunt for intrinsic properties within parameters of dynamics in psychological processes. *Multivariate Behavioral Research*, *37*, 405-422. doi: 10.1207/S15327906MB R3703_5

Bohm, D. (1980). *Wholeness and the implicate order*. Oxon, UK: Routledge.

Bohr, N. (1934). *Atomic theory and the description of nature*. Cambridge, UK: Cambridge University Press.

Bond, J. (2002). Applied sport psychology: Philosophy, reflections, and experience. *International Journal of Sport Psychology*, *33*(1), 19-37.

Bornstein, R. F. (2005). Reconnecting psychoanalysis to mainstream psychology: challenges and opportunities. *Psychoanalytic Psychology*, *22*, 323-340. doi:10.1037/0736-9735.22.3.323

Bosch, G. (2018). Train PhD students to be thinkers not just specialists. *Nature*, *554*, 277-277. doi:10.1038/d41586-018-01853-1

Bridge, M. W., & Toms, M. R. (2013). The specialising or sampling debate: a retrospective analysis of adolescent sport participation in the UK. *Journal of Sports Science*, *31*, 87-96. doi:10.1080/02640414.2012.721560.

Briki, W., Den Hartigh, R. J. R., Hauw, D., & Gernigon, C. (2012). A qualitative exploration of the psychological contents and dynamics of momentum in sport. *International Journal of Sport Psychology*, *43*, 365-384. doi:10.7352/IJSP2012.43.365

Briki, W., Den Hartigh, R. J. R., Markman, K. D., & Gernigon, C. (2014). How do supporters perceive positive and negative psychological momentum changes during a simulated cycling competition? *Psychology of Sport and Exercise, 15*, 216-221. doi:10.1016/j.psychsport.2013.11.006

Brown, J. R. (2012). *Philosophy of science: The key thinkers.* London, UK: Continuum International Publishing Group.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822-848. doi:10.1037/0022-3514.84.4.822

Brustad, R. J. (2008). Qualitative research approaches. In T. Horn (Ed.), *Advances in sport psychology* (pp. 31-43). Champaign, IL: Human Kinetics.

Buckley, R. P. (1992). *Husserl, Heidegger and the crisis of philosophical responsibility*. Dordrecht, Netherlands: Kluwer Academic Publishers.

Burke, K. L., Aoyagi, M. W., Joyner, A. B., & Burke, M. M. (2003). Spectators perceptions of positive momentum while attending NCAA men's and women's basketball regular season contests: Exploring the antecedents-consequences model. *Athletic Insight*, *5*(3), 10-18.

Cannon, W. B. (1932). The wisdom of the body. New York, NY: W.W. Norton.

Caplan, A. (2015). How reliable are psychology studies? *The New York Times*. Retrieved from https://www.nytimes.com/2015/09/08/opinion/how-reliable-are-psychology-studies.html

Capra, F. (1975). *The tao of physics*. London, UK: Flamingo.

Carless, D., & Douglas, K. (2013). "In the boat" but "selling myself short": Stories, narratives, and identity development in elite sport. *The Sport Psychologist, 27*, 27-39. doi:10.1123/tsp.27.1.27

Carver, C. S. (2003). Pleasure as a sign that you can attend to something else: Placing positive feelings within a general model of affect. *Cognition and Emotion*, *17*, 241-261. doi:10.1080/02699930302294

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control theory approach to human behaviour*. New York, NY: Springer-Verlag.

Carver, C. S., & Scheier, M. F. (2002). Control processes and self-organization as complementary principles underlying behaviour. *Personality and Social Psychology Review*, *6*, 304-315. doi:10.1207/S15327957PSPR0604_05

Chambers, A. F. (1982). *What is this thing called science?* Buckingham, UK: Open University Press.

Charles, E. P. (2013). Psychology: The empirical study of epistemology and phenomenology. *Review of General Psychology*, *17*, 140-144. doi:10.1037/a0032920

Christensen, W., Sutton, J., & McIlwain, D. J. F. (2016). Cognition in skilled action: Meshed control and the varieties of skill experience. *Mind & Language, 31*, 37-66. doi:10.1111/mila.12094

Chung, M. C., & Hyland, M. E. (2012). *History and philosophy of psychology*. Chichester, UK: Wiley-Blackwell.

Clark, A. (1997). The dynamical challenge. *Cognitive Science*, *21*(4), 461-481.

Clarke, J. J. (1994). *Jung and eastern thought*. London, UK: Routledge.

Clancy, R. B., Herring, M. P., MacIntyre, T. E., & Campbell, M. J. (2016). A review of competitive sport motivation research. *Psychology and Sport and Exercise*, *27*, 232-242. doi:10.1016/j.psychsport.2016.09.003

Cleeremans, A. (2014). Connecting conscious and unconscious processing. *Cognitive Science*, *38*, 1286-1315. doi:10.1111/cogs.12149

Coakley, J. (1992). Burnout among adolescent athletes: A personal failure or social problem. *Sociology of Sport Journal*, *9*, 271-285. doi:10.1123/ssj.9.3.271

Collingwood, R. G. (1972). *The idea of history*. New York: Oxford University Press.

Collins, D., & MacNamara, A. (2012). The rocky road to the top: Why talent needs trauma. *Sports Medicine*, *42*, 907-914. doi:10.2165/11635140-000000000000 00.

Collins, R., Evan-Jones, K., & O'Conner, H. L. (2013). Reflections on three neophyte sport and exercise psychologists developing philosophies for practice. *The Sport Psychologist*, *27*, 399-409.

Conroy, D. E., & Benjamin, L. S. (2001). Psychodynamics in sport performance enhancement consultation: Application of an interpersonal theory. *The Sport Psychologist*, *15*, 103-117. doi:10.1123/tsp.15.1.103

Conroy, D. E., Poczwardowski, A., & Henschen, K. P. (2001). Evaluative criteria and consequences associated with failure and success for elite athletes and performing artists. *Journal of Applied Sport Psychology*, *13*, 300-322. doi: 10.1080/104132001753144428

Corcoran, K. J. (1995). Understanding cognition, choice, and behaviour. *Journal of behaviour Therapy and Experimental Psychiatry*, *26*, 201-207. doi:10.1016/00 05-7916(95)00020-Z

Corlett, J. (1996). The role of sport pedagogy in the preservation of creativity, exploration of human limits, and traditional virtue. *Quest*, *48*, 442-450. doi:10. 1080/00336297.1996.10484209

Cornelius, A., Silva, J. M. III, Conroy, D. E., & Petersen, G. (1997). The projected performance model: Relating cognitive and performance antecedents of psychological momentum. *Perceptual and Motor Skills, 84*, 475-485. doi:10.2 466/pms.1997.84.2.475

Cosmides, L., Tooby, J., & Barkow, J. H. (1992). Introduction: Evolutionary psychology and conceptual integration. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 3-15). New York: Oxford University Press.

Côté, J. (2009). The road to continued sport participation and sport excellence. In E. Hung, R. Lidor, & D. Hackfort (Eds.), *Psychology of sport excellence* (pp. 45-52). Morgantown, WV: Fitness Information Technology.

Cowen, A. P., Nesti, M. S. & Cheetham, M. (2014). The psychology of dynamic balance and peak performance in sport: Correction theory. *Quest*, *66*, 421-432. doi:10.1080/00336297.2014.936620

Creswell, J. (2011). Controversies in mixed methods research. In N. Denzin, & Y. Lincoln (Eds.), *The Sage handbook of qualitative research*. (pp. 269-283). London: Sage.

Crust, L. (2008). A review and conceptual re-examination of mental toughness: Implications for future researchers. *Personality and Individual Differences*, *45*, 576-583. doi:10.1016/j.paid.2008.07.005

Crust, L., & Nesti, M. (2006). A review of momentum in sports: Why qualitative research is needed. *Athletic Insight*, *8*(1), 1-15.

Csikszentmihalyi, M. (1975). Play and intrinsic rewards. *Journal of Humanistic Psychology*, *15*(3), 41-63.

Csikszentmihalyi, M. (1992). *Flow: The psychology of happiness*. London, UK: Rider Publications.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York, NY: Harper Collins.

Csikszentmihalyi, M. (2002). *Flow: The psychology of optimal experience*. New York, NY: Harper & Row,

Culbertson, L. (2005). The paradox of bad faith and elite competitive sport. *Journal of the Philosophy of Sport*, *32*, 65-86. doi:10.1080/00948705.2005.9714671

Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual Review of Psychology*, *62*, 583-619. doi:10.1146/annurev.psych.093008.100356.

Damasio, A. (2006). *Descartes' error*. London, UK: Vintage.

Davids, K., & Araújo, D. (2010). The concept of 'organismic asymmetry' in sport science. *Journal of Science and Medicine in Sport*, *13*, 633-640. doi:10.1016/j. jsams.2010.05.002

De Botton, A. (2012). *Religion for atheists*. London, UK. Penguin Books.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behaviour*. New York, NY: Plenum.

