DETERMINATION OF INTERACTION EFFECTS IN EXPECTATIONS FOR POST-EVENT INFORMATION ON MEMORY FOR ITEMS IN A SERVICE ENCOUNTER

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ABSTRACT

Our minds are not a blank canvas onto which experiences leave their independent and indelible impression. Consumers, therefore, would rarely enter a service encounter without prior knowledge to guide their expectations. The importance of prior knowledge – in the form of schemas – while acknowledged in the study of post-event misinformation effects on memory has received limited attention. Outside of studies investigating misinformation effects, the literature indicates that inconsistency between our expectations and what we experience, improves recall accuracy. Whether this effect translates into reduced susceptibility to misinformation effects and that schema consistency increases susceptibility, is unclear.

The main contribution of this thesis is the demonstration that consistency between schema and the experience, and its interaction with encoding goals, changes a person's susceptibility to misinformation and their subsequent store quality perceptions. The effects of encoding goals – whether someone is trying to form an impression or remember the details of their experience – while used in previous misinformation studies, has not been previously investigated.

To investigate the effects of schema consistency and encoding goals on misinformation acceptance, and the subsequent impact of misinformation acceptance on store quality perceptions, a three-way between participant design was undertaken using a café service encounter as the context. The three factors – independent variables – and their levels included in the study were schema consistency (consistent/ inconsistent), encoding goal (impression/ recall) and post-event information (misinformation/ neutral).

Results from the study showed that misinformation effects are most likely when people are paying less attention to the service environment. The explanation provided in the study is that when there is a match between what people expect and what they experience they pay less attention to the details of the experience, which results in less diagnostic information encoded into memory. If, however, they were paying attention due to an inconsistency, the information would be attended and result in reduced misinformation acceptance. Where a person was instructed to try and remember the details of their experience rather than form an impression, they paid greater attention to detail than those who were forming an impression. When their expectations were not met in an experience, subsequent exposure to misinformation causes these people to accurately recall their original experience and escape the effect of misinformation.

Significant results were also observed for changes to store quality perceptions, revealing that consumers who accept the misinformation have store quality perceptions that reflect its inclusion. Also observed was an interaction with the initial expectations that meant merchandise quality perceptions improved when a person's memory for the experience was consistent with their original expectations, and lower when inconsistent.

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STATEMENT OF ORIGINALITY

This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

Signed

Seán Muir McNally _____

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1.0 INTRODUCTION

1.1 BACKGROUND

Imagine visiting a café based on a friend's recommendation. However, when you visit the café some aspects of the experience do not match your expectations. As a result you may form an impression counter to your original expectations or try to remember what the café was really like to discuss with your friend. A couple of days later while reading a local newspaper you see an advertisement for that same café. The advertisement depicts the café as 'up market' . . . a style reflective of your friend's original description. The next time you are organising to meet friends for coffee and they suggest the café you had recently visited. Will you remember the café as you experienced it or will your recollections reflect the advertisement? Will the discrepancy between your expectations and experience affect your perceptions of the service?

The research reported in this thesis seeks to answer the questions posed above, and by so doing adds to the body of knowledge in consumer behaviour on the effects of advertising and in field of cognitive psychology on the determinants of post-event misinformation effects. More specifically, the research addresses the following questions:

What, if any, is the moderating effect of prior expectations on a person's susceptibility to accept misinformation about a previous experience? Will a person's encoding goals moderate the effects of prior expectations on misinformation acceptance?

Previous research in consumer behaviour has shown that advertising received after an event can affect what a person recalls and the evaluations they make (Braun, and Loftus 1998; Braun 1999; Cowley, and Janus 2004). This

phenomenon is known as misinformation effect and refers to the recall of post-experience information as part of the original experience (Loftus, and Hoffman 1989; Gerrie, Garry, and Loftus 2003). Research investigating misinformation effects has been conducted since the 1970's when the veracity of eye-witness testimony was questioned (e.g. Loftus 1975). Decades of research have found the misinformation effect to be a robust phenomenon (Ayers, and Reder 1998).

Prior knowledge, in the form of schema, affects the process of memory at the encoding, processing and retrieval stages (Alba, and Hasher 1983). For the purpose of the research presented in this thesis, 'schema' is broadly defined as a person's knowledge structure as it relates to concepts and their relationship to each other (Tuckey, and Brewer 2003). I propose that consistency between the schema an individual has activated, and his or her experience will modify the likelihood of misinformation acceptance. I also propose that an individual's attention goals at the time of encoding will moderate the effects of schema consistency on misinformation acceptance.

To address the research questions, I draw on the literature from the field of cognitive psychology to understand the nature of the phenomenon. I use the associative network model of memory (Anderson 1983; Srull, Lichtenstein, and Rothbart 1985; McClelland 1995) and the source monitoring framework (Johnson 1988; Johnson, Hashtroudi, and Lindsay 1993; Johnson, and Mitchell 2002) to predict and interpret the results.

The remainder of this chapter addresses the importance of the research area, scope of the research problem, an overview of the methodology, and the thesis structure.

1.2 IMPORTANCE OF RESEARCH AREA

Advertising is an important activity for many businesses and organisations and as a result it is a frequently researched topic. In terms of its effects on consumer experience, advertising has long been known to affect expectations and the consumption experience (Deighton 1984). However, in recent years there is growing evidence that communication received after a consumption experience can alter what is remembered and the subsequent evaluation of that experience (Braun, and Loftus 1998; Braun 1999; Cowley, and Janus 2004). Post-experience advertising's ability to alter what a consumer remembers is of interest to the study of consumer behaviour because of the frequency of consumers' exposure to advertising.

Studies investigating the effects of communication seen or heard after an event on the recall of that event – known as misinformation effects (Loftus, and Hoffman 1989) – have investigated a broad range of factors that influence a person's susceptibility to these effects and have shown the effect to be robust (Ayers, and Reder 1998). One of the factors that influences what is recalled is the schema operating during an experience (Gerrie, Garry, and Loftus 2003). While considered important when understanding memory (Alba, and Hasher 1983), a limited amount of research has investigated schema's role in misinformation effects. Further research is needed to understand the various effects schema has on misinformation acceptance.

The understanding of misinformation effects has direct relevance to services and retailing. The retail environment offers a strategic tool for competitor differentiation (Kotler 1973). For service firms, particularly those whose services are high in experience qualities, there are limited number of cues used when judging service quality prior to purchase (Zeithaml 1989). Because there is limited amount of cues, consumers rely on the retail environment to infer service quality (Parasureman, Zeithaml, and Berry 1988; Zeithaml 1989;

Parasurman, Zeithaml, and Berry 1994) and store image (Lindquist 1974; Darden, Erdem, and Darden 1983; Zimmer, and Golden 1988). Although store image is not an end in itself, store image can affect a consumer's future store choices (Stanley, and Sewal 1976; Nevin, and Houston 1980; Malhotra 1983). If marketers are able to use their communication tools to change consumers' recollections of their experience, then they can potentially change behaviour. This possible influence on consumer behaviour makes the investigation of misinformation effects an important area for theory development and for assisting both regulators and communication managers understand the broader effects of advertising on the market.

1.3 SCOPE OF RESEARCH PROBLEM

The purpose of the study presented here is to contribute to the body of knowledge on memory accuracy; specifically contributing to the understanding of the conditions under which post-event misinformation acceptance is more likely to occur. As discussed in the preceding section, there is a need to further understand the factors that both increase and decrease a person's susceptibility to including post-event information into their recall of an event.

While acknowledged as important to understanding memory, the effects of schema on susceptibility to misinformation effects have received limited attention to date. This study seeks to address the gap in the body of knowledge by addressing the following questions:

What, if any, is the moderating effect of prior expectations on a person's susceptibility to accept misinformation about a previous experience? Will a person's encoding goals moderate the effects of prior expectations on misinformation acceptance?

In examining these questions through the current literature a number of hypotheses are developed, including the consequences of misinformation acceptance on store quality evaluations. These hypotheses are as follows:

H_1: *Misinformation effects will increase as the consistency between expectations and original experience increases.*

H_2: *The relationship between misinformation effects and encoding goal will be moderated by schema consistency (H_1), such that when there is consistency between schema and experience, misinformation effects will occur regardless of the encoding goal used (H_{2a}). When there is schema inconsistency the use of a recall encoding goal would eliminate misinformation effects (H_{2b}).*

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H_3: *Acceptance of the misinformation will result in improved quality perceptions.*

The scope of the current study is based on a frequently used service and memory for a visual discrete item that is central to the act of consumption. The use of a frequently consumed service as the context – buying and consuming coffee in a café – limits the generalisations the study can make about infrequently consumed services and non-service consumption. Also, the study's use of a visual item limits direct generalisations to non-visual items.

1.4 METHODOLOGY OVERVIEW

Research in this thesis investigates the impact of post-event information on memory by using a between subject multi-factorial experimental design in which memory encoding is manipulated through expectations and encoding goals. In the experiment participants were; 1) instructed on the type of information that they needed to pay attention to in a video of a café they would see later; 2) given a description of the type of café that was shown. After reading this information participants saw a video of a café that included a customer service encounter, completed a distraction task, and were then given a magazine advertisement of the café. Participants then answered a series of questions about this advertisement before completing another distraction task. Finally, participants completed a recognition memory test on items shown in the video and a series of questions regarding their impressions of the café's quality. This experimental approach replicates the three-stage approach – stimulus, misinformation, and then measurement – experimental method used for investigating memory distortion effects from post-event misinformation in previous studies (Ayers, and Reder 1998).

Three factors were manipulated in the study, each with two levels, creating a 2x2x2 experimental design. In the chronological order in which the manipulations occurred in the study, the first factor was a manipulation of encoding goals. In this manipulation, participants were instructed to either form general impressions of the café quality, or to remember what they saw. The second manipulation changed expectancy of the target item, to either consistent or inconsistent, by telling participants that the type of café that they would see was either a restaurant or take-away. The remaining manipulation was for post-event information. In the magazine advertisement for the café, participants were either given neutral information or misinformation

regarding the target item. Results were analysed in terms of memory accuracy, strength of recollection, and café quality impressions.

Further details regarding the methodology and measurement approach employed in this research are given in section 3.0 Methodology.

1.5 THESIS STRUCTURE

After the introductory section, this thesis is divided into four main sections. A literature review of key concepts as they relate to the development of each of the hypotheses and interpretation of results is provided in the first section. An explanation of the methodology and details of the results are provided in the second and third section. In the final section, the contribution to knowledge; implications for theory development; and application of what was learnt from the study, are discussed.

Knowledge Review: The study of misinformation effects on memory is a broad field. In this section I draw together relevant studies to provide a framework for misinformation effect and how expectations are likely to moderate the effects of post-event misinformation on memory. The knowledge review chapter is comprised of three sections. In the first section I provide background to the study of memory accuracy through understanding the constructive nature of memory and the associative network model of memory. This theoretical framework is later used in developing the hypotheses and explaining the results from the study. In the second section I review the misinformation effect literature to show the scope of the effect and the theoretical benefits for better understanding the impact of expectations and encoding goals. Included in this section is a review of the source monitoring framework which has become a dominant framework for understanding misinformation effects, and is used within this thesis to interpret results. In the final section, schema theory is introduced and hypotheses are developed on how schema, through expectations and processing, and encoding goals are likely to moderate the post-event misinformation effect.

Methodology: After developing the hypotheses, details of the methodology of the experiment undertaken to test the hypotheses, including the theoretical framework for dependent and independent variables, are discussed. The methodology section also includes a review of the theory underpinning the research design and measurement techniques employed.

Results and Conclusion: Hypothesis testing is provided in this section.

Discussion and Implications: In the final chapter of the thesis, I draw out the theoretical and practical implications of the research. Results are discussed in terms of their implications for memory theory, regulation and managerial practice. Study limitations and areas for future research are also discussed in this chapter.

2.0 KNOWLEDGE REVIEW

2.1 INTRODUCTION

The objective of the knowledge review chapter is to provide the relevant body of knowledge as it relates to the thesis. This review presents the theoretical foundations that provide the framework for the development of the hypothesis and interpretation of the study results.

Broken into three main sections, the first section of the knowledge review chapter outlines how episodic memory is a constructive process that can lead to memory error. Within this section, the associative network model is introduced. This model provides a framework for understanding the constructive nature of memory and explaining differences in recall accuracy. The model is used in later sections, including hypothesis development and for explaining results of the study reported in this thesis.

In the second section, the study of memory accuracy through the use of post-event misinformation is discussed along with the currently known scope and explanations of the phenomenon. The impact of competing explanations for misinformation effects on method and measurement are covered in this section. Greater detail on method related issues are covered in the methodology chapter.

Concluding the knowledge review chapter, relevant areas of schema theory are discussed, and hypotheses for the potential moderating effect of prior expectations and encoding goal on misinformation acceptance are provided. Evaluations of retail environment quality as an implicit measure of misinformation effects are also discussed with hypothesis put forward in this section.

In summary, the knowledge review chapter provides foundational information for the thesis and the development of the hypotheses. This review shows that important gaps exist in memory research for how expectations and a person's goals are likely to moderate their susceptibility to misleading post-event information about their prior consumption experiences.

2.2 CONSTRUCTIVE MEMORY

Memory plays an important role in our decision making. We believe our memory is an accurate reflection of our past experiences and as a result we rely on it when making decisions (Alba, and Hasher 1983). However, memory is better described as a dynamic, ongoing construction of the past. In this chapter I provide background to the study of memory accuracy through an understanding of the constructive nature of memory.

The constructive model of memory views retrieving memory as a reconstructive process in which we recall a general theme and some details to construct a memory (Bartlett 1932). This reconstruction is analogous with the way a palaeontologist creates an image of a dinosaur from bone fragments and knowledge of how they fit together (Neisser 1967). What we see is not a collection of bone fragments but a fully fleshed out image of a dinosaur. Neisser (1967) argues that when we remember something, traces of information are not simply reactivated, but are used as information to support our construction. The constructive nature of memory is central to the understanding of misinformation effects on memory accuracy. This dynamic process of construction provides opportunities for information received after an event – and separate to it – to be incorporated into the recalled details of the original event.

In one of the earliest investigations into the constructive nature of memory, Bartlett (1932) compared participants' memory of a story they had read with their later recall of the story. In his study, participants read a native North American folk-tale, called 'The War of the Ghosts', which was unfamiliar, and had references and a story structure that were also unfamiliar. After reading the story twice and then after a delay, participants tried to recall the story in full. Instead of accurate recall, participants recalled information in a way that

reflected their own schema for aspects of the story. Where a schema can be described as a knowledge structure that represents concepts, their characteristics and relationships to each other (Tuckey, and Brewer 2003). The changes noticed by Bartlett were not just in terms of the words used, but also to the overall structure and focus of the story. Bartlett's research revealed that retrieval is an active process that creates a coherent whole by fitting different elements together and distorting, or introducing new information in order to create coherence. While lacking many of the controls used in subsequent studies of memory, including controls for the type of schema, Bartlett's work remains a forceful illustration of the power of schema on memory accuracy.

In the next section, the constructive nature of memory is further developed through the use of the associative network model. This model provides a more detailed framework for understanding and predicting misinformation effects.

2.2.1 Associative Network Model

The view that memory is a constructive process is based on the connectionist approach to memory. In this approach, memory is represented as a pattern of activated units that forms an associative network (Anderson 1983; Srull, Lichtenstein, and Rothbart 1985; McClelland 1995). This model of memory is widely referred to as an associative network model (ANM) and is used in explaining a wide range of memory phenomena, including misinformation effects in episodic memory (Ayers, and Reder 1998). Associative network models share a common structure that is represented by an array of interconnected nodes (see e.g Anderson, and Bower 1973; Collins, and Loftus 1975; Anderson 1983).

Each node in the ANM represents a different concept, such as a specific item seen in a room. A node could also represent context information about an item, such as where the item was in a room, or the time of day when you were in the room observing that item. An association between nodes is created when they are linked together. It is these links connecting each node that represent the strength of association.

For an item to be remembered its node needs to be activated above a certain threshold. Determining the likelihood that a node is activated – and hence a memory recalled – is the amount of activation it receives from the originating node and whether this level of activation exceeds a given threshold. The amount of activation a node receives is determined by the relative strength of its link with the originating node, divided by the number of links coming from the originating node. Only when the level of activation a node receives exceeds a threshold, will the node then become activated and cascade its activation to other linked nodes. The more activation a node receives the stronger its association with the originating node and, as a result, the greater its likelihood of being activated in the future when the original node is activated. This increased strength means that other nodes receive less activation and as a result are less likely to be recalled.

Somewhat counter intuitively, as additional information is linked to an item the likelihood of remembering that item is reduced. The reduced likelihood of remembering an item occurs because of the greater number of other items competing for activation that would have otherwise gone directly to the target item. This effect is referred as the fan effect, since it diagrammatically looks like facts associated with an item spread out – fan out – from that item (Anderson 1974; Anderson 1983). Illustrating the fan effect, in a study by Anderson (1974), participants learnt various propositions regarding a person (e.g. a hippie) and locations (e.g. is in the park). The number of associations

was manipulated by changing the number of types of people relative to a location (e.g. policeman in the park, and hippie in the church). Results from the study showed that increasing the number of associations reduced accuracy and increased the length of time taken to recognise a proposition. The longer delay in recognition is thought to occur from a person having to move through each of the activated associations to check whether it is the correct association or not.

Illustrating the fan effect in the context of the café, a person who visits a café and has coffee and banana cake with their friend would find it relatively easy to recall the particulars of that meeting. However, if they had read a review about the café that included similar things they had also experienced, then the person might struggle to recall the same particulars. As the person tries to remember things from the meeting they would also be recalling things from the review that were in common. Each time the information was recalled they would need to consider whether it was part of the first meeting or from another source. Without direct access to the context information associations, errors can occur from inference making (Ayers, and Reder 1998). The direction of these errors is influenced by expectations of the most likely source of a memory (Bayen, Nakamura, Dupuis, and Yang 2000; Spaniol, and Bayen 2002).

In the context of misinformation effects, the fan effect has been proposed as an explanation for the reduced memory accuracy through the post-event information providing additional facts about an experience, leading to less activation of the correct details (Ayers, and Reder 1998).

Application of the associative network model, as outlined in this section, is used in subsequent sections to explain misinformation effects and how expectations are predicted to moderate these effects.

2.3 MISINFORMATION EFFECT

2.3.1 Introduction

In this section of the Knowledge Review I provide an overview of the study of misinformation effects in the broader field of psychology and the consumer behaviour literature. A summary of the circumstances in which misinformation effects occur, and competing explanations for the effect, including the source monitoring framework which is adopted for this study, is provided.

