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Knowing When To Ask

Introspection and the Adaptive Unconscious

Abstract: *The introspective method has come under attack throughout the history of psychology, yet it is widely used today in virtually all areas of the field, often to good effect. At the same time indirect methods that do not rely on introspection are widely used, also to good effect. This conundrum is best understood in terms of models of nonconscious processing and the role of consciousness. People have access to many of their feelings and emotions, and develop rich narratives about themselves and their social worlds. These conscious states, accessible to introspective reports, are often good predictors of people's behaviour. There is also a pervasive adaptive unconscious that is inaccessible via introspection. When using introspective reports researchers should be clear about which kinds of mental states they are trying to measure.*

The introspective method has come under repeated attack from the time psychology began as an empirical science to the present day (Jack and Roepstorff, 2002; Lieberman, 1979; Nisbett and Wilson, 1977), yet the method is alive and well in virtually all areas of the field. How can a method that is so widely used be so maligned? To understand this conundrum, we need to ask what people are doing when they introspect and what they are accessing. By developing clearer ideas about the limits of people's ability to access their cognitive and emotional processes we will know better what to ask people to report and what is better left unasked.

Introspective Reports are Alive and Well

A broad examination of psychological research — not just in cognitive psychology — reveals that researchers continue to put introspective reports to good use. A casual perusal of journals in virtually all subdisciplines of the field reveals many dependent measures in which participants are asked to report their internal states, and in each of these fields there is evidence for the validity of these reports. Consider these examples:

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Personality research

Personality researchers have long relied on self-report inventories in which people rate their own traits. Some of these measures are quite direct and transparent, such as a recent measure of the 'big five' personality domains by Gosling, Rentfrow and Swann (2002), in which people rate their level of agreement with statements such as, 'I see myself as extraverted, enthusiastic' and 'I see myself as calm, emotionally stable'. The predictive validity of self-report measures of personality has been controversial for many years. No one doubts that there are correlations between such measures and actual behaviour, though there is much debate over the magnitude of these correlations (e.g. Epstein, 1979; Mischel, 1968; Ross and Nisbett, 1991). Recent evidence suggests that self-report measures are especially likely to predict behaviours that are under people's conscious control, as opposed to more spontaneous, uncontrollable behaviours (e.g. Asendorpf *et al.*, 2002).

Emotions research

In the thriving study of human emotion, the primary empirical method is the straightforward self-report questionnaire, on which people rate their current feelings, moods and emotional states. Many well-validated self-report instruments have been developed, such as the Multiple Affect Adjective Checklist (Zuckerman and Lubin, 1965) and the Positive Affect Negative Affect Schedule (Watson *et al.*, 1988). It is difficult to imagine the field of emotion research progressing as it has without the ability to question people about the nature of their feelings and emotions. Self-reported emotions have been found to predict many important behaviours, including prosocial acts, aggression and suicide (e.g. Carlson *et al.*, 1988; Lindsay and Anderson, 2000; Nierenberg *et al.*, 2001; Sanchez and Le, 2001).

Attitudes research

Attitudes are one of the oldest topics in social psychology and the most common way of measuring them is with self-report questionnaires. In countless surveys and laboratory studies, people are asked to report their evaluations of social issues, consumer products and other people, and these reports are, under many conditions, excellent predictors of behaviour. Ajzen and Fishbein's (1980) theory of planned behaviour, for example, argues that the best way to predict people's behaviour is to ask them their intentions, and such self-report measures have been found to be excellent predictors of behaviours such as people's use of birth control (e.g. Davidson and Jaccard, 1979). Similarly, political scientists have done a reasonable job of predicting the outcome of political elections with polls, in which people are asked for whom they plan to vote (e.g. Krosnick, 1999; Manza *et al.*, 2002; Miller, 2002). Simple questions about people's attitudes and intentions have considerable predictive validity, in that they often correlate highly with people's overt behaviour (e.g. Ajzen, 1996; Fazio, 1990).

