Phenomenology in laboratory-based tasks: Exploring methodologies that integrate experiential reports with behavioural measures in psychological research

Alan McAuliffe B.A.

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Supervisor: Dr. Marek McGann

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Abstract

Disparate research traditions in the study of experience have led to contentious arguments over the use of first-person methods in psychological research (Dennett, 2001; Schwitzgebel, 2003). Some believe that researchers are inclined to avoid qualitative techniques due to their many limitations (Vermersch, 2004), largely because these methods may resist replication and fail to control for the subtleties of meaningful experience, as well as the effects these methods have on the examined behaviour (Petitmengin, 2006; Hurlburt & Aktar, 2006; Schwitzgebel, 2008). However, recently emerging approaches within Psychology and Cognitive Science have argued strongly that experience should play a more central role in our examination of behavioural data. Despite this emerging consensus, the relationship between experience and behaviour remains very poorly understood. Placing emphasis on understanding subjective experiences calls for a re-examination of the methods we commonly use in psychology, with the aim to gain a better understanding of the person's experiences, and the meaning of their actions, at the time that the behaviour of interest is carried out. In order to further investigate this phenomenon, the current project has built on research using integrative and phenomenologically-informed methods in the study of experience. Five experiments were conducted to explore the potential use of such methods in the laboratory, with the initial series of experiments aiming to find an experimental paradigm that engages the participant in meaningful ways. The final experiments of this thesis directly gather data on participant experiences during a contextualised lab-based paradigm. Findings suggest that the use of integrative methods in the laboratory may have extraneous effects on task behaviour and we are still in the early stages of the development of more far reaching methods in the study of experience. This work highlights the challenges and necessity of understanding how we can use revised methods to further explore the relationship between experience and behaviour in meaningful, but controlled, ways.

Declaration of Originality

College: Mary Immaculate College, University of Limerick

Department: Psychology

Degree: PhD

Name of Candidate: Alan McAuliffe

ID Number: 0640409

Title of Thesis: Phenomenology in laboratory-based tasks: Exploring methodologies that integrate experiential reports with behavioural measures in psychological research

Declaration: I hereby declare that this thesis is the result of my own original research and does not contain the work of any other individual. All sources that have been consulted have been identified and acknowledged in the appropriate way.

Signature of Candidate: _____

Alan McAuliffe

Signature of Supervisor: _____

Dr. Marek McGann

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Chapter One

Overview and summary

The aim of this work is to explore whether more phenomenologically inspired methods might usefully augment or complement standard laboratory practices in psychological research. Though it remains a significant challenge to current scientific methods, the relationship between experience and behaviour is increasingly recognised as an important topic in Psychology and Cognitive Science. Experiential data are notoriously difficult to examine, with many different methods available that each bring with them a host of supporters and critics. Throughout most of the history of experimental Psychology, we have had a distrust of first-person accounts of behaviour. This is partly due to the kinds of problems with describing and verifying details of the conscious experiences of people, which led to the rejection of introspection as a scientific method (Nisbett & Wilson, 1977; Johansson et al. 2005). It is also partly due to numerous empirical studies illustrating how little insight people appear to have into their own behaviour (e.g. Piccinini, 2003; Schwitzgebel, 2008).

Despite this history, recent developments within the broader field of Cognitive Science have given rise to dissatisfaction with the way in which first-person experience has been marginalised in mainstream laboratory research (Kagan, 2012). Theoretical advances, driven by a greater awareness of the embodied, situated nature of psychological processes,

have made it clear that while a simple relationship between a person's conscious experience and their behaviour is not the case, the meaning of the entire situation for the person is impossible to ignore. Despite this acknowledgement, it remains very difficult to quantify or account for such nebulous concepts (Barrett, Mesquita & Smith, 2010; Kagan, 2012). Simple descriptions of experience may not provide us with a direct understanding of the causes of particular behaviours, but some means of making sense of a person's meaningful experience of the situation is needed if we are to adequately explain the ways in which the meaning, or context, of the stimuli affect the way people behave.

Some researchers have called for a complete overhaul of the way in which psychological research is conducted as a result of these criticisms, with the introduction of strikingly different research techniques, for example neurophenomenology (Lutz & Thompson, 2003) and descriptive experience sampling (Hurlburt & Akhtar, 2006). The current project, however, is an attempt to take an evolutionary rather than a revolutionary approach. The project aims to explore ways of integrating first-person reports of experience with behavioural measures in standard experimental laboratory tasks, but with the additional aim of using minimal changes in practice so as not to affect the rigour and replicability of such scientific methodologies.

Chapter Two of this thesis focuses on phenomenologically informed methods that are currently used in the study of experience. It highlights some promising methodologies that aim to explore experiential data in rigorous ways that are being applied in a number of settings. The chapter gives an overview of some criticisms of the standard methodological approaches to psychological research that have led to the call for more emphasis on experience and meaning. Different approaches and their implications are critically examined.

Some considerations are made concerning how more phenomenologically informed research practices might complement traditional methods of investigation in psychology.

Chapter Three discusses currently developing perspectives within Psychology, such as the "embodied" approach (Varela, Thompson & Rosch, 1991; Wilson, 2002; Ziemke, 2003), that argue that we need to replace our existing modes of research with models that also afford more synthetic thinking without sacrificing the rigour and discipline of proper scientific practice. In contrast to traditional approaches, more embodied approaches view the overall experience and meaning of a given situation as playing a significant role in how we construct our thinking and acting at a given time, instead of just the individual aspects of a stimulus or situation. This chapter explores in more detail some of the theoretical background of embodied and situated cognition underlying the greater recognition of a need for methodological change. It also outlines some of work to date that considers the examination of experience in controlled settings, rather than naturalistic explorations that are seen in much of the qualitative literature.

Building on this, Chapter Four examines three experimental paradigms that may afford us the opportunity to explore the coupling of experience and behaviour using minimally altered laboratory methods. The aim of these experiments is to identify an experimental task that could act as a useful paradigm for methods that use more phenomenological approaches. Using standardised laboratory tasks, we explore ways of using more "meaningful" versions and applications of the experimental paradigms. That is, can these experiments be altered or carried out in such a way as to expose more straightforward links between what the participant experiences and how they behave in the setting? Experiment 1 describes the Go-No-Go Association Task (GNAT), which is a standard test of executive function, usually conducted with relatively meaningless stimuli (or at least

meaningless in the context of the task behaviour). Using both more and less meaningful stimuli, different patterns of behaviour in response are identified in a between-participants experiment. The stimuli used for this experiment consisted of culturally loaded images that provide a clear task-relevant meaning for participants, while other images were more abstract. Ways of exploring experience using this task are discussed, as well as the implications of integrating qualitative or phenomenological methods to such an experimental paradigm.

Experiment 2 presents a decision making experiment called the Balloon Analogue Risk Task (BART). This is a simple decision making task where participant choices are measured over the course of the experiment, but in a less abstract way than the GNAT. As the task progresses, research has shown that some individuals make different choices if they are predisposed to making high risk choices in their everyday lives (Lejuez et al. 2002). For our purposes, however, we used the task in a clearly defined way, presenting the experiment in a contextualised way to explore how the experimental setting affected performance. As the aim of the thesis is to explore ways of studying experience in more controlled ways, we developed a socially contextualised framing for the task (where participants were told their scores affected other participants) as well as a standard individual version of the task with identical task stimuli in a between-participants study. This creates a specific meaning framework for the task, and we aimed to measure behavioural differences in the task that was specifically related to how the task was presented to participants.

Building on this, Experiment 3 describes a more dynamic task – the Iowa Gambling Task (IGT). This task is specifically designed to be "realistic" in that the participant interacts with it and adapts their behaviour over the duration of the task. Using the socially contextualised framing for the task from the previous experiment, promising findings show that it may be possible to use more qualitative methods with the IGT. This leads to the

following experiments using more integrative methods with the IGT, in an attempt to fully flesh out an experimental method that aims to understand the relationship between the experience and behaviour.

Chapter Five of this thesis outlines Experiment 4, which uses the IGT with framing contexts similar to Experiment 3. This experiment also uses a more structured exploration of the participants' experience of the IGT between the framing groups, with the aid of a tailor-made questionnaire for the task. As the literature strongly suggests that participants have difficulty describing their experiences in a clear and useful manner, some of the participants were given introspective training and practice in description of their experiences before the task. A questionnaire designed by Maia and McClelland (2004) was used for the collection of experiential data, with alterations to the questionnaire carried out to focus descriptions of the subjective experience of the participant. Introspective training for this experiment was influenced by the work of Hurlburt and Akhtar (2006), whereby participants were given several training session in the days prior to taking part in the IGT. Using similar decision making tasks, participants in the training group were trained to focus on the way in which they naturally described their experiences in a lab-based setting.

As drawing links between phenomenological and behavioural aspects of the task is a challenging endeavour that requires much effort on part of the participant, our next task was to carry out controlled but unstructured collection of experiential data in the lab, outlined in Chapter Six. Experiment 5 integrates direct forms of phenomenological data collection in the laboratory. In order to advance the development of phenomenologically informed laboratory practice, practice that makes the experience of the participants a key part of the experiment, we examined the effect of context-setting on performance in the lab using experience sampling methods. This took the form of a simplified version of Hurlburt & Akhtar's (2006)

Descriptive Experience Sampling (DES). DES purports to sample "pristine" experiential data of an open, relatively unprejudiced sort. Findings from the previous experiment raised some interesting questions on the way participants are asked to describe their experiences. Specifically, whether direct qualitative questioning had an effect on the overall experience for participants. For Experiment 5 it was decided that data would be collected without the lengthy training of participants, in the hope of avoiding changing their experience of the task and thereby making it more likely that we were sampling the kind of "pristine" experience that DES is intended to access. Given the plethora of introspective research that incorporates phenomenological training in to their methods, we discuss whether this could be used to ascertain the kind of differences in responses that training participants to describe their experience might have, especially in more controlled settings and the ways in which these methods can be used.

Finally, Chapter Seven of this thesis discusses the implications of adopting phenomenologically informed methods in lab-based tasks. The limitations of our use of DES and introspective training are discussed, with suggestions for future research using open-ended questioning and the type of 'minimal change' we originally hoped for in earlier chapters. While there are growing concerns that we need to replace our existing investigative procedures with methodologies that also afford more synthetic thinking, we must also take care that we do not sacrifice the rigour and discipline of proper scientific practice. This chapter also discusses some issues with the current models and theories of how we study experience in Psychology at present, and limitations facing the area of phenomenologically informed methods. In this way it calls on theorists to re-evaluate the use of unfocused data collection methods seen in some of the literature, with the findings of our experiments

indicating that qualitative questioning may affect participant behaviour in ways that are not yet fully understood.

Chapter Two

Phenomenology in Psychological Research:

An Overview

From the beginnings of experimental Psychology, introspection was seen as the disciplined study of consciousness. Within the English-speaking world, the name probably most commonly associated with the method in Psychology's early years was E. B. Titchener (1867 – 1927). A student of Wilhelm Wundt (1832 – 1920), he developed an approach in the study of consciousness that relied on verbal reports of internal mental states. By many researchers working during these initial days of the discipline, Psychology was seen as an attempt to understand the human mind, believing that consciousness could be broken down to its basic elements without sacrificing any of the properties of the whole. However, introspection lost much of its traction soon after these earliest stages of its development. Instead, behaviouristic methods became increasingly popular in the following decades. Introspective investigations led to intractable disagreements and incommensurable descriptions of the phenomena of conscious experience. Behaviouristic techniques, emphasising third-person observations of movement and behaviour, were seen as a scientific necessity (though perhaps most famously linked with the likes of Watson, 1913, the approach is associated with a number of different schools of thought; e.g. Hull, 1943; Skinner, 1945; Tolman, 1932). Psychology moved away from the fundamental question of the human psyche

in order to address more measureable, tangible issues that could properly be addressed by developing scientific methods.

Even though there was a shift from introspection to behaviouristic methods, early psychologists believed that there was a tangible link between understanding experience and behaviour. While Wundt proposed that the person's descriptions of how an environmental stimulus made participants think and feel was important for understanding this, behaviourists, such as B. F. Skinner (1904 – 1990), argued that if introspective methods could be verified at all, it was only because observable behaviour can be objectively measured. Present in both of these approaches was the close association of experience and behaviour. The shift in focus was largely concerned with the methods used in the study of behaviour, with introspective methods leading to highly subjective data that was open to interpretation and difficult to define.

Jerome Bruner (1915 -), one of the most influential psychologists of the twentieth century, looked at how needs, motivations and expectations influenced perception. Often associated with the movement known as the 'New Look', his work was concerned with the development of human cognition and the role of strategies in the process of human categorisations. His early cognitive work showed how environmental and experiential factors played pivotal roles in human cognitive development. However, by the 1960's, researchers had designed computer programs that could solve difficult logic problems, a domain previously thought to be a unique quality of humans. This led to the development of computer models for human cognition, where information-processing paradigms were used to help understand behaviour in more objective ways (Newell and Simon, 1972). Experience was seen as an integral part of the process, but efforts became more concerned with

explaining and understanding cognitive functioning rather than defining the properties of experience, as experimental methods moved further away from descriptive research.

As cognitive psychological approaches developed, the link between consciousness and behaviour became more attenuated. Research, such as Nisbett and Wilson's (1977) study, a classic in the field, showed that there seemed to be little connection between experience and behaviour concluding that "people may have little ability to report accurately on their cognitive processes" (p. 246). That is, people had little conscious insight into the factors that affected their actions. Although people can usually produce an explanation for their behaviour, this explanation may not be accurate and difficult to calibrate with the observed behaviour. In reviewing several studies that experimentally manipulated the cause of a participant's behaviour, then asking the participant to explain their behaviour, Nisbett and Wilson found that participants would tell the experimenter more than could have been known given the experimental manipulation. This led many to believe that participants would readily contrive information, due to influences of intersubjectivity and experimenter bias.

In contrast, developments in recent cognitive science suggest that isolation of behaviour from experience is problematic. With advancements made in neuroscience over the last few decades, computer modelling of cognitive behaviours has become more contentious as our understanding of the relationship between experience and behaviour is still not clear (Froese & Spiers, 2007; Gallagher, 2000; Stuart, 2012). Current mainstream psychological research is dominated by the cognitive, information processing paradigm, which has come under increasing criticism in recent years (Barrett & Lindquist, 2008; DeJaegher, DiPaolo, & Gallagher 2010; DiPaolo & Thompson, 2014; Mesquita, Barrett & Smith, 2010; Shapiro, 2011; Wilson, 2013). Researchers with a more qualitative or phenomenological focus argue that many mainstream methods fail to adequately account for the ways in which the

psychological situation, participant knowledge, context and experience play key roles in understanding the relationship between behaviour and mind. These criticisms stem from how third-person approaches predominantly focus on counting behaviours in controlled settings. While this has allowed for relatively easy and usable ways in which scientists can measure behaviour and apply it to some aspect of the phenomenon investigated, it tends to "compartmentalise" psychological processes (Barrett & Lindquist, 2008).

Concerns about compartmentalisation refer to the way many theorists characterise the mind, body, and various psychological functions as essentially distinct and separate entities that influence one another during the generation of behaviour. Such thinking tends to under-represent the ways in which the various aspects of the psychological system – environment, body, brain, and behaviour – are coupled to one another and are substantially interdependent (DiPaolo & Thompson, 2014; Thompson & Stapleton, 2009). This also results in experience being marginalised, as it is difficult to describe in relation to behavioural responses, confined by the limitations of experimental methodologies. Levine (1983) argued that behaviour is often described in terms of its underlying processes: that is, researchers are quite adept at explaining the causal roles involved in the functions of behavioural processes, but overlook the meaning of the behaviour. This is inextricably linked with how we categorise the role of experience in much of Psychology and Cognitive Science. As such, it can be ill-defined and may be overlooked in its relation to behaviour.

Barrett, Mesquita and Gendron's (2010) concept of the "psychological situation" is an alternative approach that tries to understand behavioural processes in more dynamic or multifaceted ways that go beyond characterisations generated from traditional first or third-person methods. They define a psychological situation as containing numerous aspects that are relevant to the thoughts, feelings and behaviours of a particular person at a particular

time. The experiential, phenomenological aspects of the situation tend to be overlooked by traditional quantitative methods which typically examine phenomena in terms of stimulus-response pairs, with cognitive mediating processes inferred from the observed relationship. This may be due to "essentialising", which Barrett, Mesquita and Smith (2010) argue is evident in much of Psychology. This refers to using terms in such a way as to suggest that there is some deep reality to a (usually inferred) psychological category in the material world. This criticism has a long history in phenomenological Psychology. However, most mainstream research still overlooks the implications of describing the mind and body as intrinsically independent, separable phenomena. This may need to be re-evaluated in light of the growing body of research that suggests that the two are deeply interdependent and mutually constraining (Barrett et al, 2010; Barrett, 2011; .Clark, 1997; Varela, Thompson & Rosch, 1991).

True to good science, cognitive theories are largely based on evidence generated by experimental investigations. Kagan (2012) states that the hope in Psychology is that the concept and explanation applied to the observation in one setting with one procedure would remain appropriate in other settings with similar procedures. He argues, however, that few theories explicitly account for the social and physical context in which a particular cognitive or behavioural process occurs (these things are always held constant by the fact that experimental research is almost all carried out in laboratories or other academic settings isolated from "normal" or naturalistic social and cultural practice). The power of an individual's psychological situation and context in structuring people's thinking and behaviour has nevertheless been in evidence for decades (Barker, 1968; Gibson, 1960). Kagan (2012) also states that cognitive theorists too readily generalise behavioural outcome across contexts. This has facilitated contentious disagreements about the defining properties

of many popular concepts. The conclusion to draw from such work incorporating the relationship between the cognitive-behavioural system and its environment is that the meaning of any action, and the cognitive processes involved in behaviour, cannot be adequately understood until that action is properly situated in some environment-organism functional unit (Heft, 2010). That is, the meaning of the whole situation for the person matters if we are to understand the observed behaviour.

More recent cognitive research has highlighted the need for adopting more integrative approaches (DiPaolo, 2009; Froese, Gould & Seth, 2011). However, few options are available to try to integrate first- and third-person methods in controlled settings by psychologists, a challenge that is also faced by cognitive scientists (Olivares et al. 2015; Wilson & Golonka, 2013). Controlling the myriad of possible variables that exist in real-world situations is impossible, but even in the highly structured setting of the psychological laboratory there seem to be potential issues of situation and meaning for the participant that are not systematically examined. The goal of this thesis is to explore ways in which the gap between behavioural, laboratory-based, and more phenomenologically informed approaches might be bridged without the need to dramatically transform normal professional practice in the discipline.

The remainder of this chapter is in 4 sections. The first gives an overview of the limitations of contemporary research methods. The second section gives an overview of phenomenological methods in Psychology and experimental philosophy. These methods stem from a particular subset of qualitative research, deriving from specific philosophical traditions and placing importance on how and why experience may help understand cognition and behaviour. The third section illustrates how this phenomenological understanding can inform behavioural science by trying to move beyond mere classifications of experience and

uncover the structures of lived experience (helping to characterise the psychological situation more broadly) which will help us understand cognition more thoroughly. The fourth section looks at "contextualised methodologies" and introduces how alternative mixed-method approaches may offer tentative suggestions for how we can generate more robust experiential or phenomenological data that may inform third-person behavioural science.

2.1   Limitations of contemporary research methods

Traditional quantitative methods are designed to generalise behaviour across context and offer rigorous, tried and tested means of investigating psychological phenomena. The strengths of such science are many, but come at the cost of uncertainty regarding their generalisability, and difficulty in understanding the ways in which the range of psychological processes involved in any situation interact with one another (Kagan, 2012). Qualitative research is intended to balance and help contextualise finely focused data collected in naturalistic settings. Vermersch (2004) warns, however, that qualitative research is currently in a problematic state as psychologists have not made much progress in finding meaningful ways to utilise descriptive data to understand human behaviour. Within qualitative methods, current first-person methods, in particular, also have a number of limitations.

Despite very different methods and different kinds of data being involved, both traditional first-person and third-person methodologies in Psychology share some common limitations. First- and third-person methodologies compartmentalise psychological processes because they may be intrinsically designed to do so. Qualitative approaches, for their part, tend to focus more strongly on the experiences or attitudes of people, but tend to be conducted at a level of analysis that removes the possibility of closely examining the links between a person's experience and their individual behaviours. Third-person, quantitative

data is sometimes not much concerned with authentic lived experience (Levine, 1983; Nisbett & Wilson, 1977) and as a result, mind and body are discussed as quite separate entities in much of mainstream Psychology (Barrett & Lindquist, 2008; Varela et al. 1991). This has perpetuated the idea that the two *must* be separated. This stems from phenomenologically informed approaches that suggest that the methodological techniques commonly used in Psychology stem from an approach that typifies behaviour as automatic to external stimuli.

More embodied research approaches may be advantageous as they acknowledge the mind and body as mutually informing entities, or more, different aspects of the same phenomenon of an organism making sense of the world (DiPaolo, 2009). Embodied approaches hold that we must include environmental and situational aspects in understanding behaviour. However, in experimental paradigms we still lack integrative methodologies that overcome the limitations of traditional methods. Embodied approaches still somewhat lack a fundamental theoretical framework (Wilson & Golonka, 2013), with a tangible framework that is still in development (DiPaolo & Thompson, 2014; Froese & Spiers, 2007).

There have been a number of attempts to overcome the limitations of scope imposed by standard research paradigms. For example, "secondary approaches" developed in the past few decades have tried to integrate first- and third-person methodologies. However, they may still perpetuate the notion that the mind and body need to be studied separately (Varela & Shear, 1999). The data in many forms of secondary approach are gathered separately and subsequently integrated through data interpretation, as this is currently the clearest and generally accepted form of analysis (Lutz & Thompson, 2003). Contemporary theories are adopting more 'open' approaches, acknowledging that embodiment, experience and context are impossible to completely balance or control, but must be included explicitly in the description of a task or the explanation of the behaviour involved (Allen & Williams, 2011;

Wilson & Golonka, 2013). However, even though researchers are claiming that our actions are shaped by the entirety of a situation in which we find ourselves, few have actually implemented this in the analysis (Doan, 2009; Piccini, 2003; Schwartz, 2010). When the situation is looked at, it is usually done so in a rudimentary way where facets of the phenomena are manipulated to illustrate the causal role of a particular psychological process. For example, researchers commonly use time pressure, expertise, deliberate practice and a multitude of experimental manipulations to show how behaviour is made of a specific set of processes. This may be more limiting than previously supposed. Few attempts directly consider that participants' experience and interpretation of environmental stimuli is an important part of understanding the behaviour. If there are ways of directly investigating experience in terms of how it shapes behaviour, then we need to develop more holistic methods.

In principle, qualitative approaches, which commonly elicit descriptions of a situation and behaviour from people who experienced them, seem perfectly suited to such a holistic approach, but are not commonly applied in the kinds of controlled settings of laboratory work. Qualitative work largely focuses on behaviour in naturalistic settings. It is typically retrospective or general in its approach, involving the recall of past events or descriptions of frequently occurring aspects of a person's experience. Though "mixed" or integrated methods exist, their target is generally not the specific manner in which behaviour and experience interact in the process of performing the kinds of cognitive tasks explored in laboratory research.

A number of attempts to develop more integrative methodologies are underway (Olivares et al. 2015; Doan, 2009; Wilson & Golonka, 2013). However, these all seem to be in the very early stages of development. No approach has built up a wide base of support

amongst researchers. In the last three decades, the study of consciousness has moved from the realm of philosophy into the spotlight of interdisciplinary scientific research. Cognitive and brain sciences have come together in an attempt to meet the challenges posed by the scientific study of consciousness and unconscious processes. This modern endeavour has yielded important insights about neural mechanisms and their relation to human cognition and behaviour, findings that give rise to new answers to age-old questions (Weisberg, 2011). While the principles are promising (meaning and context are important; subjective experience may be key to understanding behavioural phenomena), a lot of these approaches are establishing themselves, but tend to involve dramatically different forms of data collection, well outside the standards of practice in normal laboratory research (DiPaolo &Thompson, 2014; Gallagher, 2000; Olivares et al. 2015). They may attract a few eager rebels, but have yet to see widespread adoption. Additionally, these approaches may be somewhat rudimentary and hard to adopt in other research areas (Dennett, 1991). Yet, the principles are encouraging, for example, the technique known as neurophenomenology attempts to generate phenomenological "markers" that would allow neurological data to be interpreted. Phenomenological markers are coded descriptive data relating to a particular experience. These markers are sometimes developed through standard phenomenological forms of analysis. That is, interviews are often analysed through a disciplined method, such as Content Analysis, one of the most widely used methods in phenomenological research (Langdridge, 2004). This method allows researchers to code the descriptive data which are used as markers, numerical representations of descriptive experiences, so that links could be drawn with neurological data. The aim with neurophenomenology is not just to explore brain regions and related experiences; rather, it was a significant advancement in phenomenological research that attempted to generate methodological techniques of substantiating descriptive data with hard empirical data.

However, instead of trying to develop a completely new approach, there remains a question as to whether we may be able to explore the effects of meaningful experience in the lab. That is, an evolution of research practices, rather than a revolution, may be our best next move. Instead of attempting to reinvent empirical practice, the intention of the present work is to search for useful ways in which our understanding of what happens in experiments can be improved by disciplined phenomenological or experience-focused methods.

2.2   Introduction to phenomenological methods

Phenomenology can be described as the study of experience and consciousness, specifically their structures and how we come to understand them. Phenomenological Psychology, drawing directly from the eponymous tradition of philosophy aims to focus on human experience and "how the things that are perceived, appear in consciousness" (Langdridge, p. 21). To explore psychological phenomena, we aim to go beyond the description of subjective experience and attempt to explore the structures underlying the experience for the person. It is quite different to the kind of intuitive "Cartesianism" common amongst psychological researchers, where the mind and body are seen as separate, knowable objects. Instead, phenomenology attempts to characterise both the mind and body in terms of lived experiences. Phenomenologists argue that attaining descriptions of subjective conscious experience is of great importance as it may help us more clearly understand the psychological phenomena being explored (Langdridge, 2004).

Phenomenological Psychology aims at describing lived experience and involves exploring what is meaningful for an individual at a specific point of time, typically through the use of focused interviewing (Langdridge, 2007; Reid, Flowers & Larkin, 2005). This characterisation of phenomenology appears in many modern psychological studies of

consciousness as well as literature on experimental philosophy (Burr, 2003; Schwitzgebel, 2003). However, the traditional study of phenomenology is rooted in a philosophical discourse of describing what appears to consciousness in an "authentic" manner. This refers to the process of describing experience in a reductive and disciplined way, often called phenomenological reduction. Precisely how this reduction is achieved depends on the researcher's theoretical outlook.

The philosophy of phenomenology is not just a single approach, although they all share some key beliefs and underpinnings. There are three distinct schools in the history of phenomenology: transcendental phenomenology; hermeneutic phenomenology; and existential phenomenology. The original phenomenological philosophy proposed by Husserl (1859 – 1938) claimed that it is possible to suspend personal opinion and arrive at a single descriptive representation of the phenomenon being investigated. Scholars differ in how to practice this phenomenological reduction in the Husserlian tradition. Husserl's main disciple, Martin Heidegger (1889 – 1976) proposed a phenomenology that turned instead to interpretative narration, termed *hermeneutic phenomenology*. This school of phenomenology believes that it is not possible to separate personal opinions and beliefs in phenomenological reduction. Instead, interpretative narration provides the means of arriving at an accurate description of the phenomenon. This approach emphasises the importance of considering the subjective experience of individuals and groups. Essentially, it attempts to find the objective truth of a phenomenon through individuals' life-world stories using narratives attained through phenomenological reduction. For hermeneutic phenomenology, description is already interpretation, so a pure phenomenology with its pure ego is impossible. From historical and methodological perspectives, this is a form of understanding that is not concerned with the subjective experiences of the individual.

Existential phenomenology, on the other hand, is a movement based on the rejection of Cartesian rationalism (Kafle, 2011). Kierkegaard (1813-55) is usually referred to as the founder of modern existentialism (Langdridge, 2007). Existential phenomenologists claim that philosophical investigations could not be conducted from an objective standpoint and reject Husserl's belief of a possibility of a complete reduction. Instead, existential phenomenologists attempt to flesh out a description of direct contact with the world. They stress the importance of everyday experiences as it is perceived and described by the individual. As such, the name is common to the thought of Heidegger, Jean Paul Sartre (1905 – 1980), Maurice Merleau-Ponty (1908 – 1961) and other twentieth century philosophers influenced by them. Grouping these scholars under the term existential phenomenology is said to be justified as they share commonalities in their understanding of the phenomena on which they focused as well as the phenomenological method they used to account for the description of such phenomena (Kafle, 2011).

The importance of phenomenological approaches for Psychology is that they aim to understand the meanings and fundamental structures of experience. To do this, researchers attempt to describe experience in a pure or pristine way, using what is often referred to as 'bracketing' or the Epoché. This is a process by which we attempt to abstain from presuppositions or preconceived ideas that we may have about the things we are investigating. This is often used as an essential criticism of third-person sciences: while we attempt to avoid biases of everyday knowledge and critically examine the phenomenon being investigated, we minimise attempts to expose knowledge of the participant to clarify the meanings of their experience (Gallagher, 2005). Burr (2003) argues that this is due to experience being marginalised as a by-product in quantitative studies and an effect of the mainstream perspective being dominated by third-person descriptions of behaviour. This is

also echoed in Levine (1983) who worries that third-person science is trying to 'explain away' behaviour, instead of understand it.

Husserl criticised Psychology as a science that had gone wrong by attempting to apply methods of the natural sciences to human issues. He argued that human existence is characterised by a 'natural attitude', referring to the basic way in which we experience the world. We rarely attempt to critically examine our experience. Husserl's criticism of psychological methods stems from how Psychology deals with living subjects who are not simply reacting automatically to external stimuli, but are instead responding to their own perception of what these stimuli actually mean. From his perspective, psychologists at the time were attending to external, physical stimuli that could be isolated and correlated with each other in isolated responses. This not only misses important variables but it also ignored context and created highly artificial situations, a criticism echoed by many cognitive scientists in recent years (DiPaolo et al, 2014;Froese et al. 2011; Lutz et al. 2002; Stuart, 2011). Phenomenologists largely argue that most of mainstream Psychology is guilty of this, overlooking the manner in which the data collected are constrained or pre-shaped by the theory that led to the researcher asking the question in the first place (Langdridge, 2007). This is where schools within phenomenology diverge. Transcendental phenomenologists believe that Epoché can be truly achieved through phenomenological inquiry, clarifying the true meaning of the phenomena being studied. Existential phenomenologists, on the other hand, believe that it is worthwhile trying to achieve Epoché, however we never fully bracket off our presuppositions. Instead, phenomenological inquiry tries to elucidate the experience so that we can describe and understand it. Regardless of the adopted approach, phenomenological methods attempt to bracket preconceptions about the phenomenon investigated and allow for the participants' experience to inform their descriptions as they

consciously appear. From this disciplined description of experience, some of the structures and key relationships within our experience (perhaps including how consciousness and behaviour are related, for instance), can be determined.

2.3   Phenomenological methods in behavioural science

Froese, Gould and Seth (2011) argue that a phenomenological approach to cognitive science may offer pragmatic ways of developing new research methodologies for Psychology. It may be that the difficult problem of relating first-person qualitative data to third-person behavioural data could be overcome through finding novel ways of evoking and interpreting descriptive data of lived experience in more controlled environments. That is, data from less naturalistic and more controlled settings may provide ways of calibrating experiential data with observed behaviours. However, the authors note that we lack a satisfactory methodology that can generate phenomenological data that are as rigorous as the traditional, tried-and-tested, methods that exist in empirical approaches. We need to first develop a "systematic way of accessing and measuring the phenomenology of consciousness" (p. 38; Froese, Gould & Seth, 2011), but the current models do not offer ways of gathering descriptive data outside the realm of naturalistic behaviour that can be applied in multiple domains of experience. Another serious limitation for a phenomenological cognitive science is that some of the key principles for addressing an integrative approach are also still in their early developmental stages. DiPaolo (2009) argues that a tangible embodied cognitive science involves incorporating research from a number of diverse fields and this involves working through a number of interdisciplinary ideas. While embodied theorists generally agree that experience and bodily activity matter a great deal for cognition, precisely how they matter remains a bone of contention amongst researchers.

At present, first-person data usually consist of subjective introspective reports where participants give detailed accounts of their experience, facilitated by questions from a trained researcher (Langdridge, 2007; Weisberg, 2011). A commonly used approach is Interpretative Phenomenological Analysis (IPA) where the interviewer uses the data to create a meaningful description of the phenomena being explored. This is an approach in qualitative Psychology that aims to offer insights into how a given person, in a given context, makes sense of a given phenomenon. That is, the participant's lived experiences are "coupled with a subjective and reflective process of interpretation […] and in contrast to some other qualitative approaches, the analyst is still on familiar territory in terms of the inferences that can be made from the data" (Reid, Flowers & Larkin, 2005, p. 20). The meaning of the experience for the participant forms a crucial part of the description. While IPA has its roots in psychology and recognises the central role of the analyst in understanding the experiences of participants, it brings with it a number of methodological considerations. For example, the skills of the interviewer need to be addressed. The interview framework is not altogether clear, and has for the most part, been relatively unrestricted in terms of how the researcher frames the phenomena being explored (Pringle, Drummond, McLafferty & Hendry, 2011). The issue of experimenter bias has been raised for most qualitative approaches (Dennett, 2011; Langdridge, 2004) and may not be overcome unless there are clear procedural requirements on how the data are collected, with clearer distinctions of how certain lines of questioning may be affecting participants' responses. IPA has gained momentum in the literature as the data from these studies are interpreted in collaboration with the participant, where the participant is given more of a say on what they meant by their descriptions. That is to say, they are afforded the opportunity to describe their interpretations and the language they used to describe particular experiences.

Heron and Reason (1997) state that people's actions are grounded in their idea of the world and that which it affords through momentary experience. Participatory Inquiry is Heron and Reason's method for exploring experience in a naturalistic way, placing importance on framing situational instances and placing the person in environments that are meaningful for them at the time of investigation – usually the person's normal day-to-day environment. Participatory Inquiry uses the person's reported conscious knowledge and has been used to develop strategies for improving relations in real world descriptions. For example, Traylen (1989) identified particular stresses associated with medical professionals. Participants were not willing to readily disclose information relating to their occupational stresses. However, Participatory Inquiry was used allowing the participants to identify hurdles in their work environment while on the job, through cooperative interviews. The key feature of the method is that the participants define the questions they wish to explore further and the methodology for that exploration, insofar as the participant feels that there is a democratic dialogue with the researchers, fully engaging the participant as co-investigator.

Heron and Reason (1997) propose that there are ways of exploring conscious experience by detailing accessible knowledge. Descriptions are taken as meaningful and used to shed light on a particular aspect of behaviour. Where Participatory Inquiry differs with other introspective approaches is that it requires minimal interaction with the principal researcher as the participant is in charge of identifying and detailing what it important for them. It aims to describe situational experience in placing the person in situations of meaning. As such participants are actively involved in identifying the experience being investigated. This is different to other phenomenologically informed approaches as experience is pre-framed by the research question and it does not involve the training of participants in giving

experiential reports like other methods. Rather, the inquiry aims to use the person's natural language as they describe their experience.

In Participatory Inquiry, participants are often regarded as co-researchers in the study. The technique acknowledges that there will be differences in both the quality and quantity of participants' contributions but the approach claims that we can attain an understanding of the person's experience and their 'idea' of the world. This framing of a person and their world is concerned with how people become immersed in their experience of the world. While phenomenological techniques often develop detailed experiential reports, a Participatory Inquiry aims at focusing participant knowledge on how the experience can be improved, altered or integrated with other skills – that is, it is primarily practical in nature, focusing on improving participants' making sense of their experiences. Traylen (1989) has found that participants often become hesitant when told that they are to identify what is meaningful in their experience, however when allowed to describe what is meaningful to them, the salient features of their behaviour gradually emerge. For example, in his study on stress during skilful activities in the workplace, Traylen found that subjects were not initially forthcoming. This hesitation was due to the stress involved with the skilful activity being investigated (expert use of medical equipment). Reason (1994) detailed methodological steps that could be used to encourage meaningful descriptions of experience. This involves working to identify salient experiences for the participant and encouraging honest reflection on specific moments. For Participatory Inquiry, the main aim is to integrate it with more positive experiences and find practical solutions for the participants involved. This shows that people are not comfortable giving meta-cognitive descriptions of their experience (e.g. identifying stressors), but are happy to describe their experience, from which observations about things like stressors can be clearly made.

Introspective methods need to be rigorous in isolating descriptions of natural experiences in order for these descriptions to provide insight of lived experience. Descriptive Experience Sampling, proposed by Hurlburt (1990; 1993), is said to a tool for describing ongoing behaviour in an accurate and unbiased way. The details of use of Descriptive Experience Sampling (DES) are contentious, even amongst its advocates (Hurlburt & Schwitzgebel, 2008), as some of the concepts of consciousness are elusive and we don't have a set of clear definitions to rely on (Froese et al, 2011). The approach shows promise in its openness, however.

DES is an experience sampling methodology, originally proposed by Hurlburt (1990; 1993) where the researcher uses a subject's natural environment in order to flesh out descriptions of real-life experiences. Instead of isolating experience in a laboratory or using first-person reports as a means for interpreting meaning, this approach attempts to allow subjects to characterise what is meaningful to them at a particular moment, through notes or recordings made at the time, and subsequent facilitation by an interviewer (somewhat similar to Participative Inquiry). The method involves training periods where subjects become practised in how to give detailed accounts in ways that they are comfortable with (be it voice recorder, a notepad to jot down notes and/or drawing pictures representing how they felt at a particular time, etc). They are then fixed with a beeper and instructed to give detailed descriptions of what is experienced right at the moment when they hear the beeper. In other experience sampling methods, the participant may have been instructed to give their responses at pre-established intervals or at the occurrence of a specific event. For Hurlburt's DES however, the beeper would go off at random intervals and participants typically wear the device for at least 3 consecutive days. Following this, the participant sits down with an interviewer where they are probed to flesh out exactly how and what they felt at the time of

each beep, going over every note/recording they made over the 3 days. This is discussed in great detail in Hurlburt and Schwitzgebel's (2008) book, *Describing Inner Experience*. Throughout the book the authors have dedicated sections where they comment on each other's approach to the method and from this point on, if Hurlburt and/or Schwitzgebel are referred to individually without reference to a publication year, it refers to this particular text.

Hurlburt and Schwitzgebel (2008) differ in opinion on some of the fundamental concepts of consciousness and the validity of descriptions generated from DES. This doesn't suggest that DES is a valueless methodology, quite the contrary. It is possibly one of the only methods that currently allow us to directly comment on the most contentious arguments in the study of consciousness. But it remains clear that the method still requires some refinement. Schwitzgebel states that there are a number of problems with introspection in general that can be extended to most introspective methodologies. These are that (1) conscious states change moment to moment and there is rarely, if ever, a continuous and stable conscious state; (2) we lack the vocabulary and skill for generating detailed introspective reports as we are not accustomed to it; (3) we lack descriptive concepts of conscious experience, e.g. is it the apple or the apple experience that is red. This particular concern is metaphysical in nature and becomes an abstract and problematic concern for researchers. To tackle this issue we need to deliberately use very clear descriptions of concepts so that we avoid confusion and ambiguity; (4) introspection requires focus on the experience, which alters the very experience attended to. Retrospection may be a more accurate term for what most current introspective studies are generating as descriptions are arguably reflections on past experiences rather than notes on immediate ones; (5) personal interpretation of experiences is ever present in introspective descriptions.

For Schwitzgebel, this last issue seems to be a key point. Basic introspective descriptions may be biased and distorted, a problem where there seems to be substantial disagreement in opinions for the authors. It is problematic as there is little we can do to control how a subject implicitly interprets their experience. These concerns may have worrying consequences for any introspective method, yet no other approach in the study of consciousness is so concerned with understanding lived experience. Considering some of the points mentioned above, we may be able to provide a tentative solution by carefully considering these concerns in designing studies of experience. This may provide clarity on some of the abstract problems faced by researchers who study consciousness. These considerations are largely methodological and may offer empirical evidence to help inform future studies.

Starting with point 1 (conscious states change from moment to moment), more recent investigations of experience have argued that these moment to moment exchanges are guided by the situational instance being studied. For example, context helps shape our understanding and in turn guides situational behaviour (Barrett, Mesquita& Smith, 2010). Some researchers have argued that we need to place the subject in an environment-organism functional unit to understand the processes involved in experience (Heft, 2011), which may be a more effective method that trying to describe and understand consciousness as an isolated momentary phenomenon. The meaning of any action, the cognitive processes involved in behaviour, and the experience of the situation, cannot be adequately understood until that action is properly situated in the organism's psychological situations (Barrett & Lindquist, 2008; Wilson & Golonka, 2013).

Regarding points 2 and 3 (that we lack the vocabulary and skill for generating detailed reports/lack of descriptive concepts), typical studies have trained individuals to give more

detailed descriptions of experience. During the DES training period, this is exactly how Hurlburt attempts to address this problem. Subjects are asked to give descriptions of experience in artificial circumstances before using the DES beeper in their natural environment. Additionally, they attempt to control for difficulties in describing experience by briefing participants to say whatever comes naturally to them, and that there is no answer that is irrelevant. During the interview after the 3 day period with the beeper, the interviewer attempts to get the subject to elaborate on their descriptions so the reports do not consist of ambiguous statements. Training has also been used in neurophenomenological studies (which will be examined more closely in the following chapter) and is seen as an essential part of the process (Burr, 2002; Langdridge, 2004/2007; Lutz, 2002, Lutz & Thompson, 2003; Varela, 1996).

Another point needs to be addressed however: phenomenologically training subjects may be an ineffective was of eliciting subjective reports. Hurlburt (1990) viewed this training as a pivotal part of the way in which descriptive data should be collected. Introspective descriptions are not easily accessible for the subject (Hurlburt & Akhtar, 2006). However, when individuals are phenomenologically trained, the context of the experience is changed. Lutz and Thompson (2003), for instance, claim that this is a non-issue, however they do not fully illustrate why, instead proposing that individuals become more sensitive to their own experience through "the systematic training of attention and self-regulation of emotion" (p. 33). The second part of this claim is problematic. How individuals regulate their emotions to increase sensitivity to experience is never fully explained and it doesn't seem to have empirical grounding (Levine, 1983). Another problem becomes apparent: emotion is a vague and broad term with many implications. As Fehr and Russell (1984) state, "everyone knows what an emotion is, until asked to give a definition. Then, it seems no one knows" (p. 464).