Debois, N., Ledon, A., Argiolas, C., & Rosnet, E. (2012). A lifespan perspective on transitions during a top sports career: a case of an elite female fencer. *Psychology of Sport and Exercise*, *13*, 660-668. doi:10.1016/j.psychsport.2005 .11.001.

Debois, N., Ledon, A., & Wylleman, P. (2015). A lifespan perspective on the dual career of elite male athletes. *Psychology of Sport and Exercise, 21,* 15-26. doi:10.1016/j.psychsport.2014.07.011

Debois, N., & Leseur, V. (2013). Athletes' careers in France: in pursuit of excellence in sport and life. In N. B. Stambulova, & T. V. Ryba (Eds.), *Athletes' careers across culture* (pp. 90-102). New York, NJ: Routledge.

Den Hartigh, R. J. R., Van Geert, P. L. C., Van Yperen, N. W., Cox, R. F. A., & Gernigon, C. (2016). Psychological momentum during and across sports matches: evidence for interconnected time scales. *Journal of Sport and Exercise Psychology*, *38*, 82-92. doi:10.1123/jsep.2015-0162

Dennett, D. C. (1969). *Content and Consciousness*. London, UK: Routledge and Kegan Paul.

Denzin, N. (2010). Moments, mixed methods, and paradigm dialogs. *Qualitative Inquiry*, *16*, 419-427. doi:10.1177/1077800410364608

Dewar, A., & Horn, T. (1992). A critical analysis of knowledge construction in sport psychology. In: T. Horn, (Ed.), *Advances in sport psychology* (pp.13-22). Champaign, IL: Human Kinetics,

Di Blasi, Z. (2003). The crack in the biomedical box. *The Psychologist, 16*(2), 72-75.

Dijksterhuis, A., & Aarts, H. (2010). Goals, attention, and (un)consciousness. *Annual Review of Psychology*, *61*, 467-490. doi:10.1146/annurev.psych.093008.1004 45

Dijksterhuis, A. & Nordgren, L. F. (2006). A theory of unconscious thought. *Perspectives on Psychological Science*, *1*, 95-109. doi.org/10.1111/j.1745-6916.2006.00007.x

Doran, C. (2017). Rage and anxiety in the split between Freud and Jung. *Humanities*, *6*, 53. doi:10.3390/h6030053

Dougher, M. J. (1995). A bigger picture: Cause and cognition in relation to differing scientific frameworks. *Journal of behaviour Therapy and Experimental Psychiatry*, *26*, 215-219. doi:10.1016/0005-7916(95)00021-Q

Dunwoody, P. T. (2006) The neglect of the environment by cognitive psychology, *Journal of Theoretical and Philosophical Psychology*, *26*, 139–153. doi:10.10 37/h0091271

Eagleman, D. (2011). *Incognito: the secret lives of the brain*. Edinburgh, UK: Canongate.

Eagleman, D. (2015). *The Brain: The story of you*. Edinburgh, UK: Cannongate.

Earman, J., & Salmon, W. C. (1999). The confirmation of scientific hypotheses. In M. H. Salmon, J. Earman, C. Glymour, J. G. Lennox, P. Machamer, J. E. McGuire, J. D. Norton, W. C. Salmon, & K. F. Schaffner (Eds.), *Introduction to the philosophy of science* (pp. 42-103). Indianapolis, IN: Hackett Publishing.

Edwards, T., Hardy, L., Kingston, K., & Gould, D. (2002). A qualitative analysis of catastrophic performances and the associated thoughts, feelings, and emotions. *The Sport Psychologist*, *16*, 1-19. doi:10.1123/tsp.16.1.1

Erikson, E. H. (1959). Identity and the life cycle: Selected papers. *Psychological Issues*, *1*, 1-171.

Falzeder, E. (2016). Types of truth. *Jung Journal*, *10*, 14-30. doi:10.1080/19342039.2016.1191110

Fazey, J., & Hardy, L. (1988). *The inverted-U Hypothesis: A catastrophe for sport psychology*. British Association of Sports Sciences Monograph no. 1. Leeds: The National Coaching Foundation.

Feltz, D. L. (2007). Self-confidence and sports performance. In D. Smith & M. Bar-Eli (Eds.), *Essential readings in sport and exercise psychology* (pp. 278–294). Champaign, IL: Human Kinetics.

Ferguson, C. J. (2015). 'Everyone knows psychology is not a real science'. *American Psychologist*, *70*, 527-542. doi:10.1037/a0039405

Fitts, P. M., & Posner, M. I. (1967). *Human performance*. Oxford, UK: Brooks/Cole.

Fordham, M. (1957). *New developments in analytical psychology*. London: Routledge and Kegan Paul.

Fordman, F. (1966). *An introduction to Jung's psychology*. London, UK: Penguin.

François, C. (1999). Systemics and cybernetics in a historical perspective. *Systems Research and Behavioral Science*, *16*, 203-219. doi:10.1002/(SICI)1099-1743(199905/06)16:33.0.CO;2-1

Freud, S. (1999). The "Uncanny". In S. Freud (Ed.), *The Standard Edition of the Complete Psychological Works of Sigmund Freud, Volume XVII (1917-1919): An Infantile Neurosis and Other Works* (pp. 217-256). London: Vintage. (Originally published in 1919)

Frias, F. J. L., & Monfort, X. G. (2015). A hermeneutical analysis of the internalist approach in the philosophy of sport, *Physical Culture and Sport. Studies and Research*, *67*, 5-12. doi:10.1515/pcssr-2015-0018

Friesen, A., & Orlick, T. (2010). A qualitative analysis of holistic sport psychology consultants' professional philosophies. *The Sport Psychologist*, *24*(2), 227-244. doi:10.1123/tsp.24.2.227

Fuchs, A. H., & Milar, K. S. (2003). Psychology as a science. In D. K. Freedheim (Ed.), *Handbook of psychology*, (pp. 1-26). Hoboken, NJ: John Wiley & Sons Inc.

Füllsack, M. (2016). Circularity and the micro-macro-difference. *Constructivist Foundations, 12*(1), 1-10.

Gallwey, W. T. (1986). *The inner game of tennis*. London, UK: Pan Books.

Gardner, F., & Moore, Z. (2006). *Clinical sport psychology*. Champaign, IL: Human Kinetics.

Gardner, F. L., & Moore, Z. E. (2012). Mindfulness and acceptance models in sport psychology: A decade of basic and applied scientific advancements. *Canadian Psychology, 53*, 309-318. doi:10.1037/a0030220

Garner, W. R. Hake, H. W., & Erikson, C. W. (1956). Operationism and the concept of perception. *Psychological Review*, *63*, 149-159.

Gernigon, C., Briki, W., & Eykens, K. (2010). The dynamics of psychological momentum in sport: The role of ongoing history of performance patterns. *Journal of Sport and Exercise Psychology*, *32*(3), 377-400.

Giacobbi, P. R., Poczwardowski, A., & Hager, P. (2005). A pragmatic research philosophy for sport and exercise psychology. *The Sport Psychologist*, *19*, 18-31. doi:10.1123/tsp.19.1.18

Giardina, M. D. (2017). (Post?)qualitative inquiry in sport, exercise, and health: notes on a methodologically contested present. *Qualitative Research in Sport, Exercise and Health*, *9*, 258-270. doi:10.1080/2159676X.2016.1273904

Gilbourne, D., & Richardson, D. (2006). Tales from the field: personal reflections on the provision of psychological support in professional soccer. *Psychology of Sport and Exercise*, 7, 335-47. doi:10.1016/j.psychsport.2005.04.004

Gill, D. L. (1994). A sport and exercise psychology perspective on stress. *Quest*, *44*, 20-27. doi:10.1080/00336297.1994.10484108

Gilovich, T., Vallone, R., & Tversky, A. (1985). The hot hand in basketball: on the misperception of random sequences. *Cognitive Psychology, 17*, 295-314. doi:10.1016/0010-0285(85)90010-6

Ginsburg, R. D., Smith, S. R., Danforth, N., Ceranoglu, T. A., Durant, S. A., Kamin, H., … Masek, B. (2014). Patterns of specialization in professional baseball players. *Journal of Clinical Sport Psychology*, 8, 261-275. doi:10.1123/jcsp.20 14-0032

Giorgi, A. (2000). Psychology as a human science revisited. *Journal of Humanistic Psychology*, *40*, 56-73. doi:10.1177/0022167800403005

Giorgi, A. (2014). Phenomenological philosophy as the basis for human scientific psychology. *The Humanistic Psychologist*, *42*, 233-248. doi:10.1080/08873267.2014.933052

Gledhill, A., & Harwood, C. (2015). A holistic perspective on career development in UK female soccer players: A negative case analysis. *Psychology of Sport and Exercise*, *21*, 65-77. doi:10.1016/j.psychsport.2015.04.003

Gleick, J. (1997). *Chaos*. London, UK: Vintage.

Goodwin, C. J. (1999). *A history of modern psychology*. New York: John Wiley & Sons.