Misinformation effects were first investigated by Loftus and colleagues in the nineteen seventies because they believed there was potential for memory impairment after answering leading questions when providing eyewitness reports of crimes (Loftus 1975). Currently, misinformation effect is a general term used to describe memory distortion where post-event information is incorporated into memory for the original event (Loftus, and Hoffman 1989; Gerrie, Garry, and Loftus 2003). More generally, misinformation effects are also a form of the retroactive interference effect, in which information given after an event impairs memory (Ayers, and Reder 1998). Through understanding memory accuracy and memory distortion by investigating real-life memory phenomena, misinformation research has contributed to the understanding of memory (Koriat, Goldsmith, and Pansky 2000).

Although the fields developed separately, misinformation effects are a specific type of source monitoring error (Mitchell Johnson 2000), in which memory error occurs due to misattributing the post-event information to the original event. Since its development, the source monitoring framework has been used to explain misinformation effects (Ayers, and Reder 1998) and helped predict the circumstances in which they occur (Johnson, Hashtroudi, and Lindsay 1993). The application of the source monitoring framework to

understanding misinformation effects is further developed later in this chapter.

In the next section, the adoption of misinformation effects in consumer behaviour is discussed. The study of misinformation effects in a consumer behaviour context provides additional understanding of how marketing communication affects consumers.

2.3.2 Advertising's Misinformation Effect

Although the study of the effects of advertising on consumers is not new to the field of consumer behaviour, the study of advertising using the misinformation effect framework is a relatively new area of investigation. Introducing the approach to the consumer behaviour literature in 1998, Braun and Loftus (1998) showed that misinformation in the form of advertising could affect memory for packaging, and that this change could also affect evaluations of product quality.

Since the initial Braun and Loftus (1998) study, others have further explored the potential of advertising's misinformation effect. Research within an advertising context has demonstrated that post-event misinformation can change memory for evaluation of a flavour (Braun 1999), type of flavour (Cowley, and Janus 2004), characters from childhood stories (Braun, Ellis, and Loftus 2002), and memory of prior beliefs (Braun-LaTour, and Zaltman 2006). In a study by Braun (1999) that focused on memory for flavour, participants were invited to what they were led to believe was a taste test for a new orange juice brand called 'Orange Grove'. In the study participants drank vinegar laced orange juice, and were told they would later need to give their evaluation of the juice. After a distraction task, participants were given an advertisement for 'Orange Grove' that described the orange juice's flavour in positive terms. In the control condition, a neutral message was provided.

After another distraction task, participants then completed a recognition test in which they were to identify the flavour they had originally tasted from a range of five orange juices. Participants in the mislead condition were significantly more likely to recognise a better tasting juice than the one they had originally tasted.

In an extension to the orange juice taste test, Cowley and Janus (2004) investigated whether the misinformation effect extends to identification of a different, but related flavour and whether flavour familiarity had a moderating effect. Unlike the Braun (1999) study, a main effect for misinformation was not detected, instead familiarity was found to have a moderating effect on memory accuracy. Participants who were less familiar with orange juice were more susceptible to misinformation, while participants that were more familiar were more accurate even when provided misinformation.

2.3.3 Scope of Misinformation Effects

In their review of misinformation effects, Gerrie, Garry and Loftus (2003) categorised misinformation effects into two main areas: Introducing new details and transformation of existing details. Introducing new information requires the misinformation to indicate the presence of an item that was not in the original experience. While a transformation effect requires changing a pre-existing item or its characteristics.

Illustrating how misinformation can be used to include new detail in episodic memory was one of the earliest studies by Elizabeth Loftus when investigating the misinformation effect. In the study by Loftus (1975), participants were shown a scene of a car driving through the country. Later they were given a leading question which contained the misinformation that a

barn was present in the scene - "How fast was the white sports car going when it passed the barn while travelling along the country road?". In the subsequent recall test, participants in the misinformation condition were more likely to recall the barn as part of the original scene. Arguably a barn in a country scene is something participants would expect to see, and as such the study also demonstrates the potential strength of schema in misinformation effects.

The second category, which has been more thoroughly researched, demonstrates the ability of misinformation to transform existing details by changing characteristics like colour (Braun, and Loftus 1998), flavour (Braun 1999; Cowley, and Janus 2004), and the type of object (e.g. Loftus, and Palmer 1974; Loftus, Miller, and Burns 1978; McCloskey, and Zaragoza 1985; Belli 1989; Tversky, and Tuchin 1989; Braun, Ellis, and Loftus 2002). Illustrating the transformation effect in one of the classic studies of misinformation effects by Loftus (1975), participants watched a series of slides depicting a car accident in which a car is at a 'stop' sign. Later in the study participants answered a series of questions. In the misinformation condition participants were given a misleading question that presupposed the car was at a 'yield' sign. When given a memory test, participants who were given the misleading question were more likely to claim they saw the 'yield' sign than the control group. Similar to this study by Loftus, in the study reported in this thesis, misinformation is used to transform one item for another, rather than the characteristics of the item.

2.3.4 Explanation of Misinformation Effects

Despite a wide range of studies investigating the nature and circumstances of misinformation effects, there remains debate about its explanations (Ayers, and Reder 1998; Koriat, Goldsmith, and Pansky 2000; Loftus 2005). In the

original misinformation research conducted in the 1970's by Loftus and others (Loftus, and Palmer 1974; Loftus 1975; Loftus 1979), misinformation effects in their studies were viewed as memory reconstruction. A reconstruction being where new information replaces elements of the original memory trace to create a new memory of an event (Alba, and Hasher 1983; Ayers, and Reder 1998). Since these original studies, a number of competing explanations have emerged to explain both the results of the original studies and that of subsequent studies investigating misinformation effects.

In their theoretical review of the misinformation effects literature, Ayers and Reder (1998) outlined the main competing explanations in terms of memory trace and study demand explanations. Memory trace explanations include encoding and retrieval explanations. The encoding explanations included reconstruction (Loftus 1975; Loftus 1979), which suggests new information replaces the older information, and the vacant slot explanation (McCloskey, and Zaragoza 1985), which suggests new information is included when none was previously encoded despite its presence in the experience. The retrieval error explanation is that the stronger links to the misinformation due to the recency of its encounter blocks the original information. Finally, the study demand explanation is that the error reflects educated guessing by participants (McCloskey, and Zaragoza 1985). With this explanation it is suggested that participants choose the misinformation item because it was previously presented and not because they believe it is the correct item. The reasons for this choice could be because they think this is what the researcher wants, or some other non-memory based criteria.

An alternative view that accounts for a wide range of different experimental results investigating misinformation effects is the source monitoring framework (Ayers, and Reder 1998; Gerrie, Garry, and Loftus 2003; Loftus 2005). Source monitoring involves the attribution of a source to information

(Johnson, Hashtroudi, and Lindsay 1993; Mitchell, and Johnson 2000) and views misinformation effects as source misattribution (Lindsay 1990; Zaragoza, and Lane 1994). The source monitoring framework has become a common approach in studying misinformation effects, and is adopted in this thesis. Prior to discussing this framework, both memory trace and demand explanations are discussed as they still have application to understanding source misattribution errors.

2.3.4.1 Memory Trace Explanations

Briefly mentioned previously, the memory trace explanation of misinformation effects is a group of explanations that explain the effects as driven by either memory encoding or retrieval errors. Memory encoding explanations explain misinformation effects in terms of errors that occur when the original information or misinformation are placed into memory. Both reconstruction and the vacant slot explanations are types of encoding errors. Misinformation effects may also occur from a retrieval error. In this situation the effect occurs when the needed information is encoded but cannot be recalled.

Memory reconstruction as an explanation was one of the first explanations put forward to explain misinformation effects (Loftus 1975; Loftus, Miller, and Burns 1978; Loftus 1979; Belli 1989; Braun 1999). In this account, the memory trace for the original information is over-written by the new information, resulting in only one memory trace for the target item. Once over-written the original memory trace is believed to no longer exist. In terms of the ANM, memory reconstruction can be described in terms of the link between the original target item and the context becoming severed and the creation of a link between the misinformation item and the context. Because

the memory trace in the reconstruction explanation is believed to have been changed, this explanation is also referred to as trace-alteration.

For items that exist on a continuum – such as colour – trace-alteration is interpreted as memory blending (Loftus 1977; Braun, and Loftus 1998). In this context, the original memory is updated with the new information to create a new composite outcome. For example, in their study of colour shifting using misinformation, Braun and Loftus (1998) showed participants a chocolate bar with a blue wrapper. Later participants were shown a misleading advertisement depicting the chocolate bar with a 'green' wrapper. In the recognition test which asked participants to indicate the colour of the wrapping from a colour wheel, mislead participants were more likely to select blue and blue-ish green.

Another memory encoding explanation put forward for the misinformation effect is the vacant slot account. In their critique of the trace-alteration hypothesis, McCloskey and Zaragoza (1985) argue that participants may not remember the original information because it was either never encoded or the trace had decayed, resulting in it becoming inaccessible. By not having a memory for the original item, a person would have a metaphorical 'vacant slot' (Braun 1999) for the item in their memory of the event. In the vacant slot explanation, a participant who does not remember the original item but does remember the misinformation item may select this incorrect item as the correct item in a memory test due to its greater familiarity (McCloskey, and Zaragoza 1985). McCloskey and Zaragoza argued that as long as the control group results are beneath the complete accurate recognition, the vacant slot hypothesis cannot be rejected.

An alternative memory account to the encoding errors is that the original trace and the misinformation coexist in memory and that the error occurs at

retrieval. With this explanation the misinformation effect occurs from the post-event misinformation inhibiting the accessibility of the original information (Bekerian, and Bowers 1983; Christiaansen, and Ochalek 1983; Bowers, and Bekerian 1984; Schooler, Foster, and Loftus 1988; Chandler 1991). This account is commonly referred to as blocking (Ayers, and Reder 1998; Koriat, Goldsmith, and Pansky 2000; Gerrie, Garry, and Loftus 2003). The inhibition of original information from the misinformation is thought to occur due to its recency having stronger activation than the decayed trace of the original (Christiaansen, and Ochalek 1983). In terms of the associative network model (Ayers, and Reder 1998), compared to the control situation when a person in the test condition is given a recognition task, the memory activation is split between the two alternatives, the original and the misinformation item. Since the misleading item was the most recently activated, the level of activation will be stronger and it will be retrieved.

Demonstrating the blocking account as an explanation of the misinformation effect, Schooler, Foster and Loftus (1988) had participants first view a series of slides depicting a burglary followed by an unrelated filler task, and then they read a narrative describing the burglary. Up to this point, the study followed the standard misinformation effect design. However, unlike the standard design participants did not receive any misinformation in the narrative. Instead, participants took an interpolated test in which they were forced to select an item as something they recognised that was not shown in the slides. In the study the memory target item was the brand of soap, so if a person saw the Ivory brand soap in the interpolated test they were given Palmolive or Dawn brands to choose between. After completing an additional filler task, participants were given the final recognition test. This test consisted of the item seen in the original slides plus a new item that was not shown in either the original slides or the interpolated test. Compared to the control group, which did not have the interpolated test, memory accuracy was reduced.

Schooler and colleagues argue that because the final test did not include any of the items from the interpolated test, the reduced accuracy is explained by the more recent memory trace from the interpolated test blocking access to the original item, forcing participants to guess in the final test.

To determine if the blocking or trace-alteration best explains results in a standard misinformation effect research design, research has looked at participant's response times in making a recognition judgment (Cole, and Loftus 1979; Tousignant, Hall, and Loftus 1986; Loftus, Donders, Hoffman, and Schooler 1989) and confidence in that recognition judgement (Loftus, Donders, Hoffman, and Schooler 1989). In their study, Loftus, Donders and colleagues (1989) reasoned that if a person has two items in memory then conflict might arise when they try to recall the correct item. This conflict would result in longer reaction times when making a recognition decision, as the person would need to resolve which item to select. In Experiment 1 of the their study, they compared results of the standard recognition test — choice between mislead item and the original item — and the modified test proposed by McCloskey and Zaragoza (1985) — original item and an item not shown previously — on reaction times and judgement confidence. In the standard test, there was no difference in the reaction time and decision confidence of those who selected the misinformation item in the mislead condition and those who selected the correct item in the control condition. This result was interpreted as support for the argument that participants did not hold two memory traces. However, because a person may have resolved the conflict prior to the memory test, the blocking account could still not be dismissed (Loftus, Donders, Hoffman, and Schooler 1989).

2.3.4.2 Study Demand Explanations

Memory based accounts of the misinformation effect in terms of both encoding and retrieval errors were reviewed in the previous section. The potential for demand effects in misinformation studies and how addressing this issue has evolved research design, are discussed in this section.

Independent of a participant's memory for the original target item, participants may select the misinformation item in order to give the response they believe the experimenter wants (McCloskey, and Zaragoza 1985). McCloskey and Zaragoza argued that the participants who remember the original information and misinformation may believe that the experimenter – having created both the original information and the misinformation – must know what the correct item is so they choose the misinformation believing the experimenter must be correct. In this scenario, participants base their decision on information other than their memory.

To address both the demand and vacant slot explanations, McCloskey and Zaragoza created a modified recognition test which, unlike the original misinformation test design, did not let participants choose between the original item and the misinformation item. Instead participants had to choose between the original item and a new, not previously seen item. The rationale for this is that if participants' memory in the misinformation group were affected by the misinformation, then they would be less accurate than participants in the control group. Participants who believed the misinformation was correct would be forced to select an item; with the assumption that this guessing would be random and result in fewer participants selecting the correct item. However, if there was no misinformation effect then no difference would exist between group performances. Without the misinformation a person who has accurate memory for the original stimuli would have to select the original item since

there is no reason for them to make a choice based on any non-memory decision strategy, such as inference of what the study is trying to achieve or a belief that the person who designed the study would not have given the misinformation item unless it was correct.

In their study, McCloskey and Zaragoza found no misinformation effects. While some studies using this design have also failed to find misinformation effects (for example, Chandler 1991; Belli 1993) others have found an effect (Belli 1989; Tversky, and Tuchin 1989; Belli, Windschutle, McCarthy, and Winfrey 1992). Although their argument is acknowledged (e.g. Loftus 2005) the modified test has not been widely adopted and is considered insensitive to misinformation effects (Ayers, and Reder 1998). To address the potential for guessing, a 'guess' option was adopted in subsequent studies (e.g Braun 1999; Cowley, and Janus 2004).

2.3.4.3 Source Monitoring Framework

The previous sections reviewed the competing explanations for misinformation effects. Missing from these explanations is the role of the source of information, and the process a person goes through when attributing the original or misinformation item to its source. This source attribution is covered in this section, and is used in the interpretation of results presented in this thesis. An overview of the framework and how it is used in misinformation effect research is provided in the first part of this section, followed by a review of the factors known to affect source attribution errors.

Initially developed as a reality monitoring framework to explain how real experiences are discriminated from imaged events (Johnson, and Raye 1981), the source monitoring framework is concerned with understanding how a

person attributes the origins of a memory, belief or knowledge to a source (Johnson 1988; Johnson, Hashtroudi, and Lindsay 1993; Johnson, and Mitchell 2002). Within the framework of source monitoring, misinformation effects are conceptualised as source misattribution (Lindsay 1990; Zaragoza, and Lane 1994). The framework has gained support for its ability to explain different misinformation effects across various studies (Ayers, and Reder 1998; Gerrie, Garry, and Loftus 2003; Loftus 2005).

According to the source monitoring framework, mental experiences do not carry an indicator that labels the source of the information. Instead source attribution is a process that matches the characteristics of a memory with expectations about memories for a particular source (Johnson, and Mitchell 2002). These memory characteristics include perceptual detail (Johnson, Foley, and Leach 1988; Lindsay, Johnson, and Kwon 1991), contextual information (Johnson, Foley, Suengas, and Raye 1988), semantic detail (Lindsay 1990; Lindsay, Johnson, and Kwon 1991), affective information (Suengas, and Johnson 1988) and cognitive operations (Finke, Johnson, and Shyi 1988). This attribution process can happen quickly or after more effortful deliberation (Johnson, and Raye 1981; Johnson, Foley, Suengas, and Raye 1988).

The judgement process used to identify a source is based on a person's experience with different sources of information that creates expectations about the characteristics of a memory from a source (Bayen, Nakamura, Dupuis, and Yang 2000; Mitchell, and Johnson 2000; Spaniol, and Bayen 2002). These judgments, however, are also biased by a person's goals, agenda and meta-memory skills (Mitchell, and Johnson 2000). When making a source attribution, memory characteristics are compared to average differences associated with different sources of information. For example, a person recalling something about a café may notice they recall an image but have no

recollection of sounds or any interaction with other people. In other words, the memory has limited perceptual detail of the images they can recall. On the basis of this information and their experiences with print advertising, they may judge the memory source as an advertisement they had seen rather than something they had personally experienced.

In summary, source attribution framework for memory posits that a person does not have direct access to a tag that identifies the source of their memory. Instead a person makes a judgement about the source of their memory based on its characteristics and how these compare to their expectations for memories from different sources. The next section further elaborates on the relevant aspects of the source monitoring framework used in this thesis by discussing the conditions in which source monitoring errors are more likely to occur.

2.3.4.4 Factors Affecting Misinformation Effects

As discussed, within the source monitoring framework, source misattribution occurs when a person fails to correctly attribute the source of a memory (Johnson, Hashtroudi, and Lindsay 1993). Paralleling the discussion on explanations for misinformation effects, source misattribution can arise from encoding issues when a person fails to include differentiating information or the information lacks characteristics that would allow accurate attribution. Even if adequate information is encoded, misattribution can still occur at retrieval if a person does not use the available information to discriminate between sources (Johnson, Hashtroudi, and Lindsay 1993). Without the discriminatory information attribution is likely to be based on a person's schema for sources of information (Bayen, Nakamura, Dupuis, and Yang

2000; Spaniol, and Bayen 2002), with attribution based on the source from which they believe that type of information is most likely to have originated.

The first of the two encoding issues that lead to source attribution error is incomplete encoding of source detail. Even if information was encoded, source information rapidly decays, increasing the chances that it is unavailable when needed (Underwood, and Pezdek 1998). Without adequate detail on which to base a source decision, a source attribution error is more likely to occur (Lindsay, and Johnson 1989). While adequate detail may have been present during a person's experience, a person may not have encoded the information because their attention was divided across other tasks (Jacoby, Woloshyn, and Kelley 1989). They have been focusing on their emotions rather than the message (Johnson, Nolde, and De Leonardis 1996), or the similarity of the occasion to previous occasions meant that they did not pay attention to information that would have discriminated between occasions (Lindsay 1990). The second situation underscores the importance of expectations generated by schema in drawing attention to details of an experience. This idea is further developed in section 2.4 on schema and the development of the hypothesis for this thesis.

