Looking In and Speaking Out

Introspection, Consciousness, Communication

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To Samuel

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Acknowledgements

The rise, fall and rise of introspection

Introduction

There is renewed interest in introspection in mainstream psychology, consciousness studies, cognitive science and a raft of cognate social science disciplines. This has been stimulated by developments such as the emergence of consciousness studies as an interdisciplinary but discrete area of study, and the realisation that the development of sophisticated machinery to study brain function and brain states invites consideration of experiences that seem to correlate with them. Indeed, it is increasingly recognised that introspection is at the heart of psychological, social scientific and humanistic endeavour. As Jack and Roepstorff write '… introspection is the *sine qua non* of consciousness. Without introspection, we simply wouldn't know about the existence of experience' (Jack and Roepstorff, 2003b: xv).

Introspective reports, though, are discursive events: introspective data are essentially descriptions of inner experiences that rely on the use of everyday communicative skills and practices in institutional settings, such as the psychology laboratory. But while there have been numerous discussions of the different forms of introspective data, and the methodological advantages and problems associated with studying reports of inner experience, there has been—as far as we are aware—no sustained, detailed analysis of the language of introspective description. In this book, we develop and illustrate an empirical perspective on introspective reports of inner conscious experience that draws from social scientific research on language in social interaction.

In this and the second chapter, we review the history of introspection and its use in contemporary research programmes to explore inner experience and consciousness. Although our account predominantly reflects the kinds of methodological and substantive concerns that animate psychologists and researchers in consciousness studies, we try to introduce a broader range of critical points informed by more social scientific concerns, particularly research on the socially organised practices of communication in naturally occurring settings. The empirical approach is outlined and illustrated briefly in chapter three, which also introduces the data for our study: reports of inner experiences generated as part of an experimental procedure to test for parapsychological phenomena. Chapters four and five examine two broad features of introspective reports: the ways in which participants report how they apprehend their inner experience; and, paradoxically, the absence of reports: periods of silence. In both cases, we argue that descriptions of inner experience (or the momentary absence of description) exhibit the participants' tacit orientation to the context of laboratory research on consciousness. Chapters six and seven examine poetic phenomena in our introspective data (particularly acoustic relationships within and between discrete imagery reports), and other poetic relationships, such as puns and category associations. We show how these ostensibly playful communicative practices have serious import in that their operation can impact upon the content of what is being reported.

One key feature of the renewed interest in introspection and introspective data is the use of one-to-one interviews to generate people's retrospective accounts of their inner experiences. In chapters eight and nine we broaden the focus of our analysis and examine the ways in which interactional processes underpin and impact upon attempts to elicit descriptions of conscious experience in retrospective interviews. In chapter eight we raise some broad methodological issues via discussion of the way that data are often presented in formal research articles or books in consciousness studies. In chapter nine, we extend our argument by examining interviews from the parapsychology experiments in which experimenter and participant review the experimenter's record of the prior introspective report. We identify a number of interactional phenomena and show that the organisation of these communicative practices fundamentally shapes what is taken to have been the participant's inner experience. Finally, in chapter ten, we summarise and reflect on the wider implications of the argument developed through the empirical research discussed in this book: that to understand properly the nature of introspective reports, it is essential that we attend to the socially organised communicative competences that inform their production.

The term introspection, or 'looking into one's own experience', comes from the Latin *intra*, meaning 'inward', and *spicere*, meaning 'to look at'. While the notion that the 'mind can reflect upon itself' was first written about by Augustine circa 410, the word introspection is thought to have emerged in the second half of the 17th century, and as a psychological method introspection has been used with varying levels of caution in experimental psychology since the end of the 19th century. At this time William James stated: 'the word introspection need hardly be defined—it means, of course, the looking into our own minds and reporting what we there discover' (1890: 185). Yet, despite the apparently self-evident nature of introspection, operational definitions have varied greatly over the years, as has its use as a method for the study of inner experience, and debates about the limits and problems of introspection are long standing. It was considered a central feature of the earliest psychological research. But since then, discussion of the value of introspection has been stimulated by three key intellectual developments: Watson's (1913) critique of introspection, and the subsequent rise of behaviourism; the rise of cognitive psychology, and particularly, Nisbett and Wilson's (1977) examination of the use of introspection in cognitive psychological research; and calls for the development of first-person methodologies in response to the recognition of consciousness as a topic of philosophical, psychological and neurological inquiry (for example, Chalmers, 1999). In this first chapter, then, we offer an historical review of the emergence and role of introspection in psychology, focusing on why researchers initially advocated introspective methods and then subsequently rejected them.