Memory research

Since the inception of research on human memory in experimental psychology, one of the chief measurement techniques has been people's reports about what they recognize or recall. Had psychologists not relied on these kinds of self-reports, research on memory would never have started. Many current studies of memory continue to ask participants to report what they can recall (e.g. Smilek *et al.*, 2002) and the processes they used to recall something (e.g. Jacoby *et al.*, 1997). Several studies have found that these types of self-report measures predict interesting outcomes, such as people's accuracy in identifying suspects in line-ups (e.g. Dunning and Stern, 1994).

Developmental research

An active area of research in developmental psychology is the study of children's theory of mind and attributions about the causes of their own and other people's behaviour. Many of these studies rely heavily on children's reports about themselves and their environments, such as their beliefs about where someone will look for a hidden object (in the false belief paradigm; e.g. Wimmer and Perner, 1983) or their reports about other people's desires and attitudes (e.g. in the literature on discounting and attribution; Karniol and Ross, 1976). For example, a large literature has examined children's ability to predict other people's behaviour, such as where people will look for a hidden object. By age four or so children's predictions are quite accurate (e.g. Wellman *et al.*, 2001; Perner and Clements, 2000).

In each of these areas of research, the introspective method is alive and well and has yielded highly useful results; indeed, verbal reports are one of the main methods of the discipline. Why, then, all the fuss? Why have some, including me, questioned the use of the introspective method (Nisbett and Wilson, 1977; Wilson and Stone, 1985; Wilson, 1994)?

The Limits of Introspective Reports

Despite the heavy reliance on self-reports in each of the areas it is clear that the measures have their limits. One problem is the well-recognized issue of social desirability, namely whether people are willing to report the states that the researcher is interested in measuring.

A more fundamental problem is whether participants have access to their thoughts and feelings. Increasingly, researchers are realizing that a great deal of what they are interested in measuring is not consciously accessible to their participants, forcing them to rely on alternative methods. Indeed, in each of the areas I have just reviewed, the limits of people's ability to report their internal states and traits has been questioned:

Personality research

There is a long tradition of measuring personality with techniques other than verbal reports. In the early years of personality research projective techniques, such as the Rorschach and Thematic Apperception Test, were developed to measure aspects of personality that people might be repressing (e.g. Murray, 1938). In recent years there has been an increased emphasis on implicit measures of personality that do not rely on people's introspective access to their own personalities, and may tap states that are simply inaccessible to people (i.e. are not necessarily the result of repression but still cannot be accessed consciously; for a review, see Wilson, 2002).

Emotions research

Researchers have long sought physiological and behavioural measures of emotion, including facial expressions, observer ratings and autonomic responses. One advantage of these measures is that they avoid the unwillingness people might have to report their true feelings. As in the area of personality research, theorists with a psychoanalytic bent have argued that people sometimes have difficulty reporting some of their feelings due to repression, though whether nonconscious feelings exist (or can be proven to exist) is controversial. With the advent of implicit measures and new theories about brain functioning, many researchers now argue that some feelings are inaccessible to conscious awareness, not necessarily because of repression, but because of the architecture of the mind (e.g. LeDoux, 1996; Wilson, 2002). Consequently, nonverbal measures of emotion are crucial, though as noted by Larsen and Fredrickson (1999), none have proven to be 'the gold standard' to which all other measures can be compared.

Attitudes research

The search for indirect measures of attitudes also has a long history (see, for example, Crosby, Bromley and Saxe, 1980). With the recent development of implicit measures such as the Implicit Associations Test (Greenwald, McGhee and Schwartz, 1998), there has been an explosion of research on the nature of attitudes and people's awareness of them. Some have argued that people can simultaneously possess different implicit and explicit attitudes towards the same object, with self-report measures tapping only the explicit attitude (e.g. Wilson, Lindsey and Schooler, 2000).

Memory research

Although verbal report measures have been indispensable to research on memory and information processing, it was the development of indirect measures (chiefly reaction time) that fuelled the cognitive revolution in the 1950s and 1960s (e.g. Teichner and Krebs, 1974; Wood and Jennings, 1976). Cognitive psychologists have also relied heavily on measures of brain activity, including electroencephalogram (EEG) recordings, positron emission tomography (PET) scans

and functional magnetic resonance imaging (fMRI). Clearly these measures reveal workings of the brain to which participants have no access.