Gould, D., & Dieffenbach, K. (2002). Overtraining, underrecovery, and burnout in sport. In Kellmann (Ed.), *Enhancing recovery: Preventing underperformance in athletes* (pp. 25-35). Champaign, IL: Human Kinetics.

Gould, D., Udry, E., Tuffey, S., & Loehr, J. (1996). Burnout in competitive junior tennis players: II. Qualitative analysis. *The Sport Psychologist*, *10*(4), 341-366.

Greene, T. A. (1994). The archetype of the game. In M. Stein & J. Hollwitz (Eds.), *Psyche and sports* (pp. 34-48). Wilmette, Il: Chiron Publications.

Greenwood, J. D. (2009). *A conceptual history of psychology*. New York, NY: McGraw Hill.

Gucciardi, D. F., Gordon, S., & Dimmock, J. A. (2008). Towards an understanding of mental toughness in Australian football. *Journal of Applied Sport Psychology*, *20*, 261-281. doi:10.10801041320080199855 6

Gucciardi, D. F., Gordon, S., & Dimmock, J. A. (2009) Advancing mental toughness research and theory using personal construct psychology, *International Review of Sport and Exercise Psychology*, *2*, 54-72. doi:10.1080/17509840802705938

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: Sage.

Haig, B. D. (2005). An abductive theory of scientific method. *Psychological Methods*, *10*, 371-388. doi: 0.1037/1082-989X.10.4.371

Haken, H. (1988). *Information and self-organization: A macroscopic approach to self-organization*. New York, N Y: Springer-Verlag Berlin Heidelberg.

Hales, S. D. (1999). An epistemologist looks at the hot hand in sports. *Journal of the Philosophy of Sport*, *26*, 79-87. doi:10.1080/00948705.1999.9714580

Hanrahan, S. J., & Andersen, M. B. (2010). *Routledge handbook of applied sport psychology*. Oxon, UK: Routledge.

Hardy, L. (1990). A Catastrophe Model of Performance in Sport. In J. G. Jones & L. Hardy (Eds.), *Stress and Performance in Sport* (pp. 81-106). Chichester, UK: Wiley.

Hardy, L. (1996a). A test of catastrophe models of anxiety and sports performance against multidimensional anxiety theory models using the method of dynamic differences. *Anxiety, Stress, and Coping*, *9*, 69-86. doi:10.1080/106158096082 49393

Hardy, L. (1996b). Testing the predictions of the cusp catastrophe model of anxiety and performance. *The Sport Psychologist*, *10*, 140-156. doi:10.1123/tsp.10.2.1 40

Hardy, L., Beattie, S., & Woodman, T. (2007). Anxiety-induced performance catastrophes: Investigating effort required as an asymmetry factor. *British Journal of Psychology, 98*, 15-31. doi:10.1348/000712606X103428

Hardy, L., & Parfitt, G. (1991). A catastrophe model of anxiety and performance. *British Journal of Psychology*, *82*, 163-178. doi:10.1111/j.20448295.1991.tb0 2391.x

Hardy, L., & Parfitt, G., & Pates, J. (1994). Performance catastrophes in sport: a test of the hysteresis hypothesis. *Journal of Sports Science*, *12*, 327-334. doi:10.10 80/02640419408732178

Hardy, L., Woodman, T., & Carrington, S. (2004). Is self-confidence and bias factor in higher-order catastrophe models? An exploratory analysis. *Journal of Sport and Exercise Psychology*, *26*, 359-368. doi:10.1123/jsep.26.3.359

Harford, T. (2011). *Adapt: Why success always starts with failure*. London, UK: Little Brown.

Harré, R. (1972). *The philosophies of science*. London, UK: Oxford University Press.

Harrington, A. (1997). *The placebo effect: An interdisciplinary approach*. Cambridge, MA: Harvard University Press.

Hassin, R. R., Uleman, J. S., & Bargh, J. A. (Eds.). (2005). *The new unconscious.* New York, NY: Oxford University Press.

Hastie, P. A. (2015). Early sport specialization from a pedagogical perspective. *Kinesiology Review*, *4*, 292-303. doi:10.1123/kr.2015-0029

Haule, J. R. (2011). *Jung in the 21st century*. Oxen, UK: Routledge.

Hauw, D., & Durand, M. (2004). Elite athletes' differentiated action in trampolining: A qualitative and situated analysis of different levels of performance using retrospective interviews. *Perceptual Motor Skills*, *98*, 1139-1152. doi:10.2466/pms.98.3c.1139-1152

Hauw, D., & Durand, M. (2007). Situated analysis of elite trampolinists' problems in competition using retrospective interviews. *Journal of Sports Sciences*, *25*, 173–183. doi:10.1080/02640410600624269

Hays, K., Maynard, I., Thomas, O., & Bawden, M. (2007). Sources and types of confidence identified by world class sport performers. *Journal of Applied Sport Psychology*, *19*, 434-456. doi:10.1080/10413200701599173

Hayslip, B., Petrie, T. A. MacIntire, M. M., & Jones, G. M. (2010). The influences of skill level, anxiety, and psychological skills use on amateur golfers' performances. *Journal of Applied Sport Psychology*, *22*, 123-133. doi:10.1080/10413200903554281

Henschen, K. (2001). Lessons from sport psychology consulting. In G. Tenenbaum (Ed.), *The practice of sport psychology* (pp. 77-87). Morgantown, WV: Fitness Information Technology.

Hergenhahn, B. R. (2009). *An introduction to the history of psychology*. Belmont, CA: Wadsworth.

Higham, A., Harwood, C., & Cale, A. (2005). *Momentum in soccer: Controlling the game.* Leeds, UK: Coachwise.

Hill, K. L. (2001). *Frameworks for sport psychologists*. Leeds, UK: Human Kinetics.

Hoberman, J. M. (1992). *Mortal engines: The science of performance and dehumanization of sport*. Caldwell, NJ: The Blackburn Press.

Hoberman, J. M. (1995). Sport and the technological image of man. In W. J. Morgan, & K. V. Meier, (Eds.), *Philosophic inquiry in sport* (pp. 202-208). Champaign, IL: Human Kinetics.

Hodge, A. (2017). The 6th international conference on self-determination theory: A review and emerging themes. *Sport and Exercise Psychology Review*, *13*(1), 94-96.

Holowchak, M. A., Reid, H. L. (2011). *Aretism: An ancient sports philosophy for the modern sport world. Plymouth*. UK: Lexington Books.

Horn, T.S., Lox, C.L. & Labrador, F. (2010). The self-fulfilling prophecy theory: When coaches' expectations become reality. In J. M. Williams (Ed.), *Applied Sport Psychology: Personal Growth to Peak Performance* (6th ed., pp. 81-105). New York: McGraw Hill.

Horner, M. (1968). *Sex differences in achievement motivation and performance in competitive and non-competitive situations* (Unpublished doctoral dissertation). University of Michigan.

Howe, K. R. (1988). Against the quantitative-qualitative incompatibility thesis, or, dogmas die hard. *Educational Researcher*, *17*, 10-16. doi:10.3102/0013189X0 17008010

Husserl, E. (1970). *The crisis of European sciences and transcendental phenomenology*. Evanston, Il: Northwestern University Press.

Ilundáin-Agurruza, J. (2014a). Waking up from the cognitivist dream – The computational view of the mind and high performance. *Sport, Ethics and Philosophy*, *8*, 344-373. doi:10.1080/17511321.2015.1026629

Ilundáin-Agurruza, J. (2014b). Skillful striving: Holism and the cultivation of excellence in sports and performative endeavors. *Sport, Ethics, and Philosophy*, *8*, 223-229. doi:10.1080/17511321.2014.981363

Isaacson, W. (2008). *Einstein: His life and universe*. London, UK: Pocket Books.

Iso-Ahola, S. E., & Mobily, K. (1980). Psychological momentum: A phenomenon and an empirical (unobtrusive) validation of its influence in a competitive sport tournament. *Psychological Reports*, *46*, 391–401. doi:10.2466/pr0.1980.46.2.3 91

Jackson, S. A. (1992). Athletes in flow: A qualitative investigation of flow states in elite figure skaters. *Journal of Applied Sport Psychology*, *4*, 161-180. doi: 10.1080/10413209208406459

Jackson, S. A., & Csikszentmihalyi, M. (1999). *Flow in sports: The keys to optimal experiences and performances*. Champaign, IL: Human Kinetics.

Jackson, S. A., Thomas, P. R., Marsh, H. W., & Smethurst, C. J. (2001). Relationship between flow, self-concept, psychological skill, and performance. *Journal of Applied Sport Psychology, 13,* 129-135. doi:10.1080/10413200175314985

Jacobi, J. (1962). *The psychology of C. G. Jung*. London, UK: Routledge & Kegan Paul Ltd.