Consideration of the use of introspection is enmeshed with epistemological and ontological debates concerning the nature of subjectivity and objectivity, consciousness, and the scientific enterprise (for consideration of these issues the reader is referred to Lyons, 1986; Velmans, 2000b). In this chapter, though, we focus on introspection as a method, rather than as philosophical construct (Armstrong, 1968; Gertler, 2001; Shoemaker, 1994). However, it is important to sketch the philosophical intellectual context from which the experimental application of introspection emerged.

Early experimental introspection

Philosophical antecedents of introspection had engendered a degree of epistemological uncertainty over the value of first-person reports of inner

experience. While rationalists such as René Descartes and George Berkeley held that subjective experience was irreducible and the basis of all human knowledge, empiricists, such as John Locke and David Hume grounded knowledge in sense impressions. The empiricists were concerned with how we acquire knowledge about the external world. Nevertheless, Locke recognised the faculty of reflection, knowledge based on 'inner sense'; and Hume, while sceptical of the value of subjective reports of 'the mind's operations', did think it possible that direct knowledge of the content of mind was possible (Lyons, 1986). As such, the empiricists made a clear demarcation between 'inner' versus 'outer' sense, a distinction which formed a logical bedrock for the development of an epistemology based on the deliberate observation of inner experience (Boring, 1953). However, empiricist philosophers did not make the crucial distinction between mere awareness of inner states and the analytical observation of inner states (Danziger, 1998). Nor did they consider whether or not 'reflection' might be subject to error (Boring, 1953). These issues were highlighted by Immanuel Kant.

Kant's legacy for introspection was twofold. Whilst he reasoned that it was possible to acquire empirical data from the observation of inner states, he regarded this data as superficial and limited. He distinguished between awareness and the principles of its organisation, which are not available to conscious experience. As such we can only learn about 'phenomena' or the appearances of things, and not about things-in-themselves (noumena). According to this view, subjective experience was not a reliable source of data about objective reality, and the organisation of consciousness, as noumena, was unknowable (Morris, 1991; Tarnas, 1991). Kant did not consider that the observation of inner experience could form the basis of a science. Any data from introspective observations were limited because they were based merely on the observation and classification of the 'appearance of things', akin to botany (Danziger, 1998). This was not scientific due to the method's inability to explain the organisation of the observed parts: it provided no scope for a systematic and mathematical understanding of inner experience.

Despite philosophically grounded concern about the value of reflective reports of inner experience, towards the end of the 19th century at the University of Leipzig, Wilhelm Wundt argued that conscious states were a legitimate subject for scientific analysis and attempted to establish and 'scientize' introspection as a method, developing a rigorous experimental procedure (Coon, 1993). Wundt has been proclaimed as one of the founding fathers of experimental psychology, having established the first official 'Institute for Experimental Psychology' in 1883 (Danziger, 1998). However, he regarded himself foremost to be a philosopher and physiologist and he used knowledge of both fields in his work, applying the empir-

ical methods of physiology to the study of consciousness. Wundt aimed to go beyond philosophical enquiry based on the laws of logic, and instead establish a careful empirical analysis of the elementary contents of conscious experience (Wundt, 2008: 149). For these purposes, he drew upon his precursors Hermann von Helmholtz (with whom he had worked as a researcher, early in his career) and Gustav Fechner, who both practised psychophysics. Helmholtz and Fechner had begun to apply mathematical laws to the relationship between measurable subjective sensations and external stimuli, thereby challenging the notion that 'mind' was beyond the remit of the scientific enterprise.

To ensure scientific credibility, Wundt imposed strict parameters to the study of inner experience. He distinguished between naïve 'self-observation' or 'pure introspection' and trained 'inner perception' or 'experimental introspection' (Wundt, 1897). Experimental introspection was thought to give 'special access' to inner experience, access that was only given to trained psychologists under controlled conditions. This experimental approach countered James's comment that 'If to have feelings or thoughts in their immediacy were enough, babies in the cradle would be psychologists, and infallible ones' (James, 1890: 189). Wundt's distinction between the 'pure introspection' that James describes and experimental introspection placed emphasis not on access to experience as a source of psychological insight, but on the method and attitude by which experience is attended and reported.