Developmental research

Although children's verbal reports are still the primary method in many areas of developmental psychology, questions about the limits of their access to their own thought processes have been raised, and alternative measures, such as gaze and actual behaviour, often reveal different developmental trajectories of cognitive processes (see Wilson, 2002, Ch. 3 for examples).

In each of these areas researchers are developing theories about the kinds of mental processes and states to which people have direct access (e.g. explicit attitudes, self-theories about personality) and the processes and states to which they do not (e.g. implicit attitudes and traits). Given that issues about the validity of self-reports have been percolating in psychology for decades, it is curious that theoretical progress about the nature of conscious versus unconscious processing has been so slow.

A Brief Historical Overview

The debate over the validity of introspection began at the onset of psychology as an empirical science in the late nineteenth and early twentieth centuries (e.g. Titchener, 1909; Wundt, 1894). At that time the main subject matter of psychology was 'the stuff of which consciousness was made', studied by presenting stimuli to participants and asking them to introspect 'on the course of the experience that has just taken place' (Allport, 1955, p. 71). This method turned out to be a dead end, due largely to the unreliability of reports from one laboratory to the next.

This early failure of the introspective method could, in principle, have led in many fruitful directions. On the one hand, psychologists might have concluded that the basic processes they were trying to study, the building blocks of sensation and perception, were inaccessible to conscious awareness. Such a conclusion could have been a stepping stone to hypotheses about the accessibility of mental processes more generally, leading to theories about the power and scope of nonconscious mental processes.

There were two major obstacles to such theoretical progress. First was the long shadow cast by psychoanalysis, the major theory of the unconscious at the time. The view of the unconscious as a dynamic set of instinctual urges dominated the theoretical stage, making it difficult to develop alternative theories of a pervasive, adaptive unconscious. Second, there few methods available to study nonconscious processes. Experimental psychologists willing to tackle such difficult-to-test notions as repression and perceptual defence were hampered by inadequate methods (for reviews see Erdelyi, 1974, 1985). Research on perceptual defence, for example, became bogged down in thorny methodological issues and largely petered out until new methods were developed to test the influence of subliminal

exposures to stimuli (see, for example, Dijksterhuis and Bargh, 2001). There simply were no sound methods available to test hypotheses about unconscious processes.

Though psychoanalysis was the dominant theory about unconscious processes, ironically there were prior formulations to which researchers frustrated by the failure of the introspective method might have turned. A generation before Freud, a group of nineteenth-century British physicians and philosophers argued for the existence of a different kind of unconscious, one that bore a remarkable similarity to the current view of a set of pervasive, adaptive, sophisticated, mental processes that are critical to human survival but which operate in parallel to consciousness. Laycock (1860), Hamilton (1865) and Carpenter (1874) pointed to the existence of powerful nonconscious processes that analyse the world and direct behaviour automatically, and are not just the repository of threatening, infantile urges that are pushed out of awareness, as Freud was to argue shortly (see Miller, 1995; Wilson, 2002).

Assuming that the early experimental psychologists were aware of these views, and were willing to consider that the failure of their introspective methods might be evidence for them, they would still have been stymied by the absence of tools to test ideas about a powerful set of unconscious mental processes. As with any science, theory and methodology exist in a symbiotic relationship in psychology, and the absence of appropriate methods hindered theoretical developments about nonconscious processing.

Instead of leading to theoretical developments about the nature of unconscious mental processes, the failure of the introspective method led to theoretical developments in the opposite direction, away from theories about the mind (conscious or unconscious) and into the lap of behaviourism (e.g. Lieberman, 1979; Watson, 1913). Again, methodology drove theory: because there were no reliable ways of studying the mind, it was, according to behaviourists like Watson, unworthy of study, leading to several decades of research on the behaviour of pigeons and rats.