There is little research carried out specifically addressing this emotion-body phenomenon of increasing sensitivity to experience. Additionally, there are no research methodologies capable of addressing this kind of body-phenomena at present. Trying to illustrate original and refined first-person data for cognitive science may be premature if we don't have the tools to sample it carefully and to analyse it.

Subjects in these studies may not need to be phenomenologically trained to actively reflect on their experience. Overgaard (2004) argues that participants actively reflect as they engage in a controlled cognitive task. That is, participants may actively reflect on their experience throughout the tasks, which shapes their experience. However, how this active participation may affect performance is little understood and is an important aspect to clarify. If participants are more actively involved in the process of investigation than we currently give them credit for, then this has ramifications for the generalisation of results in much psychological research. This is echoed in Kagan (2012) who worries that we are overlooking experience in our current descriptions of behaviour. Researchers that are more sympathetic to phenomenological approaches suggest that we need to invest in developing more practical first-person methods (Wilson & Golonka, 2013; Schwitzgebel, 2008). That is, we may need to invest in finding methods that render descriptions of experience that are just as tried-and-tested as current experimental methods.

Some form of training methods are seen in most, if not all introspective approaches (Lutz & Thompson, 2004; Schwitzgebel, 2003). Introspective training aims to provide a clearly defined experience where reports are gathered before taking part in the study. One classic case is that of Titchener's introspective methodology, where participants were presented with distinctive tones and asked to detail their salient features. Schwitzgebel (2003) notes that this is a rudimentary form of introspection, yet it is seen in phenomenologically

informed research (Lutz & Thompson, 2003; Varela, 1996) and offers a means of reflecting on consciousness that is distinct and separate from other more familiar forms of experience. By this, we refer to the nature of describing an experience which is (1) not normally experienced by the person, therefore novel and (2) an opportunity for genuine introspection as the person must reflect on a distinct experience that cannot be confused for another or for a separate temporal experience. In Schwitzgebel's (2003) view, these warrant much more exploration in the study of consciousness. However, Hurlburt and Ahktar (2011) are not concerned with trying to understand consciousness as an isolated momentary phenomenon. While the reiteration of moments and descriptions through the DES method are important, the training involved to attain thee descriptions aims to avoid unnecessary and potentially misleading reflections, similar to the Husserlian phenomenological project. However, some methodological issues remain as DES argues that it can attain accurate accounts of experience. The authors state that the method attains descriptions that are as close to the natural flow of experience as descriptive methods have been able to accomplish thus far.

Hurlburt and Schwitzgebel (2008) argue that through first-person methods, the elicitation period of describing experience is more like retrospective experience as the subject creates their narrative accounts. Hulbert avoids this criticism by redefining what he means by pre-reflective states. He claims DES accesses 'pristine experience', and characterises pristine experience as isolating the moment-to-moment consciously accessible descriptions – what is meaningfully attended to at that very moment in time in a natural environment. DES accepts that subjects only attend to or notice just a few of the experiences available to them at a particular time, and these individual accounts are the pristine experiences. This represents an experiential state that is not reflected upon and thus, he claims, avoids the retrospective experience criticism. Participants don't have the opportunity to reflect on it as they are

trained to give accounts of the 'pristine' experiences. Froese et al (2011) termed this reflective consciousness, though Hurlburt (2011) would likely resist this characterisation as it implies an 'after-the-moment' phenomenon. This illustrates a key difference in the researchers' objectives. Schwitzgebel doesn't believe that DES can fully explicate moment-to-moment experiences. Hurlburt acknowledges that while it is far from ideal, DES may currently be the best way of formulating descriptions of momentary experiences. However, neither Participatory Inquiry nor DES properly examines how a subject's experience might change when they actively reflect on it. For Hurlburt, his aim with DES is to pick out structures within the verbal iterations, for example, the multiplicity or paucity of elements within attention, the mood of the participant and its effects on experiential accounts. Pristine experience concerns itself with the natual and the fidelity to the natural (Hurlburt, 2011). However, how the experience changes is ill-defined (Kane, 2010) and if the experience alters once an agent actively focuses on it, then surely the act of training individuals in such studies is problematic.

Firstly, how we can ever use first-person reports to inform us if they represent a realm of experience only accessible through active reflection is unclear. Secondly, the phenomenological reports only tell of experience of phenomenologically trained individuals. The reports are removed from the lived experience of the typical untrained individual, or the way we naturally attend to the environment. Thirdly, we should be extremely cautious when using introspective methods without considering temporality. That is, when the experiences are identified, what they are currently doing in their natural environment and whether or not this experiential data can be meaningfully used to understand some aspect of how the participant behaves in that context. By allowing random beeping in DES, participant's pre-conceptions and expectations about the experience they are to describe are strongly limited,

and it makes the descriptions of experience near impossible to integrate with any sort of meaningful generalisation of how experience may be structured – information about the environment and the person's behaviour at that moment cannot easily be collected or corroborated with others' descriptions in similar situations. That seems to be what Hurlburt is suggesting with 'pristine' experience: that an individual will meaningfully seek out what is meaningful to them, yet there is no systematic way to compare it to any other individual's experience or calibrate it with the participant's behaviour. The benefits of the person's natural environment in providing access to uncontrived experiences eliminate standards for comparison, which is also true for Participatory Inquiry. To put it in different terms, it is unclear if descriptions of similar situations, attained from a number of people, could be used to understand their behaviour in that situation, or more generally in similar contexts.

2.4   Psychological methods and context

In recent years there have been a number of attempts to reintroduce experience in lab based settings, not just conceptually but pragmatically (Barrett et al. 2010). In examining behaviour and experience in context these approaches draw on the history of phenomenological research. Some of the traditional phenomenological studies have been particularly influential. As Merleau-Ponty (1965) stated, "the world is inseparable from the subject, but from a subject which is nothing but a project of the world, and the subject is inseparable from the world, but from a world which the subject itself projects" (p. 499). A number of approaches developed in the following decades by viewing the individual as a more active agent in how they understand the world around them. For example Barker's (1968) study on child behaviour observed that children's behaviour is not easily explained purely in terms of response to immediately preceding stimuli, particularly when those stimuli

are adult behaviours. He coined the term 'behaviour setting' in ecological psychology which refers to the physical and social settings in which behaviours occur and by which they are often structured. By placing importance on the psychological situation of the individual, his work showed social and physical context is a good predictor of behaviour.

Mesquita et al. (2010) argue that we must understand that behaviour is entrenched in multifaceted processes involving emotion, sociality and the environment. The experiential aspect of this dynamic relationship with the world is fundamental to cognitive function. Understanding subjective experience is particularly important if we are to view the individual as an active agent in cognitive functioning. As such we need to develop more systematic ways of using individuals' understanding of the world as a means to categorise behaviour. A cognitive agent engages in meaningful interaction with the world, which is context dependent and embedded in their social world.

Slaby (2010) argues that an analysis of contextual patterns as well as conceptual difficulties and their potential consequences for empirical work need to be carefully considered. He used the term 'critical neuroscience' to refer to an approach that strives to understand, explain, contextualise and critique developments in and around the social, affective and cognitive neurosciences. Aiming to be an interdisciplinary approach, Slaby argues against thinking of the work of the humanities and natural sciences as inhabiting intrinsically different epistemologies. Instead, he argues that negative critique must remain important within collaborative experimentation, but that this cannot be the only viable avenue for collaboration. However, this is also needed more broadly for psychological science. In actuality, some of Slaby's critiques may be premature for the neurosciences when, at its core, research practices in Psychology overlook some of the concerns he raised. He argues that we need a 'critical' scientific approach which delves into the phenomenological aspects of

behaviour and aims to understand the mind in terms of holistic principles. If a critical study of meaning and subjectivity can be integrated with the research practices, then we may be better equipped to explore situation. This is a pragmatic way that more qualitative work might contribute to cognitive and social research, especially when detailing aspects of lived experiences.

Even decades-old studies have shown that the mind does not select out individual elements – isolated stimuli – of the environment to respond to (Barker, 1968; Levine, 1983; Maturana & Varela, 1980; Milgram, 1974; Rosenberg, 1969). As Schwartz (2010) states, our actions are shaped by the entirety of the situation in which we find ourselves (Schwartz, 2010). When people respond to a stimulus they are rarely, if ever, reacting just to the specifics of the stimulus itself, but to the meaning and entire situational context, and doing so not as a collection of separate cognitive, emotional and other systems, but as a person interacting with their world (Golonka & Wilson, 2012). One classic example that illustrates this fact is that of Rosenberg and a team of researchers (1969), who conducted a study using two contextualised situations in an experimental task on social perception, asking participants how much they liked or disliked various pictured persons. Both groups were informed that past research indicated that liking-disliking reactions to strangers correlated with maturity. These studies show just how sensitive participants in the lab are to contextual changes and social cues.

In one of their experiments, one group were told that psychologically mature and healthy individuals show greater liking for strangers than immature people and were given fabricated journal article citations. The other experimental group were informed the opposite – that research indicated that immaturity was associated with greater liking of strangers, with fabricated journal articles cited. Both groups however were informed that they were not going

to take part in a study of liking-disliking images of strangers, but rate pictures of strangers to create a standardised list of photographs. Participants believed that these photographs were then going to be used in a liking-disliking task in future research. It isn't surprising that there were significant differences between the groups, but the obvious manipulation here is not the full story. Rosenberg's work is a clear illustration of evaluation apprehension, which can be made to affect experimental responding. However, Rosenberg also included a control group with no information about maturity and liking. The results indicated that male participants rated male pictures much lower than both experimental groups, in particular they rated the images substantially lower than the group that were informed that lower ratings was associated with maturity. The meaning of stimuli played an integral role in the experiment that overshadowed the social cue groups.

Males rated male images substantially lower when they were not aware that literature (although fabricated) indicated that it had a bearing on one's psychological maturity and health. It seems that meaning of the task within the entire psychological situation, not just the stimulus, plays a fundamental role in experimental paradigms and, in the case of the group with no priming, Rosenberg (1969) concluded that individual's ratings were influenced by needing less approval from others. In a follow-up interview of participants, Rosenberg found that individuals in the social cue conditions behaved in such a way to win favourable judgement from the experimenter. Schwartz (2010) states that even in abstract, lab-based, cognitive tasks, the meaning of a situation for the participant can be sufficiently powerful, in that it has serious implications for cognitive theories. Schwartz argues that qualitative differences in cognitive tasks, personality, and situational factors influence behaviour in the lab and this leads to conceptual difficulties when drawing instances and making generalisations about cognitive processes. As Molden and Dweck (2006) claim, trying to

make generalisations about the "average person" leads us to describing no one in particular. People and situations are not simply separable sources of variation that interact and influence each other.

In another experiment, Rosenberg (1968) attempted to directly manipulate context in a behavioural task involving finger tapping. At the beginning of the experiment, participants were asked if they had taken a general abilities test during freshman week. The purpose of this was to prompt participants toward evaluation apprehension. They were subsequently asked to focus on their performance through pre-tests on verbal and symbolic skills. Results indicated that primed participants performed more accurately in the finger tapping task than non-primed peers. Shortly after, Rosenberg conducted another study using the finger tapping task, and instead of priming participants on performance evaluation, informed them that the task was recently conducted at other universities and results implied that people with higher intelligence performed differently. Although this was fabricated information, results showed that participants performed more accurately. Additionally, in both experimental conditions outlined, participants received either full feedback or partial feedback on their performance during the task. Both groups performed better in the task than the non-primed groups; however the group with full feedback performed slightly better than the group who received partial feedback.

Wilson and Golonka (2013) argue that social priming has become a worrying issue in Psychology in more recent years. Priming research states that behaviour is often triggered by the mere presence of relevant situational features (Bargh, Chen and Burrows, 1996). However, the lack of control over the information contained in social priming experiments results in unreliable outcomes for specific examples (Wilson, 2013). Cesario (2014) argues that semantic and social priming seen in these studies should be concerned with trying to

identify possible issues with priming in the methodologies used. This is sympathetic with critiques of introspection. The effects of context and situational instances on more general psychological methods are currently overlooked, despite more recent research highlighting how important it is on the resulting behaviour.

One of the conclusions that Rosenberg draws is that participants regulate their responding so as to win favourable judgement from the experimenter. However, the study has additional implications. By altering momentary situations, participants perceived the task differently. The meaning of the task, and the participants' experience of it, was altered. Even if participants were guided by favourable judgement of experimenters, cues in the experimental paradigm created different phenomenological meanings, the implications of which are not fully explored. Rosenberg describes this as bias in experimental responding through arousal of evaluation apprehension and cueing particular response patterns likely to foster positive evaluation. However, it may be that stimulus meaning had an integral role in the experiments and at present, psychological literature either overlooks the influence of context (which alters meaning) or as a research field, methodological principles don't yet address such phenomena.

Research methodologies need to be scrutinised as a number of issues have emerged in consciousness and cognitive studies over the last number of years. Traditional methods of investigation are limiting in their scope. First- and third-person methodologies tend to compartmentalise psychological processes as they are intrinsically designed to do so. Current research models are designed to address information processing systems and aim to limit their scope to add scrutiny to the individual process being investigated. As we move toward more dynamic and holistic approaches to cognition, there have been a number of attempts to overcome this. Secondary approaches have tried to integrate first- and third-person

methodologies for more inclusive data. However, these methods are still in the early stages of development. They tend to make assumptions about the effects (or non-effects) of training participants in reflection, and run continual risk of producing confabulated data. Attempts to integrate them remain one of the most difficult problems in cognitive science (Chalmers, 1995), that of using first-person data to guide behavioural interpretation. This makes it hard to adapt to other research paradigms in psychological studies. Rather than try to vilify the methods, we need to be open and inclusive of ideas that may avoid mind/body categorisations yet produce concise and reliable data.

2.5   Conclusion

Compartmentalisation of psychological processes is common in much of Psychology and has led to the mind and body being discussed as quite separate entities (Barrett & Lindquist, 2008). This happens in both consciousness and cognitive studies, and is problematic as it perpetuates the idea that they must be addressed individually, and have little relationship with each other. Research often marginalises experiential processes in some way or another. This is problematic for a number of reasons. Generally, more recently developed theories are adopting holistic approaches and acknowledging that experience is an important concept for understanding cognition. However, even though many studies claim that our actions are shaped by the entirety of a situation in which we find ourselves, how to study this interdependence in a reasonable and practicable way remains unclear. When the situation is looked at, it is usually done so in a rudimentary way where phenomena such as time pressure or task skill is altered. Few attempts directly consider the processes that may be involved in the meaningful interpretation of environmental stimuli. Understanding these processes may be the key to developing more holistic methods of investigation.

While viewing meaning and context as important, new approaches to research sensitive to this issue are still in development, and only a handful of research fields are dedicated to exploring the subtleties of meaningful experience. Instead of trying to develop a completely new approach, it may be more worthwhile to explore the effects of meaningful experience in the lab through secondary approaches. This involves not only adopting a holistic approach to consciousness, but a refocus of the way we carry out normal experimental research.

Ideally, we need an approach that clarifies the experience investigated, yet does not alter that experience (or limits the ways in which the experience is altered). This will result in more meaningful data where the situational experience is explored. There are growing concerns that we need to replace our existing investigative procedures with methodologies that also afford more synthetic thinking (Varela, 1996). However we must take care that we do not sacrifice the rigour and discipline of proper scientific practice (Wilson & Golonka, 2013). While traditional research principles take an analytic perspective to understanding the organism, often characterising the person as a passive observer in the world, we should instead focus our attention on trying to characterise the individual as an active participator in the cognitive process. From this chapter, we see that phenomenology plays such an important role in Psychology as it goes beyond qualitative descriptions informing not just how, but why we place such value on understanding experience in behavioural and cognitive science.

The following chapter discusses the challenge of studying experience in controlled settings and some of the extant approaches that are being used in current research. While standard experimental methods tend to isolate behaviour in the laboratory, qualitative methods tend to focus on naturalistic settings, where the links between behaviour and experience can only be made in general terms. If we are to examine how experience plays a

role in behaviour in more precise and controlled fashion, we need methods that include the collection of data on experience in the controlled setting of the laboratory.

Chapter Three

Integrative Methods in Psychology

One researcher's obvious phenomenological truth, grounding an entire research programme, is another's theory-laden confabulation. And once this is grasped, all the sound and fury of the debate loses its interest; the debaters are talking about different things. Consciousness studies cries out for a reasonably accurate introspective method (Weisberg, 2011, p. 5).

The literature discussed in the previous chapter has highlighted how phenomenological research aims to explore the underpinnings of consciousness, experience, and behaviour. However, these research paradigms are largely concerned with qualitative descriptions of experience, most often in naturalistic settings, making it difficult to integrate findings with behavioural and cognitive science (Froese, Gould & Barrett, 2011; Varela and Shear, 1999). A plethora of research in the past few decades highlight embodiment as an important paradigmatic shift in Psychology for understanding these concepts further (Barrett, 2011; Colombetti, 2007; DiPaolo, 2009; Heft, 2011; Thompson & Varela, 2001; Varela et al. 1991). The most common definitions of embodied cognition involve the straight-forward claim that states of the body modify states of the mind. However, it is argued that the implications of embodiment are actually much more radical than this (Chemero, 2009; Stuart, 2011; Varela, 1996; Wilson, 2002). It involves a shift in focus from the way much of cognitive science is characterising cognitive processes at present. If cognition spans the brain, body, and the environment, it can no longer be considered a "disembodied" state, modified by experience. Rather than an input-output system of some kind which is most commonly

seen in the literature on higher-order cognitive functioning, the cognitive system is an extended system assembled dynamically, in context, from a broad array of resources including bodily, neural, and environmental. Taking embodiment seriously therefore requires new methods and theory, as experience plays a different role in how behaviour is understood. The central claim is that the brain is not the sole cognitive resource available to us to solve problems, a claim seen as radical for many researchers as many of our cognitive theories stem from defining the individual as a processor of information (Allen & Williams, 2011). The shift in embodiment argues that "our bodies and their perceptually guided motions through the world do much of the work required to achieve our goals, replacing the need for complex internal mental representations" (Wilson & Golonka, 2013, p. 263). This simple characterisation changes our idea of what cognition involves, and thus embodiment is not simply another element to be *added* to the cognitive system, it changes what we think about cognition from the ground up.

The term 'machine-metaphor' has been used to refer to cognitive system being understood as information processing systems. Under this view, experience is often characterised as causing internal triggers in the organism instead of influencing the person's cognitive processes (Barrett & Lindquist, 2008). However, embodied researchers emphasise qualitative features of behaviour that have been previously overlooked to understand the cognitive process, usually because they do not easily fit into momentary data sampling techniques typical in traditional research (Colombetti, 2005; Lewis, 2005; Slaby, 2007; Stuart, 2012). An embodied approach should "never forget that it's trying to explain the first-person experience of the organism" (Wilson & Golonka, 2013, p. 9). While these developing trends tend to be philosophically motivated, they are gaining traction in more mainstream psychological literature (Allen & Williams, 2011, Kagan, 2012; Wilson & Golonka, 2013).

Slaby, Paskaleva and Stephan (2013), for instance, investigated components of behavioural change that may involve more active engagements with the environment. They argue that we lack a systematic way discussing how behaviour is "dynamically set in motion […], unfold[s] dynamically over time […] according to a specific trajectory in which the agent's behaviour and experience is in dynamic, coordinated exchange with significant goings-on in the environment" (Slaby, Paskaleva & Stephanp, 2013;. p. 5, 6). As we have seen in Chapter Two, traditional research principles may be limiting as they start by viewing the organism as a passive observer in the world, absorbing information in an abstract and neutral fashion, and address cognitive processes as distinct modules, or components of a complex cognitive structure. For example, evaluation, judgement, emotional valence, and interpretation are all characterised as occurring after the information has been input into the organism through the perceptual system. A number of traditional approaches in Psychology characterise behaviour as stimulus-response systems which is said to compartmentalise psychological processes, with theories often referring to the mind and the body as intrinsically distinct and separate entities that influence one another during the generation of a response. Experience, under this view, is an ill-defined and little discussed component of the perception process. In other words, the feeling of what happens is completely overlooked, which has implications for developing embodied theories as we currently do not know how to usefully integrate subjective data with behavioural responses in meaningful ways.

Some current embodied approaches in Psychology argue that experience needs to be seen as a structural component of behaviour, where we understand it in terms of the situation in which a person finds themselves (Allen & Williams, 2011; Schwartz, 2010). The kind of argument laid out by Slaby et al. (2013) makes clear that cognitive activity is not something that occurs in isolated components at discrete moments, but is a prolonged process, one that

is continuous and continually evolving over time. While it is vital that we maintain high standards of control and systematicity in our observations and measurements of behaviour, it seems necessary to broaden our methods to include participants' experiences (meaningful and otherwise) of the situations in which the measurements are made.

Several attempts to cope with the complex relationship between first- and third-person data on experience have been made in cognitive science. Some researchers argue that experience has, in much of psychological research, not been seen as an integral part of contemporary research methods (Di Paolo, Rohde & De Jaegher, 2007; Varela et al. 1991, Wilson, 2013). Varela and Shear (1999) have argued that first-person and subjective experiences are an explicit component in how we understand third-person characterisations of behaviour; however, separating the two, as is common in the psychological literature, is problematic as it isolates our understanding of either facet of the situation. A key issue is not just that more phenomenological approaches highlight important aspects of experience, but rather that we lack a pragmatic approach for using qualitative descriptions to usefully explain and inform behavioural data of empirical studies.

For more embodied approaches the experience is never characterised as external to the process, either just "in here" or "out there". Instead, it is seen as something that is inherent to it: the agent is embedded and continuously immersed in experience (Stuart, 2012). The organism is at the centre of activity in the world and individuals play an active role in the generation of meaning and behave in ways that matters to them. This clearly involves quite a different take on what cognition is and how it should be studied from a straightforward computational view. Rather than cataloguing sets of basic cognitive processes (such as working memory, problem solving systems and so on), cognition and action must be examined in a clearly defined context, as involving structured interactions with the person's

environment, instead of processes occurring within the head of the person. The following sections outline the current research being carried out in Psychology that is synonymous with embodied approaches. Some of these areas of research are calling for substantially different ways of collecting and analysing data, than current mainstream approaches.

3.1   Phenomenologically informed methods – The Elicitation Interview method

Some researchers propose that integrating phenomenologically informed approaches in the lab is a worthwhile challenge that may help us find new ways of understanding cognition (Lutz & Thompson, 2003; Olivares et al. 2015; Piccinini, 2010; Varela, 1996). Rather than find faults in typical lab based practices using different lab based tasks, this thesis aims to find ways of using certain forms of phenomenologically inspired methods to augment and complement standard laboratory techniques. Wilson and Golonka (2013) argue that we need to focus on the "unfolding of a complex dynamic in the present time" (p. 2) where a more comprehensive understanding of experience is required. As we have seen, there are a number of methods that may be available for this; however adapting them for lab based practices will be a challenge as these methods often call for additional actions on the part of the experimenter (Heron & Reason, 1997; Hurlburt & Akhtar, 2006).

As well as Interpretive Phenomenological Analysis (IPA), there are a number of approaches that attempt to develop methods for examining experience through descriptive reports. The "elicitation interview" is Vermersch's (1992) proposal for attaining accurate descriptions of lived experience, most fully developed in the work of Petitmengin (2006). The authors argue that when an individual tries to explain reasons for behaving or responding in a particular way, the subject is inclined to provide justifications or rationalisations which substitute themselves for the actual decision criteria. The elicitation interview is a means of

drawing out the particulars of the pure, unconceptualised experience of the interviewee at a particular time – performing the phenomenological reduction in collaboration. As Petitmengin (2006) states that the method "enables us to bring a person, who may not be trained, to become conscious of his or her subjective experience, and describe it with great precision" (p. 230). It is argued that rigorous training for the interviewer is necessary as the process being described by the interviewee is something that is not immediately accessible to reflective consciousness and verbal descriptions. We experience it, but often in an unrecognised or pre-reflective way. The elicitation interview enables a trained researcher to gather experiential information from an untrained participant.

Petitmengin's Elicitation Interview (EI) method (2006) provides rigorous step-by-step guide for attaining accurate descriptions of experience. Firstly, the interviewer helps the subject choose a particular occurrence in the cognitive process to be described in an attempt to isolate a singular experience situated in a specific time and space. This is said to reduce justifications of experience and encourage descriptions of how the subject imagines or what they believe about the experience. Secondly, the interview process involves evoking a response, often based on what is called 'sensorial triggering'. Often we are unaware of memorising a particular cognitive event but Petitmengin and colleagues argue that, based on Husserl's description of 'passive memory', a particular memory can be triggered by focusing the subject on a specific temporal event. For example, focusing attention on how you got to work this morning may trigger your memories of the journey. So take for instance how you were feeling; the effect the weather had on you; a song on the radio etc. Over the course of the interview, the interviewer elicits the visual, auditory, tactile, kinaesthetic, olfactory sensations associated with that particular experience. The EI method, however, aims at shifting the subject's descriptions from the content of the experience, the 'what' (visual,

tactile etc.), to the processes involved, or the 'how'. Without suggesting content, the interviewer asks questions aimed at the process of behaviour, rather than experience of sensory modalities.

Petitmengin's (2006) work has shown that participants provide descriptions of the choice they did not make, supporting Nisbett and Wilson's (1977) findings that introspective methods are insufficient ways of accessing our cognitive process as people are quite inept at providing authentic descriptions and sensitive to manipulations. In an attempt to overcome this, and develop a method which accurately attains experiential data, Petitmengin et al. (2013) describe how participants learn to focus on a visual aspect of experience allowing and encouraging participants to focus on specific features. This method is largely influenced by Johansson et al. (2005) who illustrated that participants often reported descriptions of choices they did not make in experimental situations, resulting from a phenomenon termed 'choice blindness'. In this study, the experimenter presents pictures of faces to participants and asks them to choose which one the find the most attractive. The experimenter shows the chosen picture again and asks them to explain their choices, but in some instances, shows the unchosen picture. A large proportion of participants fail to detect that they have been handed the unchosen picture, and thus proceed to give a reason for making a choice that they never made.

Using photographs, Petitmengin asks questions such as "where specifically are you focusing on the photograph? What features do you notice? What are you feeling when you look at this?" and so forth. In contrast to Johansson et al. (2005), this questioning shifts subjects' descriptions from the pictures, towards the actual choice process enabling the description of emergent behaviours at that particular moment. While replicating the Johansson et al. (2005) study, the EI method introduces an elicitation stage only for some

picture choices. This is, the EI method in this study was only introduced for some of the picture choices whereby participants were asked a series of questions attempting to uncover the choice process itself. At the beginning of the experiment, the subject is told that in some trials, he will be asked to describe his choice. Following the representation of the picture, the experimenter then conducts an "elicitation interview" in order to get the subject to explain his choice process. Through the responses attained during this interview, results were drastically different from Johansson et al. (2005) with participants noticing the substitution of pictures in the majority of cases. When the elicitation stage was not introduced, results were similar to Johansson and colleagues, the changes in pictures going unnoticed.

In their study, the emphasis is placed on the ability and experience of the researcher. According to Vermersch (2011), the better the interviewer is, the more accurate the experiential data. Demands are entirely placed on the researcher and not necessarily the situation being investigated. This is similar to much of the traditional principles of introspective methods, where the researcher needs to be aware of the subtle effects of intersubjectivity. For the EI, the solution was to provide much training experience for the researcher to avoid biasing participants' responses. However, even with such training, or perhaps even as a result of such intensive training, this criticism still remains a concern. For example, how this could overcome potential participant biasing seems to only exist in theory as the EI method inevitably involves the researcher asking specific questions on experiences that may otherwise go unnoticed. The effects of introspectively exploring experience are going to change that experience in some way for the participant, even with minimal questioning. Instead of characterising biases as something that needs to be avoided, we instead should be aware that they are going to be involved in the study of experience and find ways to balance or account for them.

There was also a 45 minute gap between participant choice and the explanation period in the interview group, compared to a few seconds gap in the non-interview group. This substantial difference in the temporal dynamics of the decision and reason-giving process goes unremarked in the paper. It illustrates that the interview technique is very time intensive. As well as demanding substantial investment from both researcher and participants, it could introduce factors such as boredom and responses based on justifications for their responses.

Any research method must face this difficult problem, of how the procedure might be affecting the phenomena they aim to explore (Schwitzgebel, 2008). As discussed in the previous chapter, this is especially true for qualitative, introspective and phenomenological enquiries as these areas aim to directly comment on the phenomena they are used to investigate. For example, Langdridge (2004), as well as Reid, Flowers and Larkin (2005) state that the aim of qualitative research is to uncover some previously unknown aspect of the phenomena studied, with meaning and experience understood as an inherent part of the person's behaviour.

Uncovering new aspects of phenomena is important, but it cannot be the end point of qualitative research. Integration of experiential data with precise behavioural measures is crucial if the whole of "lived bodily experience" is to be adequately addressed. The Elicitation Interview attempts to control this through carefully training the interviewer. The only other major candidate for an approach to experiential data collection in the laboratory takes the alternative tack, of training the participants.

3.2   The neurophenomenological approach

Neurophenomenology, proposed by Varela (1996) attempted to address the problem of integrative methodologies in pragmatic ways, combining neuroscience with phenomenology in the study of experience, mind, and consciousness, with an emphasis on the embodied condition of the human mind. In order to carry out the integration of experiential and neurological data, Lutz and Thompson (2003) built on Varela's concepts and characterised a method for attaining experiential data that was divided into categories created by the participants. During intensive training sessions that took place prior to the experimental task, participants labelled their experiences to create categories termed "phenomenological markers" (which are also often called invariants or qualitative categories). During the neurophenomenological experiment then, which gathered brain data by recording EEG signals, participants would press a button at various stages of the study, where the experiential data was gathered by using the pre-established experience categories. Neurophenomenological studies often use visual perception tasks (Lutz, 2002; Lutz & Thompson, 2003; Varela, 1996) as they involve a controlled way of measuring a specific experience over time. In Lutz and Thompson's (2003) task, participants were asked to fixate on dot patterns ("random dot stereograms", perhaps better known as "magic eye" pictures) on a screen which gradually became 3D objects. By pressing the button, it initiated a stage in the experiment where the participant began to understand the patterns emerging before them, so the controlled descriptive data could be correlated with brain signals at specific moments on the experiment that could then be calibrated. These data are then analysed in relation to the "phenomenological markers" that had been created, and the subjective descriptions guide the interpretation of the brain data. What this approach shows then, is that links can be drawn with subjective experience and behaviour in controlled ways.

Neurophenomenology is said to find tangible links between first- and third-person data. Stemming from the embodied approach in cognitive science (Varela, Thompson & Rosch, 1991), this field of study has been acknowledged as a useful tool for cognitive science (Bayne, 2004; Doan, 2009) however certain ambiguities remain. Phenomenological studies often categorise difference types of conscious states of experience. Lutz and Thompson (2003) categorise many different types of conscious states, but two in particular are relevant in the study of experience in Psychology. These are: pre-reflective conscious states and unreflective consciousness states. Legrand (2007) states that through pre-reflective forms of bodily experience, the performative body relies on sensori-motor integrative mechanisms that process information on the external world in a self-relative way. That is to say, accessing lived qualities of the experiencing process with an open and unprejudiced descriptive attitude. Unreflective consciousness is a 'natural attitude', wherein we are caught up in the world and our various belief-constructs and theories about it (Lutz & Thompson, 2003). Unreflective consciousness uses our habitual, implicit concepts to structure our experience, and is the kind of experience that trained phenomenologists explicitly aim to minimise or eliminate.

In neurophenomenology, the pre-reflective state is investigated. Participants in these studies are "phenomenological trained" to give verbal subjective responses (Lutz, 2002; Lutz, Lachaux, Martinerie & Varela, 2001; Lutz & Thompson, 2003; Varela, 1999). As discussed in Lutz and Thompson (2003), training subjects involves a number of important features. The first is structural description – individuals were encouraged to adopt open and unprejudiced descriptive attitudes. This was achieved through intensive training sessions which was said to stabilise qualitative details that had "categorical features of experience that are phenomenologically describable both across and within the various forms of lived

experience" (p. 32), essentially encouraging them to talk about experience in an open and confident way.

However the practicalities and training procedures involved are intense and hard to replicate when applying these methodological principles to other psychological and behavioural phenomena. Whereas these approaches are tailor made for the particular phenomena explored in the initial research (through the use of pre-established experience categories), traditional research models are designed to be generalised and applied in substantially varied domains. For a technique to find more widespread use it will need to be robust and rigorous. To achieve widespread adoption, a method will need to be not just practical, but relatively easy to apply.

In a sense, these methods are 'closed', in that they are narrow in focus and not open to much manipulation. They naturally produce narrowly focused data, isolating one or two facets of the psychological situation. Levine (1983) argues that this may be problematic as controlled methods might be overly restrictive, especially considering the wide range of possible aspects of the psychological situation, context and meaning have on cognition and behaviour (Barrett & Lindquist, 2008). How to use this approach for the study of more general experience or behaviour is not understood and has not been proposed in the current literature. Researchers are unclear how exactly to adopt the neurophenomenological approach in the further exploration of experience, without adopting additional methods for attaining experiential data in the laboratory. The tasks used in neurophenomenological studies are also specifically designed for perceptual and neurological data (EEG), and there are currently no attempts to generalise the methods to behavioural work. For example, integrating these techniques with otherphysiological measures could give strength to the method, especially how current technological advancements are not particularly intrusive (smartwatches gather

accurate physiological measurements such as heart rate, sleep patterns, and have also been used to measure blood pressure).

Schwitzgebel (2003) argues that the methods we readily use in first-person approaches may affect the participants' experience. If this is true, as some of the neurophenomenological work seems to show, then training individuals in qualitative or phenomenologically informed studies has the clear limitation of changing experience for them. From the introspective training methods used by Titchener (1867 – 1927), participants are encouraged to not only actively reflect on experience, but to describe their experience in a way that is not necessarily natural for them (Schwitzgebel, 2003). Dennett (1991) argues that researchers need to take (at least) some of what naïve participants describe as meaningful or authentic. It is, after all, based on their perspective of what the researcher is asking. This is also echoed in Gallagher (2005) who calls for a naturalisation of phenomenological methods whereby we use experiential data in more controlled ways, exploring specific aspects of behaviour.

In other introspective methods, the onus is put on the researcher. For example, Petitmengin (2006) states that the researcher needs to have the appropriate skills before collecting introspective data. For the Elicitation Interview, care is needed to reduce experimenter or intersubjective biases. For Hurlburt and Schwitzgebel (2008), they argue that only researcher with intensive skills training should contemplate introspective data collection techniques. While taking great care in gathering qualitative responses or interviewing participants should always be done in a controlled way, Vermersch (2004) notes that researchers who would be interested in exploring experience in disciplined ways are moving away from introspective methods due to their intensive training practices.

For Lutz and Thompson (2003), refining first-person methods is needed to allow individuals to "thematize important but otherwise tacit aspects of their experience" (p.39). This may be possible through developing first-person methods in novel empirical tasks and focussing on the unreflective state of consciousness. How we could go about interpreting this data is unclear, with the only method carried out illustrated in neurophenomenological studies (which concentrate on a different conscious state – prereflective). Lutz and Thompson discuss 'tuning' experience so that intersubjective corroboration can be made precise and rigorous. This may be possible, but the subjective data reflects that of phenomenologically trained subjects. The issue is such: phenomenologically training individuals to generate accounts of experience gives us descriptions that can only be confidently generalised to phenomenologically trained individuals. It is therefore limited in what it can tell us of lived-experience on a day to day basis (the unreflective state). These approaches attempt to produce systematic, useful, first-person experiential data. Through their efforts, limitations and methodological shortcomings are becoming clearer.

3.3   Using Analytic Techniques to Mitigate Limitations of Experiential Data

The available methods have a clear limitation in the requirement for training, or the prolonged and intensive interviewing process. However, qualitative methods from Psychology may help mitigate this challenge at the other end of the data collection process – by using analysis techniques that help structure the data in a sensible fashion. Generating useful first-person methods without phenomenologically training individuals calls for more rigorous and structured models of analysis. Fortunately, two such models exist in phenomenological research: Content Analysis and Template Analysis. Both of these methods are use in the process of IPA and are seen as standard in much of qualitative analysis

(Langdridge, 2004). These approaches stem from the Husserlian school of phenomenological philosophy.

A form of Content Analysis has been used in the neurophenomenological studies previously discussed, wherein verbal subjective reports were analysed for thematic content and phenomenological clusters were created. Phenomenological clusters are categories of common thematic content, and can be generated with most types of verbal data. However, the individuals in the study were previously trained to report pre-reflective states of consciousness. This was carried out by exposing the participants to the experimental task a number of times and encouraging them to actively reflect on their experience. Similarly, Lutz, Dunne and Davidson (2007) carried out training sessions in a neurophenomenological study on meditation. They claim that this training was necessary as it familiarises individuals with the moment to moment character of mental events. However, reports of more unreflective states could prove an interesting endeavour, and perhaps possible by recording first-person reports from unreflective states (where the participant is new to the idea of phenomenological reporting) to pre-reflective states (where the individual is aware of what phenomenological reports entail, and as such their experience has been modified). For Lutz et al's (2001) study, Content Analysis was said to be the most appropriate method for analysing subjective reports as the questions framed an ambiguous aspect of experience a priori.

However, Template Analysis is a similar method that could investigate unreflective states. This lesser known approach uses a coding frame devised theoretically after collecting the data (a posteriori). This method explores important aspects of experience while allowing the meaning in these particular areas to emerge during the analytic process (Langdridge, 2007). This could be particularly important for illustrating the relationship between emotional states and pre-reflective consciousness in Lutz and Thompson (2003). The main difference

between Content Analysis and Template Analysis is that the latter is more focused on coding the descriptions. Often used in audience research (Langdridge, 2004), it is seen as an efficient way of categorising opinions based on descriptive narrative. The data from Template Analysis is often used to directly understand aspects of participants' behaviour, especially in a systematic way. It is also said to be suitable for data that is not particularly phenomenological and for larger sample sizes. Whereas content analysis is often used for a single interview, template analysis can code large scale qualitative data, especially when used to isolate particular experiences or aspects of responses. Waring and Wainwright (2008) argue that Template Analysis is an advantageous approach when analysing rich unstructured qualitative data following the primary data collection phase and can easily be integrated with a number of approaches, making it much more suitable for wide scale use than other qualitative techniques.

Ways of naturalising and formalising a phenomenological method have been proposed in current research such as Gallagher and Zahavi's (2008) book *The Phenomenological Mind*, as well as Overgaard (2004). However there has yet to be coherent and commonly used method that takes experiential data from untrained or naturalistic sources. The project of naturalising phenomenology in cognitive science has not found a coherent basic ground yet (Overgaard, 2004) and for this reason, much more research is needed to address some of the problems associated with integrative methods. The two primary extant methods both put high demands on training, either of the interviewer (with concomitant concerns about leading participants) or the participant (with concerns about transformed experiences). The effects of the biasing or changing of experience is not fully understood.

3.4   Developing Integrative Research Methods

There are many challenges in developing new methodological approaches, as seen in mixed method or secondary approaches. These approaches tailor the measures of either qualitative or quantitative data that are then often used to explain the other. Neither the Elicitation Interview nor neurophenomenological approach outlined above has been widely adopted. This may be due to the methods being both expertise and resource intensive. Few attempts at replication have been made as a result, with researchers often using the more questionnaire based techniques for gathering aspects of experiential data (Smith, 1992), which affords a controlled and relatively easy way of gathering targeted data, while being readily adapted to general behavioural research.

As we have seen, Lutz and Thompson (2003) propose that qualitative data could be used to generate phenomenological markers to interpret the empirical data, rather than using the third-person data to explain the descriptions. However, less demanding methods, even in the laboratory may be more useful while researchers attempt to address how to best investigate experience in a more focused way. Barrett et al (2010) argue that scientific exploration aims at categorising specific processes, breaking them down, or "dividing up the world into figure and ground, leading scientists to attend to certain features and to ignore others" (p. 1), which becomes problematic when trying to define the relationship between experience and behaviour. We know that they are related, perhaps even mutually constructive concepts, but understanding their relationship often involves suspension of phenomenological understanding as the methods used to explore them are limiting, or often involve the adoption of practices that are designed to describe them separately.

Levine (1983) proposes that once the causal role between stimulus and response is explained, much of the psychological researchers claim that nothing more needed to

understand. The phenomenon is explained, even though little may have been said on the nature of the experience. This is problematic as explaining individual level processes (such as brain systems, metacognitive functions or some instance where the behaviour has occurred) giving rise to behaviour may only be part of the story. Quantitative methods explaining the "causal role in our interaction with the environment, […] explains the mechanism underlying the performance of these functions" (Levine, 1983, p.357). While it is true that the methods explain and help us understand quite a bit about the phenomena studied, it is not the whole story. As noted in the previous chapter, Participatory Inquiry (PI) and Descriptive Experience Sampling (DES) claim to obtain accurate descriptions of authentic experience in naturalistic settings. These method use some practice or training for participants, but without the kind of extensive re-training of experience associated with neurophenomenology. While intended for use outside of the laboratory, these approaches may yet have valid uses inside it.

PI attempts to gather descriptions of experience without trying to pre-categorise it, as shown in Traylen (1989) where participants seemed happy to describe their experience, but found it difficult to articulate a meta-cognitive judgement on that experience (they found it easier to describe stressful experience but more difficult to identify what was stressing them). It is typically conducted in the form of a retrospective interview, which does really allow for a high resolution description of the relationship between experience and a given behaviour.

DES is perhaps more promising. A significant feature of DES is the use of a beeper. This is said to define specific moments when participants give descriptions of their experience. The use of the beeper defines a clear and specific moment of experience for users. This may help minimise post-reflection bias as subjects have minimal time to reflect. Additionally, DES is to be used in completely naturalistic settings where participants are engaging in day-to-day activities, and some researchers are discussing this method as a

possible means for use in more controlled settings (Olivares et al. 2015). Hurlburt and Heavey (2001) propose that DES could become a widely used tool in psychological research, seeing it "as good as, if not better" than other methods used to explore inner experience (p. 400). However, the authors have serious hesitation when it comes to how DES methods can be generalised or expanded into other areas of psychological research. They argue that the technique should not be used lightly, and suggest extensive practice on the part of the interviewer.