James, W. (1892). *Psychology: A briefer course*. Retrieved from https://archive.org/details/psychologybriefe00willuoft

Jenkins, S. (2008). Zen Buddhism, sport psychology and golf. *International Journal of Sports Science and Coaching*, *3*, 215-236. doi:10.1260/1747954087850241 80

Jentsch, E. (1906/1997). On the psychology of the uncanny. *Angelaki*, *2*, 7-16. doi:10.1080/09697259708571910

Johnson, N. (2007). *Simply complexity*. Oxford, UK: Oneworld Publications.

Jones, G., & Hanton, S. (2001). Pre-competition feeling states and directional anxiety interpretations. *Journal of Sports Sciences*, *19*, 385-395. doi:10.1080/026404101300149348

Jones, G., Hanton, S., & Connaughton, D. (2002). What is this thing called mental toughness? An investigation of elite sport performers. *Journal of Applied Sport Psychology*, *14*, 205–218. doi:10.1080/10413200290103509

Jones, G., Hanton, S., & Connaughton, D. (2007). A framework of mental toughness in the world's best performers. *The Sport Psychologist*, *21*, 243-264. doi:10.1123/tsp.21.2.243

Jones, M. I., & Harwood, C. (2008). Psychological momentum within competitive soccer: players perspectives. *Journal of Applied Sport Psychology*, *20*, 57-72. doi: 10.1080/10413200701784841

Jones, R. A. (2007). *Jung, psychology, postmodernity*. Hove, UK: Routledge.

Jones, R. A. (2013). Jung's "psychology with the psyche" and the behavioral sciences. *Behavioral sciences*, *3*, 408-417. doi:10.3390/bs3030408

Jung, C. G. (1958). Psyche and symbol. New York, NY: Anchor.

Jung, C. G. (1960). *The collected works of C. G. Jung: Vol. 8. The structure and dynamics of the psyche.* London, UK: Routledge & Kegan Paul.

Jung, C. G. (1966a). *The collected works of C. G. Jung: Vol. 7. Two essays on analytical psychology*. Princeton, NJ: Princeton University Press.

Jung, C. G. (1966b). *The collected works of C. G. Jung: Vol. 16. The practice of psychotherapy.* London, UK: Routledge & Kegan Paul.

Jung, C. G. (1968). *The collected works of C. G. Jung: Vol. 12. Psychology and alchemy*. Abingdon, UK: Routledge.

Jung, C. G. (1969a). *The collected works of C. G. Jung: Vol. 9i. Archetypes of the collective unconscious*. Princeton, NJ: Princeton University Press.

Jung, C. G. (1969b). *The collected works of C. G. Jung: Vol. 11. Psychology and religion: west and east.* Princeton, NJ: Princeton University Press.

Jung, C. G. (1971). *The collected works of C. G. Jung: Vol. 6. Psychological types*. London, UK: Routledge & Kegan Paul.

Jung, C. G. (1975). *Critique of psychoanalysis*. Princeton, NJ: Princeton University press.

Jung, C. G. (1995). *Memories, dreams, reflections*. London, UK: Fontana Press.

Jung, C. G. (2002). *The undiscovered self*. Oxon, UK: Routledge.

Kahnemen, D. (2011). *Thinking, fast and slow*. London, UK: Penguin.

Kal, E. C., van der Kamp, J, & Houdijk, H. (2013). External attentional focus enhances movement automatization: A comprehensive test of the constrained action hypothesis. *Human Movement Science*, *32*, 527-539. doi:10.1016/j.hum ov.2013.04.011

Karcher, S. (1999). Jung, the Tao, and the classic of change. *Journal of Religion and Health, 38*, 287-304. doi:10.1023/A:102290800

Kauffman L. (2016). Cybernetics, reflexivity and second-order science. *Constructivist Foundations, 11*(3), 489–497.

Kauffman, S. (1995). *At home in the universe*. New York, NY: Oxford University Press.

Keegan, R. J., Harwood, C. G., Spray, C. M., & Lavallee, D. E. (2009). A qualitative investigation exploring the motivational climate in early-career sports participants: coach, parent and peer influences on sport motivation**.** *Psychology of Sport and Exercise*, *10*, 361-372. doi:10.1016/j.psychsport.2008.12.003

Keegan, R. J., Harwood, C. G., Spray, C. M., & Lavallee, D. E. (2010). From motivational climate to motivational atmosphere: a review of research examining the social and environmental influences on athlete motivation in sport. In: B. D. Geranto (Ed.), *Sport Psychology* (pp. 1-55). New York, NY: Nova Science Publications.

Keegan, R. J., Harwood, C. G., Spray, C. M., & Lavallee, D. E. (2014). A qualitative investigation of the motivational climate in elite sport. *Psychology of Sport and Exercise*, *15*, 97-107. doi:10.1016/j.psychsport.2013.10.006

Keegan, R. J., Spray, C. M., Harwood, C. G., & Lavallee, D. E. (2010). The 'motivational atmosphere' in youth sport: coach, parent and peer influences on motivation in specializing sport participants**.** *Journal of Applied Sport Psychology*, *22*, 87-104. doi:10.1080/10413200903421267

Kelly, G. A. (1955). *The psychology of personal constructs.* New York: Norton.

Kelso, J. A. S. (1995). *Dynamic patterns: The self-organisation of brain and behaviour*. Cambridge, MA: The MIT Press.

Kelso, J. A. S. (2008). An essay on understanding the mind. *Ecological Psychology*, *20*, 180-208. doi:10.1080/10407410801949297

Kelso, J. A. S., & Engstrøm, D. A. (2006) *The complementary nature*. Cambridge, MA: The MIT Press.

Kerick, S. E., Iso-Ahola, S. E., & Hatfield, B. D. (2000). Psychological momentum in target shooting: Cortical, cognitive-affective, and behavioral responses. *Journal of Sport & Exercise Psychology*, *22*(1), 1–20.

Keynes, J. M. (1921). A treatise on probability. *The Economic Journal*, *31*, 507-512. doi:10.2307/2223083

Kihlstrom, J. F. (1987). The cognitive unconscious. *Science*, *237*, 1445–1452. doi:10.1126/science.3629249

Kimiecik, J., & Stein, G. (1992). Examining flow experiences in sports contexts: conceptual issues and methodological concerns. *Journal of Applied Sport Psychology*, *4*, 144-160. doi:10.1080/10413209208406458

Klafter, A. B. (2018). Fear of success. In S. Akhtar (Ed.), *Fear: A dark shadow across out life span* (pp. 147-168). Oxon, UK: Routledge.

Klempe, S. K. (2012). Psychology – Tensions between objectivity and subjectivity. *Integrative Psychological and Behavioural Science*, *46*, 373-379. doi:10.1007/ s12124-012-9200-4

Koch, S. (1961). Psychological science versus the science-humanism antimony: Intimations of a significant science of man. *American Psychologist*, *16*, 629-639.

Koch, S. (1964). Psychology and emerging conceptions of knowledge as unitary. In T. W. Wann (Ed.) *Behaviorism and phenomenology* (pp. 1-45). Chicago: University of Chicago Press.

Koch, S. (1993). "Psychology" or "the psychological studies"? *American Psychologist, 48*, 902-904. doi:10.1037/0003-066X.48.8.902

Kontos, A. P., & Feltz, D. L. (2008). The nature of sport psychology. In T. Horn (Ed.), *Advances in sport psychology* (pp. 3-14). Champaign, IL: Human Kinetics.

Kornspan, A. S. (2012) History of sport and performance psychology. In S. M. Murphy (Ed.), *The Oxford handbook of sport and performance psychology* (pp. 3-23). New York, NY: Oxford University Press.

Krane, V., & Baird, S. M. (2005). Using ethnography in applied sport psychology. Journal of Applied Sport Psychology, *17*, 1-21. doi:10.1080/10413200590932371

Kristjánsson, M. (1993). Deci and Ryan's cognitive evaluation theory of intrinsic motivation: A set of common sense theorems. *Scandinavian Journal of Psychology*, *34*, 338-352. doi:10.1111/j.1467-9450.1993.tb01130.x

Kuhn, T. (1996). *The structure of scientific revolutions*. Chicago, Il: The University of Chicago Press.

Laing, R. D. (1959). *The divided self*. Middlesex, UK: Penguin Books.

Lamiell, J.T. (1998). “Nomothetic” and “idiographic”: Contrasting Windelband’s

understanding with contemporary usage. *Theory & Psychology*, *8*, 23-38. doi:10.1177 /0959354398081002

Langenhove, L. V. (1995). The theoretical foundations of experimental psychology and its alternatives. In J. A. Smith, R. Harré, & L. V. Langenhove (Eds.), *Rethinking psychology* (pp. 10-23). London, UK: Sage Publications.

Latham, G. P., & Locke, E. A. (1991). Self-regulation through goal setting. *Organizational Behavior and Human Decision Processes*, *50*, 212-247. doi:10.1016/0749-5978(91)90021-K

Lavallee, D., Bruce, D., & Gorely, T. (2004). The golfer-caddie partnership: an exploratory investigation into the role of the caddie. *Athletic insight*, *6*(1), 20-35.