The second encoding issue leading to source misattribution is a lack of diagnostic detail present during the encounter. While the information may still have source characteristics, if the perceptual characteristics are too similar to another source, it would be difficult to correctly identify the information sources (Johnson, Foley, and Leach 1988; Goff, and Roediger 1998). Receiving information from sources that are closely timed also reduces a person's ability to accurately differentiate information from those sources (Winograd 1968).

A person may have encoded adequate detail in memory to allow accurate source discrimination but still fail to retrieve the information (Marsh, and

Hicks 1998) due to personal biases, goals, motivational and social factors operating at the time of the source decision (Johnson, Hashtroudi, and Lindsay 1993; Mitchell, and Johnson 2000). In particular, using lax criteria (Lindsay, and Johnson 1989; Dodson, and Johnson 1993; Multhaup 1995), having divided attention during the memory test (Dodson, Holland, and Shimamura 1998), or limiting the available time a person has to make source decisions during the memory test (Zaragoza, and Lane 1998) are likely reasons for an increase in source misattribution.

When reflecting on factors that increase source confusion and how to reduce their occurrence, Johnson and colleagues (1995) noted that, in general, processes that encourage encoding of distinctive and item-specific features reduce source confusion. This principle is consistent with the principle of discrepancy detection used for understanding the contexts that are most likely to encourage misinformation effects (Tousignant, Hall, and Loftus 1986; Gerrie, Garry, and Loftus 2003). In general, the principle of discrepancy detection predicts that the susceptibility to the misinformation effect will decrease as a person's ability to detect discrepancies between their original experience and the misinformation increases (Gerrie, Garry, and Loftus 2003). The principle places an emphasis on the process of encoding at the time the misinformation is encountered. Within the misinformation effect literature, stronger discrepancy detection is likely to occur when there is a short delay between the original event and the misinformation (Loftus, Miller, and Burns 1978; Belli, Windschutle, McCarthy, and Winfrey 1992); when the target item is central rather than peripheral to an experience (Wright, and Stroud 1996; Heath, and Erikson 1998) and by increasing the attention paid to post-event information (Tousignant, Hall, and Loftus 1986).

2.3.5 Summary

In this section of the knowledge review an overview was given on misinformation effect research in terms of its explanations and scope. Through this debate the field has contributed to the understanding of memory accuracy in the field setting (Koriat, Goldsmith, and Pansky 2000). While the explanations of misinformation effects have changed along with aspects of the methodology (Ayers, and Reder 1998), in applied settings, Gerrie, Garry and Loftus (2003) argue, the critical issue is not the route taken for misinformation effect, but rather that participants believe the misinformation is correct.

One of the critical factors reducing the acceptance of misinformation is the encoding of discriminating information. In this section I also discussed research showing that prior experience and goals play a role in moderating the misinformation acceptance. This is a relatively unexplored area that has potential to further explain the situations in which misinformation effects are more likely and has application for understanding misinformation effects in our day-to-day environment.

In the next section I further develop an understanding of the scope of misinformation effects through a review of schema theory as it relates to source misattribution and misinformation acceptance. I highlight the importance of prior knowledge in misinformation acceptance and the important knowledge gaps which remain.

2.4 SCHEMA

2.4.1 Introduction

People do not generally experience the world, or goods and services with a mind that is a blank slate. Prior to an experience they have personal experiences or may have received information from indirect sources which act as a lens to assist in understanding the world. The previous experiences are organised into schemas which provide expectations for the future and guide attention. Schemas are based on experiences; however, prior experiences are not themselves a schema. As mentioned in previous chapters, a schema can be defined as a knowledge structure that represents concepts, their characteristics and relationships to each other (Tuckey, and Brewer 2003) . More specifically schemas impact the memory encoding process through affecting what things are attended; through the storing of meaning; by the creation of a holistic representation; and by creating inferences that add and omit details (Alba, and Hasher 1983). Through this process schemas affect expectations about an experience.

Using the associative network model that was discussed in the previous section (section 2.2.1), a schema can be represented as a cluster of linked nodes that correspond to concepts that are relevant to a schema. When a person encounters a situation, they may see something they recognise that is relevant to a schema. The activation of the concept that leads to recognition also results in a cascade of activation to other associated concepts including those comprising the schema. The relative activation that a concept receives depends on the recency and frequency of that relationship being activated. This pattern of links that create activation corresponds to the schema. The use of the associative network model in regards to schema is further developed in regards to the hypothesis put forward in this section.

While an activated schema is acknowledged as likely to have an effect on misinformation acceptance (Gerrie, Garry, and Loftus 2003) there is limited research investigating schema's effect on misinformation acceptance (Nemeth, and Belli 2006). In this section of the thesis, the moderating effect of schema on memory accuracy during the memory encoding process is discussed, and its potential moderating affect on misinformation acceptance is argued, and hypotheses are proposed.

2.4.2 The Moderating Effect of Expectations on Misinformation Acceptance

When a schema is active during an experience it can affect what things are attended to during an experience, and it can affect what is encoded in memory (Hirt, McDonald, and Erickson 1995; Hirt, McDonald, and Markman 1998). While some studies have shown that information that is consistent with an activated schema is more likely to be recalled than inconsistent information (e.g. Brewer, and Treyens 1981; Cohen 1981), the weight of evidence is that inconsistent information is more likely to be recalled than consistent information (e.g. Friedman 1979; Graesser, Gordon, and Sawyer 1979; Srull 1981; Pezdek, Whetstone, Reynolds, Askari, and Dougherty 1989; Heckler, and Childers 1992; Lampinen, Copeland, and Neuschatz 2001). The differences in accuracy for consistent and inconsistent information have been attributed to the type of memory test methods (Alba, and Hasher 1983), relative levels of inconsistency (Tuckey, and Brewer 2003), use of schema irrelevant items (Heckler, and Childers 1992), and differences in use of encoding goals (Hirt, McDonald, and Markman 1998). For example, in a study by Heckler and Childers (1992) that looked at advertising messages, schema expectancy and relevance were manipulated to test the interaction between the two constructs. In their study, relevance was defined as the

importance of the information to meaning of the message. Results from their study showed that when testing differences between consistency and inconsistency, relevant information is better recalled than irrelevant. For the study reported in this thesis, a pilot study was undertaken to ensure the target item was relevant to the schema.

The stronger performance of inconsistent information in memory tests can be explained in terms of this information receiving greater attention due to its unexpectedness, which results in the information staying longer in working memory while a person tries to comprehend its presence in an experience (Pezdek, Whetstone, Reynolds, Askari, and Dougherty 1989; Tuckey, and Brewer 2003). Support for this interpretation is seen in a study by Freidman (1979), in which he tracked eye movements. Items that were inconsistent with the activated schema received attention that was twice as long as the attention given to schema consistent items. Recall results in the Friedman study were higher for the inconsistent items.

Within the context of misinformation effect studies, a small number studies have attempted to delineate the moderating effects of schema on misinformation acceptance. In these studies schema was not manipulated, instead the misinformation was manipulated to be either consistent or inconsistent with what could be typically expected for a particular experience. In a study by Smith and Studebaker (1996) schema's role in moderating susceptibility to misinformation was investigated in the context of jurors hearing details of a crime. In the study, misinformation was either something that was consistent or inconsistent for a particular crime. Results showed participants were more likely to accept the misinformation that reflected something that was consistent rather than inconsistent with a schema. Finding the same result in a study that used photographs of different scenes, Roediger, Meade and Bergman (2001) also found misinformation acceptance

was higher for the schema consistent items. In both the Smith and Studebaker (1996) study, and the Roediger, Meade and Bergman (2001) study the misinformation was regarding things that were not present in the original scenes. In this regard, these studies are a departure from the traditional misinformation paradigm in which misinformation contradicts and transforms an item that was present in the original experience (Ayers, and Reder 1998). Misinformation effects for added items has a stronger effect on recall than when the information contradicts the an item with another item (Frost 2000). Therefore, schema consistency an antecedent for contradictory misinformation effects should not be assumed.

A misinformation effect study conducted by Nemeth and Belli (2006) had manipulations for consistency and for type of misinformation: additive or contradictory. Results from the study showed stronger recall of inconsistent information; however the misinformation effect was not significant. As a result the potential moderating affect of schema for contradictory misinformation remains untested. The misinformation effects explored in this thesis are for contradictory misinformation. To test for a contradicting misinformation effect, the thesis also departs from the previous studies by manipulating what schema is active rather than the consistency of the misinformation. This approach creates a manipulation of consistency between the schema and the experience. By manipulating the active schema there is greater clarity on the effects of schema, since there is greater certainty as to which schema was active and that the change in schema is a causal factor.

Based on results from the non-misinformation studies showing more accurate recall for schema inconsistent items in an experience, the first hypothesis put forward is as follows:

H₁: *Misinformation effects will increase as the consistency between expectations and original experience increases.*

Support for the first hypothesis will be claimed if there is a significant main effect for schema consistency on memory accuracy.

2.4.3 The Moderating Effect of Encoding Goals on Expectations

The goals a person has when they encounter information impacts the encoding, storage and retrieval of their experiences (Srull, and Wyer 1986). As a result, to understand the affects of schema, encoding goals must also be considered. I propose that encoding goals, moderate the effect of schema consistency on misinformation acceptance.

An encoding goal is a task given before information is encountered, and is used to control the type of attention given to that information (Srull, and Wyer 1986). Within the context of memory research, common encoding goals used are recall the information, form an impression or comprehend the information (Hirt, McDonald, and Markman 1998). When using the recall encoding goal, participants are instructed to remember the information because at a later stage their memory will be tested. Recall encoding goals promote learning and a strong memory, and are used when item memory is the focus of the study. For the impression encoding goal, participants are told to form an overall impression of the information. This goal promotes integration of the different pieces of information in the study and the use of prior knowledge. Impression encoding goals are used when the purpose of the study includes impression formation and schema affects. For the comprehension encoding goal, participants are asked to focus on the coherence of the information, such as its grammatical structure. Without focussing the participant's attention on either what was shown or its meaning, this encoding goal attempts to minimise any rehearsal and use of

schema. The comprehension encoding goal is used when the focus of a study is on incidental rather than active learning.

Both the recall and impression encoding goals are of direct relevance to this study's objective of understanding the moderating effects of schema on misinformation acceptance. The impression encoding goal provides a means for testing whether schema effects are more likely to occur when the focus is on experience interpretation, while the recall encoding goal investigates whether the schema consistency affect is moderated by focusing attention on the items. By including both goals in the study, their relative affects are investigated.

While some studies investigating misinformation effects have used encoding goals as part of their study instructions, to date no study has explicitly investigated their affects. In previous misinformation effect studies, encoding goals were either absent (e.g. McCloskey, and Zaragoza 1985; Lindsay, and Johnson 1989; Loftus, Donders, Hoffman, and Schooler 1989; Smith, and Studebaker 1996), or studies used a recall encoding goal (Roediger, Meade, and Bergman 2001; Nemeth, and Belli 2006). In those studies that included flavour evaluations, an impression encoding goal could arguably be implied (Braun, and Loftus 1998; Braun 1999; Cowley, and Janus 2004).

Studies investigating the summary evaluations created when an impression encoding goas was used indicate the summary information is stored independently of the original information and these judgements are accessed rather than the original information (Carlston 1980; Wyer, Srull, and Gordon 1984). By using the summary information rather than the detail of initial experience, less source diagnostic information is likely to be recalled. Recall of less diagnostic information would increase the chances of source

misattribution (Marsh, and Hicks 1998), resulting in increased likelihood of a misinformation effect.

In a study conducted by Hirt, McDonald and Erickson (1995) on the effects of encoding goals (recall, impression) and expectations on recall, participants were given an encoding goal followed by a description of a fictional student's mid-year results. After a delay they were provided information that indicated whether the student's performance had either improved or declined. This was followed by the student's end of year results which were the same across all the conditions, and then a memory test for the mid-year results. Results from the study showed memory accuracy in the recall encoding goal condition was unaffected, while results in the impression encoding goal condition were less accurate and had expectancy congruent distortion. Given the results discussed in this section I propose that by using an impression encoding goal the resulting influence of schema on recall would lead to misinformation effects when there is inconsistency between expectations and experience.

Also I propose that when a recall encoding goal is used a different outcome is suggested. Similar to those using an impression encoding goal, participants using a recall encoding goal would also be less likely to pay close attention to the experience when it is consistent with their expectations resulting in increased misinformation acceptance. However, when there is an inconsistency between expectations and the experience, this is likely to lead to increased accuracy for items that are inconsistent with expectations. The presence of the misinformation, being inconsistent with the experience would lead to further processing of the original item, resulting in increased accuracy in the memory test. Based on this review, the following hypotheses are put forward:

H2:   *The relationship between misinformation effects and encoding goal will be moderated by schema consistency (H1), such that when there is consistency between schema and experience, misinformation effects will occur regardless of the encoding goal used (H2a). When there is schema inconsistency the use of a recall encoding goal would eliminate misinformation effects (H2b).*

Support for the above hypothesis will be claimed if there is a significant interaction between schema, encoding goal and misinformation acceptance.

2.4.3.1 Retail Experience Evaluation

Past studies finding a misinformation effect have also found that changes in memory for details of an experience translate into changes in attitudes (Braun, and Loftus 1998; Braun 1999) and buying intentions (Braun, and Loftus 1998). These studies indicate that the impact of misinformation extends beyond the change in objective memory to judgments that are based on these memories. While these previous studies have shown changes in evaluations relating to item misinformation acceptance, the evaluations also only relate to the object itself. An unanswered question is whether the misinformation effects extend to expectations of the broader consumption experience.

Within the context of retail environment, such as the café environment used in this study, memory of elements present during an experience can affect a consumer's impressions of a retailer (Mazursky, and Jacoby 1986). Without the ability to know the quality of the products sold by a retailer before consumption, consumers rely on the environment cues to make inferences to guide their decisions (Parasureman, Zeithaml, and Berry 1988; Zeithaml 1989; Parasurman, Zeithaml, and Berry 1994). In the context of this study, by changing the environment cues that are to be remembered in order to reflect a better store quality, improved store quality perceptions should follow.

With a focus on the broader service experience in this thesis the disconfirmation created by the schema inconsistencies with the experience and misinformation could lead a different outcome. A dominant model in the services literature relating to evaluations of an experience, is the disconfirmation of expectations model (Lovelock, Patterson, and Walker 2001). In the disconfirmation of expectations model, satisfaction and dissatisfaction levels are a result of differences between a person's expectations and what they experienced (Oliver 1980). Higher satisfaction occurs when expectations are exceeded with better performance, while poorer than expected performance results in dissatisfaction (e.g. Oliver 1980; Churchill, and 1982; Spreng, MacKenzie, and Olshavsky 1996). Changes in satisfaction are also linked to changes in service quality impressions (Oliver 1980; Bitner 1990).

While the disconfirmation model requires differences between expectations and what was experienced, negative attitudes to a consumption experience are not necessarily due to poor performance. Services or goods that have traits that are not expected can also lead to less positive evaluations than those with more expected traits (Ward, Bitner, and Barnes 1992; Veryzer, and Hutchinson 1998; Babin, and Babin 2001). In a retail context, environment

design factors contribute to how typical a retailer is perceived (Baker, Grewal, and Parasuraman 1994). In a study on the effects of typicality for restaurant design on evaluations, Ward and colleagues (1992) showed that consumers had more favourable attitudes about fast-food restaurants when they exhibited more typical traits. The explanation given for the link between typicality and attitudes, is that service providers that are also judged to be more typical are more likely to carry performance traits that are important to consumers for that category (Loken, and Ward 1990). Service providers that are more typical also benefit from having consumer expectations more closely reflecting the type of service provided, reducing the possibility of a negative gap between performance and expectations (Ward, Bitner, and Barnes 1992).

Based on the research reviewed here and in the previous sections, I expect misinformation acceptance to result in changed store quality evaluations. The expected outcome is put forward in the following hypothesis.

H₃: *Acceptance of the misinformation will result in improved quality perceptions.*

Support for the above hypothesis will be claimed if there is a significant main effect for target type item recognition on quality perceptions.

2.4.4 Summary

Understanding the malleability of memory is an important area of study in furthering our understanding of the nature of memory, both within a marketing context and the broader area of human cognition. In business, where there is ongoing communication between buyers and sellers about the nature of a consumption experience, the issue of memory malleability and how it may be affected by consumers' expectations is of relevance.

In the knowledge review chapter, the malleability of memory was discussed through an understanding of the constructive nature of memory. This malleability was looked at in terms of the mechanics of the associative network model of memory and its application to understanding misinformation effects, including an understanding of misinformation effects through the source monitoring framework. The source monitoring framework was introduced as a framework for understanding misinformation effects as source misattribution. This source misattribution occurs from either a lack of encoded information that discriminates between sources or insufficient motivation to retrieve discriminating information from memory. The source monitoring framework also shows the importance of prior knowledge in affecting a person's attention to differences between information from different sources, and their motivation to interrogate their memory.

Due to its importance in understanding memory and the methodology for investigating the effects of post-event information, this section also reviewed the contribution of misinformation effect research. Specific studies that looked at the phenomenon within the context of consumer behaviour are provided.

Building on the importance of prior knowledge in affecting what a person attends to during an experience, and its potential to moderate misinformation acceptance, relevant theory for schema and encoding goals was covered in the knowledge review. Based on this review hypotheses were developed. I propose that a consistency between expectations and experience leads to increased misinformation acceptance on the basis of research showing that the similarity of source information leads to increased source errors, and that an inconsistency between expectations and information leads to better recall. While I discussed studies in the area of misinformation effects that had

incorporated expectancies, these studies investigated additive misinformation rather than contradictory, and had not manipulated what schema was active during the experience. These factors reduced their generalizability to understanding misinformation effects. The expected increased misinformation effects when there is schema consistency with the service experience was formulated into the first hypothesis.

An interaction created by the differences in the effect of consistency and encoding goals on the attention given to the post-event misinformation is proposed in this thesis. Based on prior research I propose that consistency between expectations and an experience would increase misinformation susceptibility regardless of the encoding goal employed. In addition, an inconsistency between schema and an experience would lead to an absence of misinformation effect among those using a recall encoding goal. The expected interaction between schema consistency and encoding goals were formulated into the second hypotheses.

In terms of the impact of misinformation acceptance on subsequent evaluations, a review of the literature suggests that if the misinformation item reflects better quality then recall of the misinformation would result in improved store quality evaluations. The expected effects of item recall and interaction with schema were put forward in the third hypotheses.