Participants do typically receive some training before taking part in DES. This training involves showing participants how to give detailed accounts of experience. It is said to help participants define what is expected of them and the method, as well as training participants to use descriptive words effectively. However, there are two significant, and at this point familiar, problems here: (1) participants may perceive day to day events differently when the beeper is attached directly after such training. Furthermore, accounts cannot be explained outside that of subjectively trained subjects. (2) The random beeping eliminates any possibility of comparing experiences or replicating results with other accounts of similar experience (for example, emotionality and phenomenological methods, as discussed by Lutz & Thompson, 2003). The beeper goes off at any given moment so there are no two instances that can effectively compare detailed experiences. The authors state that people also use different techniques when they describe inner experience. Some use imagery or drawing; others use verbal descriptions; others use combinations of different techniques. Under normal, naturalistic use of DES there is no way of evaluating how effective these are in generating usable descriptions of inner experience. We cannot evaluate how a specific context has a bearing on how they perceive it or if specific environmental cues help shape understanding amongst participants. Hurlburt and Heavy (2001) are not interested in

evaluating DES as a tool for this purpose. As they see it, DES is a tool that accurately describes inner experience, not specific aspects of it.

A further limitation of DES may be how the authors define 'bracketing presupposition' during their development of the methodologies. The authors claim that using the beeper and its randomness helps minimise effects of any investigator's presuppositions on participant responses. This is an important limitation for any qualitative method. Indeed, subjective procedures are always at risk for finding out what the investigator expects to find rather than what is actually there. This is a problem many researchers face when carrying out this type of research. The use of the randomised beeper triggers overcomes this, but the associated compromise is that it makes DES difficult to use outside the realm of naturalistic day-to-day events. We also lack a means to standardise the observations from findings using DES. However, using DES as a guideline, it may be possible to produce meaningful and useful data for exploring how participants experience in more controlled ways. Instead of questioning the reliability of DES in obtaining accurate descriptions of inner experience, we need explore how DES may provide a means of attaining standardised data that could potentially be used to clarify behaviour measured in third-person empirical studies.

There are a number of clear guidelines that the creator of DES, Russell Hurlburt, details in order to obtain these descriptions faithfully, minimising biased or inaccurate descriptions (Hurlburt, Koch & Heavey, 2002). These relate to the broader conceptual difficulties that face most introspective studies. In order to attain accurate descriptions of experience, the following are said to help facilitate unbiased and accurate accounts: (1) the interval between experience explored and reporting of its characteristics must be short; (2) you must explore specific, well defined moments; (3) the experience being explored must be kept brief; (4) experience must be explored in varied natural contexts; (5) don't ask for

attributions of causality; and (6) distinguish carefully between describing inner phenomena and explaining conscious processes.

The first guideline *(interval between experience explored and reporting of its characteristics must be short)* is addressed in two ways, facilitated by the DES methodology: (1) participants give the detailed responses immediately after the beep and (2) participants are to reflect only on the moment they experience the beep. As such, descriptions are hoped to be accurate as they define a specific and controlled temporal experience. There may be ways of using this as a guideline to define standardised temporal experience in more controlled situations. As participants are rigorously trained in DES studies, this may need to be readdressed as it could affect the way individuals experience the phenomena in the lab using a form of experience sampling in the lab needs attention. Giving participants adequate instruction to generate a description of experience and the opportunity to become familiar with what is to be expected from them may also provide important and sufficient information.

Regarding the second guideline *(you must explore specific, well defined moments)*, this can be developed further than current phenomenologically informed studies. Instead of focusing on naturalised day to day events that does not allow comparable data, it may be necessary to create controlled contextualised situations for participants. A naturalising (or naturalistic framing) of laboratory settings may be attainable through carefully presenting a situation to participants in future studies.

Hurlburt and Heavey's (2002) third guideline *(that experience being explored must be kept brief)*, seems to stem from trying to minimise biased reports. If the experience is a brief, clearly defined situation, then it may be easier to create reliable reports with less interpretation or confabulation of experience. As report bias is a serious concern for introspective methods (Petitmengin et al. 2013), keeping the experience brief is a means of

controlling for more accurate responses as well as minimise the experience being confused for another (Hurlburt & Schwitzgebel, 2008). This guideline also ties in with the first point. By keeping the experience brief it helps define specific momentary experience, something that could be used in more standardised instances such as lab based studies.

Their fourth point (that *experience must be explored in varied natural contexts*) is one of the most important points for generating reliable and comparable reports. Participants must interact in a clearly defined context if the behavioural data can be used to investigate the specific experience. Cognitive research has long used tasks that aim to create specific situations so that participants are minimally affected by mood, personality or social context. However, it is becoming increasingly clear that mood, personality and social context are exactly what shape how we see the world and interact with the environment (Lewis, 2005; Mesquita et al. 2010). While this is clearly a challenge for laboratory practice, and would seem to advocate for more dramatic departures from standard research techniques, it might still be possible to incorporate these broader aspects of a person's normal experiences in controlled settings where certain behavioural data can be measured with the kind of precision and accuracy of interest to psychological researchers. The issue is that we need more phenomenologically informed methods that can be used in controlled ways so that the experiential data can be linked with the behaviour in tangible ways. We want a task that can produce meaningful relations between materials/stimuli and behaviour, but current practices makes this challenging.

The final two points (*don't ask for attributions of causality; and distinguish carefully between describing inner phenomena and explaining conscious processes*) are common phenomenological considerations – avoiding implicit conceptualisation and post-hoc rationalisation of experiences. This is largely controlled by using the beeper in the inventive

way Hurlburt and Akhtar (2006) utilised, as well as the non-directive way in which descriptives are elicited. Attributions of causality are minimal as the participant is not required to focus on anything other than how they feel, not why they feel it. Exposure to DES could help build a systematic way of building accurate descriptions of subjective experiences.

The elicitation interview was Petitmengin et al's (2013) response to the difficulty in obtaining accurate descriptions of lived experience. When an individual tries to explain reasons for behaving or responding in a particular way, the subject is inclined to provide justifications or rationalisations which substitute themselves for the actual decision criteria. It is argued that introspective training before describing experience is necessary because experience often relates to something that is not immediately accessible to reflective consciousness and verbal descriptions (Stuart, 2012). We experience it, but often in an unrecognised or pre-reflective way.

While much of Psychology attempts to explain behavioural phenomena by describing the causal roles of individual level processes, Levine (1983) maintains that researchers are too keen to 'explain away' behaviour without really asking questions on why the behaviour may occur, or why conscious states fluctuate from moment to moment. Finding ways of understanding emergent behaviour is central to this, as highlighted by a number of researchers in recent years (Allen & Williams, 2011; Barrett et al. 2010; Petitmengin et al. 2013). As DiPaolo et al. (2007) argue "Meaning is not to be found in elements belonging to the environment or in the internal dynamics of the agent, but belongs to the relational domain established between the two" (p. 10). This idea may be useful in the formulation of research methodologies in the future as it changes our presuppositions of behaviour and their underlying processes. These approaches are strikingly different to the cognitivist or

information-processing paradigms of today (DiPaolo & Thompson, 2014; Noë, 2005; Thompson & Stapleton, 2009; Varela et al. 1991).

Over the decades, Psychology has aimed at exploring all the facets of cognitive processes by studying them in defined settings. Current methods are quite adept at explaining individual level processes (Barrett et al 2010) such as emotion (Lewis, 2003) or specific behaviours in social interaction (Mesquita, 2010). Then again, we may have examples of embodied research shifting the question from individual level processes to more inclusive embodied networks. For example, Leone et al (2012) show how chess players have strong emotional fluctuations in decision making. They measured changes in bodily arousal from decision to decision in a game of chess, placing the body as key to understanding underlying interrelated processes. They used classic methods to show how bodily arousal was strong enough to help guide decision making patterns over the course of the game. As working memory, physiological, hormonal and emotional processes are involved in decision making (Lewis, 2005), Leone and colleagues aimed to illustrate how bodily correlates measured by heart rate could be used to predict specific performance characteristics in the chess game. They found that heart fluctuations correlated with specific moments in the game where the players were performing high stake moves or overtaking an opponent. This shows us that we can study experience and behaviour in controlled ways to relate it meaningfully to the environmental setting. Emotionality played a key role in the players' decision making, measured by physiological changes. What is harder to measure, however, is the phenomenal feeling underlying this process. In other words, explain what it feels like in these situations where meaningful behaviour is observed. It may be that the limitations of these approaches need to be overcome before we can fully embrace more embodied models of behaviour, but exploring the relationship between experience and behaviour using controlled

experimentation may be necessary to identify some the methodological limitation faced by many researchers in Psychology.

Wilson and Golonka (2013) argue that a person is never reacting to a single stimulus. Instead, the person is acting within the situation they find themselves and the aspects of the environment that become salient to them. This is also argued in Barrett (2011) who proposes that we must understand a person's behaviour in terms of experiential patterns from given complete situations. However, it becomes problematic when we try to investigate behaviour using these approaches, as highlighted in Levine (1983), it is difficult to avoid referring to individual level processes in the descriptions of behaviour or refer to mental representation to illustrate how behaviour is emergent from the entire situation a person finds themselves.

3.5 Conclusion

Simpler approaches in the study of experiences might provide more effective ways of exploring experience. For example, DES has a number of characteristics that highlights that experiential data needs to be gathered in a targeted way, but also one which minimally changes the experience explored. While this method has only been used in naturalistic settings, it shows us that there may be ways to gather experiential data on more controlled ways, perhaps even experimental lab-bases ones. This chapter has discussed that creating artificial forms of experience in the laboratory is complicated, often with second-person methods involving training which can be time and resource intensive. Less training seems to be more appealing, but training of description seems necessary in some ways. There is little research on just what changes in experience might actually occur due to training on introspection. Whatever approach is adopted, what seems very clear is that studying

experience in the lab will need a task where the stimuli of the task itself are meaningful for the participants, the stimuli and task presented should enable a participant to bring their own experience to bear on the task, so that their behaviour is being evoked within a situation that makes some sense to them. The following chapter discusses experimental paradigms where the task stimuli and context of lab-based settings are considered, with the aim of finding a task that both enables a meaningful engagement by the participant based on reliable social or cultural context, and could potentially be used with a more open- method of gathering descriptive data.

Chapter Four

Finding a laboratory based tool to explore experience

The effects of context on behaviour have been explored for decades (Barker, 1968; Heft, 2001; Wicker, 1987) and typically involve the study of situational instances (Barrett, 2011; Mesquita et al. 2010). In experimental settings, contexts are used to control meaningful, rich or culturally valid experiences, aiming to peel away the 'meaning' and get to the specific cognitive functions or behavioural processes involved. Experimental tasks aim for the strength of control and precision that makes psychological exploration rigorous and precise. However, we are faced with a clear problem in the laboratory as most behaviour and experience do not occur in such meaningless settings. A long but generally disparate tradition of research within Cognitive Psychology shows that the meaning of the stimulus (as opposed to say, it's structural or basic perceptual characteristics) may also have significant implications for how a person reacts to or uses those stimuli. The classic example is the content effects associated with the Wason selection task (Wason, 1966). The task is a commonly used test for logical reasoning. People find the Wason task much easier to solve if it is placed in the context of a social rule that they are asked to enforce, rather than abstract logical rule they are asked to test.

Wason found that when a simple inference task uses abstract, less meaningful terms (such as single digits and vowels), inference patterns were dramatically different than in the same task using more meaningful terms such as letters and their appropriate postage stamps. It is generally believed that performance in the task changes when the stimulus content is varied, which has been used to argue that human cognitive architecture contains domain-specific inference systems (Fiddick, Cosmides & Tooby, 2000). Content effects have been long shown in cognitive tasks, but typically for reasoning or decision making tasks where the behaviour involved is an indication of a choice, rather than an engagement with the environment or acting on the world in a manner that matters to the task itself. The aim of this chapter is to identify key factors for exploring experience in the lab and find an experimental tool that may be open to using more phenomenologically informed methods. For this purpose, a task is needed that is dynamic, where the meaningfulness of the materials or task framing might play clearer roles in the behaviour observed in controlled settings.

Wicker (2012) states people "attend to, assess, and act on environmental events in light of their current knowledge and beliefs" (p. 474). This involves considering the larger contexts of the settings we use to measure behaviour. It has been argued that behavioural patterns correspond with socio-cultural norms and the physical forms of the environments in which the behaviours occur (Barrett et al, 2010). However, this is an underexplored concept in mainstream Psychology as more research is needed to link experiences with environmental settings through traditional and contemporary perspectives. It is also a concept whose examination is surprisingly rare. Scott (2005) argues that the spatial-temporal characteristics and associated social norms encompassing a behaviour that emerges has been problematically under-examined in extant psychological research.

Traditional information processing approaches to understanding perception and behaviour take an analytic perspective to understanding the relationship between a person and their environment. The characteristics of stimuli in cognitive tasks often relate to perceptual or structural aspects of those stimuli. For example: their presentation, sequential order, duration, and other structural components. How we understand the observed behaviour is often discussed in terms of metacognitive processes (Schwartz, 2010). Metacognition refers to an individual's knowledge about their cognition and to the ability to be able to influence one's own cognition (Meichenbaum, 1985). Koriat (2002) defines it as concerning people's cognitions and feelings about their cognitive states and cognitive processes, involving the organisation and activation of other more basic cognitive functions such as memory retrieval, decision making, knowledge manipulation and expertise. However, the developing perspectives within Psychology and Cognitive Science that emphasise embodiment and experience, discussed in previous chapters, argue that we need to replace our existing analytic modes of research with models that also afford more synthetic thinking, without sacrificing the rigour and discipline of proper scientific research.

This is often associated with a new view of consciousness as "an interactive, plastic phenomenon open to sociocultural influence" (Allen & Williams, 2011, p. 1). These approaches see not just the individual aspects of a stimulus or situation as important, but the overall meaning of the stimulus or task as playing a significant role in how we construct our thinking and behaviour at a given time. While the aim in psychological research is to measure behaviour in defined contexts, we have seen in earlier chapters that critics suggest that experience is marginalised by the way we 'do' Psychology at present (Mesquita et al. 2010) and that traditional methodologies generalised behavioural outcome across contexts, currently overlooking the meaning and experience (Kagan, 2012). Wilson and Golonka (2013) state,

"in its day-to-day life the organism never gets to peer behind the curtain" (p. 9); instead, something is either seen as relevant or not, experienced as meaningful or barely experienced at all.

In order to offer potential insights to the patterns of behavioural responses using descriptive reports of experience, controlled tasks are needed that enable some kind of meaningful activity for the person. As outlined in previous chapters, meaning appears to be a concept that incorporates not just the immediate movements or details of particular stimuli, but rather the whole context or situation in which a person is involved. Schwartz (2010) states that we are "profoundly influenced by the immediate context in which the respective task is situated" (p. 105), due to the metacognitive experiences involved in our perceptual capabilities and how we make sense of task-based stimuli.

Balanced against this is the need to use stimuli, tasks, or situations that are sufficiently minimal that some kind of experimental control can still be achieved. As the motivation of the present work is to take evolutionary steps toward amended methods, rather than revolutionary overhaul of existing practice, the intention is to start small. Accordingly, the aim of this chapter is to examine the possibility of minimal conditions that enable the exploration of meaningful experience in the laboratory. An initial task was identified that involved dynamic responses to the stimuli of the task, but also offered a clear set of stimuli that might meaningfully support the behaviours appropriate to the task.

4.1   Experiment 1: The Go No-go Task

The way stimuli are presented to participants in cognitive tasks has been an important consideration in most (if not all) psychological studies. This has led to interesting findings,

for example, the effects of priming are very powerful and commonly underestimated (Bargh et al. 1996; Cesario, 2013; Wilson, 2013). Environmental cues and stimuli changes have been consistently shown to affect behaviour (Barker, 1968; Heft, 2011). For example, Reber and Schwartz (1999) have shown that that people are more likely to endorse a statement as true when the colour in which it is printed makes it easy rather than difficult to read. Schwartz (2010) also found evidence that this is true when the words rhymed (McGlone & Tofighbakhsh, 2000). This research illustrates that subjective experiences are an important part of understanding behaviour. What people conclude from their experiences often depends on their assumptions, which are also context-sensitive. In the above example, recall to assess truth was difficult because participants were distracted by an unrelated stimulus (the colour of text). As such, the effects that the contents had on the task-stimuli are an important consideration for understanding how subjectivity can be measured in controlled environments. However, exploring the particulars of the relationship between the subjective experience and the cognitive performance is made difficult by the fact that such experiences are typically not recorded in detail (they are assumed according to the conditions of the stimuli), nor are there obvious ways in which they might be analysed. Helping to show how meaning plays a role in cognitive tasks may allow for a more phenomenologically informed method, but we need a task in which meaning can be taken into account.

The Go No-go Association Task (GNAT) is one such task that may offer us a means of exploring the relationship between meaning, task experience, and behaviour. The GNAT, developed by Nosek and Banaji (2001), is a highly controlled, face-paced task that is extensively cited in the study of executive functioning, a 'higher cognitive' function. It is a standardised experiment commonly used to explore executive functions and locus of control, with many variants and a substantial associated literature. For our purposes, the task provides

us a means of investigating stimulus-response behaviour with precision and reliability. As it has been used in the study of executive functioning, it has been used to investigate metacognitive systems such as lexical decision making, perceptual discrimination, priming and memory tasks (Gomez, Ratcliff & Perea, 2007). There are two forms of the task, sharing the key characteristic of having to inhibit one response that is evoked much more frequently than a competing response (or non-response).

A particular model of the GNAT presents one stimulus that requires an action, and one stimulus that requires a non-action. That is, participants are asked to perform an action when one stimulus is presented and withhold that action when the other stimulus is presented. This model is sometimes referred to as the Stop/Go task as the 'stop' response requires the withholding of a response. The other model of the task is a two-choice decision task, where one stimulus requires an action (go), and the other stimulus requires a similar but different (no go) action. This version of the task is created when the 'go' response is characterised at high-frequency, while the 'no go' is characterised at a low frequency. Typically, there are 5 times as many 'go' stimuli than 'no go' (Goldstein et al 2007). This model is said to be a more efficient measure of response control as it is associated with less errors made from repetitious behaviour (errors from motor control). Generally, literature on the Stop/Go version of the task reports less accuracy and much higher error rates as participants typically confuse the stop stimulus with an action. This is said to be due to the rapid nature of responses in the Stop/Go task (Gomez et al. 2007).

For our use of the GNAT, we aim to explore the experiential components of response and response inhibition using manipulations to the task stimuli. This is carried out by varying the images representing the 'go' and 'no go' stimulus. We propose that actions may be supported by more meaningful stimuli in that they have a culturally supporting context. That

is, if the stimuli are meaningful to the participant, they may perform differently than if the stimuli are more abstract. If this is true, then there may be ways of exploring details of that experience using augmented qualitative techniques in later studies. For Experiment 1 however, responses to meaningful and less meaningful stimuli are compared between three conditions, using simple manipulation to the GNAT stimuli.

Using the two-choice model of the GNAT, different stimuli sets were developed. These consisted of a traffic light set, number set, and a coloured image set. The traffic light condition used green 'go' traffic light stimuli and red 'no go' traffic lights stimuli. The numerical condition used the figures 6 and 9, where the 6 was the go stimulus, 9 was the 'no go' stimulus. Finally the third condition used coloured circles as 'go' and 'no go' stimuli: a blue circle was the go stimulus and a yellow circle was the no go stimulus. The meanings associated with more meaningful stimuli are analogous to real-world behaviours in a clear manner, which was also why the two-choice GNAT was used instead of the stop/go version of the task. We hypothesise that different image stimuli will result in different task-behaviour. If this hypothesis is supported, then there may be ways of adapting methods for attaining experiential reports based on the subjective experience of the stimuli.

4.1.1   Method

Design

The study utilised a between groups design. The independent variable was condition. Three GNAT conditions were developed consisting of: a traffic light condition; a numerical

condition; and a coloured image condition. The dependent variable was performance in the task measured by total error rate scores and reaction times.

Participants

Seventy-five participants took part in this task, 45 female and 30 male. Ages of participants ranged from 18 to 56 (mean = 23.67yrs, SD = 6.32). Participants were recruited on a voluntary sampling basis at Mary Immaculate College, University of Limerick, Ireland. All participants were from the undergraduate and postgraduate cohort of the college and had normal or corrected-to-normal vision. Ethical approval for the conduct of the experiment was granted by the Mary Immaculate Research Ethics Committee (MIREC). Participants were randomly assigned to conditions.

Materials and apparatus

The experiment took place in designated Psychology laboratories on Mary Immaculate College campus. The experiment was carried out on a Dell desktop computer operating on Windows XP. The experimental programmes were developed on Superlab 4.5 consisting of 150 Go stimuli and 30 No go stimuli for each condition, programmed to be presented in a randomised order per participant.

As outlined above, three sets of stimuli were used. In the first stimulus category, traffic light images were used (Figure 4.1), with the green traffic light representing a 'go' stimulus and the red traffic light representing the 'no go' stimulus. The second stimulus category used numerical images consisting of figures 6 or 9 (Figure 4.2). These images were altered so that their spatial placements on the screen corresponded with the traffic light

condition. That is, the figure 6 was placed such that its circular component occupied the same location as the green traffic light; likewise the figure 9 was placed such that the circular figure occupied the same space on screen as the red traffic light. The third stimulus category used blue and yellow circles (Figure 4.3). While the numerical stimuli allowed for a check against the spatial orientation of the traffic light images, circles of blue and yellow allow for a comparison against effects of colour contrast (as opposed to the culturally specific meaning associated with traffic lights, that would be familiar to the participants).
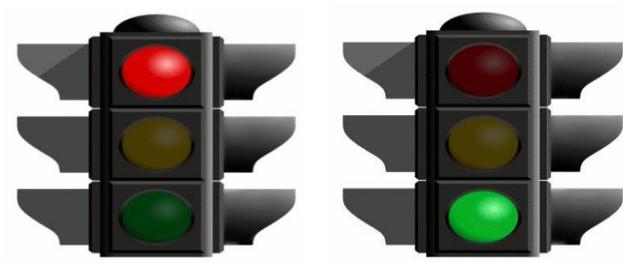
Figure 4.1: Traffic light condition: Red (no go stimulus) and green (go stimulus)
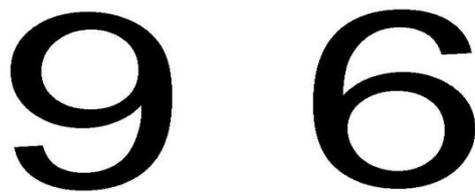
Figure 4.2: Numerical condition: Figure '9' (no go stimulus) and '6' (go stimulus)
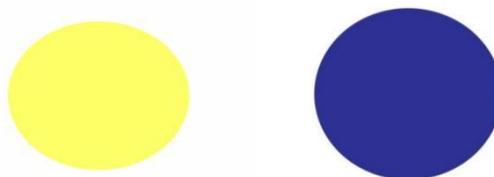
Figure 4.3: Colour condition: Yellow circle (no go stimulus) and blue circle (go stimulus)

Procedure

Participants were randomly assigned to a condition when they arrived at the lab. They were given instruction material and once they agreed to take part in the experiment, they signed a consent form (see Appendix A). Participants were reminded that they could leave the experiment at any stage without having to give an explanation or justification. Following this, participants were seated in front of a Dell laptop computer where further instructions were detailed (full material in Appendix A). Participants were instructed to press any key to prompt that they were ready to start the experimental trials. When they did this, the GNAT task was initiated. Participants were then presented with instructions of the task on the screen:

When you see the [insert stimulus name], press the [\\] button on the keyboard with your left hand. When you see the [insert image name] press the [/] key with your right hand.

You will get some practice trials before the experiment begins.

If you have any questions please ask the experimenter.

Press any key to continue.

Participants were instructed to place both hands on the keyboard so they could comfortably respond to the task. Following five practice trials composed of 4 'go' trials and 1 'no go' trial, participants initiated the experiment be tapping any key on the keyboard. The GNAT consisted of 180 images in total, presented sequentially for a maximum of 2000ms. There were 150 'go' and 30 'no go' trials over the duration of the task, presented in a randomised order per participant. A fixation point was presented for 500ms before the next

image appeared on screen after every trial. Trials progressed by a response (pressing a key) or after the allocated 2000ms had passed. The fixation point appeared on screen whether the response was correct or not. Incorrect responses and responses that took longer than 2000ms were recorded as errors. On completion of the task, participants were fully debriefed and the experimenter answered any questions they may have had.

4.1.2 Results

From investigation of the Go – No go performances mean scores for error rates and reaction times were calculated. These scores are outlined in the table below (Table 4.1). Error rates (ER) in the traffic light condition were 9.12 (SD = 4.157), showing greater ER than the other two groups. The numerical condition showed average ER of 6.56 (SD = 3.355) with the colour condition at 6.28 (SD = 3.021). From investigation of the calculated mean scores for reaction times (RT), the numerical condition showed slower reaction times than the other two groups with average RT of 402.669ms (SD = 73.82); traffic light condition RT was 269.438ms (SD = 29.824) with the colour condition RT of 281.548ms (SD = 50.834).

Table 4.1: Mean scores for stimulus condition: Error rates and reaction times

	Error rates		Reaction time	
	Mean	*SD*	*Mean*	*SD*
Traffic light condition	9.12	*(4.16)*	269.438	*(29.82)*
Numerical condition	6.56	*(3.36)*	402.669	*(73.82)*
Colour condition	6.28	*(3.02)*	281.548	*(50.83)*

Separate between-groups analyses of variance were carried out for both Error Rates and Reaction Times. For Error Rates, there was a statistically significant difference at the p <.05 level in the three groups: $F(2, 72) = 4.9$, $p = .01$. The effect size, calculated using η^2, was .119 indicating a large difference in ER between groups. Post-hoc comparisons using Tukey HSD indicated that the mean score for the traffic light condition (M = 9.12, SD = 4.157) showed significantly higher error rates than the numerical condition (M = 6.56, SD = 3.355) and colour condition (M = 6.28, SD = 3.021). There was no significant difference found between the numerical and colour conditions.

For Reaction Times, there was also a statistically significant difference at the p<.05 level between the three groups: $F(2. 72) = 45.6$, $p <.005$. The effect size, calculated by using η^2, was .56 indicating a large difference in RT and condition. Post-hoc comparisons using Tukey HSD indicated that the mean score for the traffic light condition (M = 269.438, SD = 29.82) was significantly lower (responses were faster) than that of the numerical condition (M = 402.669, SD = 73.82), but not significantly different from the colour condition (M = 281.548, SD = 50.843). The numerical condition was also significantly higher than the colour condition, indicating that RT was longest for the numerical condition.

4.1.3   Discussion of Experiment 1

The results of this experiment suggest that participants may attend to the stimuli differently depending on their visual contents. The images used in the traffic light condition were used in hopes of providing clear meaning cues. Findings show that participants' reaction times were much faster for the traffic light condition compared to the other conditions. More

meaningful stimuli did affect behaviour from which we see a clear change in the patterns of behaviour between conditions. However error rates for the traffic light condition were significantly higher than both other conditions, which may simply represent a speed-accuracy trade-off. This would still suggest that the stimuli had an effect on the behavioural responses in the task, although research on the GNAT states that the meaning of the stimuli is said to have little bearing on performance and is not often explored (Nosek & Banaji, 2001). Additionally, during informal feedback after the experiment, participants reported that they didn't feel engaged with the task. As it progressed, some participants reported that they were bored during the task. This is a real challenge for any attempt in exploring the relationship between experience and behaviour, as boredom may imply a different kind of relationship between the two over time.

Examining the experiential components associated with this is challenging. The GNAT may not be a suitable means of investigating experiential differences in the task due to the rudimentary task demands. That is, in retrospect the experiment lacks qualitative features beyond those imposed explicitly by the experimenter in the form of particular stimuli. While the behaviours involved in the GNAT are analogous to real-world behaviours for the more meaningful stimuli, the GNAT may be too minimal a behavioural measure. Each response is, in principle, meaningful in its response to the given stimulus; but in practice, is isolated from one another in that earlier decisions do not affect later ones and the task itself provides no feedback to the participant on their performance. The GNAT is a test of more implicit behaviour, like perceptual judgments (Gomez et al. 2007). However, it appears that we need a more explicit task in the study of experience in the laboratory. Nonetheless, it is important to note that even in a commonly used paradigm such as the GNAT (Gomez et al. 2007); different behavioural patterns can be observed when we manipulate the contents of the

stimulus. To investigate qualitative components of task performance, it is clear that the task requires clearer experiential components where participants interact with task stimuli over longer periods of time, instead of specific trial outcomes. Additionally, to avoid people getting bored, we need a task that is more engaging, with the potential for a range of different outcomes that might differ for the participant – that is, where the participant might be able to become invested in their performance. For our next experiment, we considered the form of a game to keep participants engaged with the task and to consider their behaviour over the course of the task.

4.2   Experiment 2: The Balloon Analogue Risk Task and task framing

The Balloon Analogue Risk Task (BART) is a simple decision making task presented as a game to assess participant's risk-taking tendencies. During the task, participants inflate a simulated balloon and are instructed to keep the volume of the balloon as full as possible to gain points. The more the balloon is expanded, the more points that are earned. Participants can save points earned per balloon trial at any stage. If the balloon is over-inflated before points are saved, they lose the points for that trial (and are met with an unpleasant popping noise). As such, the BART takes the form of a game where participants aim to minimise their losses. It is a standardised task for decision making that can be applied in controlled lab-based settings, but also has real-world applicability in that it can be used to assess risk taking dispositions in everyday life.

The Balloon Analogue Risk Task (BART) has not yet been extensively used in decision making research. Instead, studies using the task have focused on its reliability to identify risky decision makers (Lejuez et al 2002) and in evaluating sequential decision

making theories (Pleskac, 2008). The BART, developed by Lejuez et al (2002) is said to be a rigorous decision making task as it involves "actual risky behaviour [...] similar to real-world situations" (p.76). In the literature, the BART is usually used as a means of differentiate people that may engage in real-life riskier behaviour, such as smoking and casual drug use (Lejuez et al. 2003), as well as impulsivity in daily life (Hopko et al. 2006).

The BART is sometimes compared with the more complicated Iowa Gambling Task (IGT) in that they are both a measure of sequential decision making (Pleskac, 2008). Both tasks involve risk and uncertainty and have been used to identify individuals with specific high risk behaviour in clinical and neurological experiments. Both tasks use reward and punishment schemes to identify decision making patterns over the course of the task. The IGT does this by using 4 decks of cards, from which the participants make a series of free choices, each with different gain and loss outcomes that the participant learns over time. The BART uses a balloon where inflations reward the participants in points, but it is more unpredictable. If the balloon is overinflated it will burst, causing the participant to lose any points attained during that trial. Participants can "bank" their points at any time in the BART, at which point the next trial begins with a new balloon. With 60 trials in a complete standardised BART paradigm, analysis of the task focuses on participants' ability to save points by inflating the balloon as much as possible. It is inferred that participants who continue to overinflate the balloon trials losing points are riskier decision makers in real life. The task has shown consistent validity in experimental research including health correlates such as smoking and drug use (Lejuez et al. 2003). It has also been used to investigate planning during stressful situations (Lauriola, Panno, Levin & Lejuez, 2014; White, Lejuez & Wit, 2008). As such, the BART may be an appropriate task for keeping the participant

actively engaged with the task, have some real-world relevance, and yet provide a relatively simple lab-based paradigm.

This experiment aims to investigate if framing the BART in a particular context can be used to affect performance in the task. This would give us a means of investigating a clearer link between the experience of the task and performance, where the way that the task is presented could provide a clear let of meaning cues for the task stimuli. Additionally, other decision making tasks have been shown to be very sensitive to environmental and social cues (Gray, 1999; Mesquita et al. 2010). However, there is little research on the BART and context or environmental indicators on performance. To develop a way of integrating context in the lab in a pragmatic way, we created a socially framed version of the BART by leading participants in this condition to believe that their performance in the task would affect the next participant, which was someone who they were acquainted with. This simple manipulation may change the dynamics of the task as their performance in the task has more real-world consequence, a finding that is said to affect performance in a lot of lab based tasks (Gray, 1999; Schwartz, 2010).

To facilitate this, we recruited participants in a social condition in pairs of two, where participants were led to believe that they were taking part in a co-operative two person task. In reality, only one person would take took part in the BART and the other person acted as a social facilitator for the task framing. Through this, we hypothesise that participants in the socially framed condition may show different behavioural patterns over the course of the task, while maintaining a game-like task paradigm. If this finding is supported, it may suggest that the BART, as well as task framing, could be used to explore experience and behaviour using more widely used lab based tasks. We also investigate this to explore if controlled framing in the lab could provide clear behavioural patterns emerging over the course of the

task that might be associated with their experience of how they actually understand it. If clear links between context and behaviour were to be found, it may indicate that the task, or framing of the task, could be explored using more phenomenologically informed methods in future studies by exploring descriptive techniques.

4.2.1   Method

Design

The experiment used a between groups design to investigate the differences between a socially framed and individually framed BART. The independent variable was task framing, consisting of two levels: social framing and individual framing conditions. The dependent variable was BART performance, calculated by total number of successful inflations per trial. This is often called the corrected or adjusted BART score as it involves calculating average number of pumps on unexploded balloons (successfully banked trials), with higher scores indicative of greater risk-taking propensity (Lejuez et al. 2002). The corrected score is used as the frequency of pumps needed to inflate the balloon is randomised per trial, and higher pumps on successfully banks points indicates a greater propensity to risk taking (Lejeuz et al. 2002).

Social framing

Two framing groups were used in this study: a socially framed version of the task and the individual BART framing that is used in the typical Lejuez et al. (2002) task. Participants were recruited in pairs and asked to sign up to take part in the experiment with someone they

were acquainted with. They are briefed before taking part in the task that the aim of the task is to maximise points and to minimise losses. In addition to recruiting participants in pairs of two to facilitate the social framing of the BART, participants in this condition are also told that their winning total points would be the starting total for their friend sat in a waiting room area. This was used to encourage participants to experience the task in a way that had social implications.

Participants

Sixty participants completed the task, 35 female and 25 male, with an additional 30 people acting as social facilitators in the social condition, from whom no data were collected. Participants were aged between 18 and 47 (M = 22.42, SD = 5.26) and were recruited from Mary Immaculate College, Limerick, from the undergraduate and postgraduate populations, all having normal or corrected-to-normal vision. Ethical approval for the conduct of the experiment was granted by the Mary Immaculate Research Ethics Committee (MIREC). 30 participants were assigned to each condition..

Materials and apparatus

Participants were tested in a designated Psychology lab space in Mary Immaculate College, Limerick consisting of an experimental room and a waiting area. The Balloon Analogue Risk task used in this study was developed by Pleskac and Wershbale (2008) on E-Prime 2.0 stimulus presentation software. This software was run on a Dell XP computer and participants inputted their responses using a standard keyboard.

The BART consisted of 60 balloon trials presented sequentially. Instructions for the task were presented on the screen at all times as well as participants' net total of points and amount of inflations made per trial (see Appendix B).

Procedure

Participants were welcomed to the laboratory and in the social framing group, participants nominated between themselves which would be first in taking part in the experiment. Unbeknownst to this group, the participant who nominated themselves to take part second acted as social facilitator. These participants were seated in a waiting area and provided with some light reading material for the duration of the experiment.

Participants completing the experiment were brought to the laboratory, seated in front of the Dell desktop computer and asked to read the information pack as well as sign a consent form (see Appendix B). Participants were reminded that their participation was voluntary and that they could leave the experiment at any time without providing reason for doing so. If they were happy to continue, participants were asked to read instruction material. Following this, they were asked to initiate practice trials consisting of 3 balloon trials that were not included in the analyses. Participants were then prompted to complete the standard version of BART consisting of 60 trials without interruption. At the end of the task, participants were fully debriefed and participants in the socially framed condition were told the true nature of the experiment in their pairs. Participants were thanked for their time and the experimenter answered any questions they may have had. BART responses were gathered through ePrime 2.0 and analysed using SPSS software.

4.2.2 Results

To investigate the relationship between framing condition and BART performance, we calculated performance scores over the course of the task, categorising scores into 6 BART blocks, each consisting of total mean scores averaged over 10 balloon trials. A corrected score was calculated for each balloon trial to measure the total number of successful balloon pumps where points were banked before the trial ended. That is, the corrected score represents the total number of balloon inflations that did not result in overinflating the balloon and losing points for the trial. This is the standard analysis of BART performance outlined by Lejuez et al. (2002).

A mixed-measures analysis of variance was conducted to investigate the differences between framing groups and Successful BART trials over the course of the task. There was no significant interaction effect between the framing groups and BART blocks, Wilks Lambda = .967, F (5, 54) = .368, p = .868, partial η^2 = .033. There was a significant main effect for scores across the blocks, Wilks Lambda = .712, F (5, 54) = 4.36, p = .002, partial η^2 = .288, indicating an increase in Successful BART scores over the course of the task (see Figure 4.4). Using a Bonferroni correction demonstrated that this main effect still reached statistical significance. However, post hoc paired sample t-test between block (i.e. BART block 1 v BART block 2… etc) did not reveal any significant results. The main effect for framing group was not significant, F (1, 58) = .207, p = .651, partial η^2 = .004, suggesting no difference in scores for the framing groups.
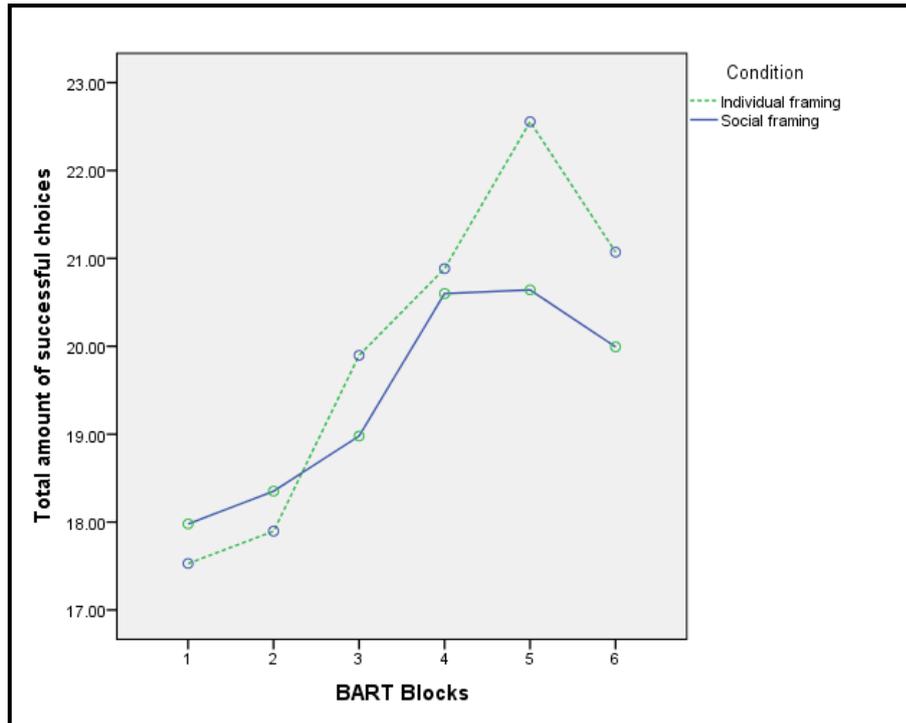
Figure 4.4: Successful BART choices between framing conditions

4.2.3 Discussion for Experiment 3

There were no differences found between social and individual framing conditions in scores on Balloon Analogue Risk Task. While this would support Pleskac's (2008) assertion that the BART is a robust decision making, the limited influence of framing is a challenge for our current research aims. However, asking for informal feedback from participants seemed to indicate a certain level of boredom of the task. This would suggest that participants may not be too engaged with the task as it progressed and that any experiential differences in the task may not have been affected by the context of the experiment, particularly in the role it may have in behaviour over the course of the task. Though presented as a game and having certain amounts of complexity to it, there is really only a choice between two behaviours – pump or bank – at any given time. This limits the variety of possible experiences and

implications for the participant, and while late decisions can be affected by earlier ones, there is not much that the participant can do about it. That is, there are a limited number of strategies available to participants to complete the task due to its simplicity.

Performance on the task did improve over its duration, indicating a change in behaviour and a possible dynamic to the experience involved. The comments regarding boredom from participants, however, would not seem to imply a rich set of experiences to be examined if complementary experiential explorations were to be included in the task. Before knowing what questions to ask using qualitative methods, we need to be clear of the experiential changes in the task. However, task framing did not have an effect on behaviour over the course of the task, so we don't necessarily have a systematic way of comparing any potential experiential differences to strengthen a lab based phenomenology in the future. Both the social framing and individual framing conditions showed similar performance across the BART blocks. Participants seem to make riskier decisions as the task progresses overall and we may be able to that the BART is, in fact, a robust tool for measuring decision making patterns as it was not very sensitive to contextual manipulations. This has implications on other research that argues that there is a clear relationship between the task and environmental stressors. However, it seems to give strength to previous research that argues that the BART is a stringent measure of risk taking behaviour. Findings are often generalised to reveal behavioural patterns in in real life settings, such as health and individual differences (Lejuez et al. 2003) as well as strategic behaviour management (White, Lejeuz and Wit, 2008). This robustness is a strength for its use in other research areas, but unfortunately makes it less suitable for the present research project.

4.3 Experiment 3: The Iowa Gambling Task and task framing

The final experiment in this chapter investigates the Iowa Gambling Task (IGT) as a possible experimental paradigm for integrating phenomenologically informed methods in the laboratory. The IGT is an extensively used assessment tool for decision making that has been used to identify individuals who are high risk takers in real life situations (DeDonno & Demaree, 2008). Developed by Bechara et al. (1994) it is said to replicate real world decision making as it involves uncertainty, reward and punishment. The computerised task involves choosing between four decks of cards presented on a screen, typically labelled A, B, C and D. The aim of the task is to maximise their winnings and avoid losses. Unbeknownst to participants, however, some decks are more advantageous than others. With 2000 points in a simulated reservoir at the start of the task, participants are instructed to pick one card at a time. The task will involve 100 such draws, but participants are typically not informed about this limit. For each deck choice, participants either win or lose points that are added or subtracted to the points in the reservoir. Typical versions of the IGT (Bechara et al. 1994) characterise two of the decks (often referred to as B & D) as less advantageous ("bad decks") in that they may yield overall net losses if chosen too often. One deck in particular (Deck B) is associated with high-frequency gains but results in catastrophic losses if chosen too often. The two other decks (A & C) have smaller immediate gains but the losses are also smaller, resulting in an overall net gain if chosen more frequently in the task ("good decks").

Typical analysis of the IGT usually involves dissecting task performance, commonly measuring performance after every 10 or 20 deck choices (Bechara et al 1994). Task performance is calculated by totalling good deck choice frequency against bad deck choice frequency. The task was made famous by Antonio Damasio's (1994) *Descartes Error*, where he outlines evidence for the Somatic Marker Hypothesis. The IGT has been used to show that

people's performance is biased by emotional 'somatic markers' whereby physiological

arousal (measured by skin conductivity and heart rate) is said to guide decision making

behaviour. The popularity of the IGT paradigm stems from the proposal of the SMH, which

is arguably the most well-known theory of emotion-based reasoning (Colombetti, 2003). The

IGT relies on normally functioning somatic markers for advantageous performance in the

task (Preston et al. 2007).