Credit for the revival of mentalism in psychology is often attributed to the cognitive revolution of the 1950s, indeed, experimental psychologists did return with vigour to the study of human information processing. One reason for this revival was the development of new methods that could study mental processing with precision, without relying too heavily on introspective reports (chiefly reaction time). It is worthy of note, however, that the study of the human mind was alive and well in another area of psychology, before the cognitive revolution. Social psychologists never abandoned the experimental study of such mental processes and states as attitudes, persuasion, frames of reference, schemas and social perception (Allport, 1985; Jones, 1985; Zajonc, 1980).

Neither social nor cognitive psychology, however, had much to say about the extent to which the mental processes they were studying were conscious or unconscious. In all likelihood this was due to skittishness over the respectability of psychology as a science. Research psychologists had to defend themselves against behaviourists, arguing that the mind could be studied as scientifically as

the bar-pressing behaviour of rats. To go a step further and argue that much of what they were studying was unconscious mental processes would have made them vulnerable to the criticism that their ideas were as untestable as psychoanalytic theory.

As the study of the mind flourished, however, questions about people's access to their own mental processes became unavoidable. Rather than ignoring the fact that their research participants seemed unable to report anything like the cognitive processes they were hypothesized to have, psychologists began to entertain ideas about the limits of conscious awareness (e.g. Mandler, 1975; Nisbett and Wilson, 1977). These questions were controversial, but with the development and refinement of methods to examine nonconscious processes, such as subliminal exposures of stimuli and implicit learning paradigms, questions about the limits of conscious awareness and the scope and power of nonconscious mental processing became commonplace (e.g. Bargh and Pietromonaco, 1982; Greenwald, Draine and Abrams, 1996; Kunst-Wilson and Zajonc, 1980; Reber, 1993).

The Adaptive Unconscious versus Conscious Processing

Much work needs to be done to elucidate the nature and scope of nonconscious processing and how it interacts with conscious processing. The outline of a picture has emerged, however, and can be summarized as follows (see Wilson, 2002 for a more complete discussion):

1. Consciousness is a small part of human functioning, even smaller than the 'tip of the iceberg' Freud imagined. There is a pervasive set of mental processes that can be referred to as an *adaptive unconscious*, adaptive in the sense that these processes are vital to human survival.
2. One view of the mind is that low-level processes such as those involved in perception are nonconscious, whereas higher-order thinking and information processing are reserved for consciousness. According to this view, consciousness is the chief executive of the mind, setting policy and making major decisions, while nonconscious modules carry out more mundane mental tasks. This view has become untenable, however, as more and more research (largely by social psychologists) demonstrates the power and scope of nonconscious processes. Bargh and Chartrand (1999), for example, argue persuasively that mental processes previously thought to be the function of consciousness, such as the implementation of goals and the evaluation of one's experiences, often occur nonconsciously. The exact terrain of what people cannot access consciously continues to be mapped, but as the lines are redrawn, more and more mental territory is being allocated to non-consciousness — so much so that some have argued that consciousness is a vastly overrated commodity, and that our very sense of having consciously willed our actions is often an illusion (Wegner, 2002).
3. As demonstrated by the research reviewed earlier that relies on introspective reports, people's self-views are not epiphenomenal. People have access to many of their feelings and emotions and develop rich narratives about

themselves and their social worlds. These conscious states often play an important causal role in people's behaviour. The conscious narratives people tell about themselves, for example, can be critical to their psychological well being (see Wilson, 2002, Ch. 8).

4. The result is a dual system of nonconscious traits, attitudes and emotions that underlie conscious versions of these states, often quite different from their nonconscious counterparts. Progress is being made in fleshing out the precise nature of this duality (e.g. Nosek and Banaji, in press), though much work needs to be done (Jack and Shallice, 2001).

The basic question of what people have access to and what they do not is of course critical to the issue of when researchers can rely on introspective methods. The answer will come from careful research showing the predictive validity of verbal reports versus other measures of the construct under study. This statement is hardly novel but takes on new urgency as measures of implicit states continue to be developed and pitted against explicit measures of the same construct. Introspective reports will never disappear as a valued tool in psychological research, though their limits are becoming ever clearer.

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