Wundt's method of experimental introspection was designed to facilitate exact observation. His introspective observers underwent considerable training; Boring (1953) rehearses the anecdote that observers had to have practised reporting on inner experiences at least 10,000 times before they could contribute to formal experiments. Wundt also insisted on careful timing: attention was paid to conscious experience for a set interval, after which reports were made immediately. Moreover, he focused on simple conscious events, such as the intensity and duration of a stimulus. He was aware, for example, that, as immediate experience was composed of both content and an 'experiencing subject', the latter could influence the prior. This led him to avoid introspecting on complex and dynamic phenomena that might change as a result of observing them analytically, such as intense emotions (Wundt, 1897). He argued that complex psychological phenomena (such as emotions or beliefs) were social in nature, and could therefore only be studied in the context of language, religion, myth and custom, through history and ethnography (Lyons, 1986; Morris, 1991). His research examined experience in relation to carefully measured and controlled external stimuli in order to create simple conditions for observation that had a specific focus, such as tone-sensation, and by systematically changing the properties of the external stimulus in order to explore the

relationship between 'outer' and 'inner' stimuli. Finally, Wundt advocated the need to repeat observations frequently. Implications of this method were that reports were amenable to statistical analysis and other investigators had access to the procedure and stimuli, and could therefore attempt replication of his work.

Wundt developed this methodology from a particular philosophical standpoint. He wrote 'the expressions outer experience and inner experience do not indicate different objects, but different points of view from which we take up the consideration of and scientific treatment of a unitary experience … the point of view of psychology … may be designated as immediate experience' (Wundt, 1958: 386 [1907]), a quote that encapsulates three key features of his approach. (1) He saw 'inner' and 'outer' experience as complementary, being equally valid viewpoints of the same experience, and drew no distinction between the experimental observation of 'inner', immediate experience and the observation of external events (Morris, 1991). In both instances, the scientist was seen as recorder of sensory information, whether this be reading the temperature on a dial or noting whether a light has become lighter or darker (Kroker, 2003). (2) Wundt did not advocate the study of inner experience in isolation. That introspective reports were supplemented by independent 'objective' measures was paramount in his approach. He sought to relate contents of experience, or 'elementary processes' that belong 'to the psychological sphere' to 'elementary processes' that belong to the 'natural scientific sphere' (1958: 387 [1907]). For this reason, Coon (1993) describes his approach as falling in the 'use of instrumentation camp', for example, reaction times between the presentation of a stimulus and a response could be measured with a 'chronograph'. (3) Wundt also clearly demarcated immediate conscious experience as the focus of psychology's remit. He argued that the purpose of psychology, as distinct from the natural sciences, was to examine the contents of consciousness. Consequently, he had three objectives: to identify the basic components of conscious experience; the relationships between these components and external stimuli, and the laws that underpinned these relationships.

It might be argued that Wundt's approach actually differs little from the protocols used in some modern neurocognitive research (for example Libet, Wright, Feinstein and Pearl, 1979). The reports made were not lengthy verbal accounts, but brief comments, for example, on the relative intensity of a perceptual stimulus, when one became conscious of a sensation, or whether a pitch was lower or higher than one just heard previously (Thomas, 2010). Further, Wundt's introspective method did not deviate very far from that of his precursors (and successors) in psychophysics. Although rigorous, his approach was restrictive, being limited to studies

of sensation and perception and based on the verbal reports of a handful of trained psychologists.

Wundt's former students extended and developed his work at other institutions. Oswald Külpe (at the University of Würzburg in Germany) and Edward Titchener (at Cornell University in the United States), continued to study thought processes through the analysis of verbal introspective reports from trained research participants. Their goal, too, was to determine the basic elements of thought—to produce a 'periodic table' of consciousness—based on reports of the sensations of immediate experience (Adams, 2000; Külpe, 1895; Titchener, 1898). Following Wundt, introspection was modelled upon observation (or inspection) in the natural sciences, aiming for measurement and control. However, the aims and introspective practice of Wundt's followers deviated from those of Wundt in important ways: the remit of introspection was broadened to include more complex psychological phenomena; correlates with objective measures were no longer seen as essential; and qualitative reports of experience took on greater importance, there was a shift of focus to quality from quantity (Coon, 1993). Titchener described this departure as a movement from a focus on instruments, the 'chronoscope, kymograph and tachistoscope' to a focus on the observers themselves. His approach attempted to 'mechanise' or standardise the 'introspecting tool', that is, the introspecting person (Coon, 1993; Titchener, 1912). Through extensive training, the aim was to describe accurately 'inner experience' in response to a stimulus; thereby to render introspection 'photographic' (Boring, 1953). For instance, Titchener drew the following guidelines in an attempt to control the introspective attitude: be impartial (observe without preconception); be attentive (make no speculations); be comfortable (to minimise distractions); and be alert (to stop if feeling tired) (Titchener, 1898: 34–35). He was quite clear about some of the limitations of this process: 'The ideal introspective report is an accurate description … of some conscious process. Causation, dependence, development are then matters of inference' (Titchener, 1912: 486). Avoiding inference was central to Titchener's method, referred to as avoiding the 'stimulus error'. Rather than meanings of, or knowledge about, the stimulus, attempts were made to elicit details of the experience itself. For example, rather than observing and reporting 'the apple is green' the introspector would report 'there is greenness'.