Lemyre, P. N., Hall, H. K., Roberts, G. C. (2008). A social cognitive approach to burnout in athletes. *Scandinavian Journal of Medicine & Science in Sports*, *18*, 221-234. doi:10.1111/j.1600-0838.2007.00671.x

Lent, J. (2017). *The patterning instinct: a cultural history of humanity's search for meaning*. New York, NY: Prometheus Books.

Lincoln, Y. (2010). "What a long stage trip it's been…": twenty-five years of qualitative and new paradigm research. *Qualitative enquiry*, *16*, 3-9. Doi:10.11.77/1077800409349754

Lincoln, Y. S., & Denzin, N. K. (2005). Epilogue: The eighth and ninth moments—Qualitative research in/and the fractured future. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (pp. 1115-1126). Thousand Oaks, CA: Sage.

Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.

Lindsay, P., Breckon, J. D., Thomas, O., & Maynard, I. W. (2007). In pursuit of congruence: A personal reflection on methods and philosophy in applied practice. *The Sport Psychologist*, *21*, 335-352. doi:10.1123/tsp.21.3.335

Loland, L. (2000). The logic of progress and the art of moderation in competitive sports. In T. Tännsjö, & C. M. Tamburrini, (Eds.) *Values in sport: Elitism, nationalism, gender equality and the scientific manufacture of winners* (pp. 39-56). London, UK: Routledge.

Louro, M. J., Pieters, R., & Zeelenberg, M. (2007). Dynamics of multiple goal pursuit. *Journal of Personality and Social Psychology*, *93*, 174-193. doi:10.1037/0022-3514.93.2.174

Lovelock, J. (2009). Gaia: A new way to look at life on earth. Oxford, UK: Oxford University Press.

MacIntyre, T. E., Jones, M., Brewer, B. W., Van Raalte, J., O'Shea, D., & McCarthy, P. (2017). Editorial: mental health challenges in elite sport: balancing risk with reward. *Frontiers in Psychology*, *8*, 1-4. doi:10.3389/fpsyg.2017.01892

Mack, M. G., Huddleston, S., Dutler, K. E. & Mintah, J. K. (2000). Chaos theory: A new science for sport behaviour? *Athletic Insight*, *2*(2), 8-16.

Mammen, J., & Mironenko, I. (2015). Activity theories and the ontology of psychology: learning from Danish and Russian experiences. *Integrative Psychological and Behavioural Science*, *49*, 681-713. doi:10.1007/s12124-015-9313-7

Marchant, D. C. (2008). Attentional focus and golf performance. *Sport and Exercise Psychology Review*, *4*(2), 16-21.

Marcia, J. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology*, *3*, 551-558. doi:10.1037/h0023281

Martens, R. (1987). Science, knowledge, and sport psychology. *The Sport Psychologist*, *1*(1), 29-55.

Martens, R., Burton, D., Vealey, R. S., Bump, L., & Smith, D. (1990). The development of the competitive state anxiety inventory-2. In R. Martens, R. S. Vealey, D. Burton (Eds.), *Competitive anxiety in sport* (pp.117-190). Champaign, Il: Human Kinetics.

Maruyama, M. (1963). The second cybernetics: Deviation amplifying mutual causal processes. *American Scientist*, *51*(2), 164-179.

Maslow, A. (1954). *Motivation and personality*. Oxford, UK: Harper & Brothers.

Maslow, A. (1968). Towards a psychology of being. Princeton, NJ: D. Van Nostrand.

Massarelli, R., & Terret, T. (2012). Images and symbols in ancient and modern sport. *Sport, Ethics and Philosophy*, *6*, 376-392. doi:10.10.80/17511321.2012.68932 2

Masters, R. (2012). Conscious and unconscious awareness in learning and performance. In S. M. Murphy (Ed.), *The Oxford handbook of sport and performance psychology* (pp. 131-153). New York, NY: Oxford University Press.

Maxwell, J. A. (2012). *A realist approach for qualitative research*. London, UK: Sage Publications.

McCarthy, P., & Jones, M. (2013). *Becoming a sport psychologist*. Oxon, UK: Routledge.

McFee, G. (2010). *Ethics, knowledge and truth in sports research*. Oxon, UK: Routledge.

McGannon K. R., & Schweinbenz, A. N. (2011). Traversing the qualitative–quantitative divide using mixed methods: some reflections and reconciliations for sport and exercise psychology. *Qualitative Research in Sport, Exercise and Health*, *3*, 370-384. doi:10.1080/2159676X.2011.607187

Miller, P. S., & Kerr, G. A. (2002). Conceptualizing excellence: Past, present, and future. *Journal of Applied Sport Psychology*, *14*, 140-153. doi:10.1080/ 10413200290103464

Miller, S., & Weinberg, R. (1991). Perceptions of psychological momentum and their relationship to performance. *The Sport Psychologist, 5*(3), 211-222.

Mills, J. (2014). *Underworlds: Philosophies of the unconscious from psychoanalysis to metaphysics*. Hove, UK: Routledge.

Mirza N. A., Akhtar-Danesh, N., Noesgaard, C., Martin, L., & Staples, E. (2014). A concept analysis of abductive reasoning. *Journal of Advanced Nursing*, *70*, 1980–1994. doi:10.1111/jan.12379

Mitchell, K. (2018, March 26). Humble Anthony Joshua has his sights on top of the boxing tree. *The Guardian*. Retrieved from https://www.theguardian.com/sport/blog/2018/ mar/26/anthony-joshua-boxing

Mizruchi, M. S. (1991). Urgency, motivation, and group performance: The effect of prior success on current success among professional basketball teams. *Social Psychology Quarterly*, *54*, 181-189. doi:10.2307/2786935

Moacanin, R. (2003). *The essence of Jung's psychology and Tibetan Buddhism*. Somerville, MA: Wisdom Publications.

Moe, V. F. (2005). A philosophical critique of classical cognitivism in sport: From information processing to bodily background knowledge. *Journal of the Philosophy of Sport*, *32*, 155-183. doi:10.1080/00948705.2005.9714680

Moesch, K., Bäckström, M., Granér, S., & Apitzsch, E. (2014). Hard fact or illusion? An investigation on momentum in female elite handball from a team perspective. *International Journal of Sport and Exercise Psychology*, *12*, 106-120. doi:10.1080/1612197X.2013.804287

Moesch, K., & Apitzsch, E. (2012). How do coaches experience psychological momentum? A qualitative study of female elite handball teams. *The Sport Psychologist*, *26*, 435-453. doi:10.1123/tsp.26.3.435

Molenaar, P. C. M. (2004). A manifesto on psychology as idiographic science: Bringing the person back into scientific psychology this time forever. *Measurement*, *4*, 201-218. doi:10.1207/s15366359mea0204_1

Molenaar, P. C. M. (2007). Psychological methodology will change profoundly due to the necessity to focus on intra-individual variation. *Integrative Psychological and Behavioural Science*, *41*, 35-40. doi:10.1007/s12124-007-9011-1

Molenaar, P. C. M., & Campbell, C. G. (2009). The new person-specific paradigm in psychology. *Current Directions in Psychological Science, 18*(2), 112-117. doi:10.1111/j.1467-8721.2009.01619.x

Molenaar, P.C.M., & Valsiner, J. (2005). How Generalization Works through the Single Case: A Simple Idiographic Process Analysis of an Individual Psychotherapy. *International Journal of Idiographic Science*, *1*, 1-13. Retrieved from https://www.unisalento.it/documents

Molenaar, P.C.M., & Valsiner, J. (2009). How generalization works through the single case: A simple idiographic process analysis of an individual psychotherapy. In S. Salvatore, J. Valsiner, S. Strout, & J. Clegg (Eds.), *YIS: Yearbook of idiographic science* (Vol. 1, pp. 23-38). Rome, Italy: Firera. Retrieved from https://www.unisalento.it/documents

Moran, A., & Toner, J. (2017). *A critical introduction to sport psychology*. Oxon, UK: Routledge.

Moritz, S. E., Feltz, D. L., Fahrbach, K. R., Mack, D. E. (2000). The relation of self-efficacy measures to sport performance: A meta-analytic review. *Research Quarterly for Exercise and Sport*, *71*, 280-294. doi:10.1080/02701367.2000. 10608908

Mosley, M. J., Frierson, D. J., Cheng, Y., & Aoyagi, M. W. (2015) Sport & spirituality: Consulting the Christian athlete. *The Sport Psychologist*, *29*, 371-386. doi:10.1123/tsp.2013-0123

Murrey, S. (2017). Gary Player: 'I became a champion because I know what it was to suffer. *The Guardian*. Retrieved from https://www.theguardian.com/sport/201 7/jul/17/small-talk-gary-player-open-golf

Neher, A. (1996). Jung's theory of archetypes: A critique. *Journal of Humanistic Psychology*, *36*, 61-91. doi:10.1177/00221678960362008

Nesti, M. (2004). *Existential psychology and sport: theory and application*. London, UK: Routledge.