Damasio (1994) found that participants display greater physiological arousal before

making disadvantageous deck choices, characterised by changes in skin conductivity

responses and heart rate. The key feature of this is that the bodily changes are said to occur

before the individual has conscious knowledge about the outcome of the deck (Bechara et al.

2005). That is, the participant in the task shows a physiological response before making bad

decisions, highlighting the body as playing an important role for emotion. Evidence for the

SMH was illustrated from individuals with damage to the ventromedial prefrontal cortices

(VMPFC). These individuals are commonly shown to make high risk decision in their

personal lives. In the IGT, VMPFC participants generally fail to generate anticipatory skin

conductance responses (SCR) before selecting a bad deck (Bechara et al. 2005). It is thus

concluded that these individuals do not share the same reasoning capabilities to non-injured

participants.

There are also questions as to exactly how the IGT paradigm replicates real life

decision making and has been shown to be sensitive to context changes and environmental

stressors. While some researchers have identified stressors that influence behaviour in the

task (Gray, 1999; Lin et al. 2007; Preston et al. 2007) the specifics of these stressors are not

fully understood in terms of how experience in the task changes (Bechara et al. 2005; Maia &

McClelland, 2004). Maia and McClelland (2004) found that participants have more

knowledge about the IGT than initially thought by researchers and even report more knowledge of advantageous strategies than how those participants actually perform. There are very few empirical studies carried out on how conscious knowledge affects behaviour in cognitive tasks. However, Maia and McClelland developed a questionnaire to assess how participants understood the deck stimuli in the IGT. This was carried out at various points throughout the task and they claim that the questionnaire responses reflect conscious knowledge of the task. At the very least, it shows how people may be able to give experiential descriptions of certain facets of the IGT. The questionnaire measures this by asking participants to (1) rate how good or bad they thought each deck was and (2) asking them to elaborate on why they felt this way. As the task is typically 100 deck choices, Maia and McClelland (2004) were able to develop a systematic way of comparing task performance with how participants perceived the task stimuli over the course of the task.

Their findings indicate that participants were able to successfully identify which decks were good and which were bad even though their performance in the task suggested otherwise. In Bechara et al.'s (1994) analysis of the IGT they found that participants increasingly make more advantageous decisions as the task progresses. However, Maia and McClelland (2004) argue that whether participants could correctly identify good decks over bad decks was not an indicator of better task performance. It highlights two strong points in the overestimation of what the IGT can achieve. First of all, people consistently have been shown to perform to optimise gain frequency rather than maximising gains (Maia & McClelland, 2004; Preston et al. 2007) – that is, operate on short-term rather than long-term goals. Secondly, there are phenomenologically implausible accounts of participants' performance in the IGT. If they know which decks are good, it does not follow that they will follow along advantageous strategies.

This literature indicates that participants engage with the task, are capable of articulating experiences about the task, but clearly that the relationship between their experience and their behaviour in task performance is not well understood. This extensive research suggests that the IGT may be a more suitable candidate for the study of experience in relation to task behaviour, which could potentially be aided by the specific context of the task, similar to the previous experiment using the BART. Furthermore, instead of being seen as a widely-accepted task that measures emotion-based learning, the task should be seen as a lab-based task with an array of possible actions. The value of each available action can be learned over the course of the task, and a richer set of possible strategies can be followed as a result. With the aim of increasing the range of experiences of participants in performance of the task, and the implications associated with different actions (deck choices), we used the same social vs. individual framing of the task noted in Experiment 2, to help provide a little more socially relevant context with which the participants might engage.

Research suggests that performance in the IGT is highly sensitive to environmental effects and context manipulations. However, there is conflicting research suggesting that environmental stresses tend to lead performance toward more advantageous or disadvantageous behavioural patterns (Colombetti, 2003; Gray, 1999). Some say that environmental stressors facilitate advantageous behavioural patterns in the IGT (Ennis et al. 2001) while others say that participants become more guided by immediate trial outcomes, resulting in disadvantageous behavioural patterns emerging over the course of the task (Colombetti, 2008). There is also some evidence for what is terms a 'Prominent Deck B' phenomenon (Lin et al. 2007) where participants are said to be guided by following short term, not long term, goals to maximise amount of winning IGT trials rather than final outcome (Li et al. 2010).

For this experiment, we used the social framing created in Experiment 2, where participants are lead to believe that their performance in the task would affect the next participant, which was someone who they were acquainted with. We hypothesised that participants in the socially framed condition may show different behavioural patterns over the course of the task. We investigate this to explore if controlled framing in the IGT could show clear behavioural patterns emerging over the course of the task, which might be associated with their experience of how they understand the task. If clear links between context and behaviour can be found, it may indicate that the IGT could be explored using more phenomenologically informed methods in future studies.

4.3.1 Method

Participants

Fifty-nine participants took part in this study, 37 female and 22 male. Participants were aged between 18 and 39 (mean = 22.54yrs, SD = 4.68). A total of 29 participants took part in the (traditionally framed) individual IGT group. 30 participants took part in the socially framed group (and an additional 30 acted as facilitators for the social framing). Participants were recruited on a voluntary sampling basis at Mary Immaculate College, Limerick. When recruiting participants for the social framing group, participants were asked to take part in a study with an acquaintance and sign up to participate in the experiment in pairs of two. Ethical approval for the conduct of the experiment was granted by the Mary Immaculate Research Ethics Committee (MIREC). All participants were from undergraduate and postgraduate cohorts of the college and had normal or corrected-to-normal vision.

Design

A between groups design was carried out to investigate IGT performance and task framing. The independent variable was task framing which consisted of two conditions, a socially and individually framed condition. The dependent variable was performance measured by Overall Good Deck choices and total 'Bad Deck B' choices, similar to common analysis of IGT (Bechara et al. 1994; Lin et al. 2007).

Social framing

Two framing groups were used in this study: a socially framed version of the task and the individual IGT framing commonly seen in the literature (Bechara et al. 1994; Gray, 1999; Maia & McClelland, 2004). Participants are told that the aim of the task is to maximise their gains and minimise their losses. In addition to recruiting participants in pairs of two to facilitate the social framing of the IGT, participants in this condition are also told that their winning total would be the starting total for their friend sat in a waiting room area. This was used to encourage a clearly defined context for this group of participants.

Materials and apparatus

The experiment took place in designated Psychology laboratories on Mary Immaculate College campus consisting of an experimental room and a waiting area. The experiment was carried out using a Dell desktop computer with Windows XP.

The IGT programme was developed by Pleskac (2008) on E-Prime 2.0 stimulus presentation software. The IGT consisted of 100 IGT trials, presented sequentially over the course of the task. An IGT trial consists of 4 decks labelled 1, 2, 3 and 4 (instead of A, B, C

& D). Decks 1 and 3 represented the 'good' decks similar to Bechara et al.'s (1994) Decks A and C. Likewise, Decks 2 and 4 represented the 'bad' decks. The 4 decks and net total of points in participants' reservoir were presented on screen for each trial. Each of the decks was randomised per participant. They were instructed that they can choose from any of the deck per trial, each having an initial 2000 points at the start of the task, which they must try to maximise. A copy of the instructions is provided in Appendix C.

Procedure

Participants were welcomed to the laboratory and in the social framing group, participants nominated between themselves which would take part in the experiment first. Unbeknownst to this group, the participant who nominated themselves to take part second acted as social facilitator. The facilitator were seated in a waiting area outside the experimental lab and provided with some light reading material for the duration of the experiment.

Participants completing the experiment were brought to the laboratory, seated in front of the Dell desktop computer and asked to read the information pack (full material in Appendix C) as well as sign informed consent. Participants were reminded that their participation was voluntary and that they could leave the experiment at any time without providing reason for doing so. If they were happy to continue, participants completed a standard computerised version of IGT. Participants were instructed to select from among four decks of cards (labelled 1, 2, 3 & 4 but representing the traditional Decks A, B, C & D) varying in their frequencies of reward and punishment. The task consisted of 100 deck trials in total and participants completed the task without interruption. At the end of the task, participants were fully debriefed and participants in the social framing condition were told

the true nature of the experiment. Participants were thanked for their time and the experimenter answered any questions they may have had. IGT responses were gathered through ePrime and analysed using SPSS software.

4.3.2   Results

Overall Performance

To investigate the relationship between framing condition and IGT performance, we calculated performance scores over the course of the task, categorising scores into IGT blocks representing 20 card choices, similar to the commonly used analysis in the literature (Bechara et al. 1994; Lin et al. 2007; Preston et al. 2007). Scores were calculated for Overall Performance representing total amount of good deck choices [Number of choices from (Decks A + C) – Deck (B + D)] and 'Bad Deck B' choices across the IGT blocks.

A mixed-measures analysis of variance was conducted to investigate the differences between framing groups and Overall Performance across the IGT blocks. There was a statistically significant interaction effect between the framing groups and IGT blocks, Wilk's Lambda = .799, F (4, 54) = 3.4, p = .015, partial η^2 = .201.

There was a substantial main effect for overall performance across the IGT blocks, Wilk's Lambda = .635, F (2, 54) = 7.77, p <.005, partial η^2 = .365. Post hoc paired sample t-tests were carried out to explore this change across the IGT blocks, which can be seen in Table 4.2.

Table 4.2: Post hoc paired sample t-tests for overall performance across the IGT

blocks

		t	df
IGT block 1	IGT block 2		
1.27	3.44	-2.092*	58
(SD = 4.9)	(SD = 8.51)		
IGT block 2	IGT block 3		
3.44	5.76	-2.22*	58
(8.51)	(7.93)		
IGT block 3	IGT block 4		
5.76	6.69	-1.067	58
(7.93)	(8.1)		
IGT block 4	IGT block 5		
6.69	5.47	1.302	58
(8.1)	(10.1)		

*Note * = p < .05. Standard Deviations appear in parentheses below means.*

The main effect comparing the framing groups was not significant, $F (1, 57) = 2.589$, $p = .113$, partial $\eta^2 = .043$. However, from the significant interaction effect, performance in the task appeared to differ between the framing groups as the task progresses, which can be seen clearly in Figure 4.5 below.
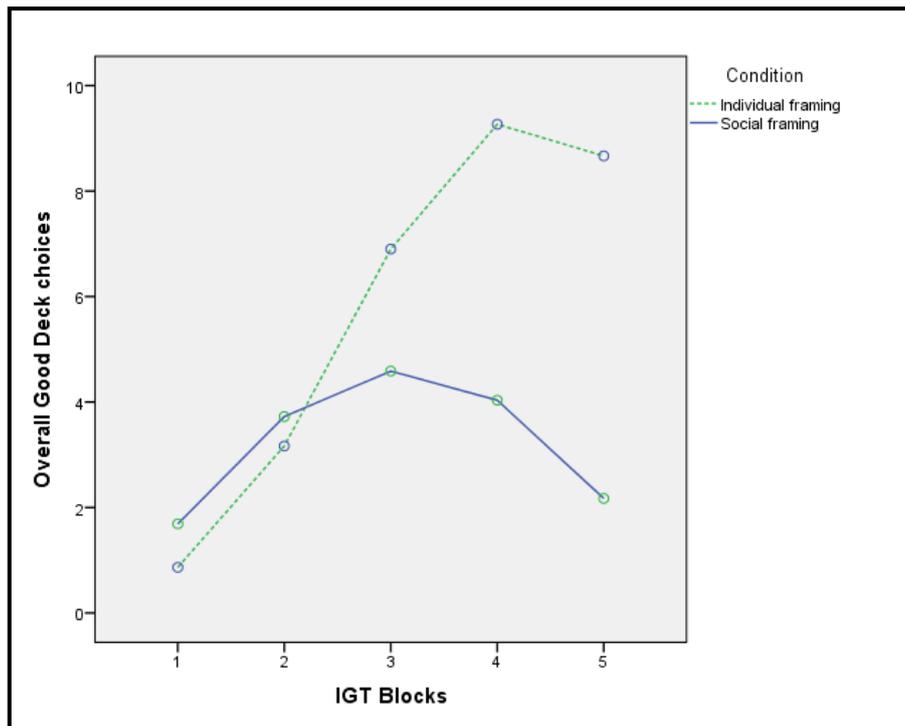
Figure 4.5: IGT Overall Performance between framing groups

Post-hoc analysis was carried out for the framing groups using independent-samples t-tests. These were used to explore each IGT block and the framing conditions. There were no significant differences in IGT scores for the first three IGT blocks, but there were statistically significant differences found for blocks 4 and blocks 5, presented in Table 4.3. These are presented in the following table. Results show that there were differences in Overall Performance scores with the individually framed group making more advantageous choices, but only after IGT block 4.

Table 4.3: Post-hoc Independent Sample t-test findings for IGT blocks

	Framing groups			
	Social framing	Individual IGT	t	df
IGT block 1	1.69	.87	-.630	57
	(SD = 5.37)	(SD = 4.64)		
IGT block 2	3.72	3.17	-.249	57
	(8.3)	(8.76)		
IGT block 3	4.59	6.9	1.122	57
	(6.64)	(8.97)		
IGT block 4	4.03	9.27	2.606*	57
	(7.86)	(7.57)		
IGT block 5	2.17	8.67	2.564*	57
	(9.11)	(10.28)		

Note.*= p < .05, Standard Deviations appear in parentheses below means.

'Bad Deck B' choices

A mixed-measures analysis of variance was also carried out for 'Bad Deck B' choices between the framing groups and IGT blocks. There was a statistically significant interaction effect between framing groups and IGT blocks, Wilk's Lambda = .8.6, $F_{(4, 54)} = 3.25$, $p = .019$, partial $\eta^2 = .194$. There was no main effect for scores across the IGT blocks, Wilks Lambda = .814, $F_{(2, 54)} = 3.09$, $p = .186$, partial $\eta^2 = .186$. The main effect comparing the framing groups was not significant: $F_{(1, 57)} = 2.955$, $p = .091$, partial $\eta^2 = .049$, however the significant interaction effect shows that there is a relationship between framing and IGT

blocks, with participants in the social framing group making more draws from the "Bad Deck B" in the final two blocks of the task. This is illustrated in Figure 4.6.
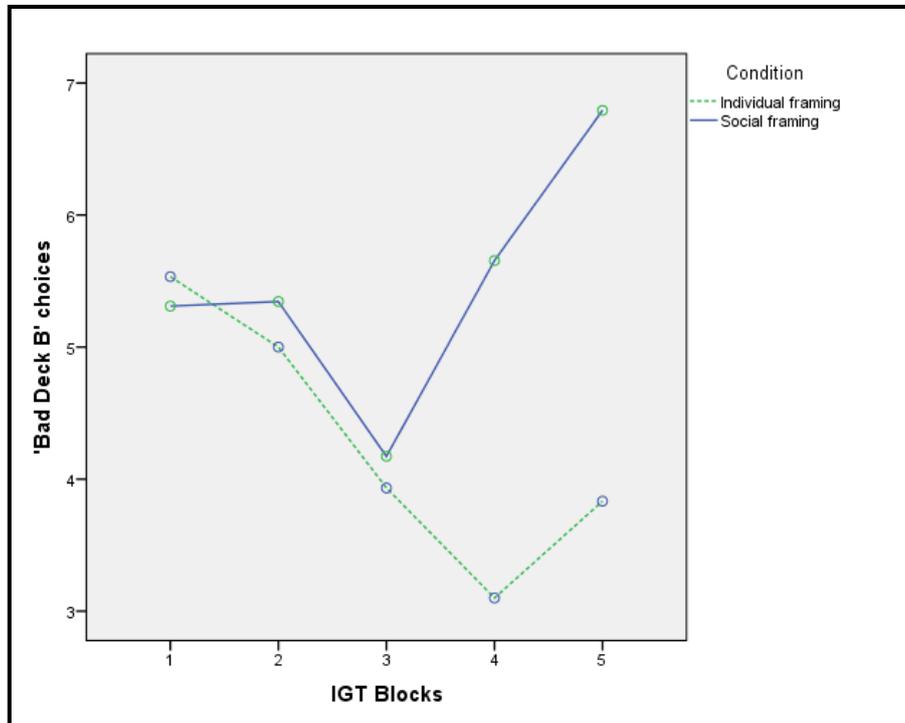
Figure 4.6: 'Bad Deck B' choices between framing conditions

Post-hoc analysis was also carried out for 'Bad Deck B' choices between the framing groups using independent-samples t-tests, presented in Table 4.4. These were used to explore individual IGT blocks for the framing conditions. There were no significant differences in IGT scores for the first IGT blocks, but there were statistically significant differences found for blocks 4 and blocks 5. These are presented in the following table. Results show that there were differences in 'Bad Deck B' choices with the socially framed group making greater choices from this deck, but only after IGT block 4.

Table 4.4: Post-hoc Independent Sample t-test findings for IGT blocks

	Framing groups			
	Social framing	Individual IGT	t	df
IGT block 1	5.31	5.53	.346	57
	(SD = 2.254)	(SD = 2.675)		
IGT block 2	5.34	5.00	-.333	57
	(3.82)	(4.12)		
IGT block 3	4.17	3.93	-.260	57
	(2.69)	(4.12)		
IGT block 4	5.66	3.11	-2.881*	57
	(3.67)	(3.13)		
IGT block 5	6.79	3.83	-2.538*	57
	(4.135)	(4.79)		

Note*= p < .05, Standard Deviations appear in parentheses below means.

4.3.3 Discussion of Experiment 3

The results of the experiment show that task framing had an effect on behavioural patterns over the course of the IGT. Social framing was associated with riskier behaviour in the IGT, with greater 'Bad Deck B' choices observed over the course of the task (as seen in Figure 4.6). As a result of these choices, poorer Overall Good Deck choices were observed in the social group. This is similar to findings from Lin et al (2007) where greater Deck B behaviour is often observed. This behaviour is said to be associated with effects of immediate trial outcome where participants may be guided by gain frequency, rather than overall net

scores. However, this interpretation may not be the whole story. We can see that in the social framing group, overall good decisions increase for the first three blocks, but then drop, with Deck B choices rising substantially in Blocks 4 and 5. While this might indicate the trial-by-trial thinking suggested by Lin et al (2007), it might also indicate an increasing pressure to produce a positive result by the end of the task. Participants were not aware of just how long the task would go on, and after 60 trials it may be a reasonable expectation that it was ending soon.

The change in profile over the course of the task is a potentially important point – both framing groups begin performing in a very similar fashion, but diverge in Block 3. This would indicate the dynamic nature of the task which makes it appealing as an engaging and potentially rich experience. Participants' engage with and perform differently as the task progresses. The use of task framing indicates clear behavioural patterns between conditions, and suggests that the IGT may have the necessary experiential components that warrant further research. In contrast to the GNAT, the stimuli of the task remain the same across conditions, but the context seems to affect the task differently. Finding methods that allow the collection of descriptive reports during the IGT may be challenging, but the multi-layered structure of the IGT suggest that there are ways of exploring the experiential aspects of the task that guide task behaviour. One of the interesting aspects of the IGT is that it requires the participants to learn strategies over the course of the task. The dynamics of the gain/loss frequencies can only be learned by interacting with the task over a number of trials. It is also worth noting that, when asked for informal feedback, participants did not mention that they were bored.

While Maia and McClelland (2004) argue that participants attain knowledge of the gain/loss frequencies at a stage earlier than previous believed (Bechara et al. 1994), this

dynamic is an interesting paradigm for the lab. Earlier decisions affect the state of play for later decisions, thus creating an interdependency and complexity in the cognitive process of performing that task most similar to everyday life than isolated, inconsequential decisions in many experiments. The results of Experiment 3 show that the IGT is a promising task for future research. The task dynamics appear to be rich enough for people's behaviour to vary, hold people's attention over the course of the task, as well as have the kind of dynamism and inter-dependency of decisions to be relevant to real-world experience. It also appears to be sensitive to participants' experience of the wider situation, indicating that there may be useful differences in experience to explore using this task. As outlined in Chapter One, the psychological situation and broader context is frequently overlooked in experimental tasks. Further research is certainly needed to explore contextual effects and the IGT, but results of the present experiment suggests there may be ways of exploring experience in the lab. This could be used to shed light on what aspects of the psychological situation is important for understanding the relationship between experience and behaviour, but in a more controlled way that previous research has proposed.

4.4   General discussion

From the results of the three experiments outlined in this chapter, the importance of context or the general meaningfulness of stimuli for behaviour seems variable and has a complex relationship with task behaviour. This may not be surprising as if the relationship was simple it would have been discussed much more in the literature since the inception of lab based experimentation. The variability of behaviour, and participants' descriptions of boredom, emphasises the importance of using tasks that engage participants in dynamic ways.

Boredom may indicate a metacognitive disengagement with the task. Schwartz (2010) stated that metacognitive experiences facilitate our interactions with environmental stimuli. As our environment contains many affordances, we attend to what is meaningful in moment-to-moment instances, which are hard to isolate in artificial and controlled settings like the lab. When we examine this behaviour in lab based paradigms, we aim to identify a particular aspect of experience to study. While we want to maintain as much control as possible, we also want to provide relevance for participants so that they can make some sense of the situation and be capable of discussing their experience and task in a coherent manner. Though it was not a key consideration in the design of the studies, nor has it seen much discussion in the literature on introspection, boredom in experimental tasks does seem important, and have some potential implications for experimental research in general. The fact that the more playful, game-like framing of the BART doesn't alleviate the boredom element shows us that there needs to be some richness in the behavioural strategies that can be learned or improved over time on the basis of feedback on how the task is going, that keeps people engaged. While the aim of the present thesis is to investigate what kinds of minimal changes in laboratory practice might enable better examination of the experience-behaviour relationship, it would seem that task design will be affected. The limited, difficult to interpret results of the GNAT and BART, and participants' informal comments about boredom setting in, indicate that to avoid limiting our research to the experiences of people apathetic about what they are doing, our tasks will need to be at least a complex and dynamic as the IGT.

The purpose of this chapter was to identify an experimental paradigm that could be used to develop more integrative methods in controlled settings; something that would enable the effective inclusion of phenomenological or introspective methods of investigation in the lab, beginning with minimalist actions, such as including more meaningful stimuli.

Experiment 1 suggests that the contents of stimuli may affect participant behaviour, even in a fast paced task like the GNAT. This is an interesting, if unsurprising, finding as it is said that behaviour in this task is due to higher cognitive functions (for example, executive functioning, or in some version of the task lexical decision making). However, the finding of this experiment may also suggest that the contents of the stimuli are also important, in how participants attend to them. The meaningfulness of stimuli in the GNAT may have some effect on patterns of performance during the task. Interpreting those effects may prove difficult and the relatively fast-paced nature of the task would make interruption to elicit descriptive accounts of participants' experiences problematic, as the aim of this project is to explore ways of gathering this qualitative data in meaningful and useful ways.

In order to find methods for exploring experience in controlled settings, it was clear that we needed to find ways of including more meaningful and engaging stimuli in our task. This would give a richer context for participants as they behave in the lab, which can often be far removed from the naturalistic ways in which behaviour occurs. From our experiments, it appears that there is some impact of meaningfulness of stimuli, even in minimal, highly constrained tasks like the GNAT. Adapting methods for using such tasks to explore relevant experiences for the participants will be challenging, and interpreting the different patterns of behaviour between the conditions would be challenging even were we to have rich descriptions of participants' experiences.   The multi-layered and dynamic IGT, on the other hand, seems to involve several components that could be used to explore interesting aspects of task behaviour.

While a simple test of decision making in the lab, the BART lacks an interdependency of decisions. It is impossible to accurately guess when a BART trial will result in a loss, and as a result, the task does not afford opportunities to vary participant performance or interact

with the task in a dynamic way. Using a social framing of the BART, we failed to uncover behavioural differences in the task. Participant cannot rely on inflation frequencies, as these vary per trial. It seems to suggest that the task is not sensitive to context manipulations in straightforward ways. While a more controlled version of the IGT (in that it involves more unpredictable gain/loss frequencies), it results in fewer behavioural strategies so it is harder to explore how experience in the task is related to specific aspects of behaviour, other than risk-taking propensities of the participants. These features may indicate the stark behavioural differences found in Experiment 3. From our findings, the IGT is sensitive to contextual manipulations. As the BART does not appear to be associated with the same effects, it suggests that the task may not be suitable for qualitative explorations. Performances in the BART may improve over the course of the task, but it brings with it certain monotony, with some participants noting that the task can be repetitive and boring, which is detrimental to developing ways of exploring experience in the task further. However, Experiment 3 suggests that there may be a way to explore experience in the task in more promising ways as performance seems to be specifically linked with how the task is framed. The IGT, being more dynamic and involving learning over the course of the task, was much more successful in illustrating a link between the task experience (in the form of social framing) and task behaviour. Environmental factors, other than personality differences or strategic capabilities, have not been extensively explored using the IGT. Uncovering how situational or framing factors affect IGT performance, using qualitative descriptions, could provide interesting insights to task experience and uncover tenets of the relationship between experience and behaviour more generally.

What we have specifically learned over the course of these experiments is that careful consideration is needed when exploring experience in the lab. Contents of the stimuli and

situation are important when measuring specific aspects of task behaviour, with the latter being a key factor in showing a clear link between experience and behaviour. Situational factors seem to be able to influence task behaviour, which could be used to explore the qualitative aspects of experience. The social framing seemed to work particularly well for the IGT, with clear behavioural patterns emerging over the course of the task. This suggests that it is the experience of the meaning, or context, of the task, that has some bearing on how the participants understands and interacts with the task over time. Having identified an appropriate task in the study of experience in the lab, we turned our attention to finding appropriate qualitative methods that can be integrated to the lab. This may allow us to uncover details of experiences that help us to understand these data more comprehensively.

Chapter Five

Experiment 4: Task-Specific Questioning and Introspective Training using the Iowa Gambling Task

We cannot predict a person's judgments or decisions by merely knowing what came to mind without taking the accompanying subjective experiences into account. Adding further complexity, the meaning of subjective experiences is itself malleable and the same experience can convey different information in different contexts (Schwartz, 2010; p. 105).

Adopting a phenomenological approach is necessary when trying to investigate the experiential nature of consciousness (Gallagher, 2005). However, Smith, Flowers and Larkin (2009) claim that phenomenological data are often elusive, ambiguous, and difficult to analyse. This is supported by a number of researchers who suggest that, at present, there is no coherent method for the study of experience in Psychology (Dennett, 1991, 2012; Langdridge, 2007; Schwitzgebel, 2008; Weisberg, 2011). Collecting descriptive data using direct questioning, but focusing on richer descriptions of experience, may offer insights to task behaviour when used in a controlled way (Hurlburt & Akhtar, 2006; Maia & McClelland, 2004; Traylen, 1989). As of yet, there is no consensus on methods for studying experience in this way, although many approaches are available to make sense of qualitative data (Langdridge, 2004). As discussed in previous chapters, these methods for studying experience tend to be either focused on naturalistic settings and offer no control over behavioural observations, or are very demanding in terms of research time (prolonged interview with the Elicitation Interview), participant time (phenomenological training), or

focused almost entirely on perceptual tasks (neurophenomenology). Standard experiments have not been readily used to explore experiences as they often lack meaningful, dynamic behaviour and are removed from their naturalistic expression. This may be due to task not engaging the participants in an embodied way, where their actions in the task are not based in any real context or meaningful situation. Additionally, the task used in common experiments may possibly bore participants, an issue not commonly considered in psychological research but potentially posing a significant challenge to any generalisation of behavioural observations.

The findings from Experiment 3 presented in the previous chapter suggest that framing an experiment in a clear and meaningful situation, where their behaviour is embedded in some dynamic interaction, may offer more useful behavioural data for exploring experience further. Moreover, it may show that there are ways of using psychological methods to explore the relationship between the experience and the behaviour in controlled settings. The previous chapter suggests that the IGT might be both engaging, and rich enough in dynamics to provide a spread of experiences that can be used to help examine behavioural differences. As such, the experiment presented in this chapter investigates the use of directed questioning on participants' experience during the Iowa Gambling Task (IGT) when task framing is used for the experiment.

As it happens, there is a questionnaire already associated with the IGT. Rather than marginalising experience, (that is, describe it in terms of characteristics of the behaviour), in the present study we attempt to use the descriptive data to interpret task behaviour using the questionnaire developed for the IGT by Maia and McClelland (2004). This questionnaire provides us with a simple, minimal start on exploring experience of the framed IGT, but we aim to do so with a greater emphasis on descriptive, qualitative questions, which have not

been directly examined in previous uses of the questionnaire. In addition, the structured probing of experience associated with an experimental task like the IGT, provides an opportunity to explore whether practice in description of experiences, or awareness of changes in responses, to questions about qualitative aspects of the task in which they are engaged.

Are participants who receive a basic form of introspective training better at picking up on experiential or emotional facets of the experience, and might this have an effect their descriptions of the task? While there has been some discussion in the literature on introspection, regarding the impact of introspective or phenomenological training on the experience itself (e.g. Schwitzgebel, 2008), there is little to no discussion as to whether concomitant behaviour changes would also occur. As such, this type of training has not been carried out using the IGT or in much of the previous studies where emphasis is on the integration of qualitative descriptions and task behaviour.

Nisbett and Wilson (1977) have argued that introspection has no place in scientific research. Overgaard (2004), and others (Gallagher, 2005; Langdridge, 2004; Smith et al. 2009) refute this in that the very basis of empirical psychological investigations is somewhat introspective as it also involves the researcher reflecting on the processes behind thoughts and feelings. As discussed in Chapter Two, introspective or phenomenological training may be associated with biases from self- reflection. This has to be addressed and investigated further if mixed methods are to be used in controlled settings. Schultz (2012) states that all psychological research is introspective in some way as it involves the active reflection of metacognitive experiences; that is, when we aim to explore behaviour in Psychology, we do so by our understanding that the behaviour involves the participants reflecting on their actions in some way. Third- person science doesn't tell us much of the qualitative

experiences associated with perceptual phenomena, however it is generally believed that the participant is actively making sense of the task demands and stimuli in some sort of meaningful way so as the behaviour is directly associated with a cognitive function.

5.1   Task-specific questioning in the IGT

The use of the Maia and McClelland questionnaire with the IGT constitutes a form of guided reflection on the task, and more particularly on the task materials, for participants. The questionnaire asks questions that are developed on a Likert rating scale (self-report ratings), but also includes questions where participants are asked to explain their responses, thus including qualitative aspects of description and uncovering qualitative features of their experiences with the task stimuli. In its previous use (Maia & McClelland, 2004), the questionnaire data were collected by interrupting the participants' performance in the IGT several times over the course of the task. A similar, less extensive, procedure is also used in other IGT studies. For example, Bechara et al.'s (1994) original study used a questionnaire that was carried out several times over the course of the task. Their questionnaire was developed to investigate levels of task knowledge and decision making strategies based on participants' perceptions of the task. On the basis of responses to their questionnaire, they claimed that participant knowledge relates to three types of 'feeling' states. These states consist of 'pre-hunch', 'hunch' and 'conceptual' periods. The conceptual period is when participants are said to attain explicit knowledge of the different outcomes of the task stimuli. Participants were shown to 'feel' certain ways during the experiment, as they interacted with the dynamics of the task, also discussed in Damasio (1994).

Following from this, Maia and McClelland (2004) developed a questionnaire specifically designed for the IGT. In this questionnaire, however, more detailed aspects of the participants' conscious or expressed knowledge were explored. This questionnaire included

items specifically related to the participants' experience of the task and has been used to argue that participants have much more conscious knowledge of the 'good' and 'bad' decks in the IGT than supposed by previous researchers (Colombetti, 2003). Maia and McClelland argue that participants' behaviour in the IGT was more affected by immediate trial outcome rather than the long term decision strategies proposed by Bechara et al (1994) who claim that during 'hunch' periods emotional feelings guide behaviour. Maia and McClelland's (2004) questionnaire was administered after the first 20 deck choices, then following every 10 deck choices. Colombetti (2008), however, suggests that their questionnaire may be too intrusive to the task.

From the responses to the questionnaire, Maia and McClelland (2004) reduced the scope of data collected (9 interview stages over the task) to a narrow range of three levels of conscious knowledge that participants may have during the IGT. Level 0 referred to the participant not having any conscious knowledge specifying a preference for one of the two best decks. That is, participants in this category are unable to identify the 'bad' decks. Level 1 referred to the participant having conscious knowledge about the outcomes of the decks that could provide a basis for that preference. That is, participants in this category can identify some, but not all 'good' and 'bad' decks consistently in their responses. They may be able to identify a 'good' or 'bad' deck, but are unable to provide justification for their choices. Level 2, the highest level of conscious knowledge categorised by their questionnaire, refers to responses that show a preference for one of the two best decks as well as having knowledge of the decks that could provide the basis for that preference. These responses are based on rating each of the decks in the task, providing justification for those ratings, rating one's own confidence levels in the task, and stating preferred decks.

In the present experiment, we included introspective training for some participants as research has suggested that training attunes participants to their experience and enables them to give more detailed responses to open questions about their activity. Maia and McClelland (2004) questionnaires did include responses to these descriptive questions that offered participants the opportunity to describe their experiences of the decks and justifications for their ratings. Responses to these questions were ignored from analysis by Maia and McClelland due to the difficulty in evaluating those responses. They state that qualitative responses were only considered for one participant in their experiment, in an instance where IGT behaviour was deemed erratic. Subsequently, this participant's data were excluded entirely from their analysis as it was determined that the participant did not grasp what was required of them in the task. It seems probable, but is not discussed, that the qualitative responses attaining from other participants in their 2004 study were vague or insufficiently structured, and difficult to analyse. This would be consistent with literature on introspection that consistently states that open ended questioning needs careful consideration (Levine, 1983; Petitmengin et al. 2013; Hurlburt & Schwitzgebel, 2008; Schwitzgebel, 2003; Traylen, 1989). As such, some of the participants who took part in Experiment 4 outlined below received introspective training prior to taking part in the task. Training is often said to change how participants view their experiences and the ways in which they describe them (Petitmengin, 2006; Vermesch, 2004). However, the effects that this sort of training could have on behaviour are little understood and have not been properly explored using controlled experiments.

There are additional problems associated with integrating introspective and phenomenologically informed methods in the lab. As presented in Chapter Two, many authors argue that introspective methods are best integrated with day-to-day activities in the

individual's natural environment (Heron & Reason, 1997; Hurlburt & Schwitzgebel, 2008; Langdridge, 2007; Petitmengin et al. 2013; Reid et al. 2005). While Maia and McClelland's questionnaire has been used with the IGT before, it does not appear to have been used to its fullest. The qualitative and open-ended questions were removed from the analysis and the useful of these data were not discussed. As the authors were concerned with knowledge of the task materials, not participants' experience, participants were not given any practice in offering descriptions of experience. As such, the experiment outlined in this chapter may help determine whether training makes a difference in the kinds of replies in the questionnaire, or the participants' awareness or understanding of their experience or the task. The chapter investigates two key issues: direct questioning relevant to the participants' experiences of the task; and adopting introspective training methods.

5.2   Method

Participants

Fifty-four participants took part in the experiment, twenty-four male and thirty female (mean age = 25.33, SD = 7.56). Twenty-seven participants were randomly assigned to each of the social framing and individual IGT conditions. In the social framing groups (10 male; 17 female) fourteen participants received training. In the individual IGT condition (14 male; 13 female), fifteen participants received training. All students assigned to the social condition (both trained and untrained) were asked to help the researcher by recruiting a friend who would come to the lab with them and also participate. Participants were recruited on a voluntary sampling basis on Mary Immaculate College, Limerick. All participants were from

the undergraduate and postgraduate cohort of the college and had normal or corrected-to-normal vision.

Design

The experiment utilised a between groups design. There were two independent variables. The first IV is framing group; similar to Experiment 3, we utilised a socially framed version of the task as well as the individual IGT condition. The second IV is training group; this variable also consisted of two levels: trained and untrained. We provided introspective training for some of the participants to explore potential differences in questionnaire reports. The untrained group received no introspective training.

The dependent variable for the experiment is IGT performance and questionnaire responses. For analysis, we calculated IGT Overall Performance (Decks [A + C] − Decks [B + D]), as well as 'Bad Deck B' choices over the course of the task. Similar to previous studies, these scores were calculated for every 20 deck choices in the task, characterised as IGT blocks.

We also collated responses from the amended questionnaire. Responses were measured for rating each IGT deck (referred to as Deck Ratings) and responses of task confidence (referred to as Confidence Reports). Deck Ratings were carried out on a 10 point scale were participants were asked to rate each of the decks sequentially, giving each deck a score between 0 and 10, stating how good (10) or bad (0) each deck was. Confidence Reports (ranging from 0 to 100) were collected after each of the questionnaire blocks, whereby participants rated how confident they felt in the task to maximise their gains and minimise their losses. The questionnaire was carried out in intervals of 20 deck choices in the task,

similar to typical IGT analysis (Bechara et al. 1994) but less intrusive than Maia and McClelland's administration (after every 10 deck choices, following the initial 20 card choice block).

Introspective Training

Participants who were assigned to the introspective training group met with the experimenter for three training sessions before taking part in the IGT experiment. During these sessions, participants completed a simple decision making task called the Angling Risk Task, developed by Pleskac (2008) on ePrime 2.0. During these sessions, the experimenter conducted semi-structured interviews. The Angling Risk Task is an experiment used to investigate decision making, but the task takes the form of a fishing game where the experimenter can alter the weather conditions (sunny/cloudy) and how many chances participants have to be successful in catching a fish in a computerised fishing task. This was used to vary the task used for the training group, to avoid boredom, and to ensure that participants had different aspects of the task to describe. Participants were aware that these were training sessions for an experimental session that would take place in the future, but were not aware of the task that was going to be used. Participants were also instructed that their performances were not going to be measured in the Angling Risk Task.

Each training session for participants took place on separate days, the first being seven to ten days prior to taking part in the IGT. Training sessions lasted between twenty and twenty-five minutes. During these sessions, the interview was administered twice at random times during the task, followed by a discussion at the end of the task. The questions used during these interviews focused specifically on the descriptive words they naturally used to describe their experience in the task. This followed similar guidelines of Hurlburt and

Akhtar's (2006) training in their study whereby focus was placed on the naturalistic expression of experiences. That is, when the participants explained why they made particular decisions in the task, the experimenter asked them to describe what they meant by the descriptive words they used, rather than the contents of their descriptions. Participants were continually asked how they felt about the task and talking about the task.

Participants were not asked to defend their behaviour in the task, but rather were instructed to focus on their experiences and to detail the descriptions of their experience as honestly as possible. This also included describing to the experimenter how they felt doing so in a lab, about a specific task, and if boredom had an effect on the task. Through this, participants reported that they were engaged with the training session. As the training sessions progressed, participants reported that they were comfortable talking about their experience of the task and the lab environment. Some participants felt that they had little to report in terms of new experiences after the first training session, but as the experimenter manipulated the conditions of the task (making it more and less difficult), they reported differences in their experiences with the descriptive words they used.

Following completion of the 3 training sessions and practice introspection, participants were invited to take part in the experimental task where their performance in IGT would be measured.

Materials and equipment

The experiment was run on a Dell laptop using Windows XP with an 18 inch monitor and standardised European keyboard. The experiment used a standardised version of the IGT run on ePrime 2.0, developed by Pleskac (2008) consisting of 100 deck trials.

An amended version of Maia and McClelland (2004) questionnaire (Appendix D) was used in the experiment and presenting on the computer screen after every 20 deck trials (IGT Blocks). As the aim of the experiment is to gather descriptive data about the participant's experience and knowledge of the task, the questionnaire was adapted to include the qualitative questions measuring deck ratings of the task stimuli. For example, question 1 asked participants to rate on a scale of 0 to 10 how good or bad the particular deck was, and Confidence Rating in their judgement (between 0 and 100). This was followed by the qualitative question:

Why did you give Deck [__} that particular rating and take a few moments to describe why

This was repeated after each deck rating and participants were encouraged to detail as much of their experience of the task as possible. We also reduced the Likert scale ratings to a 10 point scale (rate between 0 and 10) instead of Maia and McClelland's 20 point scale (rate between -10 and +10). A Dictaphone was used to record participant responses to questions.

Procedure

Ethical approval for the conduct of the experiment was granted by the Mary Immaculate Research Ethics Committee (MIREC).

Participants were recruited from the undergraduate and postgraduate cohorts at Mary Immaculate College, Limerick. The experimenter gave a brief explanation about the nature of the study and if they were willing to take part, participants were randomly assigned to either a

training or untrained group. They were advised that their participation in the experiment was voluntary and that there was no requirement for a justification on their part if they wished to withdraw participation at any time. A date and time was set for participants to take part in the study. Participants were randomly assigned to the social framing or individual IGT conditions before coming to the designated experimentation lab. Participants who received training and were assigned to the socially framed condition were asked to complete IGT experiment "first".

Once at the lab, all participants were asked to read briefing material and sign informed consent if they wished to continue. If participants were unable to recruit a friend to participate with them in the social framing groups, they were reassigned to the individual IGT condition.

Participants taking part in the experiment were met by the experimenter in designated areas and brought to the experimentation lab. Following this participants were seated in front of computer and asked to read an information sheet (Appendix D). Once they were happy to continue, they were prompted to press a key on the keyboard in front of the computer to initiate the experiment. The IGT presented a practice period of 3 individual deck choices. This was used to introduce participants to the task. After these trials, the participant had the opportunity to ask the experimenter any questions. Following this, the participants were prompted to press any key on the keyboard to initiate the IGT experimental trials. After every 20 card deck choices, the questionnaire was presented on the computer monitor. Participants were instructed to give their responses verbally and pressed the space key on the keyboard to initiate questions sequentially.

When the experiment was completed, participants were given debriefing information. Participants in the social framing group were debriefed on the true nature of the study

together and explained that some participants were not asked to bring a friend. All participants were thanked for their cooperation and the experimenter answered any questions they had.

5.3 Results

The analysis that was carried out in this experiment is divided into 4 sections: IGT performance between groups; Deck Ratings between groups; Confidence Ratings and IGT performance between groups; and Examination of Qualitative Responses.

This analysis investigates IGT behaviour and questionnaire responses over the task, divided into IGT blocks, parallel to analysis performed in Experiment 3. Each block is a summary of 20 deck choices. Groups are characterised by framing groups (social framing and individual group) and training groups (trained and untrained). IGT performance is characterised as Overall Performance (number of choices from Decks [A + C] − Decks [B + D]) and number of 'Bad Deck B' choices, in keeping with analysis carried out in Experiment 3. Deck Ratings are analysed by the calculating the score from a question in the amended 2004 questionnaire. Confidence Ratings refer to a self-reported score rating the confidence in their performance in the IGT.

5.3.1 IGT performance between groups

This section analyses behavioural differences in the IGT between groups (framing groups and training groups). A mixed-measures analysis of variance was performed on the data for each of the IGT behavioural variables.