Likewise, Külpe's method of 'systematic experimental introspection', was intended to 'subject the whole of conscious content to an exact analysis' (Külpe, 1895:19) in order to identify the components that constituted it. He argued that Wundt's focus on simple conscious elements was artificial because it was not possible to separate simple sensations from complex conscious phenomena. Following James (1890), he argued that consciousness was a 'more or less continuous stream of complex processes' (Külpe,

1895:22). He advocated an observational stance characterised by 'attentive experience' (directing one's attention upon phenomena and not upon the act of introspecting), and impartiality (avoiding bias and expectation in one's reports). However, he did not enforce the avoidance of interpretation as stridently as Titchener.

For both Titchener and Külpe, this extension of the remit of introspection, from specific stimuli to the broad content of consciousness, led to greater emphasis on the making of elaborate verbal reports. Kroker (2003) quotes an example of the introspective method from a study on reading comprehension by Edmund Jacobson, who worked at Titchener's laboratory. Observers were asked to read a sentence, apprehend its meaning, and then to close their eyes and provide in as much detail as possible everything that occurred in consciousness. Three observers did this repeatedly, after much training. In the report that follows an observer describes their experience of reading the sentence 'she came in secretly'. (The observer's comments or interpretations are in parentheses; insertions from the experimenter are in square brackets.)

> ***Observer F.*** Stimulus sentence: *She came in secretly*: 1.25 sec.
>
> 'Purple (from written words) clear. White (from paper) and black (from cardboard) in background, and these were [comparatively] unclear. Simultaneous with the visual clearness, kinaesthetic-auditory images (corresponding to the words); weak intensity, more as if whispered than as if said in ordinary voice; i.e., lacked deeper tones; and slightly faster than I should ordinarily say them. (The words did not come singly, but the sentence as a whole made a single impression on me; e.g., the period at the end was a part of the total impression. [All this was] Perception of sentence as visual and kinaesthetic-auditory impression.)
>
> 'Then vague visual and kinaesthetic image (of Miss X. coming in stealthy position, on tip-toe with legs bent, through the door into the Audition Room from the Haptics Room), i.e., blue visual image (upper left part of skirt) and very vague, featureless image, flesh-coloured (of left side of face). The image (was projected straight ahead of me, to the position in which the door actually is). Kinaesthetic images in own right upper leg (which was directly opposite in position to the image, as if my own leg was bent); also kinaesthetic images or sensation in muscles, probably intercostals, of right side (such as I get when standing and bending right leg). (The sentence meant: Miss X. came over in there, through the door, secretly.)
>
> 'In the fore-period I told myself: Get the meaning, and set myself muscularly to work hard.'
>
> (From Jacobson, 1911: 556).

It is perhaps no wonder that Boring criticised this work for taking 'twenty minutes to describe the conscious content of a second and a half and at the

end of that period the observer was cudgelling his brain to recall what had actually happened' (Boring, 1953:174).

Retrospective reports have been associated with failures of memory and inaccurate perception: verbal suggestion, post-event misinformation effects, retrospective bias (such as misremembering), 'imagination inflation' and theory driven interpretations of past events (French, 2003; Loftus & Hoffmann, 1989). Both Külpe and Titchener were aware of potential errors associated with the description and communication of inner experience. Both argued that in order to reach consensus a scientific attitude of observation was needed and an appropriate language, or vocabulary. An example of an attempt to overcome problems of idiosyncratic description comes from Dallenbach (1913) at Cornell, who worked with three introspectionists who, in order to consensually validate their reports, produced a 'language' or meaning system (based on % clarity) between themselves in training sessions prior to the experiment proper. However, no single system was agreed upon (Mandler, 2007). So, whereas Titchener focused on sensations, using predefined terms, others found this too limiting and reductionist, arguing that it destroyed rather than expressed lived experience, and preferred a metaphorical and holistic approach (Danziger, 1998). As such, there was a tension between consensus and phenomenological detail. The introspectionists were left with a dilemma: their data could be immediate, but limited to simple facets of experience, or detailed and rich, but prone to reconstructive errors.