The hypotheses developed and put forward for testing in this thesis are listed as follows:

H1: *Misinformation effects will increase as the consistency between expectations and original experience increases.*

H2: *The relationship between misinformation effects and encoding goal will be moderated by schema consistency (H1), such that when there is consistency between schema and experience, misinformation effects will occur regardless of the encoding goal used (H2a). When there is schema inconsistency the use of a recall encoding goal would eliminate misinformation effects (H2b).*

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H3: *Acceptance of the misinformation will result in improved quality perceptions.*

The methodology used to test the above hypotheses is detailed in the next section of this thesis

3.0 METHODOLOGY

A review of the current literature that outlined the need for further research to delineate the role schema in a person's susceptibility to post-event misinformation was provided in the last chapter. In this chapter the method used, measurements taken and process followed to test the hypotheses put forward in the previous section is described.

3.1 OVERVIEW

The paradigm method generally used to study misinformation effects was developed in the 1970s by Elizabeth Loftus and colleagues to investigate misinformation effects in the form of leading questions on the reliability of eyewitness testimony (e.g. Loftus 1975; Loftus, Miller, and Burns 1978; Loftus 1979). While the general process used has remained largely unchanged, different studies have used the framework to investigate a range of issues to test the generalizability and nature of misinformation effects. Building from prior studies, the details of the methodology used in the study, including the manipulations and dependent variables, are discussed here. In the first section of this chapter I provide the general process used in the study, and an overview of the main studies that have contributed to the development of the design of studies investigating misinformation effects.

3.2 MISINFORMATION EFFECT EXPERIMENTAL PARADIGM

Research investigating misinformation effects generally follow a three step process using a between subject experimental design. In the first step participants are provided some type of information which includes a target item. In the second step, participants in the test condition are given misinformation regarding the target item. In the final step, participants' memory for the original target item is tested. For example, a classic misinformation study by Loftus, Miller and Burns (1978) showed participants a series of slides depicting an accident, in which a red Datsun fails to stop at a *stop* sign and has an accident with a pedestrian. After watching the slides of the accident, participants were asked to complete a questionnaire. Participants in the misinformation condition were asked, "Did another car pass the red Datsun while it was stopped at the *yield* sign" (italics not in the original question). After a short filler task, participants completed a memory task where they chose between either a stop or yield sign, as the item they recall from the original slides. While there is variation between experiments in how participants experience the original and misinformation material, and the time lapse between the events, the general experimental framework is common to the studies investigating the effects of misinformation on memory (Ayers, and Reder 1998).

Early studies used a forced choice in the memory test so that participants choose between the original item shown in the stimulus material and the misinformation item (e.g. Loftus, and Palmer 1974). While this approach had consistently found misinformation effects, the approach was questioned by McCloskey and Zaragoza (1985) because it could not clearly rule out the possibility that participants had not encoded the original item and used a guessing strategy based on familiarity to make their choices. McCloskey and Zaragoza (1985) reasoned that if a person did not encode the original item but

did encode the misinformation, when given a choice between the original item and the misinformation item, the misinformation item would enjoy a memory advantage because it was more familiar. This greater familiarity with the misinformation would result in participants making an educated guess and choosing the misinformation item over the original item.

To control for the possibility that the observed misinformation effects were due to participants guessing, McCloskey and Zaragoza (1985) developed a modified recognition task. In the modified task, participants choose between the original item and a new item that was plausible but was not present in either the original information or the misinformation. Unlike the earlier approach, in the modified test the misinformation item was not presented. If a person did not encode the original item but did encode the misinformation item then both items should appear equally unfamiliar and result in a random guess in the modified test. If a person encoded the original item and the misinformation but believed the misinformation item was correct they cannot choose that item and were forced to guess. Evidence of a misinformation effect in the modified test is shown by lower accuracy in the misinformation condition compared to the control condition.

While some studies using the modified test failed to find a misinformation effect (McCloskey, and Zaragoza 1985; Loftus, Donders, Hoffman, and Schooler 1989; Chandler 1991; Belli 1993), other studies have shown effects (Loftus, and Hoffman 1989; Chandler 1991; Belli, Windschutle, McCarthy, and Winfrey 1992). By excluding the misinformation item from the recognition test, other researchers have argued that the test is insensitive to all but the strongest misinformation effects (Loftus, Schooler, and Wagnaar 1985; Belli, Windschutle, McCarthy, and Winfrey 1992; Ayers, and Reder 1998).

To improve the sensitivity of the recognition test, Braun and Loftus modified the recognition test in their study using packaging colour (Braun, and Loftus 1998) and taste (Braun 1999) as the target items, so that the correct item, the misinformation item, and plausible alternatives were given in the recall test.

Illustrating their approach, participants were presented with a chocolate bar that had 'green' wrapping, in what they were told was a taste test (Braun, and Loftus 1998). Then after participants completed an unrelated filler task they were presented with a print advertisement that showed the wrapper was 'blue'. To test their memory for the original chocolate bar, participants were shown a colour wheel and asked to indicate colour of the original chocolate bar's wrapping. The use of a colour wheel meant that participants could select the original colour, the misinformation colour and other plausible colours, including those in the spectrum between 'green and 'blue'. By including plausible alternatives and both the original and misinformation items, the research had sensitivity to misinformation effects with reduced possibility of demand effects influencing results by providing other plausible results. This approach however, is limited to target items that exist along some type of continuum.

In order to measure misinformation effects for a discrete item, I use the three step approach used in previous studies and adapt the continuum recognition task to accommodate for discrete items. The recognition task used here allowed participants to choose from the original test item, the misinformation item and a plausible item that was not shown in either the original event or the misinformation. The plausible item contains characteristics common to both the original and misinformation items.

The following sections of the methodology chapter provide details on the method used, processes, pre-testing and piloting, manipulations and measures used in the study.

3.3 EXPERIMENT DESIGN

The study presented in this thesis is a between- subject experimental design with three factors, with each factor having two levels, resulting in a 2*2*2 design. In general the design and procedure employed in this study is consistent with the established misinformation effect paradigm described in the previous section and employed in the consumer behaviour literature for the study of misinformation effects (Braun 1999; Braun-LaTour, LaTour, Pickrell, and Loftus 2004; Cowley, and Janus 2004).

The manipulated factors in the study were post-event information (neutral, misinformation), schema consistency (consistent, inconsistent), and encoding goal (recall, impression). For the post-event information manipulation, the post-event information was either misinformation or neutral information. The schema consistency manipulation used two alternative descriptions of the café that meant the target item seen in the video of the café was either consistent or inconsistent with expectations created by the café description. The café descriptions, described the café in terms of being a restaurant and take-away style café. The encoding goals were operationalised by asking participants to try and remember the experience or form an impression.

The table below outlines the eight conditions created by the study's 2*2*2 design.

Table 3.1 Experimental Conditions and Experience

Conditions			Stimulus Details		
Post-Event Information	Schema Consistency	Encoding Goal	Type of Café Expectation	Type of Cup Seen	Type of Cup in Post-Event Information
Misinformation	Inconsistent	Recall	Restaurant	Polystyrene	Cappuccino
Neutral	Inconsistent	Recall	Restaurant	Polystyrene	None
Misinformation	Consistent	Recall	Take-Away	Polystyrene	Cappuccino
Neutral	Consistent	Recall	Take-Away	Polystyrene	None
Misinformation	Inconsistent	Impression	Restaurant	Polystyrene	Cappuccino
Neutral	Inconsistent	Impression	Restaurant	Polystyrene	None
Misinformation	Consistent	Impression	Take-Away	Polystyrene	Cappuccino
Neutral	Consistent	Impression	Take-Away	Polystyrene	None

The study was conducted in the context of a café and the target item was the type of cup used by a customer when drinking their coffee. This context and use of a discrete item is analogous to previous misinformation research conducted in the context of an eye-witness to a crime, in which the target item was something picked-up or interacted with by the main character (e.g. McCloskey, and Zaragoza 1985; Zaragoza, and Koshinder 1989; Zaragoza, and Lane 1994). This design was selected to be consistent with the design of previous misinformation effect studies in order to assist with interpretation of the current study's results.

3.3.1 Procedure

The procedure used for the study followed the nine stages listed below.

Recruitment

Encoding Goals Presented

Schema Presented

Café Service Encounter Video

Filler Task

Post-Event Information Presented

Filler Task

Memory Test and Imager Measurement

Participants Debrief
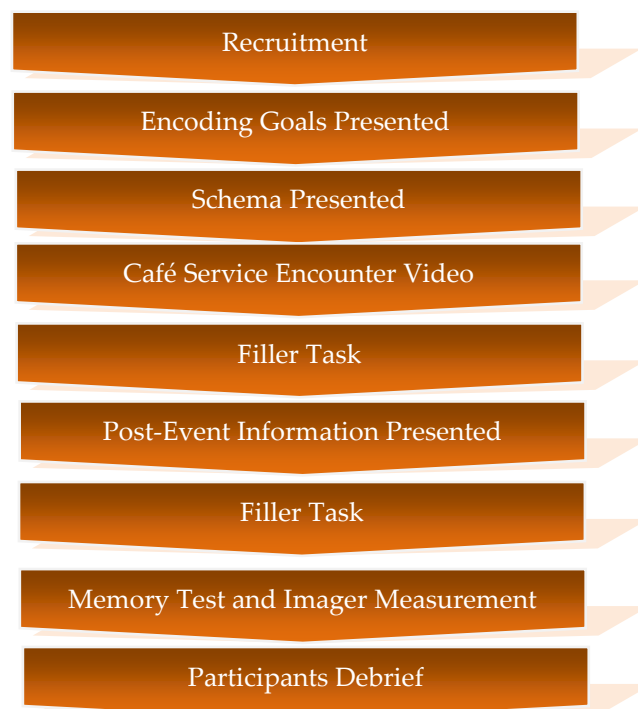
Each stage and the process are discussed in this section of the methodology chapter.

In the first stage of recruitment participants were told the study was on retail environment design, so as not to alert them to the true nature of the study and create the possibility of participants using their knowledge to guide their responses to the study. When participants arrived at the testing facility they were randomly assigned to a test condition.

Participants then read briefing instructions which contained the encoding goal manipulation, and then a description of the café. These instructions provided the schema manipulation.

Participants then watched a 3-minute video that showed the inside of café and a person buying and drinking their coffee. Details of the taped experience are provided in section 3.6.1.

After participants had watched the video, they completed an unrelated distracter task that lasted 5-minutes. Misinformation effect studies have used distracter tasks of varying lengths, with longer durations leading to increased misinformation effects (Loftus 1979). The length of time used in this study was chosen to allow separation of the tasks but not to be a key factor when interpreting the results.

Participants were then shown a magazine advertisement for the café they had seen in the video and were told the owners of the café were interested in using the advertisement to promote their café. Depending on which condition participants were assigned, they either saw an advertisement that contained misinformation about the target item or it was neutral regarding the target item. To ensure participants paid adequate attention to the magazine advertisement, they completed a series of short questions on the advertisement's message and persuasiveness.

After completing the magazine advertisement questions, participants then completed a second distracter task that lasted 5-minutes to clear their working memory of the task. This task consisted of a series of multiple choice questions on trivia and language problems. The next phase of the study was the measurement of memory accuracy.

Participants read a description of the memory task and definitions of the key terms. The memory test was conducted for three different items, one of which was the target item. The order of these items was randomly assigned. After indicating the item they recognised, participants then rated their level of confidence that they had selected the correct item. After completing this task participants completed a series of service quality questions.

The final step in the study was a short questionnaire to collected background information on participants. This series of questions included demographic information, frequency of buying coffee or tea, frequency of visiting cafes, and what they believed was the real intention of the study. Feedback was used to check for potential demand effects. No participant indicated they believed the study involved misinformation or their ability to detect differences between the video and the advertisement. At the end of the study, participants were told the studies real purpose of the study.

The survey was administered by computer using DirectRT software from the Empirisoft Corporation.

3.3.2 Exploratory Research and Pre-Testing

As part of the development of the study, exploratory research was undertaken to aid target item selection and pre-test the café and café type descriptions that were used in the study. There were two stages to the

exploratory research. The first stage consisted of two group discussions among undergraduate business students – the same sample population used in the main study – to uncover how they categorise cafés and what physical design elements were associated with the different café types. From this stage, a list of potential target items was created. The selection of the restaurant style café as the high quality, and the take-away style café as the lower quality café types were based on this stage of the research.

The next stage of the exploratory research was a survey among undergraduate business students (n=49) to determine which items were consistent and inconsistent with what they expected in take-away and restaurant style cafés. Participants were given a short description of each type of café and were then asked to indicate on a continuous scale, how likely an item would be found in that type of café. The anchor points were 'definitely would not find' and 'definitely would find', with the endpoints assigned '0' and '100' respectively. The results from this survey are shown in Table 3.2.

Overall, the results from the survey showed the cup types as a group had strong differences. The polystyrene cup was strongly associated with a take-away style café rather than a restaurant style café ($M_{take-away}$ = 89, $M_{restaurant}$ = 28, t(14.00), p<0.00). While less distinct, results for the cappuccino cup indicated the inverse ($M_{take-away}$ = 47, $M_{restaurant}$ = 81, t(6.50), p<0.00). The mug cup style was equally associated with café types ($M_{take-away}$ = 57, $M_{restaurant}$ = 50, t(-1.12), p<0.27). Other design elements tested did not show a similar clear delineation between café types either individually or as a group. As a result, cup type was used as the target item in the final study. The ease of changing cup type in the stimulus also provided an additional advantage for their use. Based on the strong difference between café types for the polystyrene cup, it was used as the target item when shown in the café video.

Table 3.2 Potential Target Items and Café Type Association, Paired t-Test

Target Item	Café Type	Mean	Std. Deviation	Sample Size*	Paired Differences	t	df	Sig. (2-tailed)
Mug Cup	Restaurant	50	29.42	49	7.00	-1.12	48	0.27
	Take-away	57	25.13	49				
Polystyrene Cup	Restaurant	28	30.54	49	60.71	14.00	48	0.00
	Take-away	89	9.14	49				
Cappuccino Cup	Restaurant	81	19.09	48	34.27	6.50	47	0.00
	Take-away	47	30.54	48				
Canteen Table	Restaurant	56	24.56	49	1.43	-0.23	48	0.82
	Take-away	55	29.83	49				
Small Wooden Table	Restaurant	53	22.90	49	13.65	2.44	48	0.02
	Take-away	66	23.04	49				
Lounge Chairs	Restaurant	64	26.30	49	33.12	5.40	48	0.00
	Take-away	31	27.75	49				
Wooden Table	Restaurant	49	26.30	49	9.06	1.47	48	0.15
	Take-away	40	26.54	49				
Metal Table	Restaurant	50	27.95	49	12.06	1.86	48	0.07
	Take-away	62	26.97	49				
Sofa Lounge	Restaurant	63	26.53	48	35.38	-6.12	47	0.00
	Take-away	27	28.17	48				

* Samples with n=48 are due to missing data from incomplete responses.

The café used in the study was pre-tested for its neutrality by using the set of store quality dimensions outlined in section 3.7.2 Store Image. In the test no café description was given beyond the name 'Café Sarina'. Similar to the expectation measurement discussed previously, image quality association was measured on a continuous scale anchored with 'strongly disagree' (0) and 'strongly agree' (100). Results show the café scores were in the mid-range with similar variation across the measured dimensions (see table 3.3). This result indicated the café used for the study did not have an image that was distinctly either a restaurant or take-away café, but was ambiguous enough for manipulation in the study.

Table 3.3 Café Quality Imagery Evaluation

Environment Imagery	Mean	Std. Deviation	Sample Size
Cleanliness	66	15.99	49
Customers Treated Well	54	16.74	49
High Quality Coffee	54	15.69	49
Pleasant place to have coffee	53	14.52	49
Employees give personal attention	50	17.10	49
Employees willing to help customers	50	15.51	49
High Quality Service	50	14.75	49
Too Busy to Respond	49	19.48	49
High Quality Food	48	13.10	49
Pleasant Atmosphere	46	14.74	49
Café Attractive	41	17.56	49

A pre-test was done to ensure that the restaurant and take-away café descriptors would generate expectations about the cup type. To test the descriptors, undergraduate business students (n=57) were recruited as participants and randomly assigned to two groups in which each group evaluated one of the café type descriptions by rating their level of expectation for each of the proposed cup types. Similar to the other pre-tests conducted for the study, participants rated each cup type on a continuous scale ranging from '0' for 'definitely would not find' to '100' for 'definitely would find' that type of cup in the café matching that description.

Overall, the descriptors were effective for ensuring the right type of cup was expected. The take-away manipulation generated stronger expectations for the polystyrene cup ($M_{take-away}$ = 79, $M_{restaurant}$ = 31,t(-5.58), p<0.001). Similarly, the restaurant description created stronger expectations for the cappuccino cup ($M_{take-away}$ = 58, $M_{restaurant}$ = 84,t(3.95), p<0.001). Based on these results, the café descriptions were adopted.

Table 3.4 Expectation Manipulation Check, Independent Sample t-Test

Target Item	Café Type	Mean	Sample Size	Std. Deviation	t	df	Sig. (2-tailed)
Polystyrene Cup	Restaurant	30.95	29	32.65	-5.58	55	0.00
	Take-Away	79.27	28	32.68			
Cappuccino Cup	Restaurant	83.58	29	16.46	3.95	55	0.00
	Take-Away	57.81	28	30.93			

The questionnaires used for item generation, selection and manipulation check are provided in Appendix 6.

3.3.3 Pilot Studies

After completing the exploratory research to determine the target item and café description manipulation, two pilot studies were undertaken. After each pilot study participants were interviewed about the process, question wording and the stimulus. Feedback and observations from the pilot studies helped to refine the process and stimulus to ensure completion times were met and that participants' interpreted the questionnaire wording correctly.

The first pilot study was conducted among undergraduate business students (n = 43). Conducted using paper-based questionnaire and with the café video shown to participants in a group setting, this pilot study revealed several issues. These included the resolution of the video was insufficient for the large screen needed for group based interviewing; students that turned up late lead to timing problems and potential sampling bias; the filler task was too difficult and led to frustration and the task taking too long to complete.

To address the problems of the first pilot study, the second study used a computer based format so that participants could start at different times, avoiding the problems of students arriving late. The computer screen gave better image resolution. The filler tasks were made simpler to complete. The amended study was piloted among undergraduate business degree students (n=12). No difficulties were encountered in the second pilot study, so the full study was then undertaken.

3.4 SAMPLE

A key consideration in sample selection was the need for participants to have had experience with visiting cafés. By having this experience it was reasonably likely that participants would have the needed schema to allow the schema manipulations to create the required expectations. On and around the university campus, a variety of cafés operate to serve the needs of staff, students, and visitors. The distribution of buying from cafés in the final study (Table 3.5) showed that the undergraduate business students (n=281) that completed the study for course credit, regularly used cafés, with only 20% buying from a café less than once a fortnight.