Nesti, M. (2010). *Psychology in football*. Oxon, UK: Routledge.

Nesti, M. (2011). Phenomenology and sport psychology: Back to things themselves! *Sport, Ethics and Philosophy, 5*, 285-296. doi:10.1080/17511321.2011. 602582

Nesti, M., & Littlewood, M. (2009). Psychological preparation and development of players in premiership football: Practical and theoretical perspectives. In T. Riley, A.M. Williams & B. Drust (Eds.), *International Research in Science and Soccer*. London, UK: Routledge.

Nesti, M., Littlewood, M., O'Halloran, L., Eubank, M., & Richardson, D. (2012). Critical moments in elite premiership football: Who do you think you are? Physical Culture and Sport. Studies and Research, Vol. LVI, 23-32. doi: 10.2478/ v10141-012-0027-y

Newburg, D., Kimiecok, J., Durand-Bush, N., & Doell, K. (2002). The role of resonance in performance excellence and life engagement. *Journal of Applied Sport Psychology*, *14*, 249-267. doi:10.1080/10413200290103545

Nordgren, L. F., Bos, M. W., & Dijksterhuis, A. (2011). The best of both worlds: Integration conscious and unconscious thought best solves complex decisions. *Journal of Experimental Social Psychology*, *47*, 509-511. doi:10.1016/j.jesp.2 010.12.007

Nordgren, L. F., & Dijksterhuis, A. (2009). The devil is in the deliberation: Thinking too much reduces judgemental consistency. *Journal of Consumer Research*, *36*, 39-46. doi:10.1086/596306

Nowak, A., & Vallacher, R. R. (1998). *Dynamical social psychology*. New York: The Guilford Press.

Oakley D. A. and Halligan P. W. (2017). Chasing the Rainbow: the non-conscious nature of being. *Frontiers in Psychology*, *8*, 1-16. doi:10.3389/fpsyg.2017.01 924

Ogilvie, B. C. (1968). The unconscious fear of success. *Quest*, 10, 35-39. doi:10.1080 /00336297.1968.10519643

O'Neil, M., Allen, B., & Calder, A. M. (2013). Pressures to perform: an interview study of Australian high performance school-age athletes' perceptions of balancing their school and sporting lives. *Performance Enhancement and Health*, *2*, 87-93. doi:10.1016/j.peh.2013.06.001

Onwuegbuzie, A. J., & Leech, N. L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology: Theory & Practice, 8*, 375-387. doi:10.1080/13645570500402447

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, *349*, 943-951. doi:10.1126/science.aac4716

Papadopoulos, K. (2006). Jung's epistemology and methodology. In K. Papadopoulos (Ed.), *The handbook of Jungian psychology* (pp. 7-53). Hove, UK: Routledge.

Parfitt, G., Hardy, L., & Pates, J. (1995). Somatic anxiety and physiological arousal: Their effects upon a high anaerobic, low memory demand task. *International Journal of Sport Psychology, 26*(2), 196-213.

Parry, J., Robinson, S., Watson, N. J., & Nesti, M. (2007). *Sport and spirituality: An introduction*. Oxon, UK: Routledge.

Pashler, H., & Wagenmakers, E-J. (2012). Editors introduction to the special section on replicability in psychological science: A crisis of confidence? *Perspectives on Psychological Science*, *7*, 528-530. doi:10.1177/1745691612465253

Pates, J., Cowen, A., & Karageorghis, C. (2012). The effect of a client-centred approach on flow states and the performance of three elite golfers. *International Journal of golf science*, *1*, 113-126. doi:10.1123/ijgs.1.2.113

Piaget, J. (1972). *Psychology and epistemology*. Harmondsworth, UK: Penguin University Books.

Petitpas, A. J., & France, T. (2010). Identity foreclosure in sport. In S. J. Hanrahan, & M. B. Andersen (Eds.), *Routledge handbook of applied sport psychology* (pp. 282-291). Oxon, UK: Routledge.

Pickering, A. (2010). *The cybernetic brain*. Chicago, Il: University of Chicago Press.

Pintuck, S., & Reynolds, C. (2012). *The philosophy of science*. New York, NY: Nova Science Publishers.

Poczwardowski, A., & Conroy, D. E. (2002). Coping responses to failure and success among elite athletes and performing artists. *Journal of Applied Sport Psychology*, *14*, 313-329. doi.org/10.1080/10413200290103581

Poczwardowski, A., Sherman, C. P., & Ravizza, K. (2004). Professional philosophy in the sport psychology service delivery: building on theory and practice. *The Sport Psychologist, 18*, 445-463. doi:10.1123/tsp.18.4.445

Polanyi, M. (1958). *Personal knowledge*. Chicago, Il: Routledge & Kegan Paul Ltd.

Popper, K. (2002). *The logic of scientific discovery*. Oxon, UK: Routledge.

Powers, W. (1973). *Behaviour: The control of perception*. London, UK: Wildwood House.

Powers, W. (1991). Commentary on Bandura's "human agency". *American Psychologist*, *46*, 151-153. doi:10.1037/0003-066X.46.2.151.b

Powers, M. A. (1994). *Control theory: A new direction for psychology*. Retrieved from http://www.livingcontrolsystems.com/intro_papers/direction_for_psych.pdf

Privette, G. (1981). The phenomenology of peak performance in sports. *International Journal of Sports Psychology*, *12*(1), 51-60.

Privette, G. (1983). Peak experience, peak performance, and flow: A comparative analysis of positive human experiences. *Journal of Personality and Social Psychology*, *45*(6), 1361-1368.

Ravizza, K. (1977). Peak experiences in sport. *Journal of Humanistic Psychology*, *17*(4), 35-40.

Ravizza, K. (1984). Qualities of the peak experience in sport. In J. M. Silva & R. S. Weinberg (Eds.), *Psychological foundations in sport* (pp. 452-461). Champaign, IL: Human Kinetics.

Ravizza, K. (2002). A philosophical construct: A framework for performance enhancement. *International Journal of Sport Psychology*, *33*(1), 4-18.

Richardson, G. P. (1991). *Feedback thought in social science and systems theory*. Philadelphia, PA: University of Pennsylvania Press.

Robins, R. W., & Craik, K. H. (1994). A more appropriate test of the Kuhnian displacement thesis. American Psychologist, 49, 815-816. doi:10.1037/0003-066X.49.9.815

Robins, R. W., Craik, K. H., & Gosling, S. (1994). *The rise and fall of scientific paradigms: Citation trends as tests of a Kuhnian displacement thesis.* Berkeley: Department of Psychology, University of California, Berkeley.

Robins, R. W., Gosling, S., & Craik, K. H. (1999). An empirical analysis of trends in psychology. *American Psychologist*, *54*, 117-128. doi:10.1037/0003-066X.54.2.117.

Robinson, D. N. (1986). *An intellectual history of psychology*. Madison, WI: The University of Wisconsin Press.

Robinson, D. W. (2005). *Conscience and Jung's moral vision: From id to thou*. New York, NJ: Paulist Press

Rogers, W. S., & Willig, C. (2017). Introduction. In C. Willig, & W. S. Rogers (Eds.), *The Sage handbook of qualitative research in psychology* (pp. 1-14). London, UK: Sage Publications.

Ronkainen, N. J., & Nesti, M. S. (2017). An existential approach to sport psychology: Theory and applied practice. *International Journal of Sport and Exercise Psychology*, *15*, 12-24. doi:10.1080/1612197X.2015.1055288

Ronkainen, N. J., Tikkanen, O., Littlewood, M., & Nesti, M. S. (2015). An existential perspective on meaning, spirituality and authenticity in athletic careers. *Qualitative Research in Sport, Exercise and Health*, *7*, 253-270. doi:10.1080/2159676X.2014.926970

Rose, S. (1997). *Lifelines: Biology, freedom, determinism*. London, UK: Penguin.

Rosenblueth, A., Wiener, N., & Bigelow, J. (1943). Behavior, purpose and teleology. *Philosophy of Science, 10,* 18-24. doi:10.1086/286788

Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom*. New York, NY: Holt, Rinehart and Winston.

Rotella, R. J. (1990). Providing sport psychology consulting services to professional athletes. *The Sport Psychologist*, *4*, 409-417.

Russell, B. (1912). *The problems of philosophy*. London, UK: Oxford University Press.

Russell, B. (1961). *History of western philosophy*. London, UK: Unwin University Books.

Russell, B. (1963). *Mysticism and logic*. London, UK: Unwin Books.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78. doi:10.1037/0003-066X.55.1.68

Saban, M. (2014). Science friction: Jung, Goethe and scientific objectivity. In R. A. Jones (Ed.) *Jung and the question of science* (pp. 30-49). Hove, UK: Routledge.