The reliability of experimental introspection was brought into question by the inability of the Würzburg and Cornell schools to agree on fundamental issues. The aim to identify the elements of consciousness led to discrepancies, Titchener's laboratory demarcating over three times as many 'sensations' as Külpe's laboratory (Boring, 1929; Velmans, 2000a). This suggested the possibility that experimental introspection was flawed in its basic assumption that there is a set or minimal number of mental elements (Hatfield, 2005). However, a more controversial debate concerned whether or not all thought involved imagery. Researchers at Würzburg reported the occurrence of 'imageless thought' whilst Titchener reported that images mediated all thought (Boring, 1929; Valentine, 1998). In a series of studies the Würzburg group observed moments of conscious experience that seemed to be 'inaccessible to further analysis' (e.g. Mayer and Orth, 1901). These moments were characterised by an absence of specific conscious representations and were difficult to express in words (Brock, 1991; Mandler, 2007). Titchener (1912) rejected the notion of 'imageless thought' and explained it as an unnecessary inference based on a stimulus error. However, his prior assumption that experience must be reduced into sensations, images or feelings also imposed a theoretical bias on reports. Based on a re-examination of the data, Hurlburt and Heavey

(2001) argue that the introspectionists at Würzburg and Cornell did not differ in their descriptions of subjective experience, but in the *theoretical interpretations* they each drew from their observations. It is, then, a matter of debate whether experimental introspection as a method of attending to inner experience was intrinsically flawed, or whether the discrepancies that arose were social in nature, ensuing from different research communities, with different aims, interpretations and linguistic tools. What was clear, though, was that experimental introspection was open to the criticism that different training methods and attentional stances had led to different findings, and to contradictions, which, due to the privacy of subjective experience, were seen by some as impossible to resolve (Lachman, Lachman and Butterfield, 1979; Locke, 2009). Training methods themselves generated suspicion: 'During Titchener's time, his Cornell colleagues and students were looked on as a "sect" organized around him, as if the whole idea of a mandatory training was unacceptable and could easily be ridiculed as an "esoteric" activity' (Depraz, Varela & Vermersch, 2003:108).

A potential discovery lurking in this dispute also revealed a limitation of the introspective method. The 'imageless thought' debate highlighted the role of unconscious processing in the microgenesis of conscious experience. According to Boring (1953), this was the introspectionists' most important finding; but it did suggest that the entire workings of the mind were not available to introspection. This limited access counted against the use of the introspective method in psychology. For instance, in his research on concept learning, Hull's (1920) participants were unable to explain how this was performed, leading him to rely upon behavioural rather than introspective indices. Intellectual developments outside psychology were also highlighting the importance of hidden processes and forces in the organisation of human behaviour. The writings of Freud, Darwin and Marx alerted scholars to the importance of unconscious processes, natural selection and the history and inherent logic of capitalism—influences not available to conscious reflection (Tarnas, 1991).

Because of the problems associated with introspectionist methods, variability in empirical findings, disputes about the interpretation of data, and perceived limitations of the reach of introspection, many psychologists turned to behaviourism, the principles of which were outlined in Watson's (1913) polemical account. Behaviouristic psychology held no truck with introspection, regarding it as being unreliable, untrustworthy, and non-functional. Watson did not 'trust the subject' to use meanings and words that could be accurately understood by an experimenter (Boring, 1953); and he did not condone the process of treating 'language behaviour' as evidence of other, non-observable, behaviour, such as distractions of attention or acoustic clarity (Washburn, 1922). 'Psychology as the behav-

iorist views it is a purely objective, experimental branch of natural science. Its theoretical goal is prediction and control of behaviour. *Introspection forms no essential part of its methods*' (Watson, 1913:158, emphasis added). Not only did Watson reject introspection as a method but he also argued for the abandonment of the study of conscious experience. 'Indeed, the time has come when psychology must discard all reference to consciousness; when it need no longer delude itself into thinking that it is making mental states the object of observation' (Watson, 1913: 163). The proper focus of psychological research, he argued, was the publicly observable behaviour of others.

Watson's arguments about what the core goals of psychology should be reflected wider contemporary debates about the development of the discipline, and these too had a negative impact on the perceived value of introspection as a research method. Strategically, there was a desire to distinguish psychology from philosophy as an academic discipline, which had traditionally drawn upon introspective methods (Coon, 1993; Costall, 2006). There was an impetus in academic psychology for order, applicability, measurement, control and standardisation, in line with a rapidly industrialising society and the development of technology, the need for which was thought to be better met by objective, third-person methods (Coon, 1993). Moreover, experimental introspection had no functional use, which did not sit well with the American zeitgeist (Boring, 1953), and it was perceived as lacking ecological validity, being focused on laboratory situations instead of the ways in which people actually behaved in real world contexts (Neisser, 1976, cited by Costall, 2006: 2-3). Even advocates of introspection such as William James, as well as the Gestalt psychologist Wolfgang Köhler, were querulous regarding the merits of the 'mental atomism' of experimental introspection: its artificiality, triviality, and the arbitrariness of controlled observations (Adams, 2000; Costall, 2006; Hatfield, 2005). It was argued that 'the type of tedious, automatonlike, internal observation that was used in the introspectionist school was so boring and unfruitful that even James dissociated himself from such experimental research' (Wallace, 2000: 89). And finally, the radical behaviourist, B. F. Skinner, subsequently went on to argue that it is not possible to attribute causality to inner experiences: they could not influence any other behaviour (Nye, 1986). While not denying the existence of inner states, from this perspective they were useless for understanding behaviour, and thus of little empirical interest. At a time of rising scientism, with a focus on the applied and practical, the study of conscious experience was seen as obscure and obtuse. As a consequence, over a period of time, studies of subjective experience, and the contents of consciousness, were largely abandoned by mainstream psychology, and so ended what has been hailed as the 'golden age' of introspection (Lyons, 1986).