Table 3.5 Sample Distribution: Frequency of Buying Coffee or Tea from a Café

Target Item	Frequency	Percentage
One or more times a day	50	18%
Less than once a day but more than once a week	98	35%
Once a week	25	9%
Less than once a week but more than once a fortnight	32	11%
Once a fortnight	19	7%
Less than once a fortnight	57	20%
Totals:	n = 281	100%

By using students, the similarity of age and education was also likely to assist in reducing personal variability, and as a result improve internal reliability (Brown, and Stayman 1992). Misinformation research reported in the Knowledge Review commonly use students. By using students in this research the study design reduces issues of sample comparability when interpreting results against other studies. Given the range in consumption frequency patterns – and its importance to the manipulations – frequency of visiting cafés was used as a covariate in the analysis.

Students used in each phase of the research received course credits for their participation.

3.5 ETHICS APPROVAL

The research undertaken for this thesis had ethics approval from the University of Sydney's Human Research Ethics Committee, reference number 7361.

In accordance with the Human Research Ethics Committee approval, all participation was voluntary and participants in the study signed an approved consent form. This consent form is shown in Appendix 7. On completion of the interviews participants were debriefed on the full nature of the research and invited to give their feedback on any issues or questions they had with the research process or topic.

3.6 INDEPENDENT VARIABLES AND STIMULUS

Each of the three manipulations in this study provide the independent variables: schema consistency, post-event information, and encoding goal. All three independent variables had two levels. The Knowledge Review (section 2.0) provided the theory behind each of the manipulations. In this section of the thesis, a description is given for each of the independent variables. Also included in this section is the café video stimulus.

3.6.1 Schema Consistency Manipulation

To manipulate schema consistency, participants were given one of two descriptions of the café before they saw the café video. These descriptions were either consistent or inconsistent with the target item seen in the video. Using store quality dimensions of product, service and atmosphere identified by Baker, Grewal and Parasurman (1994), each description emphasised the nature and quality of the service; the type of products that were for sale; and used both direct descriptions and comparisons with the alternative café type used in the study. This approach was used to prevent any café type

ambiguity and to reinforce the quality expectations needed for the manipulation.

Below are the café descriptions used in the study. In Appendix 2 both manipulations are given within the context of the study instructions and questionnaire.

> **Restaurant Style Café Description**
> Café Sarina is located on a busy street that has a mix of offices, clothing stores, restaurants and other restaurant style cafes. The café is open from early to late evening and is also open for weekend shoppers. The café focuses on high quality food, coffee and service. Relative to a nearby take-away café, prices are higher.

> **Take-Away Style Café Description**
> Café Sarina is located on a busy street that has a mix of offices and is next to a busy train station. Although there is some space for people to sit down and drink their coffee, the café was designed to cater for the morning crowds that come in to buy their coffee on their way to their offices. The café offers light meals, and focuses on coffee and fast service. Relative to a nearby restaurant style café, Café Sarina's prices are lower

3.6.2 Post-Event Information Manipulation

For the information manipulation, participants saw an advertisement that they were told was something the owner of the café was considering using. Written in a transformational style, that emphasised the product use experience (Puto, and Wells 1984; Aaker, and Stayman 1992), the advertisement showed a young male in the café and invited the reader to take time out of his or her morning to visit the café. For the misinformation condition, a cappuccino cup was shown in a central position on the table, while in the neutral condition the cup was removed. To ensure participants paid close attention to the advertisement, they completed a short questionnaire on the message and persuasiveness of the advertisement.

The person in the execution was selected to have a similar age to the participants and wore neutral style clothing to reduce distractions from the message and the target item.

To ensure participants associated the images shown in the advertisement to the café service experience, and to aid source confusion, similar perceptual details to the video were used (Johnson, Foley, and Leach 1988). As in the video, the image in the advertisement was taken from the inside of the café, using a standing height perspective and similar colour production.

Appendix 2 has examples of the mock advertisement for both the misinformation and neutral conditions.

3.6.3 Memory Encoding Goal Manipulation

As outlined in Section 2.4.3 Moderating Effect of Encoding Goal on Expectations, two memory encoding goals were used in the study: A recall encoding goal and an impression encoding goal. Both encoding goals were manipulated with explicit instructions at the outset of the study, ahead of the café descriptions and video of the café, and were based on the instructions used by Hirt, McDonald and Markman (1998). For the impression encoding goal, participants were asked to form an overall impression and that they would later be asked to asked to complete a questionnaire on their impressions. For the recall encoding goal participants were asked to pay close attention and informed that their memory would be later tested.

Below are both the encoding goal descriptions used in the study. In Appendix 2, both manipulations are given within the context of the study instructions and questionnaire.

Impression Encoding goal Condition
People form impressions about the places they see and visit. The study you are assisting with investigates the design of new café, called Café Sarina. You will be shown a video of the inside of this café from a first person perspective. Later in the study you will be asked to complete a short questionnaire about your impressions.

Recall Encoding goal Condition
The study you are assisting with investigates the design of a new café called Café Sarina. In this study you will be shown a video of the inside of this café from a first person perspective. When watching the video please pay attention to the people you see and what they do. Later in the study you will be asked to complete a short memory test about what you saw in the video.

3.6.4 Service Encounter Video

The café service encounter, that included the target item, was shown to participants in a three minute video. Video provides an effective medium to represent person-environment interactions when studying consumer behaviour in a retail environment (Baker 1986; Baker, Grewal, and Parasuraman 1994) and was used in previous misinformation effect studies (Loftus, and Palmer 1974; Tuckey, and Brewer 2003).

In terms of experimental design, the use of video compared to personal experience gives greater control over the variability created by interactions between staff and customers that can threaten the internal validity of a study (Chase, and Tansik 1983). While potential confounding variables could be measured and statistically controlled for in a 'real life' experience approach, this approach requires large sample sizes and any variables not identified and measured could still jeopardise interpretation of results (Cook, and Campbell 1979). By using video, greater internal validity is achieved by participants seeing the same information, and ecological validity is maintained (Hershberger, and Cass 1974; Bateson, and Hui 1992).

In the video, staff are shown making coffee and a female customer is shown walking back to their table holding the cup. After sitting down, the customer is shown drinking their coffee, then a male friend greets her and sits down with her. This video also shows the seating, menu signs, art, furniture and other design elements in the café. To reduce the possibility of the target item not being attended to by participants, the target item was placed both thematically and spatially central to the service encounter (Wright, and Stroud 1996). Camera shots held the cup in mid-frame position to keep it spatially central to the viewer. Refer to Appendix 1 for stills taken from the café service encounter video.

3.7 DEPENDENT VARIABLES

The hypotheses put forward in this study are concerned with memory accuracy and quality perceptions. In this section the dependent variables used to measure accuracy and quality perceptions are discussed in conjunction with the theory that supports their use in the context of this research. In section 3.7.1 the theory that underpins the use and interpretation of the level of awareness measure used in gauging memory accuracy is developed. In the development of this measure for this study, innovative modifications were made that provide a contribution to future research on memory accuracy. In section 3.7.2 the dependent measure for retailer quality impressions that was used to evaluate the implicit effect of the misinformation effect on retailer image is discussed.

3.7.1 Recognition Memory Accuracy

In the mid-1980's, Endel Tulving (1985) argued that consciousness must be addressed in studies of memory, and that the different types of consciousness – autonoetic, noetic, and anoetic – mapped to different memory systems of episodic, semantic and procedural memory, respectively. To measure the existence of the episodic and semantic memory, Tulving developed a level of awareness framework in which 'remembering' and 'knowing' were used to measure the existence of the two different memory systems. In the framework 'remembering' was defined as a person being self-aware of something that had happened on an earlier occasion and the measure was used to indicate episodic memory. This recollection is experienced as a vivid memory (Rajaram 1993; Gardiner, Ramponi, and Richardson-Klavehn 1998) in which there is conceptual processing of an episode in memory (Gardiner, and Parkin 1990; Rajaram 1993). The 'knowing' response in the framework measured awareness that something had occurred but with absence of

recollection and was used to measure the use of semantic memory. In the context of items seen in the past, a person's ability to 'know' they had seen an item relies on the use of the perceptual component of the memory (Schacter 1990; Rajaram 1993). Tulving believed measurement of the different memory systems would provide an understanding of the phenomenological aspect of memory.

Instructions given to participants typically define a 'remember' response as a memory in which they can clearly visualise the target item and its context. For a 'know' response the instructions define this response as a sense of familiarity that is not accompanied by a clear visualisation. For example, a person would indicate they 'remember' a waiter from a café if they recall details about their clothing, hair style, and the items they served. While they would indicate they 'know' a waiter was from a café if they had a sense of familiarity about having seen that person in the café but without a clear visualisation of that person in the café context.

The level of awareness approach is a broadly adopted measure that was also adopted by researchers investigating misinformation effects (Roediger, Jacoby, and McDermott 1996; Frost 2000), source confusion (Lane, and Zaragoza 1995; Anastasi, Rhodes, and Burns 2000; Bayen, Nakamura, Dupuis, and Yang 2000), memory for scenes (Lampinen, Copeland, and Neuschatz 2001) and misinformation effect studies in the consumer behaviour literature (Braun, and Loftus 1998; Braun 1999; Cowley, and Janus 2004).

While Tulving (1985) argued 'remember/ know' measure separate memory systems, others have interpreted 'remember' and 'know' responses not as discrete indexes for the two types of memory — episodic and semantic memory — but rather that they exist along a continuum (Donaldson 1996; Hirshman, and Master 1997; Inoue, and Bellezza 1998; Xu, and Bellezza 2001).

This continuum of awareness represents different amount of information, such as perceptual detail, on which a person judges whether they remembered something or felt they know it occurred. In order to judge a memory as 'remember' or 'know', in this framework a person is believed to use criteria based on both their memory quality and situation demand characteristics to make their judgements. If the amount of information relevant to a memory exceeds the 'remember' criterion level then a person judges their memory as 'remembered'. If the amount of information does not exceed this threshold but does exceed the level a person needs to feel that they know it occurred then a 'know' judgment is made. Criteria setting for judgements are not fixed. Depending on a person's motivation for accuracy and beliefs about the degree of detail that they are likely to recall, the criteria for 'remember/ know' judgements would vary. For instance, a person when asked about the décor of a café they had visited the previous week is able to recall a large amount of detail, would claim they remembered how the restaurant looked. If the same person was asked a year later about the same café experience, they may still claim to 'remember' what the café looked like, even though the amount of detail in memory is notably less than what they would have based their 'remember' judgement on a year earlier. This flexible criterion approach parallels the source monitoring framework (see section 2.3.4.3), where a person is recalling the source of the information (Johnson 1988; Johnson, Foley, Suengas, and Raye 1988)

Within studies investigating misinformation effects, researchers have used a two-step approach when using the levels of awareness measure. In the two-step approach a person first indicates they recognise the target item and then they give their level of awareness (e.g. Braun, and Loftus 1998; Frost 2000). To account for the possibility that a participant may have made their choice not based on any memory for the test item, but using a guessing strategy, researchers have included a 'guess' option (Gardiner, Java, and Richardson-

Klavehn 1996; Braun, and Loftus 1998; Braun 1999). Without a 'guess' option, the 'know' response is used by some participants as a proxy for giving a 'guess' response (Gardiner, Java, and Richardson-Klavehn 1996). When a 'guess' option is included in the scale it reduces the proportion of 'know' responses without affecting the 'remember' results (Xu, and Bellezza 2001). Xu and Belezza (2001) interpreted this result as support that a 'guess' response is based on a lower criteria level than a 'know' response.

Participants may also use the 'guess' response, not based on an evaluation of their recollection but based on an inference strategy (Gardiner, Ramponi, and Richardson-Klavehn 1998). As a result, the inclusion of the term 'guess' may encourage guessing as a response strategy for completing the study (Gardiner, Java, and Richardson-Klavehn 1996). An alternative approach that explicitly allows participants to indicate an item they believe is likely to have been present is to use the option of 'plausible' (Lampinen, Neuschatz, and Payne 1996). Similar to the 'guess' option, inclusion and exclusion of the 'plausible' option affects the 'know' response and not the proportion of 'remember' (Lampinen 1996). This indicates that those using the 'plausible' option are using lower criteria setting than the 'know' response. This seems intuitive, since the term 'plausible' encourages a participant to consider their thoughts and recollection before responding. Within this study the term 'plausible' is used instead of 'guess' to encourage introspection rather than mere guessing. In the participant instructions 'Plausible' is defined as not having a recollection of the item, but that it seems the most likely.

3.7.1.1 Single-Step Recognition Measure

In the previous section, the dependent variable used for measuring memory accuracy in this study – a 'level of awareness' measure using remember, know and plausible – was discussed. As part of the development of this measure the argument that the measure exists along a continuum based was also addressed. Based on the support for the continuum interpretation of the level of awareness measure, a single-step approach to capturing recall is adopted in the study reported on in this thesis due to its consistency with how the measure is known to work, rather than the two-step approach historically using in studies investigating misinformation effects.

As mentioned previously, studies using the levels of awareness measures for studying misinformation effects have used a two-step process (e.g. Braun 1999; Frost 2000; Cowley, and Caldwell 2001). In the first step participants perform a recognition test to show which item they recognise as the correct item. In the second step they indicate their level of awareness. An alternative approach used in word list studies is the single-step approach (e.g. Donaldson 1996; Inoue, and Bellezza 1998; Hicks, and Marsh 1999; Xu, and Bellezza 2001). In this approach a participant indicates their level of awareness at the same time they make a recognition decision. An assumption of the two-step approach is that recognition precedes a level of awareness judgement and this judgement process is unaffected by having already stated their recognition of the item. While for the single-step approach, the judgement of memory quality is not assumed to be a post-recognition judgement but something that operates at the time a recognition judgement is made (Hicks, and Marsh 1999).

Illustrating the different processing and their impact on decision making, Hicks and Marsh (1999) investigated the effects of using a single-step and

two-step approach in a word list study. In their study, participants saw words on a computer screen and then after a distraction task they undertook either a single-step or two-step memory task in which they chose words they recognised from a list that included words from the initial task, and words not previously shown. In the two-step memory task, participants first indicated whether a word was 'old' or 'new' and then indicated whether their choice was based on 'remember' or 'know'. In the single-step condition, for each word they indicated whether they 'remembered' the word was shown previously, 'know' it was shown previously or that it was 'new'. Results of the study indicated that a single-step process motivated participants to reflect on their decision.

In this study I ask participants to choose between alternatives to indicate which item they believe is correct by using a single-step level of awareness measure. The benefit of having a single-step approach is that the greater demands placed on the participant to reflect on their memory, would assist in retrieving the correct item. This modification of the recognition task represents an innovation in misinformation effect studies that helps extend the field when testing discrete items.

3.7.2 Quality Perceptions

For a change in memory to have substantive interest to managers in an applied setting, the change in memory also needs to impact the subjective interpretation of service quality. As one of the first memory researchers to consider the effects of schemas on memory, Bartlett (1932) believed that for a person to make sense of a situation both their memory for facts and interpretation of those facts were interwoven. This link between changes in memory for objective information and its subjective interpretation with misinformation acceptance among consumers was explored in initial studies

of misinformation effects in the consumer behaviour setting (Braun, and Loftus 1998; Braun 1999; Cowley, and Janus 2004). In a study by Braun and Loftus (1998) participants first evaluated a candy bar in a 'green' wrapper and then were later given misinformation that indicated the wrapper was actually 'blue'. Following the memory test, participants were then given a mock government warning that indicated candy bars with 'green' wrappers had potential health risks, while those that were predominately 'blue-ish green' and 'blue' wrappers were safe. Misled participants who reported 'blue-ish green' or 'blue' wrappers perceived the candy bar as significantly safer than those who accurately recalled the 'green' wrapper.

Based on a review of research investigating the elements of the store environment used by consumers to make quality inferences, Baker (1986) developed a typology of store environment elements. These types were ambient, social and design factors. Ambient factors are the non-visual aspects of an environment that are in the background, such as sounds and temperature. Social factors are the people who are in an environment, and includes both the activities of employees and customers. Design factors are the visual elements used in store design, such as merchandising and fixtures. Design elements can have functional or a purely aesthetic role in the stores' design (Marans, and Sprecklmeyer 1982). Within this study, a design element is used as the target object due to its visual nature and central use in the consumption experience.

To measure the impact of changes to ambient, social and design elements on quality evaluations of a retailer's offering, Baker and colleagues (Baker, Grewal, and Parasuraman 1994) developed a battery of statements to measure store quality inferences based on a review of previous studies investigating store quality. The store quality measure divides quality into three separate dimensions: merchandise quality, service quality and store image. The

merchandise quality dimension measures inferences that products sold by a retailer would be of high quality. Service quality dimension provides a measure of the attentiveness of staff to customer needs and that the service they provide is of high quality. The final dimension of store image focuses on the store environment in terms of its attractiveness. Since its development, the store quality measure has also been used to investigate store choice (Baker, Parasuraman, Grewal, and Voss 2002).

The eleven statements developed by Baker, Grewal and Parasurman (1994) were adapted for use in this study. The table below shows the original statements and those used in this study. Reflecting the café context used in the study, some adaptations were made to the wording of the questions, including the removal of 'quality of workmanship' and the expansion of 'gifts purchased' replaced with food and coffee quality measures. The quality of the coffee and food are a direct result of barista and chef's skills, so a separate reference to workmanship is redundant and was removed from the study.

Table 3.6 Store Quality Image Scale

Store Quality Image Scale (Baker, Grewal and Parasurman 1994)	Adapted Scale
Merchandise Quality	
• Gifts purchased from this store would be of high quality • The workmanship of gifts purchased in this store would be high quality	• Coffee purchased from this café would be of high quality • Food purchased from this café would be of high quality
Service Quality	
• Customers could be expected to be treated well in this store • Employees of this store could be expected to give customers personal attention • The store employees would be willing to help customers • The store would offer high quality service • Employees of this store would not be too busy to respond to customers' requests promptly	• Customers could be expected to be treated well in this café • Employees of this café could be expected to give customers personal attention • This café's employees would be willing to help customers • This store would offer high quality service • Employees of this café would not be too busy to respond to customers' requests promptly
Store Image	
• This store would be a pleasant place to shop • This store has a pleasant atmosphere • This store is clean • This store is attractive	• This café would be a pleasant place to have coffee • This café has a pleasant atmosphere • This café is clean • This café is attractive

In addition to the store quality imagery scale, expected prices for coffee and a salad were also measured. A salad was used to capture a type of meal that would be available in both types of cafés manipulated in the study. The two expected prices were summed to create an overall price measure.

For the store quality imagery scale, reliability testing of the summed dimensions to measure the extent that they collectively measure the quality dimension was undertaken using Cronbach's alpha. Results from this analysis – see Table 3.7 – show store image and merchandise quality scores of 0.70 and above, which indicate sufficient reliability for analysis (Nunnally 1978). Analysis of the service quality was beneath the required level due the statement 'Employees too busy to serve' having a lower and negative correlation with other measures in the dimension (Corrected Total Correlation

-0.214). When this statement was removed from the store image measure the Cronbach's alpha increased to 0.85. With a result above the 0.7 threshold, this revised dimension was used in subsequent analysis. In the survey, the statement was presented as a reverse scale. Although the scale is reversed in coding to be in the same direction as the other scales, the negative and lower correlation with other measures in the same dimension indicates that not all participants correctly detected the change in scale direction.