Sagar, S. S., Busch, B. K., and Jowett, S. (2010). Success and failure, fear of failure, and coping responses of adolescent academy football players. *Journal of Applied Sport Psychology*, *22*, 213–230. doi: 10.1080/10413201003664962

Salvatore, S., & Valsiner, J. (2010). Between the general and the unique: Overcoming the nomothetic versus idiographic opposition. *Theory and Psychology*, *6*, 1-18. doi:10.1177/0959354310381156

Sappington R., & Longshaw, K. (2015). Systematically reviewing the efficacy of mindfulness-based interventions for enhanced athletic performance. *Journal of Clinical Sport Psychology*, *9*, 232-262. doi:10.1123/Jcsp.2014-0017

Sayer, A. (1992). *Method in social science*. London, UK: Routledge.

Schacter, D. L. (1987). Implicit memory: History and current status. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *13*, 501–518. doi:10.1037/0278-7393.13.3.501

Schall, J. D. (2004). On building a bridge between brain and behavior. *Annual Review of Psychology*, *55*, 23-50. doi:10.1146/annurev.psych.55.090902.141907

Schmidt, S. (2009). Shall we really do it again? The powerful concept of replication is neglected in the social sciences. *Review of General Psychology*, *13*, 90-100. doi:10.1037/a0015108

Schüler, J., & Brunner, S. (2009). The rewarding effect of flow experience on performance in a marathon race. *Psychology of Sport and Exercise*, *10*, 168-174. doi:10.1016/j.psychsport.2008.07.001

Scott, B. (2016). Cybernetic foundations for psychology. *Constructivist Foundations*, *11*(3), 509-517.

Scriven, M. (1964). Views on human nature. In T. W. Wann (Ed.), *Behaviorism and phenomenology* (pp. 163-190). Chicago: University of Chicago Press.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston, MA: Houghton Mifflin.

Shamdasani, S. (2003). *Jung and the making of modern psychology*. Cambridge, UK: Cambridge University Press.

Sharp, L.-A., & Hodge, K. (2011). Sport psychology consulting effectiveness: The sport psychology consultant's perspective. *Journal of Applied Sport Psychology, 23*, 360-376. doi:10.1080/10413200.2011.583619

Sharp, L.-A., & Hodge, K. (2014) Sport psychology consulting effectiveness: The athlete's perspective. *International Journal of Sport and Exercise Psychology*, *12*, 91-105. doi:10.1080/1612197X.2013.804285

Sharp, L.-A., Hodge, K., & Danish, S. (2014). Sport psychology consulting at elite sport competitions. *Sport, Exercise, and Performance Psychology, 3*, 75-88. doi:10.1037/spy0000011

Sharp, L.-A., Hodge, K., & Danish, S. (2015). Ultimately it comes down to the relationship: Experienced consultants' views of effective sport psychology consulting. *The Sport Psychologist*, *29*, 358-370. doi:10.1123/tsp.2014-0130

Silva, J. M., Hardy, C. J., & Crace, R. K. (1988). Analysis of psychological momentum in intercollegiate tennis. *Journal of Sport & Exercise Psychology, 10*(3), 346-354.

Simons, J. P., & Andersen, M. B. (1995). The development of consulting practice in applied sport psychology: Some personal perspectives. *The Sport Psychologist*, *9*, 449-468. doi:10.1123/tsp.9.4.449

Smedslund, J. (1978). Bandura's theory of self-efficacy: A set of common sense theorems. *Scandinavian Journal of Psychology*, *19*, 1-14. doi:10.1111/j.1467-9450.1978.tb00299.x

Smedslund, J. (1988). What is measured by a psychological measure? *Scandinavian Journal of Psychology*, *29*, 148-151. doi:10.1111/j.1467-9450.1988.tb00785.x

Smedslund, J. (1991). The pseudoempirical in psychology and the case for psychologic. *Psychological Inquiry*, *2*, 325-388. doi:10.1207/s15327965pli02 04_1

Smedslund, J. (1995). Psychologic: Common sense and the pseudoempirical. In J. A. Smith, R. Harr., & L. van Langenhove (Eds.), *Rethinking psychology* (pp. 196-206). London, UK: Sage.

Smedslund, J. (2016). Why psychology cannot be an empirical science. *Integrative Psychological and Behavioural Science*, *50*, 185-195. doi:10.1007/s12124-015-9339-x

Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative Phenomenological Analysis*. London, UK: Sage.

Smith, J. A., Harré, R., & Langenhove, L. V. (1995). *Rethinking psychology*. London, UK: Sage Publications.

Smith, J. A. (1996). Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health*, *11*, 261-271. doi:10.1080/08870449608400256

Soanes, C., & Stevenson, A. (Eds.). (2008). *The concise Oxford dictionary of current English*. Oxford, UK: Oxford University Press.

Sparkes, A. (2013). Qualitative research in sport, exercise and health in the era of neoliberalism, audit, and New Public Management: understanding the conditions for the (im)possibilities of a new paradigm dialogue. *Qualitative Research in Sport, Exercise & Health*, *5*, 440-459. doi:10.1080/2159676X.201 3.796493

Sparkes, A. C. (2015). Developing mixed methods research in sport and exercise psychology: Critical reflections on five points of controversy. *Psychology of Sport and Exercise, 16*, 49-59. doi:10.1016/j.psychsport.2014.08.014

Spaulding, W. D. (1995). Cognition and causality, fiction and explanation. *Journal of Behavior Therapy and Experimental Psychiatry*, *26*, 279-282. doi:10.1016/ 0005-7916(95)00032-U

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological bulletin*, *124*, 240-261. doi:10.1037/0033-2909.124.2.240

Stambulova, N. B., Engström, C., Franck, A., Linnér, L., & Lindahl, K. (2015). Searching for an optimal balance: Dual career experiences of Swedish adolescent athletes. *Psychology of Sport and Exercise, 21,* 4-14. doi:10.1016/ j.psychsport.2014.08.009

Stanimirovic, R., & Hanrahan, S. J. (2004). Efficacy, affect and teams: Is momentum a misnomer? *International Journal of Sport and Exercise Psychology*, *2*, 43–62. doi:10.1080/1612197X.2004.9671732

Stein, M. (2005). Some reflections on the influence of Chinese thought on Jung and his psychological theory. *Journal of Analytical Psychology*, *50*, 209-222. doi:10.1111/j.0021-8774.2005.00524.x

Stein, M., & Hollwitz, J. (Eds.). (1994). *Psyche and sports*. Wilmette, IL: Chiron Publications.

Stelter, R. (2005). New approaches to Exercise and sport psychology: critical reflection. In R. Stelter, & K. K. Roessler (Eds.), *New approaches to sport and exercise psychology* (pp. 13-30). Oxford, UK: Meyer & Meyer.

Stenling, A., Lindwall, M., & Hassmén, P. (2015). Changes in perceived autonomy support, need satisfaction, motivation, and well-being in young elite athletes. *Sport, Exercise, and Performance Psychology, 4*, 50-61. doi:10.1037/spy0000027

Sternberg, R. J., & Grigorenko, E. L. (2001). Unified psychology. *American Psychologist*, *56*, 1069–1079. doi:10.1037/0003-066X.56.12.1069

Strean, W. B, & Strean, H. S. (1998). Applying psychodynamic concepts to sport psychology practice. *The Sport Psychologist*, *12*, 208-222. doi:10.1123/tsp.12.2.208

Stevens, A. (1990). *On Jung*. London, UK: Routledge.

Storr, A. (1998). *The essential Jung*. London, UK: Fontana Press

Strogatz, S. (2003). *Sync: The emerging science of spontaneous order*. London, UK: Penguin Books.

Sullivan, E. V. (1984). *A critical psychology: Interpretation of the personal world*. New York, NY: Plenum Press.

Swann, C., Keegan, R. J., Piggott, D., & Crust, L. (2012). A systematic review of the experience, occurrence, and controllability of flow states in elite sport. *Psychology of Sport and Exercise*, *13*, 807-819. doi:10.1016/j.psychsport.2012 .05.006

Swann, C., Piggott, D., & Crust, L. Keegan, R. J., & Hemmings, B. (2015). Exploring the interactions underlying flow states: a connecting analysis of flow occurrence in European Tour golfers. *Psychology of Sport and Exercise*, *16*, 60-69. doi:10.1016/j.psychsport.2014.09.007

Syed, M. (2015). *Black box thinking: Marginal gains and the secret of high performance*. London, UK: John Murray.

Tateo, L., & Valsiner, J. (2015). Time breath of psychological theories: A meta-theoretical focus. *Review of General Psychology, 19*, 357-364. doi:10.1037/gp r0000035

Taylor, J., & Demick, A. (1994). A multidimensional model of momentum in sports. *Journal of Applied Sport Psychology*, *6*, 51–70. doi:10.1080/10413209408406 465

Tekavc, J., Wylleman, P., and Erpič, S. C. (2015). Perceptions of dual career development among elite level swimmers and basketball players. *Psychology of Sport and Exercise*, *21*, 27-41. doi:10.1016/j.psychsport.2015.03.002

Thelen, E., & Smith, L. B. (1994). *A dynamical systems approach to the development of cognition and action*. Cambridge, MA: The MIT Press.