Introspection and cognitive psychology

Although introspection as an explicitly articulated research programme disappeared from psychology, it is clear, as we shall see later, that substantial research in psychology still relied upon research participants providing what were essentially introspective reports. We should be cautious, then, about accepting the conventional wisdom that renewed interest in the limits and potential of introspection followed from the rise of cognitive psychology. However, it is undoubtedly the case that experimental psychology's renewed interest in the kind of imagery and mental content neglected by behaviourism provided a stimulus to the consideration of peoples' accounts of their inner experience.

In a landmark paper, Nisbett and Wilson (1977) examined the limits of introspective access by reviewing empirical work including work on cognitive dissonance, attribution theory, implicit learning, bystander effects and subliminal perception. For example, in an attribution study by Storms and Nisbett (1970), insomniacs were given a placebo pill before going to bed and were either told that this would increase their heart rate and alertness (symptoms of insomnia) or decrease their heart rate and make them feel relaxed. Storms and Nisbett reasoned, and found, that participants who could attribute symptoms of insomnia to the pill, rather than to their own potentially agitating thoughts, would sleep better. However, participants' own verbal reports did not concur—their explanations for better sleep described personal factors such as having completed an exam or resolved a problem. Further, participants reported not having thought about the pill at all after taking it. This lack of awareness of the ostensible cause of their behaviour (better sleep) was one piece of evidence in support of the thesis that cognitive processes are rarely conscious or verbalisable. Taking this further, in some cases, Nisbett and Wilson surmised, there appears to be no access to the stimulus that has led to a behaviour (such as a word association or the presence of bystanders), even if this stimulus has been consciously apprehended. Nor might there be access to the consequent behaviour itself, such as an attitudinal change. Consequently, they concluded that 'there may be little or no introspective access to higher order cognitive processes' (Nisbett and Wilson, 1977:231) such as those postulated to underpin evaluations and decision-making. What, then, are verbal reports based on? Nisbett and Wilson propose that we draw upon culturally endorsed implicit theories or the making of simple

judgements based on what seems plausible rather than introspecting. This idea is by supported by the finding that observers, who, when asked to predict what would occur in an experimental situation (such as the attribution study described above) made the same kinds of verbal reports as actual participants (making the same 'introspective' errors), suggesting that responses were drawn from common beliefs rather than actual experience (Nisbett and Wilson, 1977).

Nisbett and Wilson began with the premise that it is intuitively unlikely that introspective reports are *always* inaccurate, and they outlined conditions that might increase 'introspective certainty': the information requested should be accessible and available to memory; and any stimuli to be reported in an experimental context should be salient, few in number and plausibly relevant in that context. They argued that while causal processes influencing experience might evade introspection, the contents of consciousness might not: introspective 'whats', rather than 'whys' or 'hows', might be reliable. Examples of contents given were one's current focus of attention, sensations, emotions, plans and intentions. However, they argued for the empirical testing of the efficacy of introspection under these conditions, querying whether accurate reports in such cases might again be due to accurate implicit theories rather than 'inner awareness'.

In a review of the impact of Nisbett and Wilson's paper ten years later, White (1988) made a number of theoretical and empirical criticisms of this body of work. Importantly, he argued that verbal reports can be inaccurate due to reasons other than a lack of introspective access. White criticized Nisbett and Wilson for assuming that the relationship between verbal report and introspective access is direct, thereby negating participants' role as active agents in the production of verbal reports; and for not adequately considering methodological flaws that might have led to distorted reports. In the first instance, a range of processes might contribute to the making of verbal reports, such as: one's motivation to be accurate, one's recent focus of attention, cultural beliefs, memories, demands of the social context and experimental cues. If verbal reports are 'hypotheses', based on competing sources of information, that may include introspective access on one hand, and other processes, such as inferences drawn from available cues, on the other, then, an inaccurate report does not necessarily indicate a lack of access, but rather, poor hypothesis building. In the second instance, White (1988) noted a number of design flaws that may have increased the likelihood of inaccurate verbal reports, including misleading experimental cues; poor probes that may have elicited irrelevant information; instructions that did not emphasise a need for accurate reports; appraisal processes that may have biased responses; plus evaluation apprehension and demand characteristics. Thus, White argues, an erroneous report that is influenced, for instance, by misleading social cues, with