Overall Performance

Overall Performance was measured for framing groups (social framing and individual IGT) and training groups (training and untrained) per IGT blocks (IGT blocks = 20 card trials). There was no significant interaction effect between framing groups, training groups and IGT blocks, Wilks Lambda = .860, $F(4, 47) = 1.912$, $p = .124$, partial $\eta^2 = .14$. There was no interaction effect between training group and IGT blocks, Wilks Lambda = .907, $F(4, 47) = 1.203$, $p = .322$, partial $\eta^2 = .093$, which is illustrated in Figure 5.1. There was also no interaction effect between framing group and IGT blocks, Wilks Lambda = .923, $F(4, 47) = 982$, $p = .426$, partial $\eta^2 = .077$, illustrated in Figure 5.2.
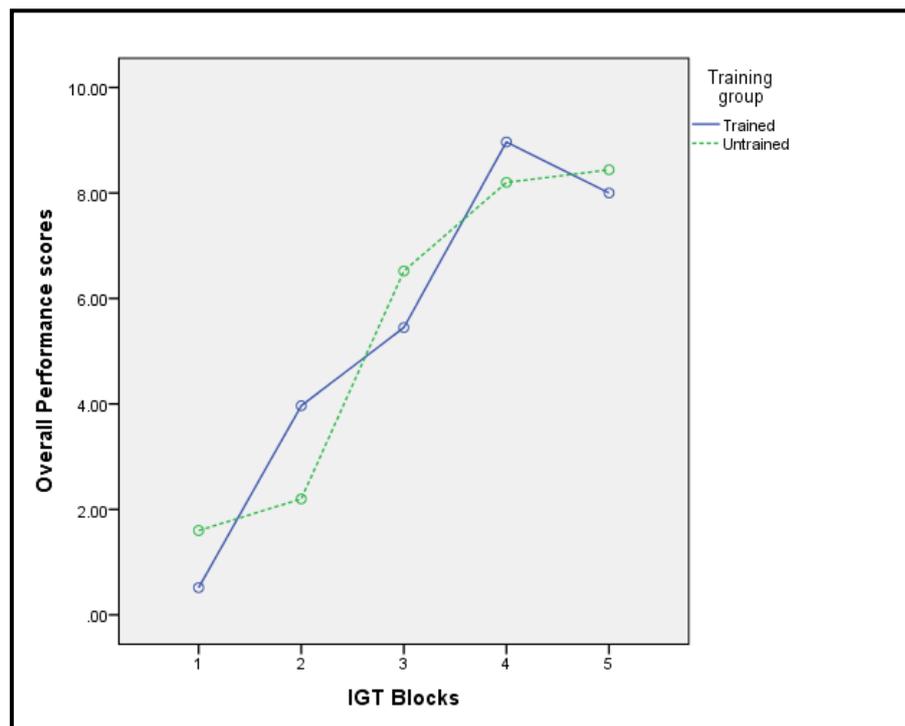
Figure 5.1: Overall Performance scores in IGT for training groups

The main effect for framing group was not significant, $F(1, 50) = .141$, $p = .709$, partial $\eta^2 = .003$. The main effect for training was also not significant, $F(1, 50) = .091$, $p = .976$, partial $\eta^2 = .002$.
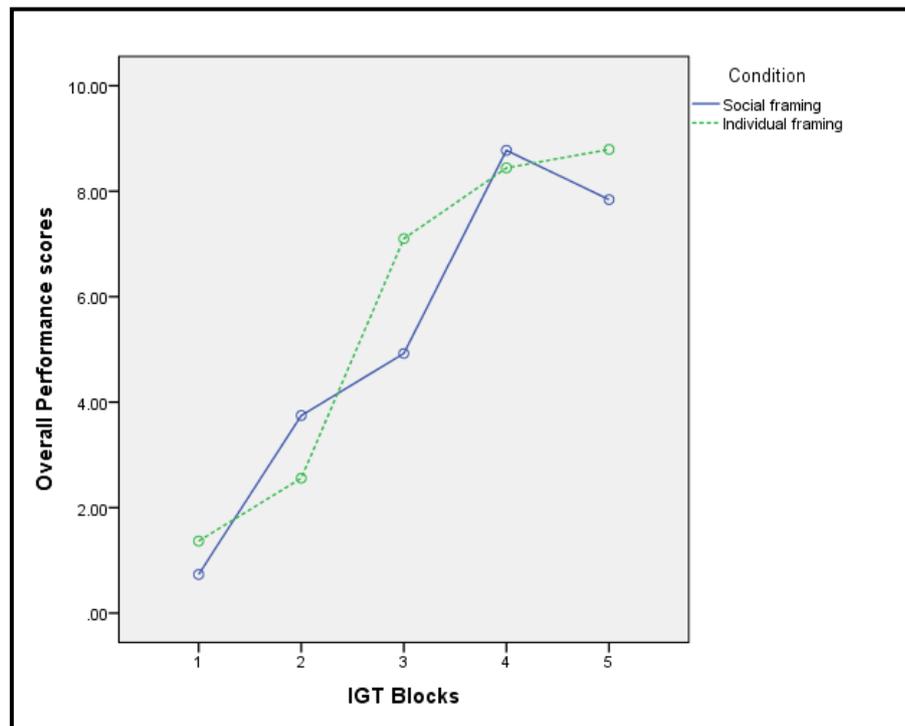
Figure 5.2: Overall Performance scores in IGT for framing groups

However, there was a significant main effect for IGT blocks, Wilks Lambda = .374; $F(4, 47) = 19.69$; $p < .005$, partial $\eta2 = .625$, showing that there is a difference in Overall Performance over the course of task, but not due to either of the grouping variables, training (Figure 5.1) and framing (Figure 5.2). Post-hoc analysis was carried out for the Overall Performance scores and IGT blocks, as the analysis revealed that there were differences in the scores between blocks. Paired-samples t-tests found that there were significant changes in the scores between blocks, presented Table 5.1.

Table 5.1: Paired sample t-tests for IGT blocks between framing groups

		t	df
IGT block 1	IGT block 2		
1.019	3.148	-1.967	53
(SD = 4.17)	*(SD = 8.403)*		
IGT block 2	IGT block 3		
3.148	5.94	-2.42*	53
(8.403)	*(7.14)*		
IGT block 3	IGT block 4		
5.94	8.61	-2.563*	53
(7.14)	*(5.26)*		
IGT block 4	IGT block 5		
8.61	8.2	.372	53
(5.26)	*(8.12)*		

*Note * = p<.05. Standard Deviations appear in parenthesis below the means*

'Bad Deck B' choices

'Bad Deck B' choices were measured for framing groups and training groups per IGT block of 20 card trials. There was no significant interaction effect between framing groups, training groups and IGT blocks for 'Bad Deck B' choices, Wilks Lambda = .971, $F_{(4, 47)}$ = .356, p = .839. There was also no interaction effect between framing group and IGT blocks: Wilks Lambda = .861, $F_{(4, 47)}$ = .796, p = .534; or training group and IGT blocks of Deck B choices: Wilks Lambda = .937, $F_{(4, 47)}$ = 1.89, p = .128. The main effect for framing group was not significant, $F_{(1, 50)}$ = 2.615, p = .112, partial η^2 = .05. The main effect for training group was also not significant, $F_{(1, 50)}$ = 1.036, p = .314, partial η^2 = .02.

There was a substantial main effect for IGT block, Wilks Lambda = .22, F (4, 49) = 44.01, $p < .0005$, partial η^2 = .61, with both grouping variables showing less choices of the 'Bad Deck B' across the 5 IGT blocks, illustrated in Figure 5.3.
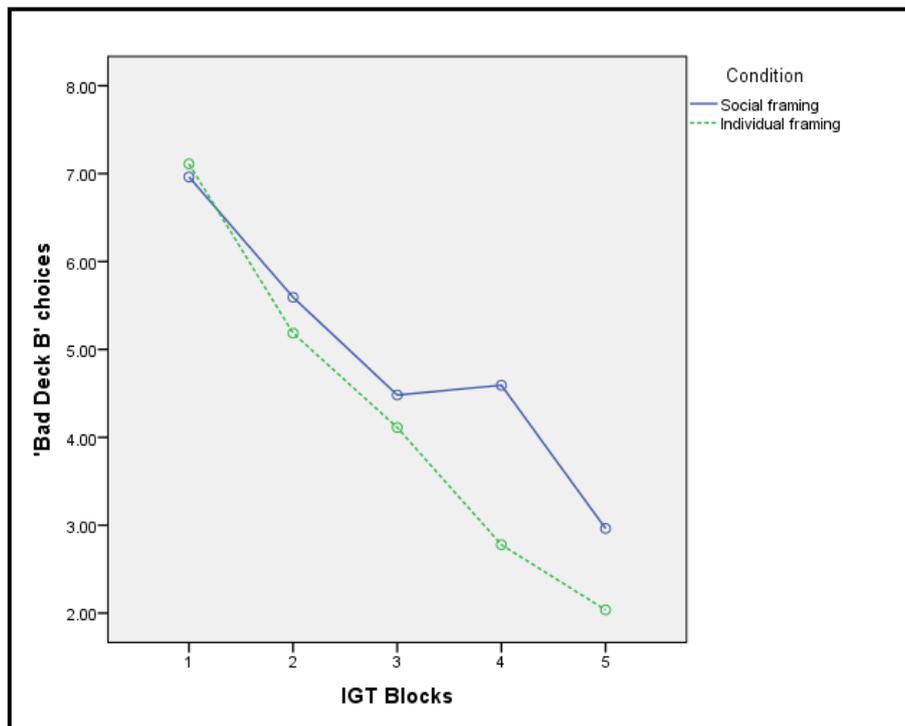
Figure 5.3: 'Bad Deck B' choices across IGT Blocks

Post-hoc analysis was carried out for 'Bad Deck B' choices and IGT blocks using Paired-Samples t-tests for each IGT block. These results are presented in Table 5.2.

Table 5.2: Paired sample t-tests for IGT blocks and 'Bad Deck B' choices

		t	df
IGT block 1	IGT block 2		
7.037	5.389	2.77*	53
(SD = 2.16)	*(SD = 3.75)*		
IGT block 2	IGT block 3		
5.389	4.296	1.95	53
(3.75)	*(3.33)*		
IGT block 3	IGT block 4		
4.296	3.685	1.24	53
(3.33)	*(2.51)*		
IGT block 4	IGT block 5		
3.685	2.5	2.85*	53
(2.51)	*(1.88)*		

*Note * = p<.05. Standard Deviations appear in parenthesis below the means*

5.3.2   Deck Ratings

Deck Ratings were measured with Question 1 of Maia and McClelland's (2004) questionnaire:

Rate on a scale of 0 to 10, how good or bad you think deck [insert deck here] is,

where 0 means that it is terrible and 10 means that it is excellent.

This was measured for Deck's A, B, C and D across the five IGT blocks and presented below. Following preliminary analyses, no major violations of the assumptions of the ANOVA were found.

Deck A

A mixed-measures analysis of variance found no significant interaction effects for framing groups, training groups and Deck Ratings for Deck A choices across the IGT Blocks: $F(2, 52) = 1.547$, $p = .204$. However, there were significant main effects for framing groups: $F(2, 52) = 8.561$, $p < .001$; but not for training groups, $F(2, 52) = 1.619$, $p = .185$. Post-hoc independent samples t-tests were carried out to find patterns amongst the deck ratings and framing group. These tests found that there were significant differences between framing groups during IGT Blocks 2, 4 and 5, which is presented in Table 5.2. This analysis shows that the individual IGT group rated Deck A as significantly more positive in blocks 2 and 4, but this was reversed in block 5 which was gathered once the IGT was completed (at which point the social group rated Deck A as more positive than the individual group).

Table 5.2: Mean ratings and t-test results for Deck A

Framing groups

	Social framing	Individual IGT	t	df
IGT block 2	5.15	6.15	-2.984*	52
	(1.433)	(.989)		
IGT block 4	5.41	6.22	-2.213*	52
	(1.217)	(1.476)		
IGT block 5	6.98	5.15	4.986**	52
	(1.217)	(1.350)		

Note. = $p < .05$, ** = $p < .001$. *Standard Deviations appear in parentheses below means.*

Deck B

A mixed-measures analysis of variance found no significant interaction effects for framing groups, training groups and Deck Ratings for Deck B choices across the IGT blocks: $F (2, 52) = .995$, $p = .42$. However, there were significant main effects between framing groups: $F (2, 52) = 16.668$, $p < .001$; but not for training groups, $F (2, 52) = 1.749$, $p = .155$. Post-hoc independent samples t-tests found that the differences between framing groups occurred during IGT blocks 3 and 5. Table 5.3 shows the t-test analysis for these differences. The social group rated Deck B more positive than the individual group.

Table 5.3: Mean ratings and t-test results for Deck B

Framing groups

	Social framing	Individual IGT	t	df
IGT block 3	5.33	2.44	11.205**	52
	(.620)	(1.188)		
IGT block 5	3.41	2.07	2.772*	52
	(2.241)	(1.107)		

Note. *= p < .05, ** = p < .001. Standard Deviations appear in parentheses below means.

Deck C

A mixed-measures analysis of variance found no significant interaction effects for framing groups, training groups and Deck Ratings for Deck C choices across the IGT Blocks:

F (2, 52) = .328, p = .805. There were no main effects for framing groups, F (2, 52) = 1.537, p = .217; or for training groups, F (2, 52) = .137, p = .925 in Deck C ratings.

Deck D

A mixed-measures analysis of variance found no significant interaction effects for framing groups, training groups and Deck Ratings for Deck D choices across the IGT Blocks: F (2, 52) = .528, p = .716. However, there were significant main effects for framing groups: F (2, 52) = 8.729, p <.001; but not for training groups, F (2, 52) = .819, p = .520. Post-hoc independent samples *t*-tests found that the differences between framing groups occurred during IGT Block 4. Table 5.4 shows the t-test analysis for these differences, where the individual IGT group rated Deck D more positively than the social group.

Table 5.4: Mean ratings and t-test results for Deck D

Framing groups

	Social framing	Individual IGT	*t*	df
IGT Block 4	3.04	5.11	-10.0960**	52
	(.649)	(.847)		

*Note. ** = p < .001. Standard Deviations appear in parentheses below means.*

5.3.3   *Confidence Ratings and IGT performance between groups*

This section analyses Confidence Reports gathered through the questionnaire with IGT performance across the IGT blocks for framing groups and training groups. IGT

performance was analysis for 'Bad Deck B' choices only as there were no trends in behaviour noted for Overall Performance in the task (Decks [A + C] − Decks [B + D]). A mixed-measure multivariate analysis of variance was performed to investigate Confidence Reports, IGT performance, framing groups and training groups.

'Bad Deck B' choices

Confidence Reports and 'Bad Deck B' choices were measured for framing and training groups across the IGT blocks. The mixed-measures multivariate analysis of variance found no significant multivariate effects for Confidence Reports and 'Bad Deck B' choices for framing groups or training groups across the IGT Blocks, $F(2, 52) = .580$, $p = .679$.

There were no interaction effects for Confidence Reports, 'Bad Deck B' choices and framing groups, $F(2, 52) = 2.502$, $p = .055$. Additionally there were no significant interaction effects for Confidence Reports, 'Bad Deck B' choices and training groups: $F(2, 52) = .611$, $p = .567$. However, we did find a significant difference between framing groups for Confidence Reports across the IGT Blocks, $F(2, 52) = 3.341$, $p = .017$, which is illustrated in Figure 5.4.
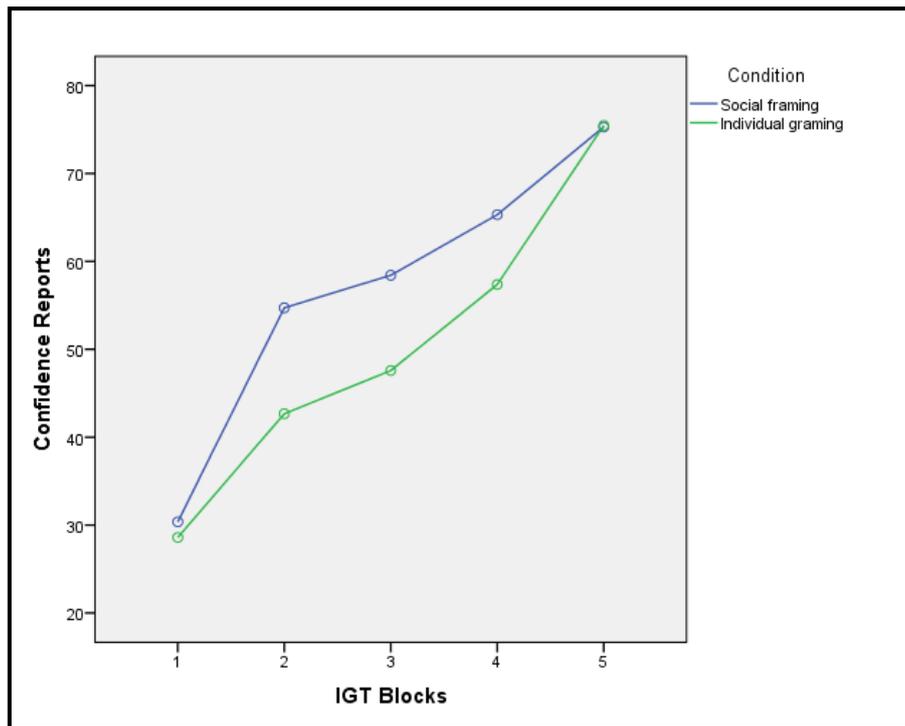
Figure 5.4: Confidence Reports across IGT Blocks for framing groups

Post-hoc t-tests were carried out to investigate the differences between the confidence reports and framing groups across the IGT blocks. This is done using independent samples *t*-tests and presented in Table 5.5.

Table 5.5: Post-hoc independent samples t-tests for Confidence Ratings and framing groups

Framing groups

	Social framing	Individual IGT	*t*	df
IGT Block 1	30.37	29.19	.253	52
	(SD = 18.55)	(SD = 15.83)		
IGT Block 2	54.67	42.78	3.509**	52
	(11.75)	(13.107)		
IGT Block 3	58.52	47.7	3.665**	52
	(10.64)	(11.05)		
IGT Block 4	65.3	57.41	3.02**	52
	(9.75)	(9.44)		
IGT Block 5	75.37	75.74	-.128	52
	(10.74)	(10.53)		

*Note. ** = p < .001. Standard Deviations appear in parentheses below means.*

We also carried out the mixed-measures multivariate analysis of variance to investigate differences in training groups for Confidence Reports with training groups across the IGT Blocks. Figure 5.5 illustrates the Confidence Reports across the IGT Blocks for training groups. No significant interaction effects were found: $F_{(2, 52)} = .940$, $p = .449$.
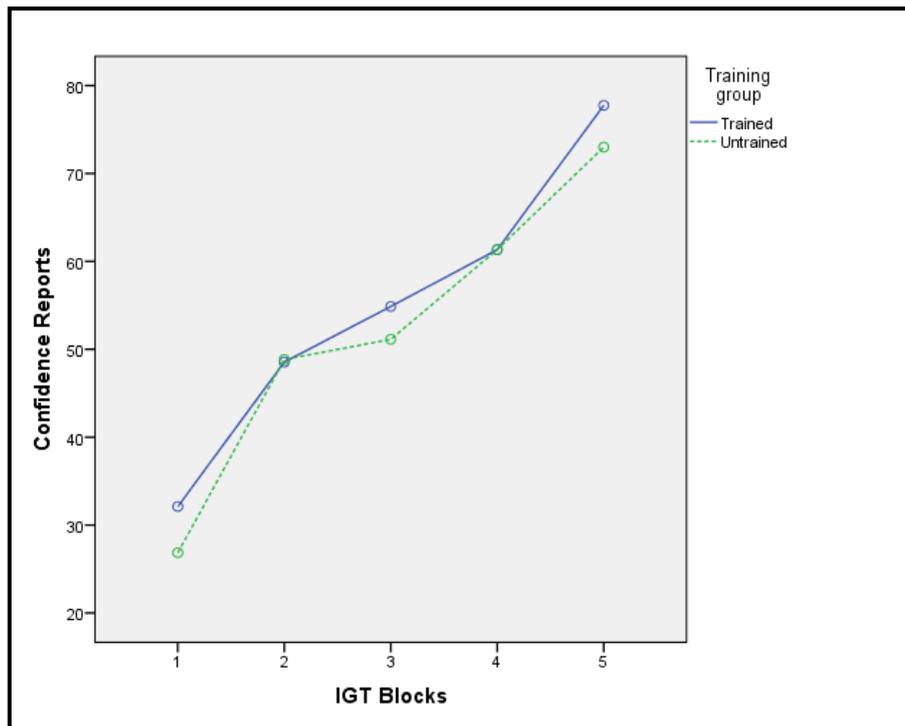
Figure 5.5: Confidence Reports across IGT Blocks for training groups.

The main effect for IGT block was significant: $F(4, 49) = .169$, $p < .005$, indicating that the confidence reports increased over the course of the IGT blocks. Post-hoc paired-samples t-tests were carried out for overall Confidence Reports across the IGT blocks. The results of these tests are presented in Table 5.6.

Table 5.6: Paired sample t-tests for IGT blocks for Confidence Reports

		t	Df
IGT block 1	IGT block 2		
29.78	48.72	-7.109**	53
(SD = 17.09)	*(SD = 13.712)*		
IGT block 2	IGT block 3		
48.72	53.11	-2.58*	53
(13.712)	*(12.047)*		
IGT block 3	IGT block 4	-4.45**	53
53.11	61.35		
(12.047)	*(10.307)*		
IGT block 4	IGT block 5		
61.35	75.56	-8.696**	53
(10.307)	*(10.54)*		

*Note.   * = p < .01; ** = p < .001. Standard Deviations appear in parentheses below means.*

5.3.4   Examination of Qualitative Responses

Qualitative Responses were gathered through question 2 of the questionnaire: "*Why did you give Deck [__] that particular rating and take a few moments to describe why*". The responses for these questions were coded using Template Analysis. Template Analysis is a commonly used approach used with qualitative or descriptive data (Langdridge, 2007). It characterises textual data according to themes. These themes only emerge from the responses once data are collated and are defined to include the relevant material and organised into an initial template, which is was undertaken after initial coding of a sub-set of the data, not pre-established by the researcher. In our data, responses were brief and neither trained nor untrained groups produced detailed descriptions of their experience with the deck stimuli or

their beliefs about the task. Responses were attained after each IGT block, and analysis of the data produced two emerging themes. These themes were characterised as (1) Estimations of Deck Outcomes and (2) Task Evaluation.

The first theme, Estimation of Deck Outcomes, related to responses directly associated with the characteristics of the deck, or deck outcomes. This enabled us to define 3 categories of response: definite estimation of the advantages/disadvantages of the deck; ambiguous estimation of the deck; or no reportable knowledge/unable to explain deck rating. These responses characterised estimations of the deck or task performance in relation to the deck and was an attempt to explore the experiences of the participant with the task stimuli.

Participant 4: "I can't actually remember that deck too much, that's one I didn't like. I avoided that one, I think so anyway…"

Participant 22: "I really didn't like that one, that one crucified me… yeah it was that one. Didn't like it..."

Participant 40: "Oh was it that one or, actually I'm mixing those two up. I liked those two you see… Those one's were am… […] I think it was that one that was okay. I always won some points on that one. I think. Can't remember the losses, I need to choose it a bit more."

For the category, 'definite estimation of the advantages/disadvantages of the deck', a table was developed to analyse the differences in frequencies between the framing of the IGT

groups, and the training groups. Table 5.7 shows the percentage frequencies in responses for this category across the groups for each of the IGT blocks.

Table 5.7: Percentage frequencies of 'Definite estimations of advantages/disadvantages of decks'

	Social	Individual	Trained	Untrained
Block 1	49.1%	50%	49.1%	50%
Block 2	51.85%	49.1%	50.1%	50%
Block 3	52.8%	49.1%	50.85%	51%
Block 4	43.5%	48.15%	42.2%	50.1%
Block 5	59.27%	62.1%	61.2%	60%

There were no noticeable differences in responses between the groups, with 'definite estimation of the advantages/disadvantages of the deck' gradually increasing across the IGT blocks. From block 1 to block 5, each grouping variable showed an increase in definite estimations of approximately 10%. For the next category, 'ambiguous estimation of the deck', a table was also developed, shown below in table 5.8.

These responses were distinguished from definitive estimations of the decks with participants' descriptions being more ambiguous, or participants becoming hesitant to describe their particular deck rating.

Participant 8: *Oh I don't know, it's just the rating I want to give it. It seems to be alright. I guess that it's one of the one's I choose a lot, but I'm just randomly picking them at the moment.*

Participant 16: *Have to give it a 5 because I think it's neutral. I don't really have a specific reason. There are losses and gains to be… with deck 2. It's one of the one's like, but like… yeah. I feel neutral about it to be sure.*

Table 5.8: Percentage frequencies of 'Ambiguous estimations of decks'

	Social	Individual	Trained	Untrained
Block 1	41.6%	37.91%	43.1%	36%
Block 2	37%	38.85%	38.8%	37%
Block 3	34.2%	40.7%	37.9%	37%
Block 4	47.2%	44.4%	47.4%	44.2%
Block 5	35.15%	36.1%	35.35%	36%

The final category consisted of responses with no reportable knowledge of the deck. These were the least frequent responses, shown in table 5.9 below. There were no reportable differences between the framing and training groups. These responses became less frequent over the course of the IGT blocks with low levels of no reported knowledge in the final IGT block.

Participant 1: *"Oh god I don't know…"*

Participant 50: *"I really wouldn't be able to say."*

Table 5.9: Percentage frequencies of 'No reportable knowledge'

	Social	Individual	Trained	Untrained
Block 1	9.3%	12.1%	7.8%	14%
Block 2	11.15%	12.05%	11.1%	13%
Block 3	13%	10.2%	11.25%	12%
Block 4	9.3%	7.45%	10.4%	5.7%
Block 5	5.58%	1.8%	3.45%	4%

The second theme for the qualitative responses was Task Evaluation. These responses were compiled from qualitative descriptions that went beyond estimation of deck outcome or responses relating to the deck, calling for a separate characterisation. These descriptions are defined by evaluations or descriptive responses that relate to the task, but are not direct comments on the deck outcome.

Participant 2: *"I'm doing really good when I choose that deck. I think I know what I'm going to get, to win more points that one is helping me. I think they're all a bit random but I know I can do well. Watch now, I'll probably lose all my points like last time!"*

Participant 48: *"I have no idea; it's all a bit random. I can't tell which is which. Can't really figure it out from the previous one"*

Responses for this were coded using Template Analysis as either 'emerging' or 'not emerging'. That is, participants whose responses went beyond the characterisation of the

'estimation of deck outcome' theme were coded as having 'emerging' task evaluation content. In most cases, this was used to identify participants who did not specify a reason for choosing a particular deck or was unable to provide justifications for their responses. However, there were no discernible differences in these descriptions between framing and training groups. Responses from trained participants were no more detailed than untrained participants, with both groups showing difficulty detailing extensive descriptions. The following table 5.10 was produced to analyse the 'emerging' Task Evaluation responses, or responses that included descriptions of the task in an evaluative way that went beyond direct estimation of the decks, across the IGT blocks.

Table 5.10: Emerging Task Evaluation responses across IGT blocks

	Social	Individual	Trained	Untrained
Block 1	14.8%	19.4%	20.7%	13.8%
Block 2	12.1%	17.6%	19.8%	10.2%
Block 3	22.2%	26.8%	27.6%	19.8%
Block 4	12.95%	13.88%	16.1%	11.9%
Block 5	24.98%	22.1%	22.4%	18.4%
Average %	17.41%	19.96%	21.32%	14.8%

From the frequencies of 'emerging' task evaluation responses, there were no distinguishing differences between the groups. However, untrained participants show the

lowest frequency of responses compared to the other groups. However, this difference is marginal, with a difference of 6.52% compared to trained counterparts.

The 'not emerging' descriptive data consisted of content that were characterised solely through the 'Estimation of Deck Outcomes' theme. That is, task evaluation descriptions did not emerge over the course of the participants answer to question 2 of the Maia and McClelland questionnaire.

Participant 51: *"That's a good deck. I'm rating that deck a nine out of 10"*

Participant 11: *"I'm not really sure about how I scored that last time, maybe a 6 because it's good, but not giving me a big, a lot of points like…"*

These descriptions primarily encompassed details on the task decks, their outcomes (or lack of details), and did not reference the task in an evaluative way, referring to experiences of task as a whole, or the social context in which some participants were placed.

5.4 Discussion

The findings in this experiment suggest that using directed questioning during the IGT does not necessarily uncover detailed experiential differences in the task. Riskier decision making amongst the socially framed group seems to have been suppressed with the inclusion of the amended 2004 questionnaire, and training did not appear to change participants' behaviour, nor did it make much of a difference in the richness of their descriptions of

experience. This is hard to analyse using mixed methods as our experiment did not yield extensive or richly detailed qualitative data. However, our aim was not to explore a phenomenological understanding of the experience in depth, but to find a method that brings together experience and behaviour in more meaningful ways. Directed questioning was used in an attempt to find parallels between the description of experiences in the task, and subsequent behaviours. Results show that task framing did not produce behavioural differences in the task like Experiment 3. There were no significant differences between the social and individual framing groups on IGT performance.

Over the course of the task, participants made more choices from the advantageous decks over the IGT blocks, which is a reliable finding in the literature (Bechara et al. 1994). Similarly, participants made fewer choices from the risky Deck B over the course of the task. Interestingly, there were consistent differences found between framing groups on Deck Ratings, but no differences between the training groups. These differences are arguably most notable for advantageous Deck A and disadvantageous Deck B. Deck A offered the most advantageous outcome if consistently relied on, however gains were not as large as Deck B, which offered the highest immediate gain but catastrophic losses if consistently chosen.

From the results of the questionnaire we see that the directed questioning used in this experiment did not uncover clear links between the experience of the task (using social or individual framing) and behavioural patterns between experimental conditions in performance on the IGT.

The lack of clarifying descriptive data produced using the questionnaire, including the more open-ended question inviting justification of ratings, may be due to a number of factors. A number of researchers (e.g. Hurlburt & Akhtar, 2006; Langdridge, 2004) warn against the use of experimental tasks in the collection of experiential data, because of the constrained and

artificial nature of the experience. We were aware of this challenge going into the experiment, but maintain, on the basis of the reviewed literature in previous chapters, that the possible benefits of a broadly application integrative approach are worth the risk to investigate.

However, in acknowledging the shortcomings of exploring experience in lab based tasks, we used the IGT in clearly defined framing contexts to help facilitate distinct experience of the task. Results from Experiment 3 indicated that there were clear behavioural patterns that emerged over the course of the IGT using social framing; these were not replicated in the present experiment. While results from the present experiment are therefore somewhat challenging, there may still be promising insights to be gained about participants' responses.

Results show a significant, though inconsistent, relationship between the framing groups in the Confidence Reports and 'Bad Deck B' choices. Participants in the social framing groups showed higher Confidence Reports during the task (after 40 card choices) but both groups have the same ratings at the end of the task. This suggests that there may be differences in the experience of the task, or more specifically, in the dynamic of the participants' experience of the task over the course of its duration. While suggestive, however, the lack of clear behavioural differences between groups in task performance (that were more strongly apparent in Experiment 3) makes interpreting this difference challenging.

The framing of the task may have a more implicit effect on the task experience. However, this may be at a higher or more abstract level than immediate behavioural control, as performance in the task was not affected by framing (unlike findings in Experiment 3). This may be consistent with Damasio (1994) whereby experience of the task over time predicts emotional markers of the task, and only later impacts directly on behaviour in the

IGT. Physiological arousal occurs in anticipation for gains and losses as the task unfolds for participants, but it also may have an effect from immediate trial outcome in the IGT. However Colombetti (2008) sees this as a presupposition that the IGT provides a clear picture of the very complex relationship emotion has with behaviour. This also highlights the limitations of methodological measures of experience and behaviour in the lab, and the type of problems that still need addressing. If behaviour in the IGT is influenced by learning over the course of the task (and anticipatory markers seem to indicate so), but is also influenced by immediate trial outcomes (as Maia and McClelland propose), then the methods that are currently available to investigate this are not adequate enough to explain experience.

How experience guides the behaviour is not altogether clear due to an issue that arose in this experiment: there were no clear behaviour patterns between groups to analyse the experiential data with, providing no clear way of statistically measuring associations between group, framing and IGT behaviour. Without a means to clearly distinguish behavioural patterns, seeking parallel patterns in experience becomes unfeasible. This may be due to the questionnaire having an effect on how the participants perceive the task when asked about specific aspects of their experiences. It also means that using this methodological approach in the lab provides additional limitations as it removes the task experience away from any sort of naturalistic expression that may have been facilitated by the framing of the task in a meaningful way. That is, while the framing initially suggested that experience mattered for the task behaviour, which is more akin to naturalistic behaviour, the use of a questionnaire to gather data on this experience alters the participants' attitude toward, or perception of, the task in such a way that it removes whatever effect framing initially had on the task. As such, it may be the case that, while training does not appear to have had a substantial effect either on behaviour or participants' insight into the task, the act of probing experience may have

affected both. This change would seem to simultaneously reinforce that experience of the task impacts on behaviour, and that studying the mechanism of that impact remains extremely difficult.

The ratings participants gave to the task stimuli also changed over the course of the task. Deck Ratings for Deck A differed between framing groups after 40 and 60 deck trials, IGT Blocks 2 and 4 showing statistically significant differences. Participants in the individual IGT condition rated these Deck A as more preferable than their socially framed counterparts. Conversely, Deck B was rated higher for the social framing groups after 60 and 100 deck trials, IGT Blocks 3 and 5. This suggests that participants in the social framing groups did not view 'Bad Deck B' as negatively as the individual IGT condition, who consistently rated Deck B lower over the course of the task. It is difficult to interpret effects on behaviour in the task as the only difference observed in task performance was observed during IGT Block 4 (after 80 deck trials). It may be interesting in and of itself, as there are no clear links between how the participants rated the decks and how they performed in the task at specific IGT Blocks.

As seen from the differences between the socially framed and individual IGT in Confidence Ratings, there may be experiential differences between the conditions. However the results of the behaviour responses are still ambiguous and we have not found a clear experiential component to interpret the deck choices. Rather, we have illustrated that are tentative links between them, and task framing may be an interesting way of exploring experiential differences further, but we may simply have been asking the wrong questions. The Maia and McClelland questionnaire was specifically developed to examine participants' knowledge and experience of the Iowa Gambling Task over the course of the task. It is an

attempt to directly evince people's experience of key aspects of the task itself. It may be, however, that a more open-ended introspective method will provide more useful data.

The Maia and McClelland (2004) questionnaire afforded a means of exploring specific and defined experiences during the IGT. This, while useful for our study, may not adequately evoke descriptions of these experiences to explore how participants may be meaningfully engaging with the task. Bechara et al (2005) criticised some of the generalisations from Maia and McClelland's original study, particularly the claim that participants may be guided by the outcome of the preceding trial, instead of learning the constraints of the deck outcome over the course of the entire task. While this criticism may overlook the effects of immediate trial outcome on subsequent behaviour, it should not be proposed that Maia and McClelland's (2004) offer a means to show behaviour is guided by immediate outcomes. Their questionnaire may illustrate instead that participants use immediate outcomes to navigate their actions more than Bechara et al (1994) initially proposed.

As results from the qualitative questions did not indicate differences between framing and training groups, either in the form of the response or the detail of participants' justifications or observations, it raises a number of questions for this type of exploration of experience and how data were gathered through the Maia and McClelland questionnaire, as well as the practicalities of gathering experiential data in lab based, that is, non-natural environments. Certainly, it would seem that some practice in introspection does not change participants' reports of their own cognition or perception of a task generally. Trained participants produced no more detailed description on the open questions available to them, nor significantly different deck or confidence ratings. There were no indications in trends to suggest any effect of training on responses to the kinds of questions used here.

While the use of the questionnaire provided a means of exploring specific experiences, and potentially assessing the effect of practice in attending to and describing the experience of completing an experimental task, it shows that there are problems when trying to understand these data from experiences of controlled lab based, non-natural environments.

5.5   Conclusion

This chapter has outlined an experiment using the IGT that attempted to explore how experience in the task guides behaviour. This was investigated by carrying out the IGT with use of a medium to explore specific experiences in the task: the Maia and McClelland (2004) questionnaire. The experiential differences in the task were facilitated by exploring framing effects aiming to create a clearly defined situation for the IGT performance to be interpreted. Additionally, some participants received introspective training to explore differences of responses for qualitative questions and discuss some of the issues with task based responses discussed by Lutz and Thompson (2003) and Hurlburt and Akhtar (2006) in Chapter Three of this thesis. Our findings and outcomes are limited by minimal behavioural differences between social framed and individual IGT conditions.

While the Maia and McClelland (2004) questionnaire was a disciplined means of exploring specific experiences in the IGT, it raises many questions about measuring how participants meaningfully behave over the course of the task. Without a better understanding of the relationship between consciousness and behaviour it becomes pretty difficult to ask the right questions. It might be that the questionnaire, which is designed around the task, was still getting at the wrong kinds of things to capture the relationship between experience and

action. The following chapter develops a sampling method to gather less constrained

descriptive data during the IGT using minimal changes to research practices.

Chapter Six

Experiment 5: Controlled Experience Sampling in the Iowa Gambling Task

The previous chapter indicates that basic introspective training of participants does not substantially change their awareness of the task or its components, even when that awareness was assessed using a series of directed questions. This is consistent with previous literature, discussed in Chapter Three, which shows that attaining useful descriptive data in controlled settings often requires extensive training for both the participant and the experimenter. Questions in Experiment 4 largely concerned the task components, but in a fairly conceptual manner, and the more qualitative questions were in fact meta-cognitive (that is, they concerned the participants' reasons for giving a particular deck ratings in the IGT). This resulted in findings that maintain the longstanding disconnection between what a person is aware of and what they do. That is, the behaviour is not linked with the subjective responses in clear ways, making it difficult to interpret the findings when considered together. Phenomenological and experiential research more generally would suggest that the questions used by Maia & McClelland (2004) constrain the kind of information we can get about the person's experience of the task – they are effectively pre-conceptualised. This is, perhaps, a necessity of attaining focused descriptive data in controlled settings. However, researchers in qualitative and phenomenological research have maintained that there are ways of attaining

more open subjective data. The hope remains to find a way to gather this type of data in controlled settings where it can be used to understand the behaviour in more comprehensive ways.

Training participants does not seem to reliably improve the participants' awareness of either the decks or their own experience of the IGT, regardless of how the task was framed. It may be more appropriate that we take a step back, and collect experiential data in a less constrained fashion. In this chapter we explore an Experience Sampling method to investigate experiences during the IGT, and their relationship with the task behaviour. While research has shown that many situational factors affect performance in the IGT (Ennis et al. 2001; Preston et al. 2007), there have been few attempts to explore qualitative aspects of engagement with the task. As findings in Experiment 3 show that the IGT is susceptible to contextual changes, the intention is to see whether patterns in the descriptions of experiences by participants parallel with patterns of behavioural responses in the task.

For the following experiment, we required an experience sampling method that could be adapted to lab based experiments. There are, as discussed in Chapters Two and Three, a number of methodological approaches that offer detailed experiential data. We considered semi-structured interviews and other approaches that involve the participant in natural and practical ways. Exploratory methods are often associated with a number of limitations, such as intensive training (Petitmengin et al. 2013; Schwitzgebel, 2008) and questionable generalisability to new domains (e.g. neurophenomenology).

As the findings of Experiment 4 suggest that a task-specific questionnaire has limitations, a broader, less structured approach to experience sampling might offer some helpful insights. Descriptive Experience Sampling (DES) is a tool for gathering experiential descriptions in natural behaviour settings, one that has gained attention in the literature

(Weisberg, 2011). For our purposes, however, we attempt to adapt the DES technique so that it can be used in the lab. DES uses verbal descriptions attained at specific moments and is concerned with the descriptive words participants naturally use when detailing experiences (Hurlburt & Schwitzgebel, 2008). This neutral focus on participants' descriptions, we suggest, leaves DES flexible enough to be adapted for use in controlled settings, such as the laboratory. Reviewing the key elements of the approach, we suggest that many of its core features and philosophy can be maintained, while the procedure is revised for laboratory situations.

6.1   Reconciling Descriptive Experience Sampling with the Laboratory

The use of a beeper: Hurlburt (Hurlburt & Akhtar, 2006) notes the importance of identifying a particular moment of experience for participants to describe. They use a beeper for this purpose. In a similar vein, according to Lutz and Thompson (2003) participants need a specific moment to describe in order for reports to be used to inform the behaviour being studied. Schwitzgebel (2003) also discusses the use of a method to define temporal experiences. He states that DES attempts to minimise effects of reflective reporting that could potentially bias data and likens the method to Titchener's aural task where participants would focus on specific tones and use their natural vocabulary to describe their experience. We decided that the use of a beep would allow for a controlled use of DES when applied at specific moments in the IGT. From the findings of the previous experiments using the IGT, the general pattern that emerges over the course of the task is that participants generally make more advantageous decisions as the task progresses. As such, applying our use of DES in the IGT at specific points (after 20 or 80 deck decisions) may uncover experiential data associated with the emerging task behaviours. Experiment 5 described in this chapter

attempts to use DES at specific moments in the IGT and investigates the differences in experiential reports when applied at early or late stages in the task.

Randomisation of data collection: Randomisation of the beeps is standard in DES methods. Experience Sampling methods rely on collecting data at random times during a person's day-to-day activities. However, non-randomness is a requirement of the controlled way we use it in Experiment 5. It is necessary to avoid interrupting the participant's performance in the IGT in order to collect data that are representative of un-reflective states, as well as to maintain as far as possible the validity of those behavioural data within the framework of the IGT itself. This is a key difference between the standard DES method and the version applied here.

In Hurlburt and Akhtar's (2006) DES study, participants wore a beeper over the course of the sampling period. When the beeper is activated, participants are encouraged to immediately detail honest accounts of experience at that moment. These may be gathered through the use of notebooks/diaries or recorded verbal descriptions, later explicated in post-hoc interviews. However, our amended or controlled use of DES is applied at specific moments in the task. It is important that participants are not aware that DES data will be collected at specific moments and therefore participants will be instructed that the beep would be randomised. That is, participants believe, to all intents and purposes, that the beep was random. As participants believe that the beeper is random, it is hoped to minimise anticipatory effects and associated biases highlighted by Hurlburt and Schwitzgebel (2008). Vermersch (2011) also discusses this randomness in great detail. He warns that the beeper inevitably creates anticipatory effects which could potentially bias descriptive data. However, our controlled use of the method only lasts the duration of the task, a relatively short

sampling period. The laboratory setting also enables a swifter recording of experiential data than the standard method, which, while keyed to notes and comments recorded immediately after the beep, are necessarily somewhat retrospective in nature.