Table 3.7 Café Image Quality Scale Reliability, Cronbach's Alpha

Source	Mean	St. Dev	Number of Scale items	Cronbach's Alpha
Merchandise Quality	10.84	3.15	2	0.69
Store Image	22.85	5.77	4	0.79
Service Quality	25.14	6.34	5	0.62
Service Quality (revised)	20.05	6.42	4	0.85
Total Store Quality	53.74	13.36	10	0.89

Sample size: n= 281

3.7.3 Analysis Technique

The data in this study was analysed using analysis of variance (ANOVA) with the general linear model (GLM) module in SPSS and with t-tests. In this study the focus is on the impact of several independent variables (the experimental manipulations) on a singular dependent variable (recognition memory), which makes ANOVA an appropriate choice for the hypothesis testing. For the analysis of the store quality imagery, multivariate analysis of variance (MANOVA) was undertaken to capture the use of multiple imagery dimensions as dependent variables. ANOVA and MANOVA are also a preferred option over multiple t-tests as is it reduces the possibility of creating a Type 1 error (Hair, Anderson., Tatham., and Black. 1998), where a difference created by the manipulations is claimed when it should have been rejected.

Key assumptions for ANOVA/ MANOVA are that the dependent variables are measured on a scale; the respondents are independent; and there is

homogeneity of error variance for the dependent variable across conditions, and in addition for MANOVA, that there is an equality of variance-covariance (Hair, Anderson., Tatham., and Black. 1998). However, ANOVA/ MANOVA is robust to violations of normality assumption when the sample sizes are similar across conditions and they are greater than n=12. The greater the sample size, the lower the impact of non-normality on the F-statistic (Rutherford 2001). In this study, sample sizes are similar across conditions and the lowest sample size for a condition is n=27, reducing the impact of non-normality on the tests.

The first assumption is that the dependent variable is measured using a scale metric. In this study the dependent variable was measured using a level of awareness scale. The levels of awareness recognition measure discussed in sections 3.7.1 and 3.7.1.1 was re-coded as a scale so that remembering the correct item and remembering the misinformation item correspond to the extreme ends of the scale. Specifically, the scale ranged from '1' to '6', where the following coding was applied:

- '6' is remember that the correct item was shown
- '5' is know that the correct item was shown
- '4' is feel that the correct item is the most plausible
- '3' is incorrectly feel that the misinformation item is the most plausible
- '2' is incorrectly know that the misinformation was the item shown
- '1' is incorrectly remember that the misinformation item was shown

The second assumption is that there is an independence of observations. This independence was achieved by randomly assigning the participants to the conditions and having them complete the study independently from other participants.

The third assumption is homogeneity of variance. This assumption is tested using Levene's test of equality of error variances. Initial analysis of the full design of the study showed the assumption was not met, (F (7,238) = 3.12, *p>.05*). However, as discussed, the similarity of cell size, the sample sizes used in the study and the robustness of the F statistic ANOVA mitigates the impact of this result. Results of the Levene's test for equality of variance are reported in context of each of the analysis. Likewise the Box test for the equality of variance-covariance matrices test is reported in context of the MANOVA.

3.8 METHODOLOGY SUMMARY

In summary, the type of memory test used in the study of misinformation effects has received extensive debate since the original misinformation studies were conducted. These debates have revolved around the ability of the different types of memory tests to accurately reflect memory states and sensitivity to misinformation effects. The study design detailed in this chapter parallels previous studies investigating misinformation effects in consumer behaviour and the broader field of psychology. Departing from the studies conducted so far in consumer behaviour for a contradictory item, the study detailed in this thesis uses discrete items rather than attributes that exist along a continuum (flavour and colour). The study also departs from previous misinformation effect studies by incorporating an innovative single-step recognition and level of awareness task that will assist future research in extending the study of misinformation when testing discrete items. In addition to the recognition memory measure, café quality impression measures were also collected.

The experimental design used in the study was a 2*2*2 between participants design. Two levels of schema were tested (consistent and inconsistent with experience) by two levels of post-event information (misinformation and neutral) by two levels of encoding goals (impression and recall). For the schema levels, 'consistent' occurred when the type of café a participant was expecting matched the type of target item shown in the café video. Within the context of this study this consistency occurred when participants were expecting a take-away style café and saw a polystyrene coffee cup. For the 'inconsistent' condition the expectancy created by the café description was not met by the target item. This occurred in the study when a participant was told the café was restaurant style café, but they saw a polystyrene cup. For the two levels of information, 'misinformation' occurred when participants

saw a print advertisement for the café that showed a cappuccino cup rather than the correct polystyrene cup shown in the video. In the 'neutral' conditions no cup was shown in the print advertisement. Finally, the encoding goals instructions were given at the beginning of the study for participants to either form a general impression (impression condition), or that memory test (recall condition) would be undertaken at the end of the study.

4.0 Results and Conclusions

4.1 Overview

The hypotheses developed in Chapter 2 are tested using the methodology, dependent and independent variables that were discussed in Chapter 3, are presented in this chapter. In the first section of the chapter the results are given for each hypothesis and then summarised and discussed. Following this chapter – and in the final chapter of this thesis – the theory contribution and implications for practitioners are discussed.

To reiterate the focus of the study, the study seeks to address the following research questions:

What, if any, is the moderating effect of prior expectations on a person's susceptibility to accept misinformation about a previous experience? Will a person's encoding goals moderate the effects of prior expectations on misinformation acceptance?

After presenting the results for each hypothesis in section 4.2, results are discussed in terms of the literature reviewed in Chapter 2.

4.2 RESULTS

4.2.1 Hypothesis One: Schema Consistency

H₁: *Misinformation effects will increase as the consistency between expectations and original experience increases.*

The above hypothesis was tested by examining whether there is a main effect on memory accuracy for schema consistency. If the main effect is significant, then support for the hypothesis will be claimed. Table 4.1 presents the ANOVA results to test this hypothesis, while Table 4.2 and Figure 4.1 show the descriptive results, and Table 4.3 shows the t-tests between the conditions.

In the analysis, frequency of buying coffee and tea was included as a covariate. Without the covariate the interaction between schema, information, and encoding goals were directionally strong but not significant ($F(1,238)=3.02$, $p>.05$). With its inclusion the interaction was significant ($F(1,237)=3.96$, $p<.05$). The covariate was included in subsequent memory accuracy analysis.

Results from the ANOVA show significant main effects for the schema manipulations ($F (1,237) = 6.36$, $p<.01$) and the post-event information ($F (1,237) = 6.46$, $p<.01$). Participants that experienced a café that was consistent with their expectations had lower accuracy ($M_{consistent}$ =4.01) than those whose expectations were inconsistent with their experience ($M_{inconsistent}$ =4.55). The significant main effect for schema consistency supports the first hypothesis.

Participants presented with misinformation were more likely to accept the misinformation items ($M_{misinfo}$ =3.90) than those given neutral information ($M_{neutral}$ =4.65). Further, a comparison of the two misinformation conditions showed memory was less accurate in the consistent versus inconsistent misinformation condition and that this was significant ($M_{misinfo/consistent}$ =3.44,

M$_{misinfo/inconsistent}$ =4.38), $t(-2.35)$, $p<.05$). The significant main effect for misinformation replicates previous research.

Table 4.1 Analysis of Variance: 2*2*2 Factorial Design

Source	Sum of Squares	Df	Mean Square	F	Sig.
Frequency of Buying (covariate)	56.32	1	56.32	13.79	.000
Schema	25.98	1	25.98	6.36	.012
Post-Event Information (PEI)	26.37	1	26.37	6.46	.012
Encoding Goal	1.16	1	1.16	0.28	.594
Schema * PEI	9.68	1	9.68	2.37	.125
Schema * Encoding Goal	1.86	1	1.86	0.46	.501
PEI * Encoding Goal	1.75	1	1.75	0.43	.514
Schema * PEI * Encoding Goal	16.16	1	16.16	3.96	.048
Error	968.21	237	4.09		
Levene's Test of Equality of Error Variances		DF1=7	DF2= 238	2.55	.015

Table 4.2 Descriptive: Schema Effect

Schema Condition	Post-Event Information	Mean	Standard Deviation	Sample Size
Schema Consistent	Misinformation	3.44	2.22	62
	Neutral	4.58	1.90	62
	Total	4.01	2.14	124
Schema Inconsistent	Misinformation	4.38	2.22	61
	Neutral	4.72	1.93	61
	Total	4.55	2.08	122
Total	Misinformation	3.90	2.26	123
	Neutral	4.65	1.91	123
	Total	4.28	2.12	246

Table 4.3 Simple Effects t-Tests: Schema Effect

Condition	Test	Sig.	Df	t- Score
Misinformation	Schema Consistent vs. Inconsistent	.020	121	-2.35
Neutral	Schema Consistent vs. Inconsistent	.685	121	-.41
Schema Consistent	Misinformation vs. Neutral	.003	122	-3.08
Schema Inconsistent	Misinformation vs. Neutral	.363	120	-.92

Figure 4.1 Accuracy of Memory: Schema Effect

Estimated Marginal Means of Memory For Target Item Scale

Covariates appearing in the model are evaluated at the following values: Frequency: Buy Coffee of Tea = 3.16
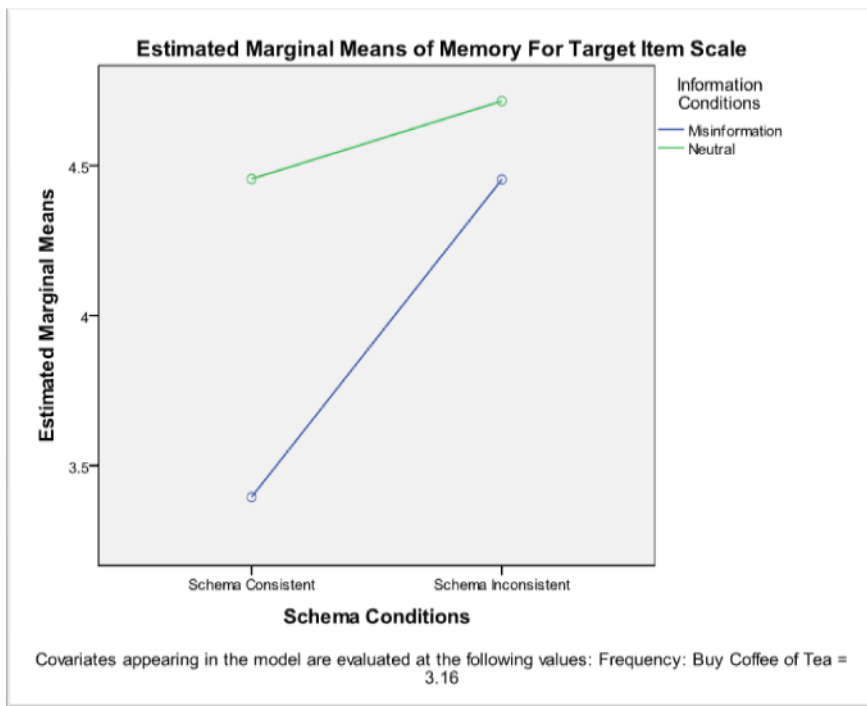
4.2.2 Hypothesis Two: Schema and Encoding Goal Interaction

H2: *The relationship between misinformation effects and encoding goal will be moderated by schema consistency (H1), such that when there is consistency between schema and experience, misinformation effects will occur regardless of the encoding goal used (H2a). When there is schema inconsistency the use of a recall encoding goal would eliminate misinformation effects (H2b).*

The second hypothesis puts forward that there would be a significant interaction between encoding goal, schema consistency, and misinformation acceptance. A significant three-way interaction was observed between schema, encoding goals and post-event information, ($F(1,237)=3.96$, *p<.05)*, which provides broad support for the hypothesis. See Table 4.1.

To assist in the interpretation of the three-way interaction, two separate two-way ANOVA were conducted; one for each of the schema conditions. In the schema consistent ANOVA, this interaction between encoding goals and post-event information was not significant ($F(1,119)=0.92$, *p>.05)*. See Table 4.5. In this analysis only the post-event manipulation led to a significant result ($F(1,117)=8.28$, *p<.01)*. This difference in the schema consistency condition was seen in higher accuracy when no misinformation was given compared to when it was given ($M_{consist/neutral}$ = 4.58, $M_{consist/misinfo}$ = 3.44, t(-3.08), *p<.01)*. See Table 4.2 and 4.3. Therefore hypothesis H_{2a} is supported.

In the ANOVA for the schema inconsistent conditions a significant effect was observed for the interaction of encoding goal and post-event information ($F(1,117)=4.28$, *p<.05)*. In the schema inconsistency condition the interaction between encoding goal and misinformation was reflected in directionally higher accuracy when a recall encoding goal is employed compared to the impression encoding goal ($M_{inconsist/misinfo/recall}$ = 4.67, $M_{inconsist/misinf/impression}$ = 4.04, t(-1.11), *p>.05)* and the inverse pattern when neutral information is supplied ($M_{inconsist/neutral/recall}$ = 4.46 $M_{inconsist/neutral/impression}$ = 4.94, t(0.96), *p>.05)*. See Tables 4.6 and 4.7. Therefore hypothesis H_{2b} is supported.

Table 4.4 Analysis of Variance: Schema Inconsistency

Source	Sum of Squares	Df	Mean Square	F	Sig.
Frequency of Buying (covariate)	62.94	1	62.94	16.43	0.000
Post-Event Information (PEI)	1.53	1	1.53	0.40	0.529
Encoding Goal	0.20	1	0.20	0.05	0.819
PEI * Encoding Goal	16.38	1	16.38	4.28	0.041
Error	448.20	117	3.83		
Levene's Test of Equality of Error Variances		DF1=3	DF2= 118	1.81	0.15

Table 4.5 Analysis of Variance: Schema Consistency

Source	Sum of Squares	Df	Mean Square	F	Sig.
Frequency of Buying (covariate)	5.38	1	5.38	1.26	0.264
Post-Event Information (PEI)	35.33	1	35.33	8.28	0.005
Encoding Goal	3.82	1	3.82	0.90	0.346
PEI * Encoding Goal	3.94	1	3.94	0.92	0.339
Error	508.01	119	4.27		
Levene's Test of Equality of Error Variances		DF1=3	DF2= 120	4.55	0.005

Table 4.6 Descriptive: Schema Consistency and Inconsistency

Schema Condition	Post-Event Information	Mean	Standard Deviation	Sample Size
Schema Consistent	Misinformation			
	Recall Encoding Goal	3.44	2.26	36
	Impression Goal Encoding Goal	3.42	2.21	26
	Neutral			
	Recall Encoding Goal	4.91	1.79	35
	Impression Goal Encoding Goal	4.15	1.99	27
Schema Inconsistent	Misinformation			
	Recall Encoding Goal	4.67	2.22	33
	Impression Goal Encoding Goal	4.04	2.22	28
	Neutral			
	Recall Encoding Goal	4.46	2.08	28
	Impression Goal Encoding Goal	4.94	1.8	33

Table 4.7 Simple Effects t-Tests: Schema Consistency and Inconsistency

Schema Condition	Information and Encoding Goals	Sig.	Df	t- Score
Schema Consistent	Recall/ Misinformation vs Recall/ Neutral	.003	69	-3.03
	Impression/ Misinformation vs Impression/ Neutral	.215	51	-1.25
	Recall/ Misinformation vs Impression/ Misinformation	.971	60	-0.04
	Recall/ Neutral vs Impression/ Neutral	.117	60	-1.59
Schema Inconsistent	Recall/ Misinformation vs Recall/ Neutral	.716	59	0.365
	Impression/ Misinformation vs Impression/ Neutral	.084	59	-1.76
	Recall/ Misinformation vs Impression/ Misinformation	.273	59	-1.11
	Recall/ Neutral vs Impression/ Neutral	.343	59	0.96

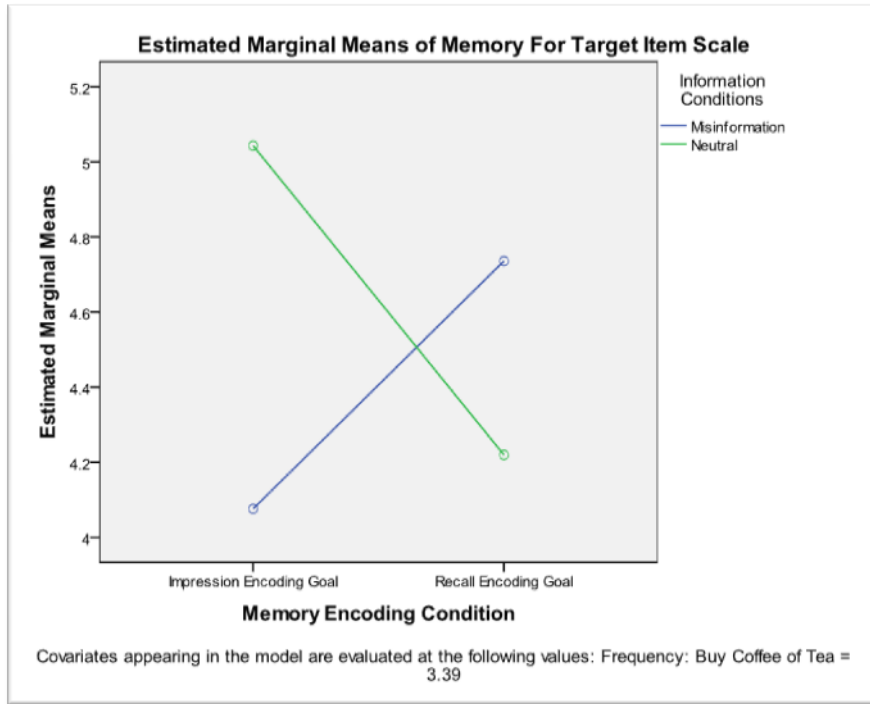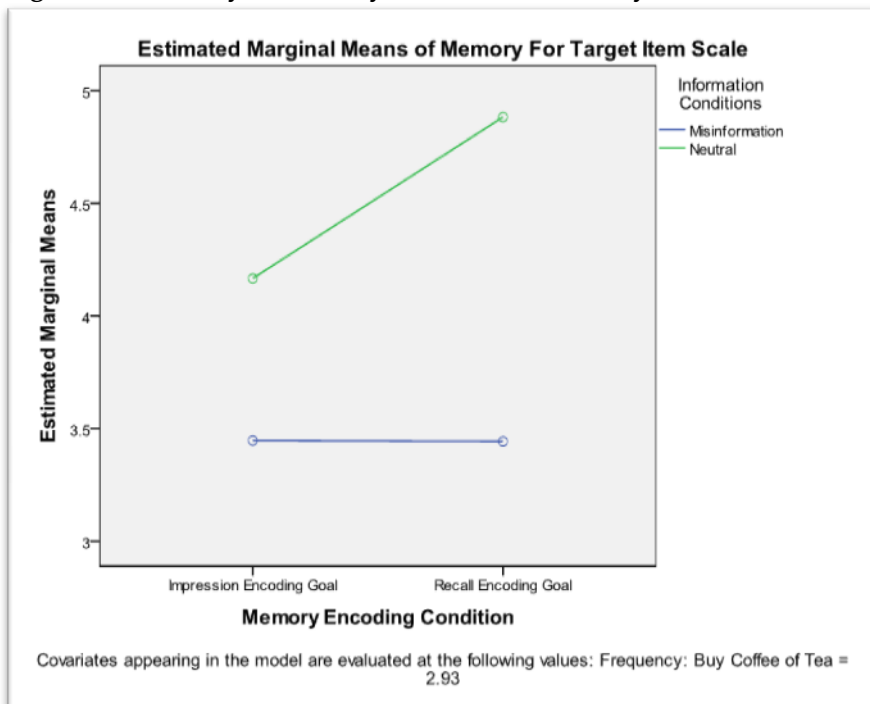**Figure 4.2 Accuracy of Memory: Schema Inconsistency**

Figure 4.3 Accuracy of Memory: Schema Consistency

4.2.3 Retail Quality Evaluation

H₃: Acceptance of the misinformation will result in improved quality perceptions.