poor motivation for accuracy, may mislead an experimenter into construing that a participant has a lack of direct access to their own experience. Prior to White's paper, Ericsson and Simon (1980) had argued that the design of the studies in Nisbett and Wilson's paper did not provide optimal conditions for recall: probes were not closely related to specific processes that could be stored in memory; and some studies gave participants distraction tasks with high cognitive loads prior to the making of a verbal report, increasing the likelihood of forgetting. Further, they noted that it has been documented how, in a series of trials, participants' behaviour on later trials may become 'automated' and thus internal states about the 'why' of the ensuing behaviour is inaccessible. They also pointed out that, when prompted in such ambiguous circumstances, participants may make generalized verbal reports, based on elements they remember from particular previous trials or prior beliefs or expectations.

At best then, Nisbett and Wilson's study makes a small inroad into understanding which internal events can be accurately reported, demarcating what introspection can and can't do, namely the inability to provide reliable reports on unconscious processes (that which never reached conscious awareness or has been subsequently forgotten). At worst, it suggests that the positivistic framework upon which their propositions are based imposes limitations and biases that obfuscate such an understanding.

Some attempts were made to develop introspective methods within the constraints outlined by Nisbett and Wilson, for example, think-aloud protocols (Ericsson and Simon, 1980) and descriptive experience sampling (Hurlburt, 1979). However, despite criticisms of the paper (Quattrone, 1985; White, 1988) the predominant response was to interpret it as advocating 'anti-introspectionism' and as a reinforcement of the woeful inaccuracy of verbal reports on internal machinations. In a neo-behaviourist vein, ways to make cognitive processes amenable to objective analysis—external, public and thus observable by a third party—continued to be developed, primarily through performance on tests, for example, of memory recall, solution finding, reaction time or physiological measurements, (Gross, 1996) as well as computer simulations. This perspective is still upheld in cognitive textbooks today, for example, Sternberg advocates the avoidance of self-report for the following reasons:

> The reliability of data based on various kinds of self-reports depends on the candor of the participants when providing reports. A participant may misreport information about his or her cognitive processes for a variety of reasons. These reasons can be intentional or unintentional. Intentional misreports can involve trying to edit out unflattering information. Unintentional misreports may involve not understanding the question or not remembering the information accurately. (Sternberg, 2009:21)

This is not to say that no cognitive psychologists drew on introspective reports. In his work on daydreams, Singer (1976) collected descriptions of inner experience and analysed their content, while Kosslyn, Seger, Pani and Hillger (1990) collected unstructured diary reports of participants' mental images in an attempt to ascertain their function in everyday life. But research that explicitly relied on reports of inner experience were the exception.

It has been argued that, although the notion of introspection has courted interest and disfavour according to shifts in the epistemological zeitgeist, experimental psychology has nevertheless been permeated with its use (Laplane, 1992). Boring recognised that introspection, broadly defined as verbal report, had not disappeared from psychology, referring to its use as 'camouflaged introspection' (Boring, 1953:169). Costall (2006) goes as far as to call the statement that introspection was ever banished from psychological enquiry a myth, the propaganda of cognitivist textbook histories. As Velmans (2000a) stresses, the use of introspection is inherent in much of cognitive psychology and neuroscience; for instance, to ascertain the threshold between subliminal and liminal awareness researchers must rely on participants' subjective reports of what they do or do not perceive; likewise, we only know about visual illusions, such as the Necker cube through introspective reports. Even a cursory examination of classic experiments in cognitive psychology reveals the use of verbal reports on inner experience, for example of enjoyment in cognitive dissonance research (Festinger and Carlsmith, 1959) and of emotional states in Schachter and Singer's (1962) research on attribution. For example, in testing the interaction between physiological arousal and cognitive attributions in the production of experienced emotion Schachter and Singer's dependent variable was based upon verbal reports—participants' descriptions of their emotional state. These reports were elicited both through mood scales, asking for example: 'How irritated, angry or annoyed would you say you feel at present?', with responses indicated along a five-point scale from 'I don't feel at all irritated or angry' to 'I feel extremely irritated or angry'; and 'In addition to these scales, the subjects were asked to answer two open-end questions on other physical or emotional sensations they may have experienced during the experimental session' (Schachter and Singer, 1962: 387). Essentially these are both forms of introspective report, which is perhaps unavoidable when seeking to better understand distinct emotional states, which are consciously apprehended.