Training: Training has been used in most, if not all introspective studies. It is said to help participants become more familiar with what is expected of them in qualitative approaches (Langdridge, 2007). However, in Hurlburt and Schwitzgebel (2007), Schwitzgebel warns that this may affect the experience being explored. That is, training may be a form of bias where participants are guided by experimenter expectations or priming. In their book, Schwitzgebel and Hurlburt argue over the questioning used in the post-experiment interview after the DES data were collected. Though training is often used in phenomenological or introspective studies, we decided that we would apply a minimal approach and use only a pre-task to familiarise participants with DES. By avoiding laborious training, we attempt to minimise biases and priming effects, and gain more naturalistic descriptions of participants' experience. There may be additional strengths to taking a minimal approach. The period of gathering the experiential data in this experiment is brief, and we wanted as natural an expression of experience as possible. This sort of minimal sampling is not readily accepted amongst qualitative and phenomenological investigators, but there may be merit in doing so for this exploratory work in controlled settings. Additionally, how training could improve descriptive reports in controlled settings is underexplored (and not often reported). The findings of Experiment 4 would seem to suggest that training in describing experience does not produce substantial differences in evoked responses to open-ended questions, and so we decided to explore this less intensive technique in the present experiment. While this may result in the reports lacking phenomenological detail, participants

are encouraged to use their natural vocabulary which may provide clearer and naturalised descriptions.

Controlled – Descriptive Experience Sampling: Taking these above points into consideration, we developed a more controlled version of DES, which we term Controlled – Descriptive Experience Sampling (C-DES). The aim is to develop a method that could be adapted to a number of behavioural paradigms, but the experiment outlined below builds on the previous experiments using the IGT. C-DES aims to use a beeper to define a particular moment of experience for the participant to describe. The use of a beeper aims to define a specific moment for the task, but instead of its original administration using randomised beeps, we administered at pre-determined points during the task. As we are aware that participant behaviour varies over the course of the IGT, we were able to define our own moments to administer the sampling method. However, this could be easily adapted to suit a wide range of studies, the key feature only being that the participant believes that the moment is randomised and does not coincide with a specific point where behaviour is hoped to be understood using the experiential descriptions. We also did not follow Hurlburt & Akhtar's (2006) classic training method for DES. During their training, which is quite extensive, sampling data are gathered over longer periods (often over days). Instead, we used a pre-task to help participants to become comfortable with qualitative methods and focus on their descriptions of experience. While participants are encouraged to use their natural expressions when describing what they experience, C-DES also utilises a rudimentary pre-trial period (which could be seen as basic training). Through this, semi-structured interviews are used to familiarise participants with talking about experience of lab-based tasks.

Early sampling will occur after 20 deck choices were made (at the end of block 1) in the task. At this stage in Experiment 3 participants in both groups were performing at a similar level. Late sampling occurred after 80 deck choices (at the end of block 4), which is still during the task as a whole, but after a period of time where participants are expected to have made more sense of the task and have a greater understanding of the different decks. In Experiment 3 the social and individual groups were widely divergent at end of block 4, perhaps indicating the more substantial difference in experience of the task, if such a difference exists.

6.1   Method

Participants

Fifty-nine participants took part in this study, 36 female and 23 male. Participants were aged between 18 and 56 (mean age = 24.45yrs, SD = 7.14). A total of 30 participants took part in the socially framed IGT (along with an additional 30 people who acted only as social facilitators); 29 participants took part in the individual IGT.

Participants were recruited on a voluntary sampling basis at Mary Immaculate College, Limerick. When recruiting participants for the social framing group, they were asked to take part in a study with an acquaintance and sign up to participate in the experiment in pairs of two. All participants were from undergraduate and postgraduate cohorts of the college and had normal or corrected-to-normal vision.

Experience Sampling (ES) data were collected after either 20 (early) or 80 (late) trials in the IGT (outlined below), the groups of which were randomly assigned by the experimenter.

For the socially framed condition, 19 completed ES early in the IGT, with 11 completing ES late in the IGT. In the individually framed condition 17 completed ES early, 12 completed ES late.

Design

A between groups design was carried out to explore differences between IGT framing and C-DES descriptions. The study used qualitative and quantitative methods. Qualitative analysis in this study consisted of the controlled use of sampling techniques based on DES (Hurlburt & Akhtar, 2006) and responses were analysed through Template Analysis (Langdridge, 2007). Verbal descriptions were attained during the IGT at specific points, either early or late stages of the task as mentioned above. Quantitative analysis in this study consisted of calculating behavioural responses over the course of the task using standard IGT scoring procedures. Independent variables are the framing of the task (social vs. individual) and early vs. late conduct of C-DES. Change in performance over five blocks of the task was also examined, in line with previous experiments.

Controlled- Descriptive Experience Sampling (C-DES) was carried out through the use of a beeper that was initiated by the experimenter at either early or late stages of the IGT. Early C-DES was carried out after 20 IGT trials. Late C-DES was carried out after 80 IGT trials.

Materials and apparatus

The experiment took place in designated Psychology laboratories on Mary Immaculate College campus consisting of an experimental room and a waiting area. The experiment was carried out using a Dell desktop computer operating on Windows XP.

The experimental programmes used E-Prime 2.0 stimulus presentation software which measured behavioural responses. A pre-task used the Balloon Analogue Risk Task (BART; Lejuez et al. 2002), consisting of 30 BART trials. For the experimental task, Pleskac's (2008) IGT ePrime script was used consisting of 100 IGT trials

A beeper developed by Maelz Sport (2014) was used to initiate beeping sequences for the C-DES. The beeper was pre-set to deliver a 440.0Hz tone for 3 seconds and was controlled by the experimenter. Along with this, a Dictaphone was used to record participant responses.

Procedure

Each participant was given briefing information and instructions on what the experimental session would involve (see Appendix E for Experiment 5 materials). After reading this information, the experimenter answered any questions that they may have had and they were asked to sign a consent form. Participants in the social framing group nominated between themselves which would take part in the experiment first. Unbeknownst to this group, the participant who nominated themselves to take part second acted as social facilitator for the framing condition. These participants were seated in a separate waiting area and provided with some light reading material for the duration of the experiment. Participants completing the experimental trials were brought to the experiment room and seated in front of

the computer desk. They were reminded that they could withdraw from the experiment at any time and their participation was voluntary. The experiment procedure is divided into the Pre-task and IGT trials.

Pre-task

Before the main IGT, a pre-task was carried out to familiarise participants with DES methods. This consisted of running a short decision making task (BART; Lejeuz et al. 2002). The experimenter used the beeper to initiate C-DES during the task. Participants were instructed to stop the task at the moment they heard the beep and describe their experience, and give clear and honest responses. This involved asking participants to elaborate on the descriptive words they used to describe their experience. If participants had trouble answering, they were asked to elaborate on what they felt at the precise moment of the beep. The experimenter did not ask specific questions, but only asked participants to elaborate on the language they used. If participants went on tangential descriptions, they were asked to focus just on the moment they heard the beep. Following this a brief interview was carried out to further encourage participants to focus on the descriptive words they used when describing their experiences and to focus on the specified experiences at the moment of the beeping sound. They were also instructed not to fabricate responses. Any questions they had were answered and they continued to complete the Iowa Gambling Task.

IGT trials

After the pre-task, participants completed the main IGT consisting of 100 deck choices. As in Experiment 3, the Iowa Gambling Task was presented as a series of free

choices from a set of four simulated decks of cards (labelled 1, 2, 3, and 4). Participants began the task with a reservoir of 2000 points and each card choice imposed a net loss or gain, with the instruction that participants should attempt to maximise their score by the end of the game. They were not informed in advance of the number of choices that they would be making, nor when the beep to indicate the moment of experience for experience sampling would occur.

DES was carried out after either 20 or 80 trials, randomly assigned by experimenter. Following the same methods as the pre-task, participants were instructed to detail their experience at the moment they heard the beep. DES responses were recorded on the Dictaphone, transcribed, and analysed through Template Analysis (Langdridge, 2007). IGT responses were gathered through ePrime and analysed using SPSS statistical software. After the experimental tasks were completed participants were debriefed and thanked for their time. Participants in the social framing group were debriefed as to the true nature of the study together with the participants acting as social facilitator. Any questions that the participants had were answered by the experimenter.

6.2   Results

6.2.1 Iowa Gambling Task Performance

To investigate the relationship between framing condition and IGT performance, we calculated performance scores over the course of the task, categorising scores into 5 IGT blocks representing 20 card choices, similar to methods used in previous experiments. Similar to Experiment 3, scores were calculated for Overall Performance representing total amount of

good deck choices [Number of choices from (Decks A + C) – Deck (B + D)] and 'Bad Deck B' choices across the IGT blocks.

Overall Performance

A mixed-measures analysis of variance was conducted to investigate the differences between framing groups (social and individual), experience sampling (ES) intervention stages (early ES and late ES), and Overall Performance across the IGT blocks. There was no significant interaction effect between framing groups, ES stages and IGT blocks, Wilks Lambda = .913, $F (4, 52) = 1.238$, $p = .306$, partial $\eta2 = .087$. There was no interaction effect between ES stages and IGT blocks, Wilks Lambda = .852, $F (4, 52) = 2.253$, $p = .076$, partial $\eta2 = .148$, which is illustrated in Figure 6.1. There was no interaction effect between framing group and IGT blocks, Wilks Lambda = .951, $F (4, 52) = .669$, $p = .616$, partial $\eta2 = .049$. The main effect between framing groups and ES stages was also not significant, $F (1, 55) = .741$, $p = .393$, partial $\eta2 = .013$.
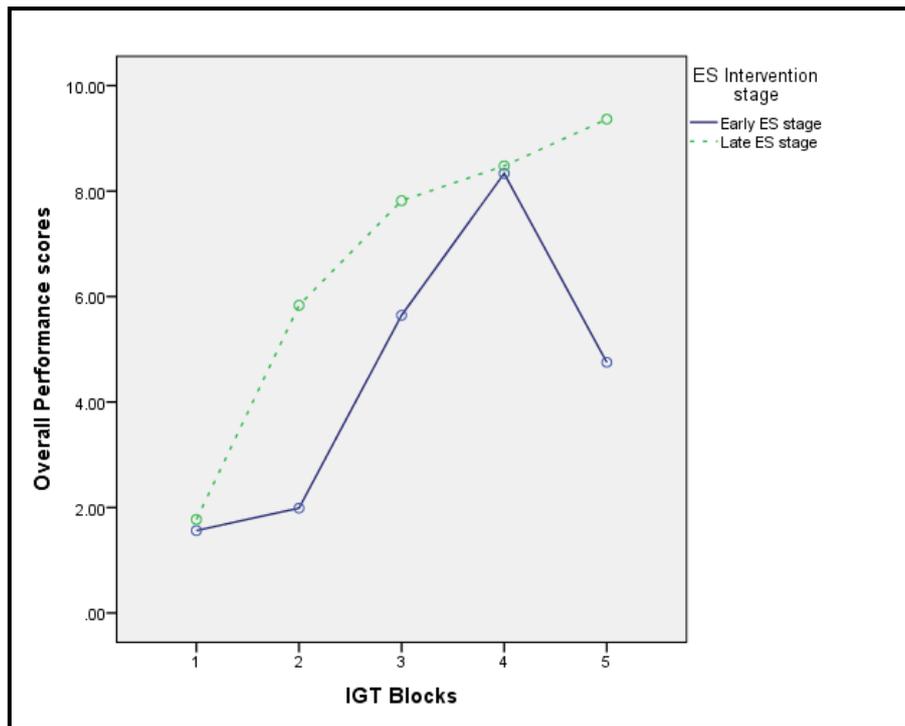
Figure 6.1: Overall Performance scores for Experience Sampling (ES) intervention

stages

The main effect for framing group was not significant, $F(1, 55) = .694$, $p = .408$, partial $\eta^2 = .012$. The main effect for Experience Sampling stage (early vs. late) was also not significant, $F(1, 55) = .2.347$, $p = .131$, partial $\eta^2 = .041$.
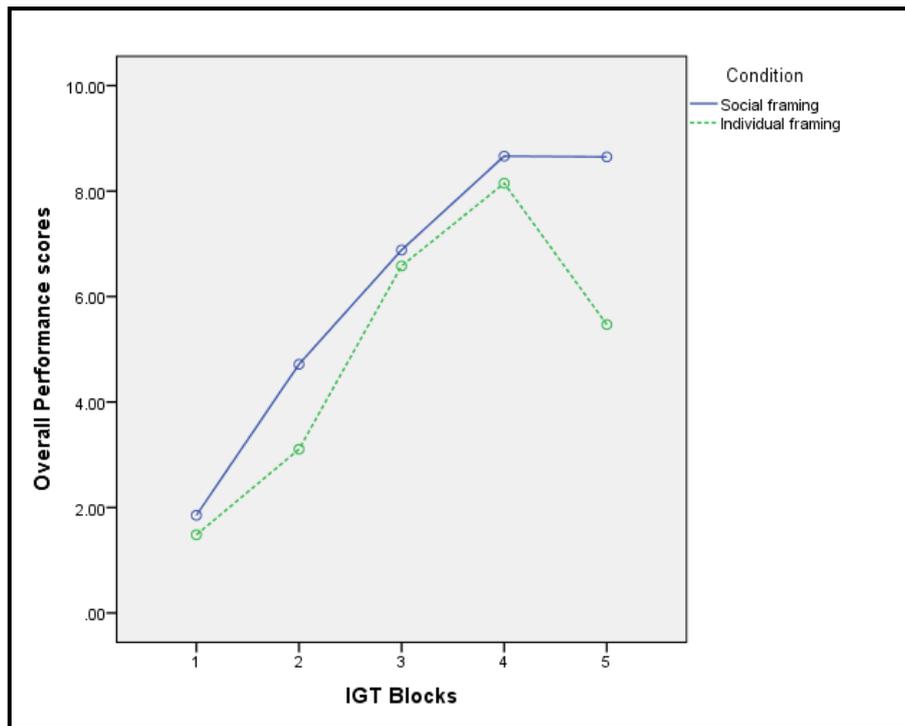
Figure 6.2: Overall Performance scores in IGT for framing groups

However, there was a significant main effect for IGT blocks, Wilks Lambda = .471; F (4, 52) = 14.599; $p < .005$, partial η^2 = .529, suggesting that there is a difference in Overall Performance over the task, but not due to either of the grouping variables, Experience Sampling stages (Figure 6.1) and task framing (Figure 6.2).

'Bad Deck B' choices

A mixed-measures analysis of variance was also conducted to investigate the differences between framing groups, Experience Sampling (ES) intervention stages, and 'Bad Deck B' choices across the IGT blocks. There was no significant interaction effect between framing groups, ES stages and IGT blocks for 'Bad Deck B' choices, Wilks Lambda = .895, F (4, 52) = 1.526, $p = .208$, partial η^2 = .105. There was also no interaction effect between

framing group and IGT blocks, Wilks Lambda = .943, F (4, 52) = .78, p = .543; or ES stages and IGT blocks of Deck B choices, Wilks Lambda = .850, F (4, 52) = 2.29, p = .072. The main effect for framing group was not significant, F (1, 55) = 1.605, p = .210, partial η^2 = .028. Similarly, the main effect for ES stages (early vs. late) was not significant, F (1, 55) = .708, p = .404, partial η^2 = .013. The main effect between framing group and ES stages was also not significant, F (1, 55) = .354, p = .554, partial $\eta2$ = .006.

However, there was a substantial main effect for IGT block, Wilks Lambda = .721, F (4, 52) = 5.039, p = .002, partial η^2 = .279, with both the social and individual framing groups showing changes in 'Bad Deck B' scores across the 5 IGT blocks, illustrated in Figure 6.3.
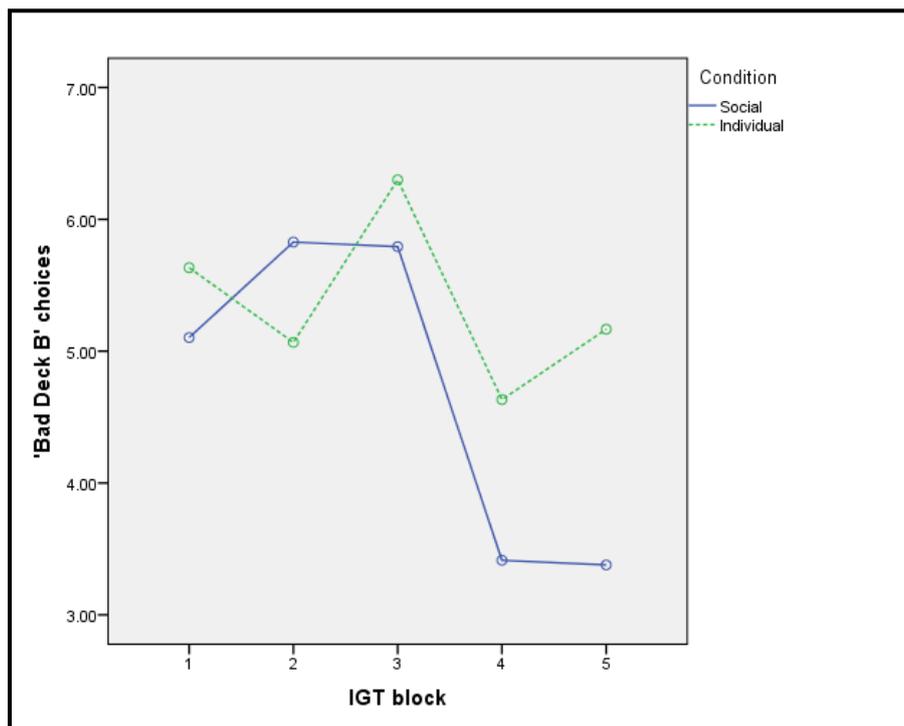

Figure 6.3: 'Bad Deck B' choices in IGT for framing groups

Post hoc tests were carried out to investigate the differences between the 'Bad Deck B' choices over the course of the task, measured the IGT blocks. Paired sample t-tests were used to investigate this for each set of IGT blocks, and are presented in Table 6.1.

Table 6.1: Paired sample t-tests for IGT blocks between framing groups

IGT Blocks		t	df
IGT block 1	IGT block 2		
5.372	5.44	-.17	58
(SD = 2.45)	(SD = 3.87)		
IGT block 2	IGT block 3		
5.44	6.05	-.892	58
(3.87)	(3.52)		
IGT block 3	IGT block 4		
6.05	4.033	3.73**	58
(3.52)	(3.36)		
IGT block 4	IGT block 5		
4.033	4.289	-.507	58
(3.36)	(3.96)		

*Note ** = p < .001. Standard Deviations appear in parentheses below means.*

6.2.2 Experience Sampling

Template Analysis

The initial coding templates of the qualitative data were developed through Template Analysis. For this, the researcher was not aware which of the framing conditions or ES stages that the data belonged. Template Analysis categorised participant's responses and two

distinct themes emerged: descriptions based on the environment and descriptions based on the task. Blind coding was done to ensure that the main coding framework was consistent with the template framework and that the themes contained consistent subcategories. Once the coding framework was developed, 52% of the data (31 participants) were coded by an independent researcher who was asked to categorise responses using the template framework. Over 90% of the data were consistent with the template framework. Any disparities were discussed. Descriptions attained during the DES are described in the common themes outlined in the subsequent sections. Template Analysis allows responses be categorised in a relatively straightforward fashion. That is, the emergent themes are used to categorise responses from each participant so that the data (each response) had elements of both themes.

Overview of qualitative responses

In reviewing the descriptions collected for the qualitative analysis, a number of subcategories emerged which are summarized in the following section. It was found that thematic content was shared between the socially framed and individual IGT groups. The two primary themes of environment-based and task-based descriptions were then categorised into subcategories, detailed in Table 6.2 below.

Environmental Descriptions of Experience (EDE) were categorised through responses that specifically referred to the environment or environmental stimuli. These include descriptions of experiences in the lab as well as details of peripheral aspects of environmental experiences that may have been expressed. Task Descriptive Responses (TDR) refers to descriptions of IGT and their experience of taking part in the task. These include personal feelings of the task, estimations of their performance and descriptions of behaviour strategies in the task. As mentioned above, Template Analysis allowed the categorisation of responses

from each participant so that each response had elements of both themes. That is, each response may consist of a particular EDE and TDR and for our analysis, descriptions that were characterised as in one of the EDE themes could also appear in subcategories of the TDR theme. This was a feature of the descriptions attained through our use of C-DES, which often contained descriptions in the participants' natural patterns of expression.

These descriptions frequently contained features of several themes, but the overall meanings of their experiences were characterised from the most prevalent and dominant expression. This includes most frequently expressed descriptions, and overall meanings of their contents. An independent coder assisted in the coding of approximately 50% of the data, with fewer than 5% discrepancies apparent from the initial framework. Any discrepancies were discussed with the independent coder and were found to be due to the data involving both of the framework themes, often found to be interdependent in these participants' descriptive responses.

Table 6.2: Summary of thematic content of participant C-DES responses during the Iowa Gambling Task

Environmental Descriptions of Experience (EDE)	Task Descriptive Responses (TDR)
• Immediate environment: descriptions of the lab environment including feelings of comfort and posture	• Personal feelings of the task where participants may have used emotive words in describing the task
• Peripheral environment: descriptions of environment outside immediate feelings including descriptions of the room, layers of surrounding experiences like temperature, smell and sounds	• Responses of task performance: these descriptions were separate from personal feelings of the task and included responses on hypothetical performance and estimation, comparing their performance to others
• Uncategorised experiences consisting of feelings not related to task (TDR's) or the lab environment.	• General task discussion: these descriptions consisted of responses on task strategies where participants did not estimate their own performance or discuss their personal feelings of the task

The data tended to vary widely in their lengths, but not in their contents. That is, some responses were brief, while others were much more detailed, with the groups defined by the two independent variables (framing condition, and early vs. late experience sampling group) not producing substantially different descriptions of experience. The length of sampling periods seemed to vary from a few tens of seconds to several minutes depending on the comfort level of the participant, as well as their willingness to contribute. Again, this had no bearing on ES group or framing conditions. Some participants reported a relative ease in talking about their experiences of the task in the lab, while others were not as forthcoming with information. As minimal interaction and interruption is a key facet for DES procedures, there was little to no prompting from the experimenter. Instead, gentle reminders were used that participants should focus on their experience at the moment of the beep were used.

For responses that lacked one theme, a subcategory of 'Other' was used. That is, responses that contained descriptions of only EDE or TDR, a subcategory of 'Other' was used for that participant in the theme where the response could not be characterised under that theme. This is due to the nature of Template Analysis where each participant response is assigned a grouping subcategory. No response was characterised as 'Other' for both themes, and these responses were minimal (2 participants in total). As such, these responses were removed from statistical analysis, focusing instead on the differences between the subcategories of the themes for the grouping variables.

Participant 22: *"...I don't really feel anything at the moment..."*

Participant 42: *"I'm only aware of the lab, the chair... my fingers pressing the keys"*

Template Analysis allowed the categorisation of responses through examination of descriptive words used by the participant. As participants' descriptions contained both environmental responses and task specific responses, single utterances might belong in more than one category. This was facilitated Template Analysis to identify subcategories for the participants' descriptions and the independent researcher who assisted in coding the data from the framework.

Descriptions of Environmental Experience

Environmental Descriptions of Experience (EDE) responses were broken into three subcategories. Table 6.3 outlines the coding framework developed through Template

Analysis with specific reference to the responses. Subcategory 'immediate environment' characterises descriptions at the individual and personal level:

Participant 3: *"I suppose I'm aware of the chair. I'm comfortable like… (…) comfortably physically…."*

Participant 47: *"The brightness of the room, the sounds coming from the hall. The smell of the computer lab. All these things are what I'm experiencing right now..."*

This is distinguishable from subcategory 'peripheral environment' which characterises experiences of the environment not relating to specific individual level descriptions. Due to the frequent richness of descriptions, the final subcategory "uncategorised experiences" was used to characterise datum that were not related to immediate experiences or peripheral lab based responses.

Participant 40: *"I guess my mind is wandering through the college…"*

Participant 22: *"I don't really feel anything at the moment, I mean, erm […] yeah I don't really have a feeling at the moment, like my mind is blank, I can't say anything."*

Participants readily described aspects of the environment, which was uninterrupted by the experimenter to allow for the participant to use their own way of expressing meaningful experiences.

*Table 6.3: Coding Framework of Environmental Responses*

Code

1	**Immediate environment**

Participant 20: "I'm thinking of hitting these keys, I'm feeling my fingers hitting the keys […] I feel very aware of that…"

2	**Peripheral environment**

Participant 42: "it's a controlled room. I know that I'm in a lab, I'm part of the room …(…)…and um… the smell of damp from my umbrella (laughs)…"

3	**Uncategorised experiences**

Participant 2:"I'm feeling like I'm at a doctors office actually, I'm really aware of my presence in the room, and yours. I guess I feel like I'm here, in the lab. Does that make sense?"

Participant 3: "…that, yeah, and I feel hung-over to be honest. Mainly the room I'm in. That's what I'm feeling"

Following the coding of the data through Template Analysis we investigated the differences between responses and the grouping variables in the IGT. Initial analysis indicates that there were no differences in responses for early vs. late sampling of experience data. A Chi-square test for independence was carried out to explore the number of responses within the EDE subcategories and ES (early vs. late) groups of IGT. Results indicated no statistically significant association between ES groups and frequency of EDE's: The relation between these variables was not significant, χ^2 (1 n = 59) = .575, *p* = .75, phi = .099. The frequencies of responses are presented in figure 6.4. As more participants completed the early ES stage, there were greater frequencies of responses for this category. For examination of the themes across framing conditions, the early and late experience sampling grouping variable was collapsed.
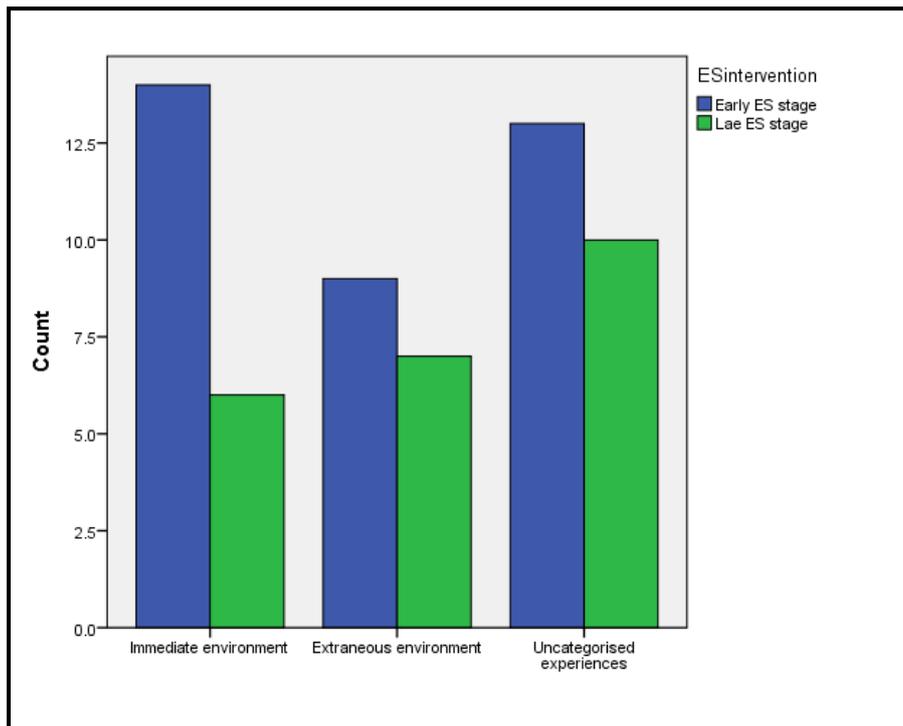
Figure 6.4: Frequencies of Environmental Descriptions of Experience responses for ES stages

Preliminary analysis shows that the most frequent responses for the socially framed were that of the 'immediate environment', followed closely by 'uncategorised experiences' and finally 'peripheral environment'. For the individually framed IGT, the most frequent response was 'uncategorised experiences', followed by 'immediate environment' and finally 'peripheral environment. This can be seen more clearly in Figure 6.5.
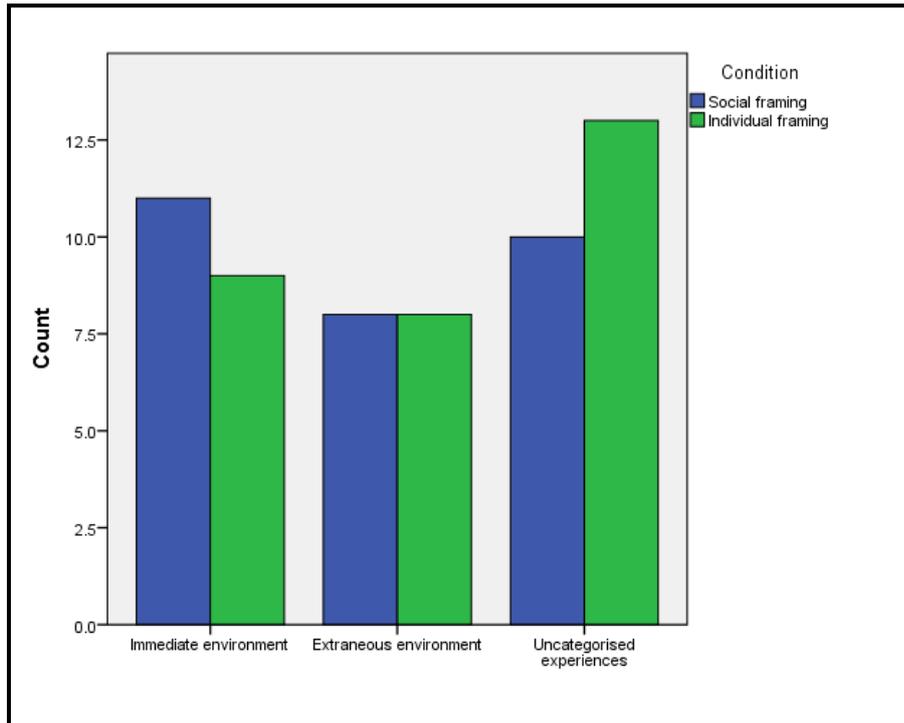
Figure 6.5: Frequencies of Environmental Descriptions of Experience responses for framing groups.

We focused on differences between the socially framed and individual IGT groups and carried out additional analysis using the Chi-Square test for independence. This was carried out to investigate the number of responses in the DES theme and framing groups (social and individual). Results indicated no statistically significant association between IGT condition and frequency of environmental responses: The relation between these variables was not significant, χ^2 (1, n = 59) = .575, p > .75, phi = .09.

Task Descriptive Responses

TDR's were categorised into three subcategories. Template Analysis facilitated the framework of these responses, detailed in Table 6.4 below. These categories outline

descriptions that are differentiated from environmental responses and specifically refer to descriptions of the task and task experience. The first subcategory is 'personal feelings' of the task, relating to specific descriptions of their feelings of the IGT.

Participant 7: *"It's a little harder than I thought… I'm frustrated…"*

Participant 8: *"I feel good at the moment…"*

The second subcategory was 'responses of task performance' and included descriptions where participants estimated their personal performance in the task. These responses were often brief, but were distinguishable from the other two subcategories as participants predominantly and consistently describe how they think they are performing in the task.

Participant 17: *"I'm really not sure how I'm doing at this… I'm not good at things like this… I bet I'm doing really badly…"*

This is differentiated from the third subcategory, 'general task discussion', which refers to descriptions of the strategies of the task. This was a less common theme that emerged but was distinguishable from the other two categories as participants refrained from using descriptive words associated with their feelings or estimations of their performance. As such, it largely refers to responses based on task strategies without explication of how they thought they were performing.

Participant 18: *"I think I figured out the pattern, you see I'm into games and I think there's a pattern to it…"*

It is worth noting that no participant made reference to the other person in the laboratory in the social framing group, or made reference to feeling that their performance was affected by their presence.

Table 6.4: Task Descriptive Responses

Code

1	**Personal feelings**

Participant 27: "I feel screwed over. I lost my points there. It's annoying… (…)…

2	**Responses on task performance**

Participant 34: "I'm wondering how I'm doing"

Participant 35: "I want to do the best in this thing. I'm not normally a betting man now, but I feel like I'm going to be compared to others"

3	**General task discussion**

Participant 51: "I think they are changing on me every time I pick a card, there's a pattern I think that I'm aware of. I'm very focused on the decks to see which ones are switching on me…"

There were no notable differences in task descriptive responses between early vs. late sampling of experience data. A Chi-square test for independence was also carried out to investigate the number of responses within the TDR subcategories and ES groups of IGT. Results indicated no statistically significant association between ES groups and frequency of TSR: The relation between these variables was not significant, χ^2 (1 n = 52) = 3.052, *p* =

.271, phi = .23. The frequencies of responses are presented in figure 6.6. As more participants completed the early ES stage, there were greater frequencies of responses for this category.
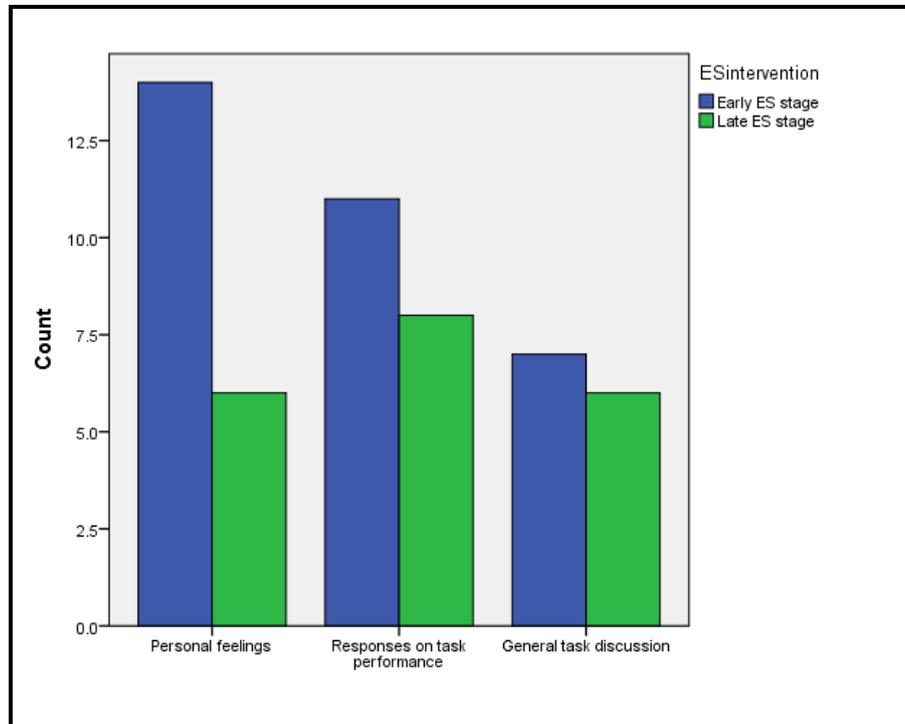
Figure 6.6: Differences in TDR responses for ES stages

Analysis of the data shows that the most frequent responses for the socially framed were of 'personal feelings' of the task, followed by 'general task discussion' and 'responses on task performance', which were quite similar in frequency. For the individually framed IGT, most frequent response was 'responses on task performance', followed by 'personal feelings' and 'general task discussion'. This can be seen in Figure 6.7.
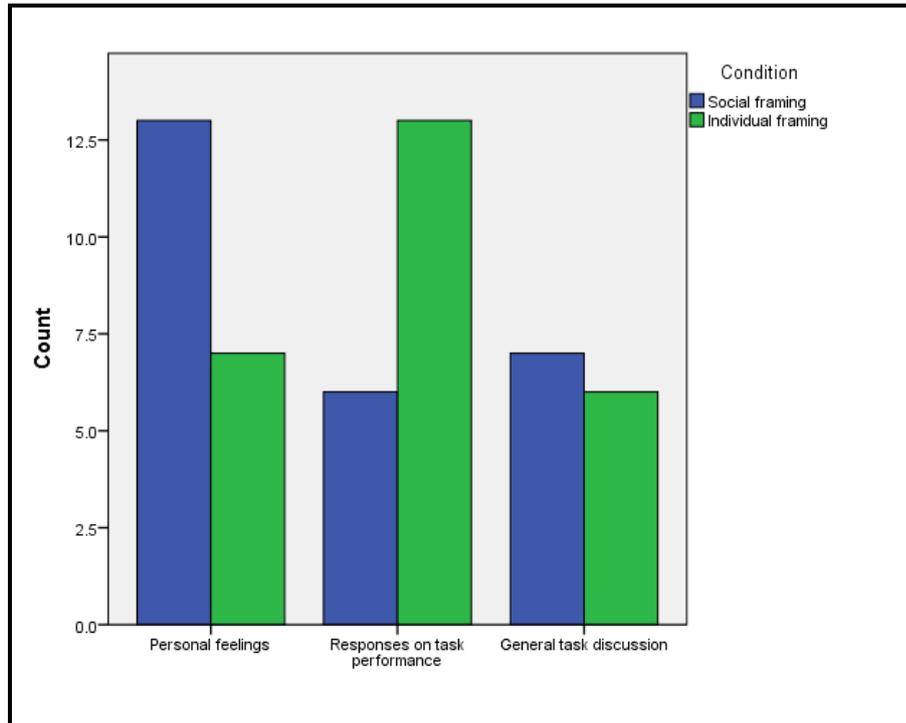
Figure 6.7: Differences in TDR responses for framing groups

A Chi-square test for independence was carried out to investigate the number of responses within the TDR subcategories and framing conditions of IGT. Results indicated no statistically significant association between IGT condition and frequency of TSR: The relation between these variables was not significant, χ^2 (1 n = 52) = 4.46, p = .108, phi = .29

6.3 Discussion

The general findings of the experiment show that there were no statistically significant differences in the pattern of IGT behaviour between the framing conditions. Riskier decision making amongst the socially framed group appears to have been somewhat suppressed, as happened in Experiment 4. The IGT was chosen for use with experience sampling methods as Experiment 3 suggested that there was a relationship between task framing and behavioural performance. As this finding was not replicated (similar to

Experiment 4), it makes interpreting the results more challenging. With C-DES included in the task methodology, differences in IGT performance were not affected by task framing. Additionally, descriptive responses attained through our use of C-DES do not offer direct insight into patterns of behaviour during the IGT. However, not finding significant differences between the framing groups in the qualitative or quantitative measures, this is an interesting observation in itself. Schwitzgebel (2003) and others (Vermesch, 2004) have argued that introspection affects the experience being explored. However, there is not a lot of research into the specific link between the two. The predominant issue for secondary approaches is how to integrate qualitative and quantitative measures, so the effects of introspection on experience are often overlooked. If the methods used exploring qualitative aspects of experience affect behaviour, then we need to plan carefully when carrying out this type of research.

Integration of C-DES with the IGT may have altered participant experience of the task. Results show that task behaviour was similar in both the social framing and individual IGT groups. This challenges findings from Experiment 3 that indicated greater 'Bad Deck B' choices in the socially framed condition. The findings from Experiment 3 suggest that behaviour over the course of the task was similar to the 'prominent Deck B phenomenon' found in other IGT studies where context was considered (Gray, 1999; Li et al. 2010). Participants are said to make choices based on immediate trial outcome, rather than overall performance in the task. In fact, the findings from the present experiment support more general conclusions drawn from Bechara et al (1994) where participants are said to learn to make more appropriate decisions to maximise final outcome over the course of the task. Using repeated measures t-tests we can see that participants consistently make fewer choices from the 'Bad Deck B', occurring after the 60 card choice point in the task.

Interestingly, IGT performances in this experiment show that all participants made advantageous decisions, increasing over the course of the task. The use of DES may be associated with the performance in the task, suggesting that introspective methods facilitated advantageous performance in the IGT in some way, or inhibited risk taking in some participants in the socially framed group. However, this is inconsistent with some of the introspective research. For example, Petitmengin et al (2013) found that participants were quite unaware of the choices that they were making in a choice blindness study and consistently made incorrect judgements. This has implications for embodiment theory which purports that the relationship between experience and behaviour is one that is close, the two phenomena tightly intertwined. Efforts are underway to understand what this relationship might be. The findings from this study show that current methods may not be sophisticated enough to separate aspects of descriptive experience and readily incorporate such data with behaviour in controlled settings. This is a long withstanding tradition in much of psychological research (Nisbett & Wilson, 1977).

However, there was a richness and variety of descriptions attained through our use of C-DES. While this lacked depth in detail, and could hardly be called phenomenological in the disciplined sense of resisting conceptualisation and a strict focus on raw experience, there were lots of descriptive contents produced which could be useful for some interpretation of the task performance, where behavioural differences in evidence that would enable a contrast, some figure-ground structure in the data. While Petitmengin and colleagues (2013) developed a method to probe responses from participants in a controlled task (choice blindness and describing preferred choices), how this method could be used in other situations is a challenge and requires extensive knowledge of qualitative interview methods. From the descriptive data produced in a novel use of DES, data suggests that people are aware of much

more than just the task or the stimuli, with responses including their estimated performance on the task, performance in comparison to other imagined participants, and descriptions of the environment. However, this may simply be due to the nature of introspection when applied in controlled settings – when participants are asked to describe their experiences, they readily account aspects of the environment, even though it may not directly be linked to the behaviour of the task, or have been part of their experience during the moments of the task itself. This is more of a limitation of DES methods as participants are left uninterrupted or guided during sampling periods. The interviews that Hurlburt carried out after the sampling periods were used to explicate the descriptions attained during the sampling periods, but this may be where some of the serious methodological concerns of DES arise. The experience of the interviewer and leading questions change seem to readily change the interpretation of responses (Hurlburt & Schwitzgebel, 2008). Our aim to overcome this was to use experience sampling methods that minimised this interaction. A controlled sampling method shows some promise, but may need to be used to interrupt behaviour in more targeted ways or involve training participants in particular kinds of introspection, both of which come with serious drawbacks and difficult limitations.

In a sense, we had hoped to show that the descriptions of experience might provide some kind of indicators or themes that could be used as "phenomenological markers", aspects of a person's experiences that might provide a hint as to the relationship between how they experienced the task environment and their behaviour in that environment. As the groups did not behave in distinct ways, finding such thematic differences becomes extremely difficult. However, the use of C-DES was able to attain descriptive data that at least partially pertained to the task and the situation. Participants readily described their personal feelings of the task; made descriptions of their behaviour in the task; described what they were physically aware

of in the lab. That the performances in the IGT do not provide any clear way of analysing the qualitative data makes it difficult for participants' descriptions to help us refine our analysis of behavioural performance. Our use of C-DES was deliberately unstructured, aiming to examine the minimal possible change in practice that might provide some phenomenological angle to laboratory experimental research, but it seems that something more than minimal change in laboratory practice will be needed to enable an adequate examination of experience and behaviour.