The retail quality impression hypothesis examines the impact of misinformation effects on quality perceptions. To test this hypothesis the retail quality evaluation measures – including price – were used as dependent measures. Acceptance of the misinformation and accurate target item were used with schema and encoding goal as the independent variables. For ease of reference, acceptance of the misinformation and acceptance of the accurate target item is referred to as 'misinformation susceptibility' in the analysis. Where as previously schema consistency was looked at in terms of expectations and experience, for this analysis, schema consistency is between schema and misinformation. Consistency between schema and misinformation in this analysis is called 'schema misinformation consistency'. Where 'consistent' refers to consistency between the schema and misinformation, and 'inconsistent' refers to inconsistency between the schema and misinformation.

Overall, the multivariate analysis of variance (MANOVA) test across the four dependent measures – Table 4.8 – showed a significant main effect for misinformation susceptibility (Wilks' Lambda = .908, $p<.05$). This result indicates that the item recognised as being part of the original experience has different effects on the dependent measures. No other conditions or interactions were significant within this analysis. To further understand the effects of the conditions on the individual quality measures, individual ANOVA were run for each of the dependent variables.

For all the quality evaluation measures, except service quality, misinformation susceptibility had a significant impact. Significant main effects for the target item recalled were observed for store image ($F(1,115)=$

5.39, *p<.05*), and coffee price expectations (*F*(1,115)= 4.61, *p<.05*). See table 4.9.

Evaluations for merchandise quality were also affected by misinformation

susceptibility through an interaction with schema (*F*(1,115)= 5.16, *p<.05*). No

significant main or interaction effects were observed for service quality.

Susceptibility to misinformation effects was associated with improved

evaluations when compared to the correct item (polystyrene cup) for store

imagery ($M_{store/misifo}$ = 24.22, $M_{store/correct}$ = 21.84, t(2.43), *p<.05*) and higher price

expectations ($M_{price/misifo}$ = \$3.34, $M_{price/correct}$ = \$3.06, t(2.02), *p<.05*). See Tables 4.11

and 4.13 respectively. While not significant, directionally similar results were

observed for merchandise quality ($M_{merch/misifo}$ = 10.63, $M_{merch/correct}$ = 10.58,

t(0.09),*p>.05*) and service quality ($M_{merch/misifo}$ = 20.76, $M_{merch/correct}$ = 19.64,

t(0.97),*p>.05*). See Tables 4.10 and 4.12 respectively.

As noted previously, a significant interaction between misinformation

susceptibility and schema confirmation was observed for merchandise quality

(*F*(1,115)= 5.16, *p<.05*). See Table 4.9. The same effect was not observed for

any of the other measures. When the consumer was susceptible to the

misinformation, and the misinformation is consistent with the schema, the

merchandise quality evaluation is higher than when the schema is

inconsistent with the misinformation ($M_{misinfo/consistent}$ = 11.45, $M_{misinfo/incon}$ = 10.15,

t(-1.50),*p>.05*). The opposite occurs when the consumer was not susceptible to

the misinformation. See Table 4.10.   Higher quality evaluations were

reported when schema was inconsistent with the misinformation ($M_{accurate/consistent}$

= 10.15, $M_{accurate/incon}$ = 11.21, t(1.54), *p>.05*). The differences in means were

directional and not significant.

Table 4.8 Multivariate Tests: Retail Quality Evaluation

Effect	Wilks' Lambda	Hypothesis df	Error df	F	Sig.
Misinformation Susceptibility	0.908	4	112	2.853	0.027
Schema Misinformation Consistency	0.990	4	112	0.283	0.888
Encoding Goal	0.964	4	112	1.041	0.389
Misinformation Susceptibility * Schema Misinformation Consistency	0.954	4	112	1.359	0.253
Misinformation Susceptibility * Encoding Goal	0.972	4	112	0.799	0.529
Schema Confirmation * Encoding Goal	0.978	4	112	0.643	0.633
Misinformation Susceptibility * Schema Misinformation Consistency * Encoding Goal	0.966	4	112	0.972	0.426
Box's Test of Equality of Covariance Matrices	Box's M= 80.17	DF1=70	DF1=102 38.05	.995	.491

Table 4.9 Analysis of Variance: Retail Quality Evaluation

Condition	Dependent Variable	Sum of Squares	Df	Mean Square	F	Sig.
Misinformation Susceptibility	Merchandise Quality	0.00	1	0.00	0.00	0.991
	Store Image	158.73	1	158.73	5.39	0.022
	Service Quality	28.89	1	28.89	0.70	0.403
	Price	2.84	1	2.84	4.61	0.034
Schema Misinformation Consistency	Merchandise Quality	1.45	1	1.45	0.17	0.683
	Store Image	14.23	1	14.23	0.48	0.488
	Service Quality	0.13	1	0.13	0.00	0.955
	Price	0.43	1	0.43	0.70	0.404
Misinformation Susceptibility * Schema Misinformation Consistency	Merchandise Quality	44.52	1	44.52	5.16	0.025
	Store Image	48.50	1	48.50	1.65	0.202
	Service Quality	8.45	1	8.45	0.21	0.651
	Price	0.28	1	0.28	0.45	0.502
Encoding Goal	Merchandise Quality	4.67	1	4.67	0.54	0.464
	Store Image	7.63	1	7.63	0.26	0.612
	Service Quality	77.05	1	77.05	1.88	0.173
	Price	0.78	1	0.78	1.27	0.262
Error	Merchandise Quality	992.81	115	8.63		
	Store Image	3384.32	115	29.43		
	Service Quality	4722.85	115	41.07		
	Price	70.76	115	0.62		
Levene's Test of Equality of Error Variances	Merchandise Quality	DF1=7	DF2= 115		1.307	0.253
	Store Image	DF1=7	DF2= 115		0.529	0.811
	Service Quality	DF1=7	DF2= 115		1.255	0.279
	Price	DF1=7	DF2= 115		1.007	0.430

Table 4.10 Descriptive and t-Tests: Merchandise Quality Image

Condition	Condition	Mean	Sample Size	St. Dev.	t- Score	Df	Sig.
Total	Accept Misinformation	10.63	54	3.15	0.092	121	0.927
	Recall Correct Item	10.58	69	2.86			
Accept Misinformation	Inconsistent	10.15	34	3.21	-1.50	52	0.143
	Consistent	11.45	20	2.93			
Recall Correct Item	Inconsistent	11.21	28	2.63	1.54	67	0.128
	Consistent	10.15	41	2.95			
Schema Misinformation Consistency (Consistent)	Recall Misinformation	11.45	20	2.93	1.62	59	0.11
	Recall Correct Item	10.15	41	2.95			
Schema Misinformation Consistency (Inconsistent)	Recall Misinformation	10.15	34	3.21	-1.41	60	0.163
	Recall Correct Item	11.21	28	2.60			

Table 4.11 Descriptive and t-Tests: Store Image Quality

Condition	Condition	Mean	Sample Size	St. Dev.	t- Score	Df	Sig.
Total	Accept Misinformation	24.22	54	5.79	2.43	121	0.017
	Recall Correct Item	21.84	69	5.07			
Accept Misinformation	Inconsistent	23.56	34	5.98	-1.10	52	0.276
	Consistent	25.35	20	5.42			
Recall Correct Item	Inconsistent	22.25	28	4.60	0.55	67	0.583
	Consistent	21.56	41	5.40			
Schema Misinformation Consistency (Consistent)	Recall Misinformation	25.35	20	5.42	2.57	59	0.013
	Recall Correct Item	21.56	41	5.40			
Schema Misinformation Consistency (Inconsistent)	Recall Misinformation	23.56	34	5.98	0.95	60	0.346
	Recall Correct Item	22.25	28	4.59			

Table 4.12 Descriptive and t-Tests: Service Quality Image

Condition	Condition	Mean	Sample Size	St. Dev.	t- Score	Df	Sig.
Total	Accept Misinformation	20.76	54	6.37	0.966	121	0.336
	Recall Correct Item	19.64	69	6.40			
Accept Misinformation	Inconsistent	20.68	34	6.20	-0.10	52	0.902
	Consistent	20.90	20	6.81			
Recall Correct Item	Inconsistent	20.14	28	6.14	0.54	67	0.592
	Consistent	19.29	41	6.63			
Schema Misinformation Consistency (Consistent)	Recall Misinformation	20.90	20	6.81	0.88	59	0.382
	Recall Correct Item	19.29	41	6.63			
Schema Misinformation Consistency (Inconsistent)	Recall Misinformation	20.68	34	6.20	0.34	60	0.736
	Recall Correct Item	20.15	28	6.14			

Table 4.13 Descriptive and t-Tests: Coffee Price Expectations

Condition	Condition	Mean	Sample Size	St. Dev.	t- Score	Df	Sig.
Total	Accept Misinformation	$3.34	54	$.889	2.02	121	0.046
	Recall Correct Item	$3.06	69	$.678			
Accept Misinformation	Inconsistent	$3.24	34	$0.85	-1.00	52	0.299
	Consistent	$3.51	20	$0.95			
Recall Correct Item	Inconsistent	$3.03	28	$0.87	-0.23	67	0.818
	Consistent	$3.07	41	$0.52			
Schema Misinformation Consistency (Consistent)	Recall Misinformation	$3.51	20	$0.95	2.31	59	0.025
	Recall Correct Item	$3.07	41	$0.52			
Schema Misinformation Consistency (Inconsistent)	Recall Misinformation	$3.24	34	$0.85	0.96	60	0.34
	Recall Correct Item	$3.03	28	$0.87			

The results from the analysis in this section show that the acceptance of misinformation has important consequences for consumer perceptions, but there are differences in effects. For all but merchandise quality, misinformation acceptance leads to higher quality perceptions. It is only for merchandise quality that consumers show a kind of reactance to misinformation, although it is accepted.

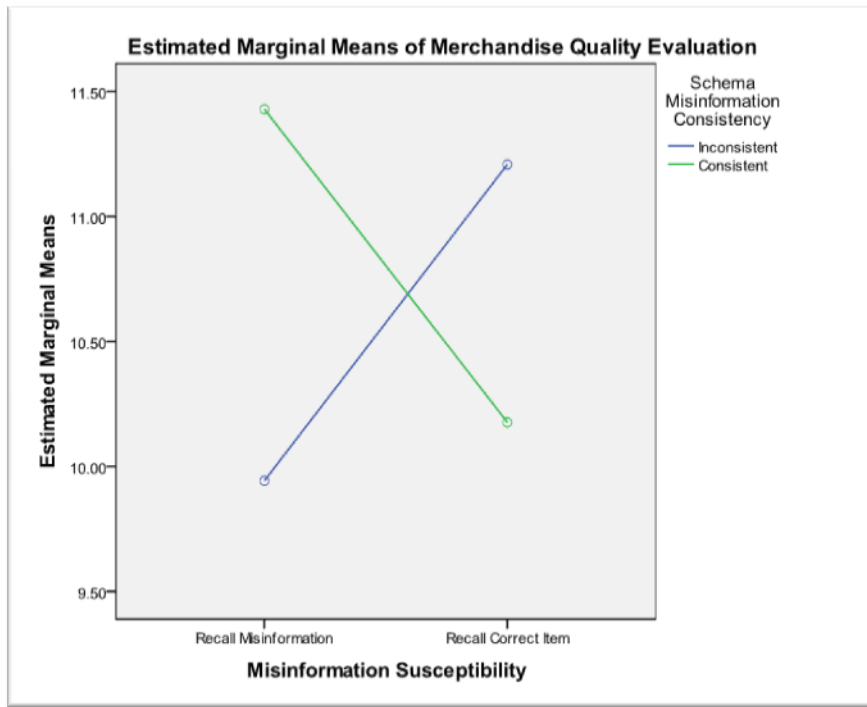**Figure 4.4 Retail Experience Quality: Merchandise Quality Impressions**

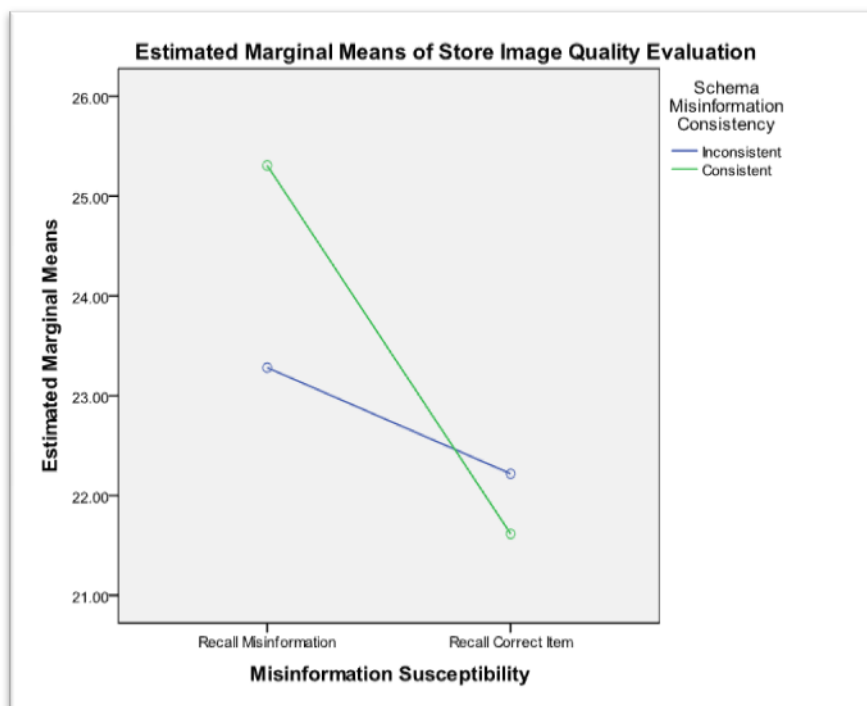**Figure 4.5 Retail Experience Quality: Store Quality Impressions**

Figure 4.6 Retail Experience Quality: Service Quality Impressions
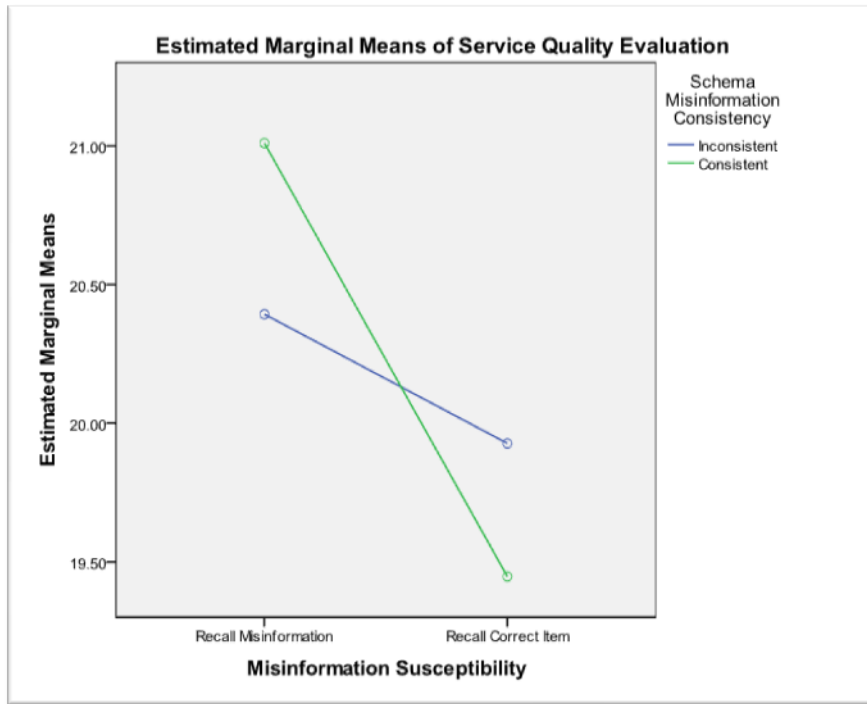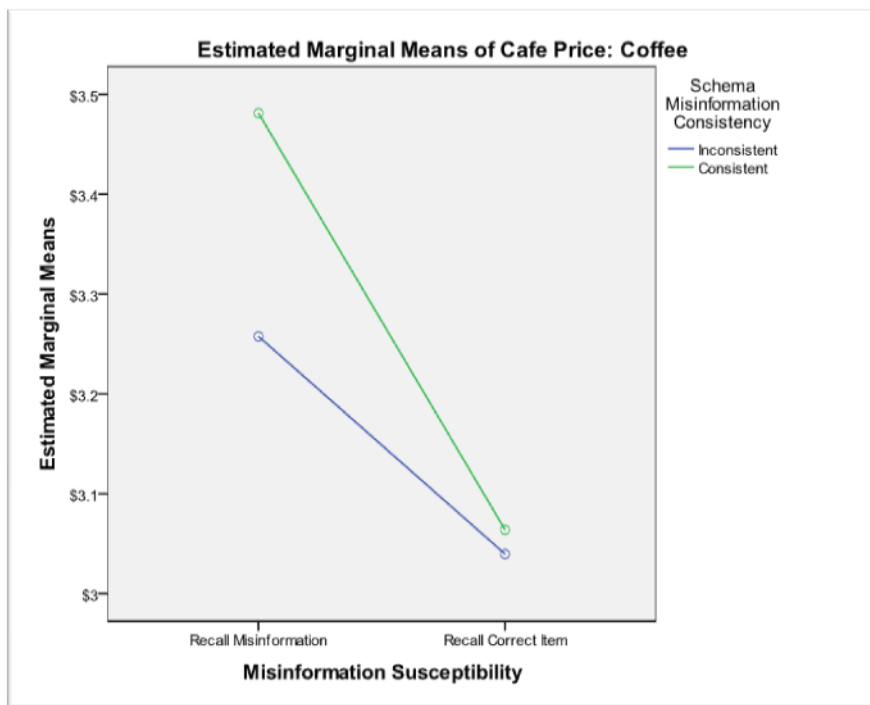

Figure 4.7 Retail Experience Quality: Coffee Price Expectations

4.3 CONCLUSION

In this chapter I have detailed results for each of the proposed hypotheses that addressed the broad research questions put forward in the introduction to this study.