Introspective methods also continued under the auspices of Gestalt psychology, transpersonal and humanistic psychology, drawing upon the phenomenological tradition (Cardeña, 2004), psychophysics (Boring, 1953), personality research and psychometrics (which rely on the assumption that in questionnaires respondents can adequately reflect on, aggre-

gate instances of and report experiences, attitudes and behaviour), psychoanalysis, clinical psychology, psychiatry and psychotherapeutic intervention. For example, the perceptual field was explored through experiential reports made in states of sensory deprivation (the ganzfeld) by the Gestalt psychologist Wolfgang Metzger in the 1920s and 1930s (Cohen, 1957). The need to examine inner experience is a practical one from a clinical perspective, where illnesses such as depression are both diagnosed and treated through descriptions of inner experience, and psychotherapeutic interventions are based on communication of, and reflection on, experience and behaviour. It is no surprise, therefore, that Costall was able to argue that

> … the claims about the demise of the introspective method are highly exaggerated. Introspection, even in some of its more full-blown versions, never went away. Some versions of the method along with their results continued—and continue—to be taken seriously within the discipline (Costall, 2006: 659).

In summary, it appears that while psychology as a discipline continued to mistrust and reject introspection, use of verbal reports on inner experience was a routine feature of numerous experimental procedures. Introspection, whilst being shown to be unreliable for the study of the cognitive microgenesis of conscious experience, was still employed, perhaps with more success, for the study of conscious events for which no other indices were available.

Introspection and the emergence of consciousness studies

With increasing attention being given to a science of consciousness (Chalmers, 1996; Crick, 1994; Dennett, 1991; Velmans, 2000b) the nature and mechanisms of subjective experience returned to the focus of mainstream psychology and neuroscience (Jack & Roepstorff, 2003). Elicitating reports about what people feel, think and see would seem unavoidable in a science of consciousness that includes the experience of consciousness. How else would non-synaesthetic neuropsychologists learn about the occurrence of colour-taste cross-modality and its correlates, or neuropsychiatrists about the nature of inner voices and when they are being experienced?

Assessment of the use and value of introspection in consciousness studies has occurred in the context of wider debates about the precise nature of consciousness. Consciousness has many definitions (Natsoulas, 1987). While it is assumed that all sentient human beings experience 'what it is

like to be conscious', the very use of the term consciousness has been critiqued for being too broad, leading to muddled, incoherent usage (Young and Block, 1996). Nearly fifty years ago Miller (1962) warned that 'consciousness is a word worn smooth by a million tongues' (cited in Velmans, 2000:5), suggesting that even then, before the advent of the systematic study of consciousness, the term was used so promiscuously that it impeded scientific research.

In terms of introspective access, consciousness has been defined in terms of 'self-consciousness', a special kind of reflective awareness where the 'self' may be the object of consciousness (typically in retrospect as a constructed model). Young and Block (1996) describe this as 'monitoring and self consciousness', involving thoughts about one's own actions, their effect, the monitoring of perceptual information in coordination with plans, and a concept of the self which is used in thinking about the self. This 'awareness of self' is experienced immediately as an ongoing, subjective, holistic, seamless and integrated impression of being. Natsoulas describes this in terms of a 'personal unity' referring to the 'totality of the impressions, thoughts, and feelings, which make up a person's conscious being' (1987: 912), perhaps akin to James' (1890) metaphor of a stream of consciousness, an enduring, flowing, fluctuating continuum. Within this 'unitary' phenomenological self, which has been described as an emergent gestalt (Greenfield, 1995), there may be an awareness of particular dimensions of consciousness, or aspects of self, such as emotions, inner speech, ideas, sensations, perceptions (Pekala, 1991; Walsh, 1995), and the phenomenal 'qualia' of experience (Chalmers, 1996). Searle (1997) argues that conscious states have two fundamental properties, subjectivity and 'intrinsic intentionality' which refers to the representational nature of consciousness, its 'aboutness', or the awareness of mental contents. This complexity within unity, where a unified field of awareness co-exists with a continuously fluctuating multiplicity of mental contents is one of the paradoxes of human consciousness (Edelman and Tononi, 2001). Thus, introspective consciousness may be defined as the awareness of the contents of consciousness, which are amenable to self-reflection, and which arise within a field of existential-phenomenological awareness that is unitary, holistic, continuous and uniquely private. However, the existence of this introspective faculty is contentious: the notion of a 'split' between 'self' and the contents of experience is controversial, as is the issue of the unity or disunity of consciousness (Carruthers, 2009; Englebert and Carruthers, 2001; Dennett, 1991; Greenfield, 1995; Damasio, 1992; Parfit, 1989; Pekala, 1991; Pronin, 2009; Schwitzgebel, 2008; Velmans, 2000b; Young and Block, 1996).

Chalmers (1999) identifies a number of problems with introspective methods in consciousness research: it is not possible to gain 'pure' access