The qualitative findings suggest that C-DES may be a tool that attains descriptive data in a novel way, but much more research is needed to flesh out its various possible strengths and limitations for use in the lab. Hurlburt proposed that DES methods are an effective tool for gathering qualitative data that are deeply concerned with phenomenological traditions. These traditions are not replicated in the lab. The data produced in this study were not phenomenological in the sense that they were not obtained through disciplined and practised bracketing of experience, and careful suppression of tendencies toward conceptualisation. Rather, we adopted an introspective approach and tried to integrate it with standard lab practices to find ways of informing the behavioural data of the IGT. However, the effect that this type of self-reflection has on experience, as well as on behaviour is still little understood and warrants further investigation.

While linking experience and behaviour with the results observed is challenging, the possibility still exists that experience, and people's reflections on it, may matter for behaviour. The apparent effect of social task framing that appeared in Experiment 3 disappeared in both Experiment 4 and in the present study. It may simply be that Experiment 3 was an anomaly, but in the case that it was not, the change in behaviour following change in participant's reflective engagement with the task would suggest that while the link between

behaviour and experience is not simple or strong, it is nevertheless present, and in need of investigation.

From analysis of Experiment 5, DES methods provided a tool for generating straightforward descriptions of experience during the IGT. The data that were collected in this instance – undirected, variable, and dependent entirely on the diverse endogenous attentional quirks of the participants – appears to lack the specific content needed to capture the relationship between experience and behaviour, if there is one to be found and tracked. This may because, as previous literature suggests, people have difficulty in describing their experience (Petitmengin, 2006; Smith et al, 2009), or it may simply be that the particular aspects of experience that are important to track are not naturally focused upon or described by participants given little to no direction.

As outlined in Chapter Two, DES is said to be used as a tool in real life day-to-day situations. More detailed methods including introspective training and targeted questions may uncover interesting descriptions, using controlled environments so that the data can be studied with particular behaviours.

6.4   Conclusion

This chapter has outlined an experiment using a novel approach to gathering experiential data. While the results of the experiment do not clarify the relationship between experience and behaviour in the controlled use of the IGT, it does suggest that DES may be a useful tool in gathering more rudimentary or basic descriptive data when applied in lab based situations, but the specifics of method need to be addressed. Any extraneous effects that the method would have on task-experience needs careful situation. That is, reflecting on

experience, even with DES, affects the overall context of the procedure. The use of DES is challenging, but it does offer a novel means of attaining the data in the lab. Moreover, it is a simple matter to use it in other experimental domains beyond the IGT (unlike neurophenomenological methods, for instance), an exciting prospect in itself for introspective studies and embodied cognitive science. A use of DES may be adapted to suit a variety of situations including the lab; it just faces the same challenges as all other introspective methods. While our use of C-DES with the IGT suggests that open introspective reports offer little immediate insight into patterns of behaviour, this finding may not generalise to other uses of the DES, especially if the effects of training are considered. Olivares et al. (2015) have suggestions on how to overcome some of the limitations of qualitative methods in the lab. It may be that we need to explore the measurements of other expressive behaviour, such as body and kinaesthetic movements, facial expressions and patterns of speech fluctuations (as opposed to just the contents of descriptions). This may go beyond the aims of this thesis and need to include more sophisticated tools to measure other behavioural responses, such as subtle bodily movements during particular activities. The experiment described in this chapter shows that qualitative methods can be used in adaptive and interesting ways to produce potentially useful data, but need to be used with caution. More research is also needed to explore how these methods actually affect the overall experience.

Chapter 7

General Discussion

7.1   Overview of research project and findings

People's experiences, and their meaning for them, have come to play an increasing role in recent psychological science (Kagan, 2012; Mesquita et al. 2012; Olivares et al. 2015). In particular, researchers are becoming more concerned with how to authentically explore experience, which usually involves contrasts between first and third person modes of analysis. The aim of the present research project was to investigate whether phenomenologically inspired methods might usefully augment or complement standard laboratory practices so that we may develop a better understanding of the relationship between experience and behaviour. The methods we currently use are heavily informed by longstanding traditions in experimental practice (Allen & Williams, 2011; Kagan, 2012); however there have been arguments over the last few decades about understanding the importance of subjective experiences in relation to observable behaviour (Dennett, 1991; Froese et al, 2011; Lutz & Thompson, 2006). As Psychology calls for methods that are "accessible to any competent external observer" (Piccinini, 2010, p. 85), our focus was on augmenting or complementing current research practices, so that lab-based methods could become more phenomenologically informed without some form of revolutionary, total overhaul of common practice.

In the current literature, there are few attempts to bring phenomenological methods into the laboratory. The kind of rigour and standards of reliable practice that come with

typical experimental tasks are important strengths in psychological research, and the aim of our experiments was to find ways of building on or augmenting this strength, rather than to try to replace normal practice. This allows us to refine standard lab based tasks to explore both experience and behaviour in ways that could be easily replicated, with hopes of finding a method that might allow us to observe the coupling of experience with behaviour in pragmatic ways. Our aim with the experiments carried out in this project was to identify tasks where participants' experience of the situation affected their engagement with the experiment, and through that, their pattern of behaviour. That is to say, these experiments did not aim to explore specific processes of executive functioning or decision making, but were used as tools for exploring methodological practices in the lab.

This investigation started with the Go No – Go Association Task (GNAT) in an attempt to explore behaviour responding to stimuli with varying associated meanings. We found that more abstract stimuli were associated with longer reaction times and fewer errors. More meaningful, or culturally loaded visual stimuli, were associated with faster reaction times and greater error rates. We infer from the findings that the more ambiguous experimental stimuli resulted in longer reaction times, which is consistent with current research on locus of control and priming where the participants attend more slowly to stimuli that are not instantly recognisable to them (Gomez et al. 2007). However, given that in our experiment this was associated with fewer errors in the task, this is somewhat contradictory to other research using the GNAT which proposes that error rates increase as the task stimuli becomes less familiar or recognisable to participants (Nosek & Banaji, 2001).

The use of the traffic light stimuli may have been more readily recognisable to the participants, but the faster times seemed to result in a speed-accuracy trade-off. While this trade-off is sometimes found in other metacognitive studies (Schwartz, 2010), the findings

from our use of the GNAT raise questions concerning how meaning plays a role in response cues. The aim for the thesis was to find a task that was sufficiently rich in meaning or complexity so that it could be integrated with more qualitative methods to explore this experience. Unfortunately, the GNAT does not afford us the opportunity of exploring the qualitative measurements of experience in the task. As discussed in the opening chapters, describing one's own subjective experience is often difficult for participants. Though it might be possible to interview participants about their understanding and interpretation of stimuli with various levels of meaningfulness (e.g. action-relevant implications of traffic light images), doing so in a fast-paced executive functioning task seems unlikely to uncover how experience guides their actions, particularly given the effect the more meaningful stimuli seemed to produce. The findings of this experiment perhaps suggest that not just structural aspects of the stimuli, but their meaning or familiarity at least, might be important, even in these types of fast-paced executive functioning tasks. However, it was decided that they offer little potential to further this research project as the task was ultimately unsuitable for qualitative exploration, and other experimental tasks were considered.

We decided to explore how the contexts of experiences were important for particular behaviours, particularly in controlled settings such as the lab. Barrett et al (2010) show that situational instances are important for interpreting and understanding the behaviour. Individuals in social settings tend to behave in ways that are linked to the situation. For example, Schwartz (2010) found that people are heavily influenced by the social settings in which we measure their behaviour. As we intended to explore experiences in relation to the behaviour that emerged over the course of tasks, we developed the social framing for the Balloon Analogue Risk Task (BART) and the Iowa Gambling Task (IGT). This was to facilitate a clear but simple context within which the task was embedded, and also to use a

manipulation of the lab setting that could easily be adapted with other tasks, or altered for different settings. It was used to manipulate how participants may perceive the task by leading participants to believe that their behaviour in the lab would have ramifications for another person completing the task directly after them. The findings in Experiment 2 show that framing the BART in a specific context did not have an effect on participant behaviour. However, this may be due to the unpredictable dynamics of the BART's gain/loss frequencies. Research suggests that it is a robust decision making paradigm, and while there might be reason to believe that people's risk-taking tendencies might change under different contexts of accountability, this was not the case with Experiment 2. Literature on BART usually discusses how it is an adapted version of the IGT, which seems to afford a somewhat greater range of decision strategies as it uses less predictable task contingencies and involves four possible actions a given point, rather than a simple binary decision, as in the case of the BART. For Experiment 3 we used the Iowa Gambling Task (IGT) to explore the framing effects.

From literature on the task, the IGT seems to contain the task elements needed to explore aspects of experience and the experience-behaviour relationship, as participants engage with the task in a different way than with the GNAT or the BART. The key features of the task are that it is dynamic, has interdependency of decisions (the consequences from early decisions impact on the value of later ones because of the participant's running total), and has been shown to be sensitive to environmental cues (performance is variable given different constraints external to the task itself). In its typical administration, researchers seem to have clear ideas of the experiential aspects of the task. That is, it is understood that healthy participants learn the good decks over the bad decks (in contrast, for instance, with VMPFC patients), and that their experience of task changes with their adapting behaviour. What is less

understood, however, is how participants seem to be quite sensitive to environmental cues and extraneous influences on task dynamics (Tomb et al., 2002). The results of Experiment 3 indicated that participants completing the socially framed IGT made riskier decisions, with clear patterns of behaviour that were associated with the framing of the task.

As the IGT seemed to be a more promising task for our methodological enquiry, we decided to use the framing effect from Experiment 3 and introduce qualitative methods in the lab. Maia and McClelland's (2004) work has shown that participants in the IGT are more consciously aware of the dynamic of the task at earlier stages in the task that previously proposed by Bechara and colleagues (1994). As such, their standardised questionnaire was used, but with more emphasis on the qualitative questions to understand the dynamics of the framing of the task, and the behavioural differences that were observed in the previous experiment. However, Experiment 4 did not show such behavioural changes over the course of the task between the framing conditions, making it very difficult to derive clear outcomes, but posing some interesting questions on the nature of qualitative questioning in controlled situations. In particular, the kinds of effects that directed questioning would have on observed behaviour.

As targeted questioning in the IGT seemed to have an overriding effect on the framing of the task, we decided to use a less intrusive, but more novel approach to gathering qualitative data in the lab. Work from Hurlburt and Akhtar (2006) has shown promise in the literature for gathering authentic experiential data in a number of situations (Froese et al., 2011; Vermesch, 2010). As such, we used the method to develop a sampling technique for the lab, derived directly from Hurlburt's DES, as an appropriate tool to help explore experiential data in controlled settings with its randomised triggering of introspective

episodes. This experience sampling approach offered a means of gathering data without much interaction or questioning from the experimenter, a possible confound in the previous study.

As DES aims to access "pristine" (Hurlburt & Akhtar, 2006) experience (relying less on retrospective accounts of an experience but notes and recorded comments made in the moments immediately following an instant of experience, prompted by a beeper device), the nature of the experience is collected within the flow of the person's natural descriptive patterns. Random sampling (or sampling where the participants believes it is random) was used to gather the data in the IGT. However, we failed to show clear behavioural differences between the framing groups, similar to the previous experiment. This may point to limitations of the IGT and similarly controlled tasks, rather than the qualitative method and their use of exploring experiential descriptions. Experiment 5 shows that C-DES could integrate sampling techniques in the lab, making it a potentially useful tool amongst a number of methods that could be used to further understand the nature of experience and its relation with observed behaviour. However, our use of the IGT brings with it a number of limitations that need careful consideration. While the task is dynamic and allows the participants to choose from an array of stimuli over the course of the task, the IGT is also associated with a few methodological concerns. Indeed, some researchers find the use of the task contentious (Colombetti, 2008; Lin et al 2007).

Limitation of the Iowa Gambling Task

Since its inception, the IGT has been widely used to identify real-life risky decision makers and is said to highlight the role of the body during this process. The findings of the task are well replicated, with participants consistently showing bodily arousal before high

risk decisions in the task (Bechara & Damasio, 2002; Bishara et al. 2009; Lin et al. 2007).

However, some empirical studies have found that participant behaviour during the IGT is

sensitive to environmental changes, such as time pressure, anticipatory fear and other

stresses (Preston et al. 2007), gender differences in competition (Ennis, Kelly & Lambert,

2001), as well as exam pressure and general stress (Gray, 1999). Neuropsychological studies

have illustrated different brain regions associated with stresses during the task as a predictor

of task performance (Bolla et al. 2004). Other research indicates that people behave

differently due to characteristics of personality (Suhr, 2007). In our use of the IGT, we

created a social framing context to facilitate clear experiential boundaries between the

groups. Doing so was not just to illustrate clear behavioural differences in the IGT, but to

show that experience is important for the interactions participants have with the task stimuli.

The results from Experiment 3 show that framing the task in this way resulted in participants

making riskier decisions. These performances are very similar to the 'Prominent Deck B'

phenomena noted in some of the IGT literature (Lin et al. 2007).

Colombetti (2008) and Tomb et al (2002) also criticise the role that skin conductance

responses (SCR) have in their relation to emotional experiences in the IGT. SCR's are said to

affect or 'bias' decisions in the task, stemming from how Damasio (1994) proposed the IGT

as the experimental evidence for somatic markers in decision making. Colombetti (2008),

along with Tomb and colleagues (2002) criticise the interpretation of findings that specific

physiological correlates are associated with bad deck choices. The most common

interpretation is that increased SCR indicates a form of tracking of general risk in the card

selections. Instead, Colombetti (2008) and Tomb et al. (2002) propose that a participant's

higher SCR before the selection of a bad deck may be due to the participant's expectation of

a higher-magnitude outcome, and not because a SCR mediates the considerations of long-

term outcomes. This is a question for which first-person report would seem the appropriate means of checking, and the results of Experiment 4 seem to indicate that participants gather knowledge of the decks in the task at an early stage, consistent with Maia and McClelland's findings.

Participants in our socially framed IGT reported greater confidence levels at early stages in the task, which is consistent with the 'prominent Deck B' phenomena reported in the literature whereby participants are guided by gain-frequency of the deck, rather than focusing on long-term outcomes of the task. Interpreting this finding is a challenge as behavioural differences were not observed between the framing groups, but it seems that the gradual advantageous choices that participants made over the course of the task in both groups is consistent with the typical findings of the IGT. That is, participants gradually improve as the task progresses, although probing qualitatively on this experience overrode any effect that the framing context had during the task.

Tomb et al (2002) illustrated gain-frequency behaviour in the IGT by altering the task paradigm. In lowering the amounts of losses of the disadvantageous decks they found that normal subjects (participants who did not suffer damage to the VMPRC) generated higher SCR's to the advantageous decks, which appears to support the hypothesis that a SCR only reflects the expectation of the immediate outcome of the decks. This is a concern also highlighted by Colombetti (2008) in that the IGT only illustrates short-sighted somatic markers, that is, immediate decisions and outcomes. With the results of our experiments using the IGT, this seems to be true for the socially framed context of Experiment 3. However, findings from the questionnaire administered in Experiment 4 show that participants had different perceptions of the decks between the framing groups, with more favourable ratings of disadvantageous Deck B in the socially framed condition. Moreover,

this is only seen after 40 deck decisions and, crucially, does not appear to have a parallel in differences in the performance on the task. Participants' reported experiences seem to diverge from their behaviour.

In relation to the advantage deck ratings, participants in the social framing condition rated Deck A as less favourable when compared to the individual group's ratings. Conversely, this reversed in the final ratings of Deck A, with participants rating it as more preferable having completed 100 trials. Again, this was not associated with differences in performance, so the question remains how to adequately integrate first-person descriptions with performance in the task, or if, indeed, such integration is a valid ambition.

Colombetti (2008) suggests that further investigation of the physiology of emotion could attempt to establish if somatic markers are indeed necessary for emotional decision making. This has implications for whether or not participants are seeking to maximise gain-frequency or maximise earnings at the end of the IGT. As researchers have traditionally proposed that Deck B is the disadvantageous deck in the IGT, Lin et al.'s (2007) research casts doubt over the strategies of participants in their proposal of the 'prominent Deck B' phenomenon. Participants seemed to choose decks with higher gains frequency rather than better long-term outcome when under social stress. That is, their performance may be guided by the high frequency of gains over losses with the risky Deck B, indicating poorer task performance. When qualitative methods were introduced to the task, there were no clear ways of understanding how the framing changed the experience of the task. Some of the deck ratings differed between the groups, but the directed questioning used in Experiment 4 with Maia and McClelland's (2004) questionnaire did not provide a clear indicators of experiential differences between groups.

With our use of the C-DES in Experiment 5, participant descriptions of their experiences did not differ between framing groups, so either the coupling of experience and behaviour is not as robust in this task, other means are necessary to explore the relationship further, or the IGT is not suitable for qualitative probing. The process of introspection just by itself seems to have suppressed the effect shown in the first IGT experiment. While a curious phenomenon, this is a perfect illustration of the deep methodological problems associated with experiential research. In principle, a next action to take would be to try to explore how the experiences of the participants are differing in the task when they are asked about their experience, versus when they are not, but there is, of course, no way to conduct such research directly. The behavioural phenomenon that promised to enable an interrogation of different forms of experience on a controlled experimental task disappeared when that experience was examined. This was not due to a failure to engage with the task generally. We found that participants in our individually framed group in Experiment 3, and across all groups in Experiments 4 and 5, performed very similar to the typical findings of the IGT. Participants consistently chose fewer cards from the riskier decks as the task progresses. Our findings show that participants generally made fewer risky decisions as the task progressed, just as Damasio (1994) originally stated.

Other aspects such as motivation, level of engagement and apathy could explain the nature of emotional decision making in further detail. Colombetti (2008) argues that the IGT cannot truthfully show whether participants make their choices by considering long-term outcomes. As a result, the IGT may need further investigation to understand the physiology and phenomenology of decision making. To do this kind of research, we need to explore other aspects of behavioural responses to the situation, such as bodily and kinaesthetic movements. Other researchers are arguing for actions (Olivares et al, 2015), but how exactly

to methodologically capture these data and usefully explore them to understand the experiential differences in behaviour is going to call for a more radical overhaul of the methods. Rather than associated experience and behaviour, we should be associating experience and the behaviour as well as bodily changes or physiological responses.

With regard to qualitatively probing during the IGT, the existing literature tends toward the claim that some form of training is needed, as participants are generally inept at discussing their experiences in sufficient detail. Experiment 4 attempted to directly build on this, and we developed a rudimentary training programme that attempted to give participants familiarity with talking about their experience in a controlled setting. However, as noted, our findings show that training had no bearing on the contents of descriptions, participants' awareness of their own thinking, or specific details about decks or actions that might have led to the evaluations they were nevertheless happy to make. However, some participants in both the trained and untrained groups had difficulties in elaborating on their experiences, and it seems possible that the narrow focus of questions worked against us in gathering more open-ended descriptive data. Our findings suggest that qualitative methods in the lab have a long way to go, but there may be promising ways of exploring experience in meaningful and controlled ways. The kinds of 'minimal' changes proposed at the beginning of this thesis seem unlikely to be enough to answer the research question. There is likely going to be some substantial innovation in the future, either in data gathering techniques, training of participants in the acquisition of meaningful data, or different kinds of experimental tasks needed.

7.2　　Implications for the study of experience in Psychology

Research on experience tends to focus on perception, or elaborating on individual level aspects of particular experiences in a person's life. As has been shown in the earlier chapters, the scientific study of behaviour and cognition commonly use experimental observations carried out by objective observers who are outside the context and the content of the object of experience. To get valid outcomes, it is often argued that measurement tools should involve tight control and narrow behavioural options in experimental protocols in the specific conditions of a laboratory, which are far from the ecological state of natural experience (Kagan, 2012). These methods enable scientists to acquire data that are precise, reliable and available for public review, the kinds of third-person data most commonly associated with the core principles of science. This allows for practical and replicable research methods, however they tend to be associated with limiting options for behaviour in the lab, as well as highly contrived situations somewhat removed from natural situations (Doan, 2009). This removal from natural situations has been criticised by phenomenologists. The main focus for Husserl was the study of phenomena as they appeared through consciousness, with the study of experience attempting to unfold meanings as they are lived in everyday existence. Some researchers argue that in order to understand behavioural data fully, we need to interpret the behaviour with the help of the subject, whereby we allow participants to describe their subjective experiences during the experiment (Froese et al. 2011; Lutz, 2002; Varela, 1999). Where this is done at all, it generally occurs after the experiment, by means of verbal reports or questionnaires (Langdridge, 2004; Smith et al. 2009; Vermersch, 2004). This subjective information is then used as some extra data which might nuance the interpretation of the empirical data in positive or negative ways, but in any case are not themselves considered as scientific inputs (Dennett, 1991).

From the earlier chapters in this dissertation we see that there are new theories of mind and cognition that claim that experience and phenomenology are important and intertwined with behaviour. For example, Barrett (2011) and Froese et al. (2011) claim that cognition spans the brain, body and environment that cannot be adequately understood in terms of disembodied states. Embodied states are generally seen as necessarily involving experience, phenomenology, where these various aspects of the phenomena become intertwined. While the theoretical (and indeed, intuitive) rationales for such thinking might be compelling, findings from the experiments carried out in this research suggest that, much in line with the prevailing common sense in scientific psychological research, whatever the role of experience might be, it is subtle, unobvious. Attempts for attaining useful descriptive data that relates to task behaviour is not going to be straightforward.

Introspection and experience have a mixed history in Psychology. The overall findings from the current project broadly support the long-existing trend that experience and behaviour have a weak relationship, if any. However, there remain good reasons to investigate the relationship in more depth and the findings of our experiments show that there is much more work to be done. There are growing parts of the scientific community that accepts subjective experience as necessary to fully understand cognitive functioning and behaviour (Colombetti, 2008; Froese et al. 2011; Olivares et al. 2015; Stuart, 2012; Wilson & Golonka, 2013). These researchers, especially in cognitive science, take subjective experience into consideration, not only as an extra source of data, but as something that should be studied on a par with typical behavioural data. The results of our latter experiments show that there is no simple path to an integration of experimental measures and participants' experience in controlled settings. While it was hoped that there may be ways of using experimental measures with minimal changes in practices, the outcome of the study suggests

that this is not, in fact, likely to be the case. If experience is to be integrated into behavioural work more deeply, some substantial alterations to methods are required. I would argue, however, that the potential pay-offs remain promising.

Even without prolonged training, direct descriptions given by the subject are often rich in experiential detail, supported by the findings of Experiment 5, which sometimes have details that are difficult to attain through third-person methods. As mentioned above, it is generally believed that people have great difficulty articulating their experiences. This could be due to the nature of the experience being examined by the researcher. The experience needs to be rich in detail and at least somewhat meaningful for the participant. This shift in focus opens the qualitative methods to be examined in a more critical way. For example, questioning the methods used to gather data on the experience and how these data are being used to understand the cognitive processes involved. If first-person approaches are to be taken seriously, the methods may need to be more accessible to researchers and used in more practicable settings, that is, in the lab.

Despite a great deal of research suggesting that meaning and experience matter, it is still unclear just *how* they matter, what the mechanism might be for experience to shape behaviour. More importantly, how this data can be collected and used in meaningful ways. The recent theories of embodied subjectivity that have been reviewed here argue strongly for the first conclusion – that experience matters. In controlled settings, there may be no strong link between consciousness and observed behaviour, so whatever links that can be shown will be looser than proposed in the literature, perhaps occurring over minutes of time rather than moment to moment.

Lutz and Thompson (2003) argue that momentary experiences are important for understanding the link between experience and behaviour. Their use of neurophenomenological methods in the exploration of experience defined specific moments in the lab whereby experiential data were gathered. This was also used in experience sampling methods (Hurlburt & Akhtar, 2006), as well as other qualitative approaches (Heron, 1996) where it is believed that attaining descriptions of a particular moment is a sufficient means of understanding the experience in a more general sense. The results of our use of C-DES, however, suggest that the details of momentary experiences are too vague or unreliable. The open-ended questions used in Experiment 5 show that participants are likely to include descriptions of their surrounding environment and other justification for their behaviour. This may be the result of using the lab as a means of exploring specific momentary experiences which removes the behaviour from a naturalistic environment. However, it also raises issues of the precise relationship between experience and behaviour, which is not actually stated clearly in most theories, and so we are still at the exploratory stage in this research. It is not easy to make predictions or test specific hypotheses; so the theories that say that experience matters for behaviour need to become more specific in detailing what their relationship might be, and how consciousness affects actions. The implications of this is far reaching, as it may show that the relationship between experience and behaviour is not as closely intertwined as believed, or there needs to be much more work done to clarify the type of relationship between them.

7.3   Implications for qualitative methods to study experience in the lab

Qualitative findings in our experiments shed little light on framing effects in the lab, showing that there are methodological challenges when studying experience in particular settings. The first problem that we face is just how difficult it is to facilitative descriptive experiences. While our use of qualitative probing in a specific task was naturally inclined to produce narrowly-focused data, our findings are consistent with previous research, which argues that people generally have trouble in elaborating on their experiences (Hurlburt & Schwitzgebel, 2008; Langdridge, 2004; Petitmengin, 2006; Vermesch, 2004). However, we face additional challenges when using sampling techniques in settings such as the lab as these methodological tools are not designed for such a controlled environment. Adapting these methods for the lab seems to compromise some of the validity of the descriptions, as the experience is being removed from naturalistic environments. As such, any descriptions attained in the lab may only be partly analogous to the real-world experience, and lose some of the details needed to understand the associated behaviours. The challenge facing us is that we are unsure exactly how descriptions in the lab differ from naturalistic expressions of experience and how these methods may be affecting them. The GNAT task and BART, for instance, both had elements that seemed to provide the possibility of meaningful experience in the laboratory (at least in a very minimal, controlled fashion), but reports of boredom and the lack of clear behavioural correlates suggests they did not capture the value of experience that is of interest here. Tasks will need to be dynamic, engaging, and carry some structural or process parallels with some form of real world experience, to be usable.

While the IGT had some aspects of this, a task is needed that measures aspects of experience that go beyond risk-taking behaviour. Instead, experimental task are needed whereby participants can meaningfully attend to stimuli so that their behaviour may indicate

clear behavioural patterns as the task progresses. However, these patterns of behaviour need to be controlled enough so that the participants' qualitative responses can be calibrated with both the task, and other participants who may take part in the task. The IGT, while certainly dynamic, is still too narrowly focused on a particular way of behaving. That is, the aim of the task is solely to make advantageous decisions over the course of the task.

It seems that moving out of the laboratory may be necessary to make methodological advancements, measuring not just the naturalistic environment of potential participants, but specific aspects of their environment, so that their behaviour and descriptions may be authentic and tied to the phenomena explored. Alternatively, aspects of the person's behaviour may not be adequately captured from their mere descriptions. If we could include analysis of the kinaesthetic awareness associated with the experience being described, we may be able to facilitate more comprehensive explorations of the associated behaviour.

Using qualitative methods in the lab for future studies

It is clear from our final two experiments that more comprehensive training and directed (though carefully focused) questioning would have to be considered for future studies. Not just in the way we train participants in the lab, but in the experiences we hope to gather data on. Given the limitations of both the task-specific questions of Experiment 4 and the unguided descriptions of Experiment 5, there seems a need to focus on more specific aspects, or particular kinds, of experience. That is, we will need to explore specific aspects of experience (for example, somatic, emotional, environmental, object-oriented, task oriented), and systematically examine whether a clear relationship exists with the behaviour. While it may move away from minimal changes in the methods, it may be necessary in order to attain

more detailed and useful responses. Different theories suggest different facets of experience are likely to be more relevant. For example, Lutz and Thompson (2003) and Hurlburt and Schwitzgebel (2008) highlight pre-reflective states of consciousness from which we attain descriptive data. At present, however, we tend not to collect any such data in a qualitative fashion. Instead, we always boil off the experience to look at just the behavioural aspects. We therefore have very few data relevant to this question, and are in a very exploratory phase of research.

We will also have to examine the various effects that introspection tends to have on cognition and behaviour during a typical task, as our findings seem to show that people were less risky in the IGT when introspection was involved at some point during the task. Instead of comparing descriptions between experiential or context groups, it may be more appropriate to focus on a more direct link of experiential data with behaviour. This may take the guise of methods and questioning more akin to the Petitmengin (2006) use of the Elicitation Interview, although this method also comes with a series of limitations in trying to find robust effects between experience and behaviour. While proponents of the elicitation interview approach argue strongly that a properly skilled interviewer neither foists particular descriptions nor prompts invented reports from their interviewees (Petitmengin, 2006), we must yet proceed with care. This means that the approach, while both demanding of extraordinary discipline on the part of the interviewer and substantial time for its conduct (often between half an hour to an hour per interview), must still be used with caution. Such pragmatic considerations must not stop us from doing good science, but they do, nevertheless, motivate us to be very aware of the range of choices we have available.

Olivares et al. (2015) suggest that instead of relying on purely first-person descriptions we should also pay attention to nonverbal indicators that are relevant during the

sampling of experience. They conclude that the interpretation of gestures, the location of eyes in the space, or the movements that follow the verbal accounts, could bring non-explicit information about specific aspects of the interviewee's experience. In addition, the interviewer could calibrate the non-verbal indicators performed by the interviewee by interpreting them, and thus improve both the introspective skills of the participant as well as their own interview skills. Their suggestion of using observations to augment first-person data is somewhat complementary to our proposal of collecting first-person data to help interpret behavioural measures.

The qualitative descriptions attained during our IGT experiments could not be used to explain the behavioural patterns in a clear way, largely because there were no performance differences observed in the framing groups of the task. The behavioural differences that were found using the initial framed IGT experiment disappeared with the introduction of qualitative methods to the task. It has been argued in an earlier chapter that theory does not yet make clear the particular impact of the use of qualitative methods on the experience being explored or associated behaviour and the findings suggest that it is not to be overlooked or underestimated. Performance differences in the IGT are consistently found in the research when the task is applied with some social stress (Gray, 1999). Even with a minimal method that claims to have very limited impact on experience, such as the DES method (and using no leading questions) framing was not associated with performance differences. This shows that there are no reliable behavioural markers that could indicate differences between the framing groups. We do not yet understand the ramifications that qualitative methods may have on the experience being explored. As such, there may be a training/naiveté trade-off given the difficulty in attaining descriptions of experience that are not subject to major criticisms. As

mentioned above, we may need to consider using sampling techniques on more non-momentary aspects of experiences (e.g. mood), or the use of more physiological measures.

Neurophenomenology attempted to integrate experiential data with neurological correlates to understand the phenomena in comprehensive ways. As outlined in Chapter Three, neurophenomenology is associated with a number of limitations, including practicalities associated with integrating empirical neural data with qualitative descriptions from trained participants. There is little consensus amongst researchers of how to integrate these types of data, which means that looking for neural correlates of descriptive experiences may have been premature as the methods used to integrate these kinds of data have not faced the same level of scrutiny as traditional psychological practices. Much more work is needed to develop our understanding of integrating these types of data, especially as experience data is open to interpretation and sensitive to manipulations or bias.

A soma-phenomenology, or a more behaviour-focused phenomenology may be possible with the current methodological tools that are available in experiential research. This research could develop on bodily and kinaesthetic movements in co-ordination of descriptions from different kinds of experiences, which could be adaptable and more generalised than EEG studies. For example, Stuart (2013) suggests the possibility of incorporating qualitative methods, such as an elicitation interview technique, with neural data measured in controlled settings as it could afford us the opportunity of examining a clearly defined behaviour in a contextualised temporal experience (specifically the idea of using a sample of participants that are finely attuned to the behaviour being measured in the controlled setting).

This is also suggested in Olivares et al (2015), who argue that there are other forms of data that may elaborate on participants' experiences. The type of qualitative data that are gathered through open-ended questioning is insufficient and does not improve our understanding of behaviour in meaningful ways. This line of questioning tends to generate experience reports of external things. If it is a person's internal, emotional or affective, or bodily experiences that play a bigger role in shaping behaviour over time, people will need training and practice. This means compromising their naiveté, but that may just be necessary. Perhaps we need an extension of neurophenomenological methods into the standard laboratory. Evidence from Damasio (1994), Barrett (2011) and others suggests physiological responses, not just neurological ones, seem to fit behaviours.

Leone et al (2012) show individuals have strong emotional fluctuations in decision making. They found that there were strong fluctuations in bodily arousal during a game of chess where (1) emotionality varied from decision to decision and (2) the bodily arousal may be strong enough to help shed light on the inner thought of the person making the decision. Bodily correlates measured by heart rate were found to predict specific performance characteristics in the chess game. With a sample of expert chess players, the authors found heart fluctuations that correlated with specific moments in the game where the players were performing high stake moves or overtaking an opponent. It illustrates clearly that we can measure and examine momentary experience where there are bodily correlates that show emotionality in clearly defined instances. Placing participants in these meaningful environments may be an advantageous way of investigating experience in the lab. However, as mentioned previously, narrowly focused tasks bring with them the limiting scope of generalising behavioural data, a concern that is often raised from standardised lab based tasks (Schwitzgebel, 2003).

As momentary experiences are not easily captured in lab based settings, it is clear that we need more robust effects before making clearer observations on the relationship between experience and behaviour. Future research could possibly explore more immersive games when gathering behavioural data, or using the participants where behaviours are controlled and limited, but fully meaningful for the participant. That is, the participant is more immersed in the experience of the task, and their behaviour has more links with fully realised meaningful descriptions. While it is not clear how we could sample such data, the loose relationship between experience and behaviour found in our use of C-DES is still problematic, and work in identifying the most appropriate data to gather, and the most appropriate analyses, should continue.

Additionally, if people can be trained to report their emotional or physiological state, it might be possible to find the kinds of "phenomenological markers" that Lutz and colleagues do with neurological data. This would be a substantial change in practice and may be possible with the use of naive participants but use more directed questions, maybe something closer to the elicitation interview as mentioned previously. Additionally, new technologies to study behaviour in naturalistic settings with methods similar to C-DES or adapted versions of it could prove useful. For example, mobile technologies, fitness trackers and smartwatches all seem promising. In Hurlburt's DES, participants recorded experience when prompted by wearing a beeper for several days. New technologies could also record much more data during these situations (and possibly trigger introspective episodes at specific moments during a specific activity). Data such as physiological arousal, heart rate, sleep information and more is already being collected by these technologies. Given the increasing awareness researchers have of the methodological limitations in experience research, using the aforementioned technologies to produce more meaningful data seems

promising, and potentially well under way. However, this would mean a move away from the minimal change in practice hoped for in the present work, but that may just be necessary to get the data we need.

7.4   Conclusion

Over the last few decades there is a growing trend in adapting first person accounts of experience in the study of cognition (Ruitenberg, 2012). Understanding experience and behaviour is crucial, but we're still in at the beginning of developing adequate methods for its controlled study. Although embodiment research stresses the importance of experience for our cognitive theories, how to characterise or study it effectively has remained a challenge. However, there is reason to believe that experience can yet be studied in a controlled manner. Many researchers have put forward models attempting to explain ways of using more integrative methodologies in the study of experience, although these practices are often carried out in ways that are strikingly different to the methods used in Psychology at present. Some have claimed that there are ways of using qualitative accounts of experience to interpret behaviour (Varela, 1996), while others have argued that third-person methods are sufficient to understand experience and its relation to consciousness (although research needs to be carried out in slightly different ways) (Dennett, 1991, 2007; Piccinini 2003). Further still, some researchers are proposing a variety of tools and techniques that explores experience by way of second-person methods (Froese et al. 2011; Hurlburt & Akhtar, 2006; Lutz & Thompson, 2003; Petitmengin, 1996).

When we analyse first person data, we do so in a way to create symbolic representations of it, through projections of what the experimenter understands by the

responses or through linguistic characterisation of experiences (Langdridge, 2004). Up to now, there are few attempts to find ways of using these data to inform the interpretation of experimental methods. If we are to test and refine our data collection techniques, we will need to be able to find some way of examining variation in measured performance that might fit or diverge from variation in observed experiences. This is a big challenge and changes in practice will have to be equally big. This research project shows that the answers are neither obvious nor straightforward. The kind of practices of psychologists and cognitive scientists doing this new kind of science will have to be very different from the practices we currently see in contemporary research. Qualitative methods are continually improving. Tools, such as a controlled use of DES, show that we can study experience and behaviour in controlled ways that still produce usable and interesting experiential data. How we use these approaches to inform and refine methodological practices is entirely undeveloped from a cognitive psychology point of view. As such the current thesis hopes to have opened avenues for new research to occur, particularly in how we can use our methods to further explore the relationship between experience and behaviour in meaningful ways.

References

Allen, M., & Williams, G. (2011). Consciousness, plasticity, and connectomics: the role of intersubjectivity in human cognition. *Frontiers in Psychology*, *2*.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology*, *71*(2), 230-244.

Barker, R. G. (1968). *Ecological psychology: Concepts and methods for studying the environment of human behavior*. Stanford University Press.

Barrett, L. (2011). *Beyond the brain: How body and environment shape animal and human minds*. Princeton University Press.

Barrett, L. F., Mesquita, B., & Gendron, M. (2011). Context in emotion perception. *Current Directions in Psychological Science*, *20*(5), 286–290.

Bastien, C. (1998). Does context modulate or underlie human knowledge. *Cognition and Context, ISPA, Lisboa*, 13–25.

Bayne, T. (2004). Closing the gap? Some questions for neurophenomenology. *Phenomenology and the Cognitive Sciences*, *3*(4), 349–364.

Bazire, M., & Brézillon, P. (2005). Understanding context before using it. In *Modeling and using context* (pp. 29–40). Springer.

Bechara, A., Damasio, A. R., Damasio, H., & Anderson, S. W. (1994). Insensitivity to future consequences following damage to human prefrontal cortex. *Cognition*, *50*(1), 7–15.

Bechara, A., Damasio, H., Tranel, D., & Damasio, A. R. (2005). The Iowa Gambling Task and the somatic marker hypothesis: some questions and answers. *Trends in Cognitive Sciences*, *9*(4), 159–162.

Burr, V. (2003). Social constructivism. *London and New York: Routledge*.

Cesario, J. (2014). Priming, replication, and the hardest science. *Perspectives on Psychological Science*, *9*(1), 40–48.

Chalmers, D. (2014). Intuitions in philosophy: A minimal defense. *Philosophical Studies*, *171*(3), 535–544.

Chalmers, D. J. (1995). Facing up to the problem of consciousness. *Journal of Consciousness Studies*, *2*(3), 200–219.

Clark, A. (1997). *Being there: Putting brain, body, and world together again*. MIT press.

Colombetti, G. (2008). The somatic marker hypotheses, and what the Iowa Gambling Task does and does not show. *The British Journal for the Philosophy of Science*, *59*(1), 51–71.

Colombetti, G., & Thompson, E. (2008). The feeling body: Towards an enactive approach to emotion. *Developmental Perspectives on Embodiment and Consciousness*, 45–68.

Damasio, A. (2008). *Descartes' error: Emotion, reason and the human brain*. Random House.

DeDonno, M. A., Demaree, H. A., & others. (2008). Perceived time pressure and the Iowa Gambling Task. *Judgment and Decision Making*, *3*(8), 636–640.

De Jaegher, H., Di Paolo, E., & Gallagher, S. (2010). Can social interaction constitute social cognition? *Trends in Cognitive Sciences*, *14*(10), 441–447.

Dennett, D. (2001). Are we explaining consciousness yet? *Cognition*, *79*(1), 221–237.

Dennett, D. (2003). Who's on first? Heterophenomenology explained. *Journal of Consciousness Studies*, *10*(9-10), 19–30.

Dennett, D. C. (2007). Heterophenomenology reconsidered. *Phenomenology and the Cognitive Sciences*, *6*(1-2), 247–270.

Di Paolo, E. (2009). Extended life. *Topoi*, *28*(1), 9–21.

Di Paolo, E. A., Thompson, E., & Shapiro, L. (2014). The enactive approach. *The Routledge Handbook of Embodied Cognition*, 68–78.

Doan, T. B. (2009). Using second person interview techniques. *E-Sense Project, The Open University*.

Engelbert, M., & Carruthers, P. (2011). Descriptive Experience Sampling: What is it good for? *Journal of Consciousness Studies*, *18*(1), 130–149.

Engström, J., Johansson, E., & Östlund, J. (2005). Effects of visual and cognitive load in real and simulated motorway driving. *Transportation Research Part F: Traffic Psychology and Behaviour*, *8*(2), 97–120.

Fehr, B., & Russell, J. A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General*, *113*(3), 464 – 486.

Fiddick, L., Cosmides, L., & Tooby, J. (2000). No interpretation without representation: The role of domain-specific representations and inferences in the Wason selection task. *Cognition*, *77*(1), 1–79.

Fillmore, M. T. (2003). Drug abuse as a problem of impaired control: current approaches and findings. *Behavioral and Cognitive Neuroscience Reviews*, *2*(3), 179–197.

Foglia, L., & Wilson, R. A. (2013). Embodied cognition. *Wiley Interdisciplinary Reviews: Cognitive Science*, *4*(3), 319–325.

Froese, T., Gould, C., & Seth, A. K. (2011). Validating and calibrating first-and second-person methods in the science of consciousness. *Journal of Consciousness Studies*, *18*(2), 38-64.

Gallagher, S. (2005). *How the body shapes the mind*. Cambridge University Press.

Gibson, J. J. (1966). *The senses considered as perceptual systems*. Oxford, England: Houghton Mifflin

Goldstein, M., Brendel, G., Tuescher, O., Pan, H., Epstein, J., Beutel, M., … others. (2007). Neural substrates of the interaction of emotional stimulus processing and motor inhibitory control: an emotional linguistic go/no-go fMRI study. *Neuroimage*, *36*(3), 1026–1040.

Golonka, S & Wilson, A. (2012) Gibson's ecological approach. *Avant: Trends in Interdisciplinary Studies 3 (2).* 40-53

Gomez, P., Ratcliff, R., & Perea, M. (2007). A model of the go/no-go task. *Journal of Experimental Psychology: General*, *136*(3), 389-413.

Gray, J. R. (1999). A bias toward short-term thinking in threat-related negative emotional states. *Personality and Social Psychology Bulletin*, *25*(1), 65–75.

Heavey, C. L., & Hurlburt, R. T. (2008). The phenomena of inner experience. *Consciousness and Cognition*, *17*(3), 798–810.