Thompson, C., & Andersen, M. B. (2012). Moving towards Buddhist psychotherapy in sport: A case study. The Sport Psychologist, 26, 624-643. doi:10.1123/tsp.2 6.4.624

Tod, D., & Andersen, M. (2005). Success in sport psych: Effective sport psychologists. In S. Murphy (Ed.), *The sport psych handbook* (pp. 305-314). Champaign, Il: Human Kinetics.

Tod, D., & Bond, K. (2010). A longitudinal examination of a British neophyte sport psychologist's development. *The sport psychologist*, *24*, 35-51. doi:10.1123/tsp.24.1.35

Tod, D., Hutter, R. I. V., & Eubank, M. (2017). Professional development for sport psychology practice. Current Opinion in Psychology, 16, 134-137. doi:10.1016/j.copsyc.2017.05.007

Toner, J., Montero, B. G., & Moran, A. (2015). The perils of automaticity. *Review of General Psychology, 19*, 431-442. doi:10.1037/gpr0000054

Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In. J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 19-136). New York: Oxford University Press.

Toomela, A. (2007). Culture of science: Strange history of the methodological thinking in psychology. IPBS: *Integrative Psychological & Behavioral Science*, *41*, 6-20. doi:10.1007/s12124-007-9004-0

Toomela, A. (2008). Variables in psychology: A critique of quantitative psychology. *Integrative Psychological & Behavioral Science*, *42*, 245-265. doi:10.1007/s1 2124-008-9059-6

Uphill M. A., & Hemmings, B. (2017). Vulnerability: Ripples from reflections on mental toughness. *The Sport Psychologist*, *31*, 299-307. doi:10.1123/tsp.2016-0034

Vallerand, R. J., Colavecchio, P. G., & Pelletier, L. G. (1988). Psychological momentum and performance inferences: A preliminary test of the antecedents-consequences

psychological momentum model. *Journal of Sport & Exercise Psychology, 10*, 92-108. doi:10.1123/jsep.10.1.92

Valsiner, J. (2007). Becoming integrative in science: Re-building contemporary psychology through interdisciplinary and international collaboration. *Integrative Psychological & Behavioral Science, 41*, 1-5. doi:10.1007/s12124-007-9002-2

Valsiner, J. (2014). Needed for cultural psychology: Methodology in a new key. *Culture and Psychology*, *20*, 3-30. doi:10.1177/1354067X13515941

Van Deuzen, E. (2002). *Existential counselling and psychotherapy in practice* (2nd ed.). London, UK: Sage.

Vancouver, J. B. (2000). Self-regulation in industrial/organizational psychology: A tale of two paradigms. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 303-341). Sam Diego, CA: Academic Press.

Vancouver, J. B. (2005). The depth of history and explanation as benefit and bane for psychological control theories. *Journal of Applied Psychology*, *90*, 38-52. doi:10.1037/0021-9010.90.1.38

Vancouver, J. B., & Kandall, L. N. (2006). When self-efficacy negatively relates to motivation and performance in a learning context. *Journal of Applied Psychology*, *91*, 1146-1153. doi:10.1037/0021-9010.91.5.1146

Vancouver, J. B., Thompson, C. M., Tischner, E. C., & Putka, D. J. (2002). Two studies examining the negative effect of self-efficacy on performance. *Journal of Applied Psychology*, *87*, 506-516. doi:10.1037/0021-9010.87.3.506

Vancouver, J. B., Thompson, C. M., & Williams A. A. (2001). The changing signs in the relationships among self-efficacy, personal goals and performance. *Journal of Applied Psychology*, *86*, 605-620. doi:10.1037/0021-9010.86.4.605

Varela, F. J., Thompson, E., Rosch, E. (1991). *The embodied mind*. Cambridge, MA: MIT Press.

Vázquez, P., Balagué, N., & Hristovski, R. (2017). Towards and integrative framework for understanding sport-related phenomena. *Research in Physical Education, Sport and Health*. *6*(1), 89-93.

Vealey, R. S. (1986). Conceptualisation of sport confidence and competitive orientation: Preliminary investigation and instrument development. *Journal of Sport Psychology*, *8*, 221-246. doi:10.1123/jsp.8.3.221

Vealey, R. S. (2001). Understanding and enhancing self-confidence in athletes. In R. N. Singer, H. A. Haueseblas, & C. M. Janelle (Eds.), *Handbook of sport psychology* (pp. 550-565). New York: Wiley.

Vealey, R. S., & Chase, M. A. (2008). Self-confidence in sport: Conceptual and research advances. In T. S. Horn (Ed.), *Advances in sport psychology* (3rd Ed., pp. 65-97). Champaign, IL: Human Kinetics.

Vergin, R. C. (2000). Winning streaks in sports and the misperception of momentum. *Journal of Sport Behavior*, *23*(2), 181–197.

Walsh, R. T. G., Teo, T., & Baydala, A. (2014). *A critical history and philosophy of psychology*. Cambridge, UK: Cambridge University Press.

Wallop, H. (2014, May 03). 'I gave it everything': Sir Roger Bannister marks 60 years since his record. *The Telegraph*. Retrieved from https://www.telegraph.co.uk/sport/othersports/athletics/10803219/I-gave-it-everything-Sir-Roger-Bannister-marks-60-years-since-his-record.html

Watson, N. J., & Nesti, M. (2005). The role of spirituality in sport psychology consulting: An analysis and integrative review of literature. *Journal of Applied Sport Psychology*, *17*, 228-239. doi:10.1080/10413200591010102

Wertz, F. J. (2014). Qualitative inquiry in the history of psychology. *Qualitative Psychology, 1*, 4-16. doi.org/10.1037/qup0000007

Wegner, D. M. & Wheatley, T. (1999). Apparent mental causation: sources of the experience of will. *American Psychologist*, *54*, 480-492. doi:10.1037/0003-066X.54.7.480

Westen, D. (1998). The scientific legacy of Sigmund Freud: Toward a psychodynamically informed psychological science. *Psychological Bulletin, 124*, 333-371. doi:10.1037/0033-2909.124.3.333

Whaley, D. E., & Krane, V. (2011). Now that we all agree, let's talk epistemology: a commentary on invited articles. *Qualitative research in Sport, Exercise and Health*, *3*, 394-403. doi.org/10.1080/2159676X.2011.607186

Wilhelm, R., & Jung, C. G. (1931). *The secret of the golden flower*. Retrieved from https://archive.org/details/TheSecretOfTheGoldenFlowerByRichardWilhelmAndCarlJung

Williams, J. (1986). *Applied sport psychology: personal growth to peak performance*. Mountain View, CA: Mayfield Publishing Company.

Williams, A. M., & Ford, P. R. (2008). Expertise and expert performance in sport. *International Review of Sport and Exercise Psychology*, *1*, 4-18. doi:10.1080/17509840701836867

Williams, J. M., & Straub, W. F. (2010). Sport psychology: Past, present, future. In J. M. Williams (Ed.), *Applied sport psychology: Personal growth to peak performance* (6th ed., pp. 1–17). New York, NY: McGraw-Hill.

Windelband, W. (1894/1980). History and natural science. *History and Theory*, 19(2), 169-185.

Woodman, T., Akehurst, S., Hardy, L., & Beattie, S. (2010). Self-confidence and performance: A little self-doubt helps. *Psychology of Sport and Exercise*, *11*, 467-470. doi:10.1016/j.psychsport.2010.05.009

Woodman, T., & Hardy, L. (2004). The relative impact of cognitive anxiety and self-confidence upon sport performance: a meta-analysis. *Journal of Sports Science*, *21*, 443-457. doi:10.1080/0264041031000101809

Wulf, G. McNevin, N. H., & Shea, C. H. (2001). The automaticity of complex motor skill learning as a function of attentional focus. *Quarterly Journal of Experimental Psychology*, *54*, 1143-1154. doi: 10.1080/713756012

Wylleman, P., & Lavallee, D. (2004). A developmental perspective on transitions faced by athletes. In M. R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 503-523). Morganton: Fitness Information Technology.

Yerkes, R. M., & Dodson, J. D. (1908). The relation of strength of stimulus to rapidity of habit formation. *Journal of Comparative Neurology and Psychology*, *18*, 459-482. doi:10.1002/cne.920180503

Yiassemides, A. (2014). *Time and timelessness: Temporality in the theory of Carl Jung*. Oxon, UK: Routledge.

Young, J. A., & Pain, M. D. (1999). The zone: Evidence of a universal phenomenon for athletes across sports. *Athletic Insight*, *1*(3), 21-30.

Zizzi, S.J., & Andersen, M.B. (2010). An Eastern philosophical approach. In S.J. Hanrahan & M.B. Andersen (Eds.), *Routledge handbook of applied sport psychology: A comprehensive guide for students and practitioners* (pp. 194–202). London, UK: Routledge.