Heft H. (2011). *Holt's "Recession of the Stimulus" and the emergence of the "Situation" in psychology. In Charles E. P. (Ed.), A new look at new realism: The psychology and philosophy of E.B. Holt (pp. 191–219).* New Brunswick, NJ

Heron, J. (1996) *Co-operative Inquiry: Research into the Human Condition.* London: Sage

Heron, J. and Reason, P. (1997) 'A participatory inquiry paradigm', *Qualitative Inquiry, 3(3).* 274-294.

Hopko, D. R., Lejuez, C. W., Daughters, S. B., Aklin, W. M., Osborne, A., Simmons, B. L., & Strong, D. R. (2006). Construct Validity of the Balloon Analogue Risk Task (BART): Relationship with MDMA Use by Inner-City Drug Users in Residential Treatment. *Journal of Psychopathology and Behavioral Assessment*, *28*(2), 95–101.

Hurlburt, R. T., & Akhter, S. A. (2006a). The descriptive experience sampling method. *Phenomenology and the Cognitive Sciences*, *5*(3-4), 271–301.

Hurlburt, R. T., & Akhter, S. A. (2006b). The Descriptive Experience Sampling method. *Phenomenology and the Cognitive Sciences*, *5*(3-4), 271–301.

Hurlburt, R. T., & Schwitzgebel, E. (2007). *Describing inner experience?: Proponent meets skeptic*. Cambridge, Massachusetts, The Mit Press.

Johansson, P., Hall, L., Sikström, S., Tärning, B., & Lind, A. (2006). How something can be said about telling more than we can know: On choice blindness and introspection. *Consciousness and Cognition*, *15*(4), 673–692.

Kafle, N. P. (2013). Hermeneutic phenomenological research method simplified. *Bodhi: An Interdisciplinary Journal*, *5*(1), 181–200.

Kagan, J. (2012). *Psychology's ghosts: The crisis in the profession and the way back*. New Haven & London, Yale University Press.

Kagan, J. (2013). Contextualizing experience. *Developmental Review*, *33*(3), 273–278.

Koriat, A., & Shitzer-Reichert, R. (2002). *Metacognitive judgments and their accuracy*. Springer.

Langdridge, D. (2004). The hermeneutic phenomenology of Paul Ricoeur: Problems and possibilities for existential-phenomenological psychotherapy. *Existential Analysis: Journal of the Society for Existential Analysis*, *15*(2), 243–255.

Langdridge, D. (2007). *Phenomenological psychology: Theory, research and method*. Durham, Pearson Education.

Lejuez, C. W., Read, J. P., Kahler, C. W., Richards, J. B., Ramsey, S. E., Stuart, G. L., … Brown, R. A. (2002). Evaluation of a behavioral measure of risk taking: the Balloon Analogue Risk Task (BART). *Journal of Experimental Psychology: Applied*, *8*(2), 75-84.

Levine, J. (1983). Materialism and qualia: The explanatory gap. *Pacific Philosophical Quarterly*, *64*(4), 354–361.

Lin, C.-H., Chiu, Y.-C., Lee, P.-L., & Hsieh, J.-C. (2007). Is Deck B a disadvantageous deck in the Iowa Gambling Task? *Behavioral and Brain Functions*, *3*(1), 3 – 16

Lindquist, K. A., & Barrett, L. F. (2008). Constructing Emotion The Experience of Fear as a Conceptual Act. *Psychological Science*, *19*(9), 898–903.

Lutz, A. (2002). Toward a neurophenomenology as an account of generative passages: A first empirical case study. *Phenomenology and the Cognitive Sciences*, *1*(2), 133–167.

Lutz, A., Lachaux, J.-P., Martinerie, J., & Varela, F. J. (2002). Guiding the study of brain dynamics by using first-person data: synchrony patterns correlate with ongoing conscious states during a simple visual task. *Proceedings of the National Academy of Sciences*, *99*(3), 1586–1591.

Lutz, A., & Thompson, E. (2003). Neurophenomenology Integrating Subjective Experience and Brain Dynamics in the Neuroscience of Consciousness. *Journal of Consciousness Studies*, *10*(9-10), 31–52.

Maia, T. V., & McClelland, J. L. (2004). A reexamination of the evidence for the somatic marker hypothesis: What participants really know in the Iowa gambling task. *Proceedings of the National Academy of Sciences of the United States of America*, *101*(45), 16075–16080.

Maturana, H. R., & Varela, F. J. (1980). *Autopoiesis and cognition: The realization of the living*. Springer Science & Business Media.

McGlone, M. S., & Tofighbakhsh, J. (2000). Birds of a feather flock conjointly (?): Rhyme as reason in aphorisms. *Psychological Science*, *11*(5), 424–428.

McVay, J. C., & Kane, M. J. (2010). Does mind wandering reflect executive function or executive failure? Comment on Smallwood and Schooler (2006) and Watkins (2008). Retrieved from http://psycnet.apa.org/journals/bul/136/2/188/

Meichenbaum, D. (1985). Metacognitive methods of instruction: Current status and future prospects. *Special Services in the Schools*, *3*(1-2), 23–32.

Merleau-Ponty, M. (1962). *Phenomenology of Perception*. London, Routledge

Merleau-Ponty, M. (1965). *The Structure of Behaviour*. London, Metheun

Mesquita, B., Barrett, L. F., & Smith, E. R. (2010). *The Mind in Context*. Guilford Press.

Molden, D. C., & Dweck, C. S. (2006). Finding" meaning" in psychology: a lay theories approach to self-regulation, social perception, and social development. *American Psychologist*, *61*(3), 192-203.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, *84*(3), 231–259.

Nosek, B. A., & Banaji, M. R. (2001). The go/no-go association task. *Social Cognition*, *19*(6), 625–666.

Olivares, F. A., Vargas, E., Fuentes, C., Martínez-Pernía, D., & Canales-Johnson, A. (2015). Neurophenomenology revisited: second-person methods for the study of human consciousness. *Frontiers in Psychology*, *6*, 673.

Overgaard, M. (2004). On the naturalising of phenomenology. *Phenomenology and the Cognitive Sciences*, *3*(4), 365–379.

Petitmengin, C. (2006). Describing one's subjective experience in the second person: An interview method for the science of consciousness. *Phenomenology and the Cognitive Sciences*, *5*(3-4), 229–269.

Petitmengin, C., Remillieux, A., Cahour, B., & Carter-Thomas, S. (2013). A gap in Nisbett and Wilson's findings? A first-person access to our cognitive processes. *Consciousness and Cognition*, *22*(2), 654–669.

Piccinini, G. (2010). How to improve on heterophenomenology: The self-measurement methodology of first-person data. *Journal of Consciousness Studies*, *17*(3-4), 84–106.

Pleskac, T. J. (2008). Decision making and learning while taking sequential risks. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *34*(1), 167-185.

Pleskac, T. J., & Wershbale, A. (2014). Making assessments while taking repeated risks: A pattern of multiple response pathways. *Journal of Experimental Psychology: General*, *143*(1), 142-162.

Preston, S. D., Buchanan, T. W., Stansfield, R. B., & Bechara, A. (2007). Effects of anticipatory stress on decision making in a gambling task. *Behavioral Neuroscience*, *121*(2), 257-263.

Pringle, J., Drummond, J., McLafferty, E., Hendry, C. (2011) Interpretative phenomenological

analysis: a discussion and critique. *Nurse Researcher. 18 (3),* 20-24

Reber, R., & Schwarz, N. (1999). Effects of perceptual fluency on judgments of truth. *Consciousness and Cognition*, *8*(3), 338–342.

Reid, K., Flowers, P., & Larkin, M. (2005a). Exploring lived experience. *Psychologist*, *18*(1), 20–23.

Rosenberg, S. (1968). Associative facilitation in the recall and recognition of nouns embedded in connected discourse. *Journal of Experimental Psychology*, *78*(2p1), 254-260.

Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin Vol 34(8).* 1096-1109.

Schultz, D., & Schultz, S. (2012). *Theories of personality*. Cengage Learning.

Schwarz, N. (2010). Meaning in context: Metacognitive experiences. *The Mind in Context*, 105–125.

Schwitzgebel, E. (2003). Do people still report dreaming in black and white? An attempt to replicate a questionnaire from 1942. *Perceptual and Motor Skills*, *96*(1), 25–29.

Schwitzgebel, E. (2008a). The unreliability of naive introspection. *Philosophical Review*, *117*(2), 245–273.

Schwitzgebel, E. (2008b). The Unreliability of Naive Introspection. *Philosophical Review*, *117*(2), 245–273.

Slaby, J. (2010). Steps towards a critical neuroscience. *Phenomenology and the Cognitive Sciences*, *9*(3), 397–416.

Smith, J., Flowers, P., & Larkin, M. (2009). *Interpretative Phoneomological Analysis: theory, method and research*. London: SAGE Publications.

Stanley, M. (1974). Obedience to authority. *An Experimental View.* Harper, New York.

Stuart, S. A. J. (2011). Enkinaesthesia: The Fundamental Challenge for Machine Consciousness. *International Journal of Machine Consciousness*, *3*(01), 145–162.

Stuart, S. A. J. (2012). Enkinaesthesia: The essential sensuous background for co-agency. *The Background: Knowing without Thinking. Palgrave Macmillan, Basingstoke*, 167–186.

Stuart S. A. J. (2013). The union of two nervous systems: neurophenomenology, enkinaesthesia, and the Alexander technique. *Construct. Foundat. 8,* 314–323

Suhr, J. A., & Tsanadis, J. (2007). Affect and personality correlates of the Iowa Gambling Task. *Personality and Individual Differences*, *43*(1), 27–36.

Taylor, E. (1996). *William James on consciousness beyond the margin.* Princeton University Press.

Thompson, E., & Stapleton, M. (2009). Making sense of sense-making: Reflections on enactive and extended mind theories. *Topoi*, *28*(1), 23–30.

Traylen, H. (1989). Health Visiting Practice: An Exploration into the Nature of the Health Visitor's Relationship with their Clients'. *Unpublished MPhil Dissertation, University of Bath*.

Varela, F. J. (1996). Neurophenomenology: A methodological remedy for the hard problem. *Journal of Consciousness Studies*, *3*(4), 330–349.

Varela, F. J., & Shear, J. (1999). First-person methodologies: What, why, how. *Journal of Consciousness Studies*, *6*(2-3), 1–14.

Vermersch, P. (2004). Attention between phenomenology and experimental psychology. *Continental Philosophy Review*, *37*(1), 45–81.

Wason, P. C. (1966). Reasoning. In B. M. Foss (Ed.), *New horizons in psychology.* Harmondsworth: Penguin

Weisberg, J. (2011). *Describing Inner Experience: A Symposium Debating Descriptive Experience Sampling (DES) Introduction*. Journal of Consciousness Studies,18 (1). 7–20

Wheeler, M. (2005). *Reconstructing the cognitive world: The next step*. MIT press.

White, T. L., Lejuez, C. W., & de Wit, H. (2008). Test-retest characteristics of the Balloon
Analogue Risk Task (BART). *Experimental and Clinical Psychopharmacology*, *16*(6), 565

Wicker, A. W. (1987). Behavior settings reconsidered: Temporal stages, resources, internal
dynamics, context. *Handbook of Environmental Psychology*, *1*, 613–653.

Wilson, A. D., & Golonka, S. (2013). Embodied cognition is not what you think it is. *Frontiers in
Psychology*, *4*.

Wilson, M. (2002). Six views of embodied cognition. *Psychonomic Bulletin & Review*, *9*(4), 625–
636.

Ziemke, T. (2003). What's that thing called embodiment. In *Proceedings of the 25th Annual
meeting of the Cognitive Science Society* (pp. 1305–1310). Mahwah, NJ: Lawrence Erlbaum.

Appendices

Appendix A: **Go No go Association Task**

<u>Instruction sheet:</u>

On the computer monitor in front of you, you will be presented with the Go No-go task.

A 'Go' symbol on the computer monitor requires you to press the [\] button.

The 'Stop' symbol on the monitor requires you to press the [/] key on the keyboard.

Take a moment to familiarise yourself with the layout of the keyboard.

If you press the incorrect button, the next stimulus appears on the screen automatically.

You are not being timed and it is not important that you complete the task quickly.

It is expected that the experiment should not take longer than ten minutes in total.

When you are ready to begin, click on the [Space bar] to begin.

COLÁISTE MHUIRE GAN SMÁL
OLLSCOIL LUIMNIGH

MARY IMMACULATE COLLEGE
UNIVERSITY OF LIMERICK

To whom it may concern,

Thank you for your interest in the study. If you agree to take part, you will be asked to complete the Go No-Go Association task. The task is not a test of your intelligence but a simple cognitive task where you are asked to press an appropriate button for what you see on the computer monitor in front of you.

You can decide to stop and leave this experiment at any time, without giving any reason or explanation, should you wish to.

All of the information collected in this study will be kept in strictest confidence.

If you have any questions at any time, please do not hesitate to ask the researcher. If you have questions later on, please email Alan McAuliffe at alan.mcauliffe@mic.ul.ie. Alternatively you can contact my research supervisor at marek.mcgann@mic.ul.ie

If you have concerns about this study and wish to contact someone independent, you may contact:

Emma Barry
MIREC Administrator
Mary Immaculate College
South Circular Road
Limerick
061-204515
emma.barry@mic.ul.ie

Consent form:

I have read the information sheet about this research project and on the Stop-Go Task, and any questions I have about the project have been answered to my satisfaction.

I understand that I am free to withdraw from the study at any time, without having to give any reason or justification.

I am aware that my results will be kept confidential.

I am aware that research findings may be published; however my anonymity will be preserved at all times.

I am willing to take part in the study, and I am over 18 years of age.

Name (please print):_____

Signature: _____

Date: _____

Debriefing:

Dear participant,

Thank you for taking part in this experiment. Research suggests that meaningful cues provide a different understanding for individuals. In this experiment, a group of participants completed the Go No-go task with 'Go' or 'No-go' symbols appearing on screen, thus providing a clear meaningful instruction. In the other group of participants however, individuals were presented with numbers, with the number '6' representing the 'Stop' stimulus. Other individuals completed the task with Yellow and Blue images. It is expected that individuals who completed the task with the Stop/Go stimulus have greater reactions times and fewer inaccurate responses. This may give us an insight the role meaning has in lab based cognitive tasks.

If you have any further questions about your own data, the research itself, feel free to contact the researcher at alan.mcauliffe@mic.ul.ie

Information sheet

To whom it may concern,

Thank you for your interest in the study. If you agree to take part, you will be asked to complete a decision making task called the Balloon Analogue Risk Task.

The task involves inflating a balloon by clicking a button on the keyboard.

Each time you click the balloon, you earn 5 points. If you overinflate the balloon it will explode and you will lose any money you earned associated with that balloon.

You may 'bank' any points earned for pumping a particular balloon at any time in the task. This will add to a pot of earned points seen on the right hand side if the screen.

Once you hit the 'bank' button or if the balloon explodes, a new balloon will appear on your screen. Please try to earn as much money as possible. There are 30 balloons you can earn money inflating.

The task in this experiment is not a test of your intelligence but is a decision-making task. You can decide to stop and leave this experiment at any time, without giving any reason or explanation, should you wish to.

All of the information collected in this study will be kept in strictest confidence.

If you have any questions at any time, please do not hesitate to ask the researcher. If you have questions later on, please email Alan McAuliffe at alan.mcauliffe@mic.ul.ie. Alternatively you can contact my research supervisor at marek.mcgann@mic.ul.ie

If you have concerns about this study and wish to contact someone independent, you may contact:

Emma Barry

MIREC Administrator

Mary Immaculate College

South Circular Road

Limerick

061-204515

emma.barry@mic.ul.ie

Consent Form

I have read the information sheet about this research project and any questions I have about the project and the BART have been answered to my satisfaction.

I understand that I am free to withdraw from the study at any time, without having to give any reason or justification.

I understand that all of the information collected in this study will be stored in accordance with all application data protection legislation including the Data Protection Act and (where applicable) the Freedom of Information Act.

I am willing to take part in the study, and I am over 18 years of age.

Name (please print):_____

Signature: _____

Date: _____

Appendix C: Iowa Gambling Task

Information sheet

To whom it may concern,

You are invited to participate in a study currently being undertaken by Alan McAuliffe, PhD candidate in the Psychology Department; Mary Immaculate College, Limerick. This research investigates your experience in a decision making task called the Iowa Gambling Task. Should you consent to participation, you will be asked to complete the Iowa Gambling Task and answer a qualitative experience questionnaire.

The aim of the task is to maximise your points by making decisions on cards that will appear on a computer screen. The experiment is not a test of your intelligence but a simple decision making task where you are asked to choose from 4 decks of cards presented on the computer monitor in front you.

[This information will appear in the information sheet given to experimental condition only:]

[Your performance in the task will affect the next participant in the game. If you perform poorly then the next participant will have a more difficult time winning points. Your performances will be judged together as this is a cooperative task. It is important that you win the most amounts of points possible in order to do well!]

All information gathered in this study will be anonymous and confidential. Data will only be viewed by the researcher and examiner. Should you consent to participation, data gathered will be anonymised and there contain no identifying factors.

You are free to decline participation in this study or to withdraw participation at any time without being obliged to give justification for your action. If you chose to withdraw your participation during completion of the study, the data that you have provided will be removed.

If you have any queries, please contact the researcher at alan.mcauliffe@mic.ul.ie. Alternatively you can contact my research supervisor at marek.mcgann@mic.ul.ie

If you have concerns about this study and wish to contact someone independent, you may contact:

MIREC Administrator
Mary Immaculate College
South Circular Road
Limerick
061-204515
mirec@mic.ul.ie

Consent form

I have read the information sheet about this research project involving the Iowa Gambling Task. Any questions I have about the project have been answered to my satisfaction.

I understand that I am free to withdraw from the study at any time, without having to give any reason or justification.

I am aware that my results will be kept strictly confidential.

I am aware that research findings may be published; however my anonymity will be preserved at all times.

I am willing to take part in the study, and I am over 18 years of age.

Name (please print):_____

Signature: _____

Date: _____

<u>Debriefing form:</u>

Dear participant,

Thank you for taking part in the study. The purpose of this experiment is to help us understand decision making during the Iowa Gambling Task. Some participants were told that their performance was going to affect the next participant in the waiting room however this is not the case. Research suggests that how people perceive a given situation affects how people perform in the Iowa Gambling Task. Your participation is greatly appreciated in this study.

Please keep the information sheet given to you at the beginning of the study for your personal records. If you have any further questions about your own data, the research itself, feel free to contact the researcher at alan.mcauliffe@mic.ul.ie

Appendix D: Iowa Gambling Task and Experience Questionnaire

(Maia and McClelland questionnaire)

<u>Information sheet</u>

To whom it may concern,

You are invited to participate in a study currently being undertaken by Alan McAuliffe, PhD candidate in the Psychology Department; Mary Immaculate College, Limerick. This research investigates your experience in a decision making task called the Iowa Gambling Task. Should you consent to participation, you will be asked to complete the Iowa Gambling Task and answer a qualitative experience questionnaire.

The aim of the task is to maximise your points by making decisions on cards that will appear on a computer screen. The experiment is not a test of your intelligence but a simple decision making task where you are asked to choose from 4 decks of cards presented on the computer monitor in front you.

At specific times in the game you will be presented with a number of questions about the task that will appear on screen. When this happens, the experimenter will be recording your responses. Please read the question aloud and answer honestly. This procedure is used to understand decision making, however we want you to focus on your honest experience about the task. There is no 'right' or 'wrong' answer. Don't try to anticipate responses; just try to honestly answer the question about the task and your experience of it.

[This information will appear in the information sheet given to experimental condition only:]

[Your performance in the task will affect the next participant in the game. If you perform poorly then the next participant will have a more difficult time winning points. Your performances will be judged together as this is a cooperative task. It is important that you win the most amounts of points possible in order to do well!]

All information gathered in this study will be anonymous and confidential. Data will only be viewed by the researcher and examiner. Should you consent to participation, data gathered will be anonymised and there contain no identifying factors.

You are free to decline participation in this study or to withdraw participation at any time without being obliged to give justification for your action. If you chose to withdraw your participation during completion of the study, the data that you have provided will be removed.

If you have any queries, please contact the researcher at alan.mcauliffe@mic.ul.ie. Alternatively you can contact my research supervisor at marek.mcgann@mic.ul.ie

If you have concerns about this study and wish to contact someone independent, you may contact:
MIREC Administrator
Mary Immaculate College
South Circular Road
Limerick
061-204515
mirec@mic.ul.ie

Amended Maia and McClelland questionnaire

Q1.   Rate on a scale of 0 to 10, how good or bad you think deck 1 is, where 0 means that it is terrible and 10 means that it is excellent.

Q2.   Why did you give Deck [__] that particular rating and take a few moments to describe why

[Repeat Q1 and Q2 for decks 2 through 4]

Q3.   On a scale of 0 to 100 how much you think that you know what you should do in this game in order to win as many points as possible (or if you can't in, to avoid losing points as much as possible). 0 means that you have no idea of what you should do and feel that you still need to explore the game more, and 100 means that you know exactly what you should do and have no doubts that that would be the best strategy.

Consent form

I have read the information sheet about this research project involving the Iowa Gambling Task and Qualitative Experience Interview. Any questions I have about the project have been answered to my satisfaction.

I understand that I am free to withdraw from the study at any time, without having to give any reason or justification.

I am aware that my results will be kept strictly confidential.

I am aware that research findings may be published; however my anonymity will be preserved at all times.

I am willing to take part in the study, and I am over 18 years of age.

Name (please print):_____

Signature: _____

Date: _____

<u>Debriefing form:</u>

Dear participant,

Thank you for taking part in the study. The purpose of this experiment is to help us understand decision making during the Iowa Gambling Task. Some participants were told that their performance was going to affect the next participant in the waiting room however this is not the case. Research suggests that how people perceive a given situation affects how people perform in the Iowa Gambling Task.

You were asked to answer questions about the task at specific moments during it. This was based on a standardised questionnaire developed for the task and some participants received training sessions to become more familiar with the procedure. This involved training in giving accounts of descriptive experience in a more disciplined way. We hope to compare responses from trained and untrained participants and explore the effects it has on response detail; and whether the training affected the experience of the task.

Your participation is greatly appreciated in this study. Please keep the information sheet given to you at the beginning of the study for your personal records. If you have any further questions about your own data, the research itself, feel free to contact the researcher at alan.mcauliffe@mic.ul.ie

Appendix E: Iowa Gambling Task and Experience Sampling Method

<u>Information sheet:</u>

To whom it may concern,

Thank you for your interest in the study. If you agree to take part, you will be asked to complete a computerised task called the Iowa Gambling Task and tell the experimenter about how you find the task at various intervals. The task is not a test of your intelligence but a simple decision making task where you are asked to choose from 4 decks of cards presented on the computer monitor in front you.

Iowa Gambling Task: This is a decision making task where you will see 4 decks of cards in front of you. You can choose a card from one of these decks by pressing keys [1] [2] [3] or [4]. Each card will show you if you won or lost some points. You have 2000 points at the beginning of the task. The aim of the game is to win the most amounts of points possible!

> [This information will appear in the information sheet given to experimental condition only:]
>
> Your performance in the task will affect the next participant in the game. If you perform poorly then the next participant will have a more difficult time winning points. Your performances will be judged together as this is a cooperative task. It is important that you win the most amount of points possible in order to do well!

At various times in the game you will hear a 'beeping' sound. You need to stop playing the Iowa Gambling Task as soon as you hear this beep and tell me exactly how you feel. This may be a little tricky at first so you're going to get a chance to practise this before the experiment begins. This is a method commonly used to understand decision making, however we want you to focus on how you <u>feel</u> as soon as you hear the beep. What is your bodily experience as that particular moment in the task? Don't try to anticipate responses. The beeping will occur at completely random times. There are no 'right' answers, just try to describe how you feel at the particular moment of the beep. At the end of the task I am going to ask you a few overall questions on how you found the Iowa Gambling Task.

You can decide to stop and leave this experiment at any time, without giving any reason or explanation, should you wish to.

All of the information collected in this study will be kept in strictest confidence.

If you have any questions at any time, please do not hesitate to ask the researcher. If you have questions later on, please email Alan McAuliffe at alan.mcauliffe@mic.ul.ie. Alternatively you can contact my research supervisor at marek.mcgann@mic.ul.ie

If you have concerns about this study and wish to contact someone independent, you may contact:

Emma Barry
MIREC Administrator
Mary Immaculate College
South Circular Road
Limerick
061-204515
emma.barry@mic.ul.ie

Consent form:

I have read the information sheet about this research project involving the Iowa Gambling Task and Descriptive Experience Sampling method. Any questions I have about the project have been answered to my satisfaction.

I understand that I am free to withdraw from the study at any time, without having to give any reason or justification.

I am aware that my results will be kept strictly confidential.

I am aware that research findings may be published; however my anonymity will be preserved at all times.

I am willing to take part in the study, and I am over 18 years of age.

Name (please print):_____

Signature: _____

Date: _____

Debriefing form:

Dear Participant,

Thank you for taking part in the study. The purpose of this experiment is to help us understand decision making during the Iowa Gambling Task. Some participants were told that their performance was going to affect the next participant in the waiting room however this is not the case. Research suggests that how people perceive a given situation affects how people perform in the Iowa Gambling Task.

You were asked to explain exactly how you felt at the moment of a beeping sound. This helps us understand exactly how you felt at a specific time in the game. You were lead to believe that the beeper went off at random intervals however it did in fact go off after 40 and 80 card choices in the Iowa Gambling Task.

Your participation is greatly appreciated in this study. Please keep the information sheet given to you at the beginning of the study for your personal records. If you have any further questions about your own data, the research itself, feel free to contact the researcher at alan.mcauliffe@mic.ul.ie

Appendix F: Experience Sampling Interviews

Summary of experience sampling transcriptions

P1	Okay so I guess that I'm feeling that I'm doing pretty well. Like I'm feeling like I'm doing it correct enough. Am… [pause] I'm very aware of performing, like I'm being tested. I know that my results will go into a computer and be analysed. I'm experiencing that feeling, which is hard to describe, like I feel like I'm doing well all things considered [laughs] I'm trying to focus on the moment of the beep, I wasn't expecting it. I was just getting into things [laughs] It's alright like...
P2	I'm feeling like I'm at a doctors office actually, I'm really aware of my presence in the room, and yours. I guess I feel like I'm here, in the lab. Does that make sense?
P3	I suppose I'm aware of the chair. I'm comfortable like... [pause]... comfortably physically. I'm also experiencing the floor. I deliberately put my feet flat on the floor at the start. That's what I'm experiencing at the moment. My chest and breathing too for some reason. And that I don't think I've figured out the task yet. I'm not sure what I'm doing yet, everytime I feel like I do know I lose it again. It's not hard or anything but I'm am... [pause] I dunno. I'm just concentrating I guess is what I mean, that's what I mean.
P4	I was going to say that I'm hearing a buzzing. It's what I'm most aware of at the moment. I think it's the computer overheating. I'm really aware of the sound of it anyway. It's the first thing I noticed, because the beep interrupted it, my thinking of it. I'm also feeling anxious, I think that's why I'm focusing on the buzzing or humming or whatever the noise is coming from the computer. I'm anxious for sure, I can feel my palm sweating on the keyboard, which is kind of gross. I'm aware of the keys in front of my, and I want to do well, but I'm still figuring out the best way to go about it. I mean I wouldn't normally be like this, so it's clear to me enough at the moment I'd say. I'm.. yeah. That's what I'm aware of at the moment.
P5	I feel like I'm doing okay but the beep startled me. I'm trying to keep on top of the task but I'm not really sure if I'm doing well or not. There's a lot of chance involved I suppose. I'm just getting used to it now.
P6	Yea it's going really well I think. I suppose its just chance too but I feel like it's going well anyway. The room is comfortable and it's a fairly straight forward task so I'm feeling good about it at the moment anyway- feeling confident.
P7	It's a little harder than I thought… I'm frustrated…"

P8	Oh jeez. It that it? I'm supposed to say exactly what I'm experiencing right now? I guess pressure, in case I say the wrong thing. I feel good at the moment
P9	I'm feeling a bit anxious about it at the moment. I'm probably overthinking it a bit I'd say. The general experience is good; I'm comfortable and all that but I'm putting pressure on myself. I get very competitive when it comes to things like this [laughs] and I think there's probably a bit more pressure because I know I'm being observed.
P10	Yea I think it's going grand so far. I feel like I'm doing as well as anyone would do really. It's starting to make more sense now as I play so yea, feeling fine. I'm finding it fairly easy to concentrate too.
P11	So I just explain how it's going is it? Yea I'm not doing too bad I'd say! It's hard to tell but I feel like I'm doing alright anyway. I feel like I'm rushing a bit though and I don't know why. I'm not thinking my moves through very much. I'd probably do better if I relaxed a bit and thought it through more.
P12	To be honest I'm finding it a bit hard. Like it's going okay but I feel like I'm just choosing things at random. I feel a bit stressed and overwhelmed by it. I don't know.. if I was doing it by myself at home I'd probably do better, you know? The room's a bit warm too so I don't know if that's affecting me.
P13	I feel pressure at the moment. I'm just getting into the swing of things. Got burned a couple of times there so won't be doing that again [laughs]. I'm feeling like I'm being judged as well like, so I have to do good. Yeah like that actually. I feel like I'm doing good but like, being measured at the same time. There's no way I can slip up. I'm very aware of the one's I'm choosing
P14	It was so silent I could only hear my watch ticking and I was letting it distract me I think. I got mixed up a few times I'd say. It could be going a lot worse though. I'm doing alright!
P15	Content. I feel really confident and content at the moment. I'm happy enough, well even though I know I don't have reference point. I got a rake of points there. So I'm feeling well chuffed. Ah yeah… I don't think there's anything else really
P16	I was getting into it there, the beep kind of startled me [laughs].. I'm getting the hang of it now. At the start I was getting a bit confused, it took me a while but I'm on a roll now. The room's a small bit stuffy but it's grand. I'm trying to concentrate on the task and there aren't any distractions really.
P17	I'm really not sure how I'm doing at this… I'm not good at things like this… I bet I'm doing really badly.
P18	I think I figured out the pattern, you see I'm into games and I think there's a pattern to it

P19	Oh god, I don't know. Am I doing it right? I'm a bit all over the place. I keep picking the wrong one and it's stressing me out a bit. I don't think it's going too well at the moment
P20	I don't know actually. To be honest I don't really think I feel anything at the moment. I feel my tummy is making a lot of sounds. I guess I'm hungry. I'm thinking of hitting these keys, I'm feeling my fingers hitting the keys […] I feel very aware of that…
P21	I'm feeling good. I'm doing better than I thought I would actually. I'm kinda taking my time a bit to think it through and it's going alright. So far so good! I'm probably after jinxing myself now though [laughs].
P22	I don't really feel anything at the moment. I don't know… [pause]. I'm genuinely feeling a little absent minded. Like if I were to say what I'm feeling at the moment I wouldn't have an answer. Sorry
P23	Am, I'm very aware of my surroundings. I feel like I'm very aware of my skin for some reason, I'm feeling like I'm aware of my body. I don't know if that's because I'm here or what like I'm just really trying to focus on what I'm experiencing right now. I have a gut feeling like I messed up too I suppose, like I know I just lost a load of points before the thing went off. Now I'm just sort of here, in the chair, very aware of things all of a sudden. Like my mind is starting to wander now, to like, I dunno... yeah
P24	I'm feeling okay about how it's going… I think. I find it hard to tell actually. It's a bit stressful knowing that I'm kinda being judged on it though. I know you're not staring over my shoulder or anything but I feel very aware that I'm doing it as a task for someone and I'm probably making a few mistakes because of that.
P25	I feel like I'm experiencing time pressure. Yeah, like I'm being timed. I'm trying to figure out how to do the best the fastest, which is probably because I'm used to playing games. I like the game. It's easy. That's how I'm feeling. It's grand like, I'm just trying to focus on the moment right now like I know you said. Am... [pause] I'd have to say I'm feeling engaged a bit, like the novelty of the game hasn't worn off yet anyway
P26	Am.. [pause] I don't know. My mind's gone blank. I can't actually think, I was focusing on the screen. I was thinking I figured out a way to get more points, but I don't know, it's being unpredictable at the moment
P27	I feel screwed over. I lost my points there. It's annoying… [pause]. That's the only thing that really stands out if I am to say exactly what I felt at the alarm going off

P28	I feel cool calm and collected. As usual, like I wanted to think about this level-headedly. I knew that I wasn't going to be doing something very hard. And I feel like I'm your average participant. Like not average, but like, I'll do no better or worse than the grand scheme of things, or in the scheme of things. My mind is wandering now. But that's what I felt at the beep. That's exactly how I felt. Other than that I guess I'd have to say my nexk is sore but that has nothing to do with this. I had an injury before, and I find sitting upright isn't the best for it
P29	I'm feeling a bit panicked about it. One minute I'm doing okay and the next I'm losing. I'd say it's going alright over all though. I'm not taking enough time to think before I choose maybe. When people passed the room I got distracted a bit so I'll have to get back into it now.
P30	I have no idea what I'm doing to be honest. My experience right now. Am… confusion [laughs]. No not really, I mean I get it now, but I keep losing so I don't know what's up with that. If I were a betting man I wouldn't bet on me. Probably doing shite to be honest, but sure. My experience, just then.. [pause] I guess it's just that of focus.. no not focusing that's not the right word. I guess attention. Or am.. attentitive. And the smell of rain too, I think it's an umbrella or something. I noticed that a few times. Yeah the room like, I feel like it's just a really bad day out. Experience
P31	Oh I wasn't expected to lose so much points at the end there. I'm feeling sad, like I really wiped out all of my points right there in an instant. I thought it was easy but I don't know, maybe the decks switched on me. It's impossible to tell. So right now I'm feeling a little deflated I guess. It got really tough there I wasn't sure which one's I liked, like I was relying on them before but then it all went belly up
P32	Am… happy. And am… the chair [laughs]. I don't know I guess. I'm fine. Feeling my usual self, not noticing anything strange. Happy out. Am, I'm experiencing the computer screen. The green colous of the decks. The dell monitor. The sound of the fluorescent light, and remembering the sound that fluorescents make when they turn on

P33	Feeling alright I guess, not sure I have it figured out yet. I'm really aware of my fingers hitting the number though, for some strange reason. I mean, I'm [laughs] I'm really aware that when I hit a key there's a change I'll lose everything. Like everytime I hit a key I get a nervous kind of feeling. Like it isn't bad nerves or anything like that, I'm not like, emotionally invested in the thing like. But Everytime I hit a key I'm not sure what's going to happen. An uneasy feeling, no not uneasy, yeah just a little nervy I think. I feel less nervy with these one's, but I'm hardy doing well with those one's, it's everytime I go for the other one's that I get nervy, but I can't help it, I want to see in case I suddenly get a load of points. I should probably just stick with what I know
P34	I'm wondering how I'm doing. I'm just wondering like, how good I did or am doing. Like what am I doing wrong. Just curious about that, and if I can do better.
P35	I want to do the best in this thing. I'm not normally a betting man now, but I feel like I'm going to be compared to others
P36	At the moment I'm grand. Not at all panicking yet. I don't have as many points as I thought I would, I guess that's why I got 2000 points or whatever at the beginning. Right so, I guess the room is the immediate thing I feel, like this is a small lab, if I was claustrophobic I might be more anxious. That's it.
P37	How am I doing? Oh I have to just win the points like, it's grand. I'm feeling good. I feel like I know the task even though I've only been playing a few minutes. It's grand. Yeah. I don't know anything else right now
P38	I feel like shouting. I didn't mean to hit that key, and I just did again. I didn't lose anything. I was feeling very apprehensive about talking about the task actually. Like I knew that the alarm was going to go off. I could almost predict it. Like I knew if I made a certain move it was going to go off and I have nothing to say. Nothing to really report at the moment. Maybe that I'm a little frustrated with myself for hitting that key. I don't like that one. Or that one actually. I love the first one though. Is that alright? I don't think there's anything else I can really say
P39	Am.. Warm. Comfortable. Snug. Happy. Like, really grand, not nervous anyway. Not that I said warm I'm feeling cold. Don't know if that's what's supposed to make me make different moves. Aware of the sounds, from the halls, think that's where the draft is coming from. Everything around me. Calm. Thinking. Yeah, that.
P40	What the hell am I feeling. Nothing. I guess my mind is wandering through the college. Like right now I'm mentally walking through the college. I'm thinking of the layout of the media labs up here, it's like a maze. Part of a maze

P41	I'm feeling very punctual, like.. [pause] I'm feeling like I'm taking part in a study. Done loads of these before. I feel really focused on the task. I'm trying to get a range of possibilities, so that I like, know the rules of the game. I mean at this stage I definitely prefer number 3 I think. I don't lose a lot of points with that one. I'm building up my points again.
P42	It's a controlled room. I know that I'm in a lab, I'm part of the room …(…)...and um… the smell of damp from my umbrella (laughs)…It's really bad actually sorry. It stinks a bit, it was in my bad. I think that's what I'm experiencing now. It's really there. Like I'm here [laughs] Okay that doesn't make sense, but I feel present. Like aware of my place in the room… I'm only aware of the lab, the chair… my fingers pressing the keys.
P43	I feel like I'm very aware of my body at the moment actually, like I'm concentrating on how I'm feeling. Especially since I know I have to talk about it. I feel apprehensive about going with a definitive answer. I'm grand, almost forgot about the buzzer going off.
P44	Right now I feel like my shoes are sore, like I hurt my ankle before. So these were a bad choice. Uncomfortable. That's my experience at the moment. How much detail do you need will I talk more? Alright, am. I feel… [pause] I feel like am… Honestly I don't know
P45	I'm experiencing pleasure at the moment. I feel like I did well now, I know what to do. I'm kicking it's ass after that card took away so many of my points. Not going with that one, so I'm studying, like I'm learning. I'm gathering info as I go along, and I'm feeling hopeful too. Yeah, jovial almost. Happy out with it now.
P46	Oh I don't know actually. Am… [pause]. I feel good. I think I'd be doing as well as anyone. Like I don't know how other people would have, unless they're just lucky.
P47	What am I experiencing right now? The room I guess. The brightness of the room, the sounds coming from the hall. The smell of the computer lab. All these things are what I'm experiencing right now. I'm very aware of them and can tune in to either, like the walls are really bright and the college is nice and busy, there's a great buzz I mean. Yeah like that. That's what I feel like is immediately in my experience. It's what I'm experiencing right now. Oh and the task, like I'm trying to play the game so I'm concentrating on my next moves, or trying to anyway. It's a little predictable at times. I actually wasn't thinking about the beeper going off again actually
P48	I think it's going well actually. Maybe I'm just lucky but I'm feeling really good about how it's going so far. I'm feeling comfortable in the room too. Like I don't feel anything weird.
P49	It's impossible to predict what's coming next. That's the only

	thing I was aware of. I don't know what way they are working. Can't figure it out. Everytime I think I can or that I do I lose. I don't feel bad or anything, but not great either. Like it's like an uneasy feeling. Everytime I feel like I know what one is my favourite, it changes. I pressed a lot of that one actually, but like, I think there are better ones. So like, I'm thinking of what's coming next, like what's going to happen of I change tactics and go mad. Like I get confused when I press other cards. They all seem to be random. There are no good or bad ones. I'm probably just experiencing task anxiety, if that's a thing. It's hard to talk about though, like I don't know, I might not be that invested in it. But I definitely think I'm thinking about strategies. That's at the moment the thing went off anyway.
P50	There's no way I did good there. Oh it's not over yet is it? Oh ok. My experience right now. I'm very disappointed actually, I thought it was over. I didn't do good, I can't figure out why I think I did good with that one there. Like the decks are swapping on me I think. I'm really aware of the task. I actually feel like I was playing it for ages actually. Yeah [pause] I guess yeah it's going a bit like, I'm feeling that. But at the same time I can redeem myself can't I? I want to do better in it. And now I know I'm staying away from that one there. It's been killing my points every so often, but like, I got a load from it. Not enough to make up for it, I lost like so much there, did you see that like? Like the 2 times I picked it. But anyway, yeah. I'm very competitive
P51	I think they are changing on me every time I pick a card, there's a pattern I think that I'm aware of. I'm very focused on the decks to see which ones are switching on me…
P52	Honestly I'm really not feeling anything. I don't have any strong feelings for right now. Like if I were to tell you anything it would be a lie. I'm tired from college, that's not a lie, from assignments, but that was me before I came in here. It's nice to sit and do something that's unrelated. I'm feeling that at the moment for sure, dreading going back [laughs]
P53	I'm just pressing random keys. I'm trying to do like, 10 of each, because I saw that there were different results from picking either. So now I have a strategy. I'm going to pick 10 of each for a while, it worked well so far but I haven't picked a lot from the 4th one yet. I'm actually not at all focused on my score, I actually only realised that now. You probably want me to say that I'm keeping track of my points, but I'm not. I'm not at all. That's something I'm not experiencing you could say. Yeah. I'm just trying to pick a set because playing all over the place isn't working for me.

P54	I'm feeling like am… I feel warm. The room is stuffy. I'm experiencing that at the moment. I find it a little hard to concentrate I guess at the moment. Am… [pause] Well like I think I'm doing ok but it's hard to tell or something. Yeah. I'm feeling warm and okay I guess
P55	Am… apprehensive. Calm. Comfortable I suppose. Aware of surroundings. Trying to plan my moves. For sure, thinking ahead. Like what my next move would be.
P56	Calm. Happy. Softness. And hardness. From the chair and from the table. Am… absence of strong feelings. I don't care either way. Just happy out. That's probably just me though, I'm the most laid back person ever. I don't worry a lot. So I'm thinking of that, that I don't worry. It's grand. Yeah. Calm.
P57	I can feel my heart at the moment, and my breathing. I'm trying to focus on right here right now, I was wandering in and out of that feeling since the start. I feel alert at the moment. Like sometimes I know exactly what's expected of me, but right now I don't know how to talk about it, articulate it exactly. I feel very present when talking now. And I have for a while. I'm focused on the task
P58	Anger. But like, not actually really angry. I'm annoyed with myself. And I don't think I have much to report. My moves were wrong there. I think.
P59	I feel like experiencing great pressure, because you're sitting next to me. I mean I think I just hit a bunch of random keys at the start, but it was like, oh yeah, I remember what I have to do. I can describe it only my own words but like, I feel normal for this kind of test. Like the right amount of pressure. It's not stress, just aware of my performance. I want to figure out the game more than do well I think, because if I figure it out I might do better or maybe there's something more going on that I don't know. That's usually the case I think, that I don't know what else is coming up in the cards. Yeah I'm feeling that, that's my experience of the situation right now. Anyway, I suppose that my hangover isn't helping. I don't know how much of that is causing the feeling, like I wasn't expecting it to be like this. It's weird because when I lost a load of points I didn't really feel anything, but as I won them back I felt like I had to. Does that make sense? Like to describe it, it feels like a kind of pressure, not a bad pressure. Yeah.