What, if any, is the moderating effect of prior expectations on a person's susceptibility to accept misinformation about a previous experience? Will a person's encoding goals moderate the effects of prior expectations on misinformation acceptance?

The findings from this study support the assertion that prior expectations based on an activated schema, moderate a person's susceptibility to misinformation. When a person's expectation is consistent with the experience, he or she is more at risk of accepting misleading advertising about the elements that were part of the experience. The study also found support for the more complex relationship in which encoding goals moderate the effect of schema consistency on misinformation acceptance. Results from the study also support the prediction that acceptance of misinformation would result in a change in retailer quality evaluations and these changes would reflect the imagery attached to the target item.

Table 4.14 summarises the hypotheses and whether or not they were supported by the findings in this study.

The next chapter – Chapter 5 – will discuss implications for the knowledge contribution of the study and the practical implications for those engaged in communications management. This chapter will also outline limitations of the study and potential directions for future research.

Table 4.14 Summary of Hypotheses and Outcomes

Hypothesis	Outcome
H_1: *Misinformation effects will increase as the consistency between expectations and original experience increases.*	Hypothesis supported.
H_2: *The relationship between misinformation effects and encoding goal will be moderated by schema consistency (H1), such that when there is consistency between schema and experience, misinformation effects will occur regardless of the encoding goal used (H_{2a}). When there is schema inconsistency the use of a recall encoding goal would eliminate misinformation effects (H_{2b}).*	Hypothesis supported. H_2: Support shown for interaction. H_{2a}: Support shown for encoding goal effect in schema consistent condition. H_{2b}: Support shown for encoding goal effect in schema inconsistent condition.
H_3: *Acceptance of the misinformation will result in improved quality perceptions.*	Hypothesis supported.

5.0 DISCUSSION AND IMPLICATIONS

5.1 OVERVIEW

This thesis began with the introduction of misinformation effects and the potential for advertising given to consumers to alter their recollections of previous consumption experiences. The nature of misinformation effects as a robust memory error phenomenon in which people remember information given to them after an event as being part of their original experience rather from another source, was introduced in Chapter 1. This chapter also noted that studying misinformation effects is important to the broader understanding of how information is integrated into consumer memory. Understanding misinformation effects is important in consumption settings because of the abundance of post-experience information offered by advertising, word-of-mouth, and critical reviews.

The importance of misinformation effects in understanding consumer behaviour is underscored by post-experience advertising. Within a marketing context, understanding how consumers recollect their experience and its subsequent impact on impressions about a retailer environment are important due to the strategic role the environment plays in differentiating a company from its competitors.

Chapter 2 provided a review of the relevant studies investigating misinformation effects and the theoretical foundations for the hypotheses that were put forward in this chapter. This discussion outlined how the constructive, rather than reproductive, nature of memory creates the potential for misinformation effects to occur. The chapter outlined known contributing factors for misinformation effects and competing theories for explaining these effects. Within this chapter the source monitoring framework was discussed in terms of its ability to explain misinformation effects and was put

forward as a framework that would be used to interpret the results of the study.

In Chapter 2 it was noted that previous memory research had shown schema consistency and inconsistency had differing effects of what items were later recalled. While the impact of schema on misinformation effects was acknowledged in previous studies, and that some studies had investigated schema's role in misinformation acceptance, these studies had looked at additive rather than contradictory misinformation and had not considered the relationship between expectations and the experience in their studies. The role of attention goals when information is encountered on encoding was discussed and hypotheses were put forward on how these goals could moderate misinformation acceptance under different conditions of schema consistency. Chapter 2 then concluded with a discussion and hypotheses on the impact of misinformation acceptance on memory for store quality and price expectations.

Chapter 3 detailed both the methodology employed in the study and the theory underpinning its use in the study. This chapter discusses why a 2*2*2 between subjects experimental design with two levels of schema consistency, attention encoding goals and post-event information, provided the necessary structure to allow testing of the hypotheses. This design also allowed the replication of previous misinformation effect studies. The chapter also outlined the rationale for the adoption of single-step recognition and levels of awareness dependent measure for memory accuracy as a methodological innovation that would assist with the hypothesis testing. Stimulus selection, pre-testing, piloting, and the choice of sample frame were discussed and justified in Chapter 3.

Results from the study were presented in Chapter 4. Each of the hypotheses were supported and the general outcome of this section provided support for the general assertion of the study that schema plays an important role in a person's susceptibility to misinformation, and that a person's attention goals further moderate their susceptibility.

In this chapter the findings from the research are examined through the lens of previous literature to draw out the contribution of the study, and its practical implications. The chapter will also outline limitations of the study and potential directions for future research.

5.2 DISCUSSION OF FINDINGS

The misinformation effect has contributed to our understanding of how memory works in the day-to-day environment (Koriat, Goldsmith, and Pansky 2000). As a field of enquiry that looks at the effects of communication on memory for an experience, the investigation of misinformation effects has direct relevance to the study of consumer behaviour.

Although the importance of schema as a determinant of misinformation effects has been acknowledged (Gerrie, Garry, and Loftus 2003), and while studies of memory outside of misinformation effects have investigated the effects of schema on recall (Alba, and Hasher 1983), no direct tests of the role of schema in misinformation effects has been published (Nemeth, and Belli 2006). There is no study that considers the effect of consistency between the initial expectations and the experience, and how a person's encoding goals moderate this effect.

The purpose of the study reported in this thesis was to extend current knowledge on the scope of misinformation effects and the understanding of memory accuracy, by determining whether the consistency between expectations and experience moderates a person's susceptibility to post-event misinformation. In investigating the moderating role of schema consistency, the role of a person's encoding goals during an encounter was addressed in this thesis. In addition, the consequences of misinformation acceptance on evaluations for service quality of a retailer were also examined.

In general, results from the study support the assertion that the consistency between schema and experience moderates the likelihood of misinformation acceptance, and that encoding goals moderate the influence of schema consistency on misinformation acceptance. Results from the study also show

that misinformation acceptance impacts evaluations of service provider quality.

5.2.1 The Effect of Schema Consistency on Misinformation Acceptance

The first hypothesis put forward that consistency between the initial expectations and the experience would increase a person's susceptibility to post-event misinformation. The hypothesis was supported by the results of the study.

The results of the study were consistent with the source monitoring framework. In the source monitoring framework, source misattribution can occur from inadequate attention paid to the details of the experience due to perceived similarity between the current situation and previous situations (Lindsay 1990). Increased schema consistency would provide conditions in which the similarity between the experience and expectations would reduce the perceived need for a person to attend to the details of their experience. The reduced attention to details would result in less detail encoded into memory that could later be used to accurately discriminate the source of the information.

Using the associative network model, discussed in section 2.2.1, results can be further understood. When the cafe type description was read, activation of the schema occurs from concepts in the description passing on its activation to other concepts. The pattern of associations represents the schema (Anderson 1983). In the schema consistent conditions when the target item is encountered, the target should have already been activated, resulting in less attention paid to the item (Friedman 1979; Pezdek, Whetstone, Reynolds, Askari, and Dougherty 1989; Tuckey, and Brewer 2003). Exposure to the advertisement, including the misinformation, resulted in the consumer processing the target item along with context information. During the

memory test, the target item – shown in the misinformation – was more recently activated, and therefore had a stronger level of activation. Recall of the item followed.

Although the explanation is consistent with the retrieval results, the increased likelihood of recall does not fully explain why the item was misattributed to the service encounter rather than to the advertising. The misattribution can be understood through the source monitoring framework. Both the advertising and the service encounter used imagery from the same café. The similarity of the context information to the original experience should reduce the available information for source discrimination (Lindsay, and Johnson 1989), and increase the strength of association of the misinformation item to the service context. With reduced ability to discriminate between sources, the likelihood of misattribution increases (Lindsay, and Johnson 1989).

In the schema inconsistent condition a different process is likely to have occurred. The inconsistency between the schema and the target item in the café would have increased the attention paid to the target item (Friedman 1979; Pezdek, Whetstone, Reynolds, Askari, and Dougherty 1989; Tuckey, and Brewer 2003), resulting in stronger links between the target item and other information in the encounter that makes up the context. The greater attention paid to the target item in the service encounter would increase the chances that the correct item is recalled during the memory test, and that the misinformation item is not recalled as the correct item.

5.2.2 The Interaction of Schema Consistency and Encoding Goals on Misinformation Acceptance

The second hypothesis asserted that an interaction would occur between schema consistency, encoding goal, and post-event information. Consistency between expectations and the experience will cause misinformation acceptance regardless of the type of encoding goal employed by the participant. Conversely, in the schema inconsistent condition increased misinformation acceptance was predicted only when an impression encoding goal was employed. For the schema consistent condition the predicted result was supported by equivalent misinformation acceptance for both encoding goals. For the schema inconsistent condition, the predicted result was supported by misinformation acceptance only in the impression encoding goal condition.

Using the associative network model to interpret results in the schema consistent condition, the café description used to invoke the schema would have led to a cascade of activation to items that are relevant to the café schema. The same process would have occurred for both the recall and impression encoding goal conditions. Seeing the target item confirmed expectations, which led to limited attention and therefore less encoding of details.

For the schema inconsistent condition an interaction was found. Misinformation acceptance was more likely for the impression encoding goal, while in the recall encoding goal the misinformation effect was absent. The explanation for the misinformation effect when the impression encoding goal was used is the same as previously discussed. The absence of misinformation susceptibility in the recall encoding goal condition is caused by the participants' focus on the details of their experience. In addition, when the

misinformation was then supplied, participants would have had a second opportunity to notice the discrepancy, further improving their recognition accuracy. From a source monitoring perspective, the increased attention to detail in the recall encoding goal condition led to an increase in accessibility of source diagnostic information, therefore allowing the accurate discrimination of the target item.

In the analysis, frequency of buying from a cafe was used as a covariate to more clearly draw out the significant pattern of results in the analysis. The significance of the covariate is consistent with previous research that finds consumers with greater familiarity are more likely to have a developed schema (Alba, and Hasher 1983). By controlling for the differing levels of schema development the effects of encoding goals and schema consistency were clearer. This result is not surprising considering the results seen in the study by Cowley and Janus (2004) which showed improved accuracy by familiar consumers when misinformation was presented.

5.2.3 Effects of Misinformation Acceptance on Store Quality Evaluations

This research provides strong support that post-event misinformation, if accepted, can affect how a consumer interprets their consumption experience. This result supports prior misinformation effect studies that showed acceptance of misinformation can manifest in changes to quality perceptions for that item (Braun, and Loftus 1998; Braun 1999; Cowley, and Janus 2004). However, unlike prior studies, this study also found these evaluations extended to broader perceptions of store quality. For the cup type recalled both price and store image were significantly affected. With the price measures – which included drinks and food price inferences – this impact is unsurprising since the different cup types are associated with different cafe types and these carry different price positions, as given in the study's café description.

The data shows that inconsistency between the schema activated and the experience affects inferences on the perceptions of merchandise quality, store image, and price were significant. The data for service quality was not significant. In an ANOVA for the merchandise quality measure – a measure of coffee and food quality – the acceptance of misinformation interacted with whether the schema was consistent or inconsistent with the misinformation. The significant interaction between schema confirmation and misinformation susceptibility on merchandise quality was unexpected. This interaction resulted in higher quality evaluations when the cup type recalled was consistent with schema, regardless of the type of cup recalled or the type of schema. For example, when the take-away cafe schema was invoked, quality evaluations were higher when the take-away cup was recalled, than when the restaurant cup (cappuccino cup) was recalled. The opposite occurred when the restaurant schema was invoked.

While unexpected, the results of the study are not inconsistent with results found in services research investigating disconfirmation of expectations. As discussed in section 2.4.3.1 in the Knowledge Review chapter on retail experience evaluation, in the disconfirmation model dissatisfaction arises when experiences fall short of expectations. Within this study disconfirmation occurred when the item recalled did not match the schema. Interestingly, while recall of the cappuccino cup was associated with higher price expectations and store quality evaluations, it was not associated with higher merchandise quality evaluations. This outcome indicates that price was associated with retail type and not quality in the context of this study.

5.3 CONTRIBUTION TO KNOWLEDGE

The findings from the study reported in this thesis make a number of contributions to both theory and methodology. From a theoretical perspective, the results contribute to our knowledge of when misinformation effects are likely to occur and when they may not occur. The results also contribute to our knowledge of the consequences of exposure to misinformation. From a methodological perspective, the results contribute to the measurement of episodic memory.

Previous studies investigating the role of schema on misinformation effects have manipulated the consistency between the experience and misinformation by changing the misinformation (Smith, and Studebaker 1996; Roediger, Meade, and Bergman 2001). These studies have shown that consistency between schema and misinformation increases the chances of misinformation acceptance.

The present study showed that consistency between schema and experience increased a person's susceptibility to misinformation acceptance. The explanation offered here is that consistency between the activated schema (expectations) and the experience results in less attention paid to the details of an experience. As a result, a person has less diagnostic details from which to draw when making source attribution judgements, resulting in a person becoming more susceptible to subsequent misinformation. Conversely, when there is inconsistency between the activated schema (expectations) and experience, people pay more attention to those elements that did not match their expectations.

Previous studies investigating misinformation effects have used encoding goals as part of the set-up procedure, notably the recall encoding goal (e.g

Hirt, McDonald, and Erickson 1995; Roediger, Meade, and Bergman 2001). However, previous studies have not investigated the effects of these goals on misinformation acceptance, although encoding goals have been seen to affect memory accuracy and interact with activated schemas (Hirt, McDonald, and Markman 1998). The present study found that encoding goals play a role in altering a consumer's susceptibility to misinformation effects. Specifically, the recall and impression encoding goals interact with expectations when there is inconsistency between expectations and an experience. When there was schema inconsistency with the experience, misinformation effects were more likely when the impression encoding goal was used and were absent when the recall encoding goal was used. The results for the study were consistent with the results from previous studies that looked at misinformation consistency with schema (Smith, and Studebaker 1996; Roediger, Meade, and Bergman 2001). In these studies misinformation acceptance was higher for items that were consistent with schema relevant to the experience. While the current study looks at schema consistency from a different point, both previous studies and the current study highlight the importance of schema consistency as a factor in misinformation effects.

For the consequences of misinformation acceptance, prior studies investigating misinformation effects in the consumer behaviour context have demonstrated that misinformation acceptance also affects evaluations of the target item in a way that is consistent with the item recalled. The current study further adds to the body of knowledge by showing that acceptance of misinformation can result in broader effects, such as changes to store image. The study added to the body of knowledge by showing misinformation acceptance effect on merchandise quality evaluations are moderated by schema. Consistency between what is recalled and schema results in higher quality evaluations, as opposed to lower quality evaluations when there is an inconsistency between the type of item recalled and schema. This result is

consistent with the disconfirmation model used in services marketing literature.

5.3.1 Method Contribution

This thesis made a contribution to the method of investigating misinformation effects in terms of measurement of the misinformation effect. A common approach adopted by previous studies is for a person to indicate which item they recognise as the item they saw in the original experience from among a group of alternatives that includes the correct and misinformation item (e.g Cowley, and Janus 2004). Misinformation studies that were interested in understanding the nature of memory also include a second step that measures the level of awareness in terms of 'remember' and 'know', with more recent studies also including 'guess' as an option (e.g Braun 1999). An alternative to this approach used in word list recognition studies, is to measure item recognition and level of awareness in a single-step (Donaldson 1996; Inoue, and Bellezza 1998; Xu, and Bellezza 2001). With this approach the levels of awareness exist along a continuum of memory quality rather than as an index for different memory systems, as proposed by Tulving (1985). By showing the alternative items together – as done in some misinformation studies (e.g Braun, and Loftus 1998; Braun 1999; Cowley, and Janus 2004) – with the single-step approach, the study took advantage of the scale qualities of the single-step measure and created an approach that allows the use of scale based multivariate approaches, like ANOVA and MANOVA when investigating effects.

5.4 MANAGEMENT IMPLICATIONS

Findings from this study have implications for both those engaged in communications management and those who regulate the advertising industry. From the perspective of regulators, the study results may be daunting. Unless policy allows advertisements to include only details that are exactly representative of reality, consumers can be misled. However, the results also show that this is only true when consumers are reflecting back on previous experiences that are similar. If the advertisement provides expectations for the next visit to the establishment and consumers are paying attention during the visit, then the misinformation will not be accepted. This situation may be likely given that the target item found in the misinformation may be the focus of the consumer's attention.

This later point is also of direct relevance to those engaged in communications management, and reinforces the results of research on the effects of expectation disconfirmation in the services literature (e.g Lovelock, Patterson, and Walker 2001). If a service is meeting service expectations then follow-up communication that is misleading may become integrated into a consumer's subsequent recall of the encounter. While this may appear beneficial to the business it would also potentially lead to setting incorrect expectations for future experiences, which would lead to scepticism of subsequent exposure to misleading advertising.

While results from the study show increases in misinformation effects under different encoding goals when there were either schema consistent or inconsistent conditions, it appears to be more prudent for managers to have customers focus on forming an impression rather than remembering the details of the experience. With a recall encoding goal, discrepancies between

expectations and experience are likely to magnify the recognition of inconsistencies in the service offering if the misleading advertising is used.

5.5 LIMITATIONS

While the study makes several important contributions to the current body of knowledge, there are limitations that need to be kept in mind when generalising the results to other contexts. Firstly, the chosen target items in this study while exhibiting the needed consistency and inconsistency with the chosen schema are still likely to be found in both types of café. This excludes the study's ability to generalise to situations where the target items are mutually exclusive to other service types and their relevant schema. Secondly, the sample frame for this study did not include current customers of the café. While this is not a limitation for the theory development nature of this study, it does limit the generalisability of the results to the in-market phenomena. Finally, the sample size of the misled participants in each of the conditions, while adequate for the hypothesis tests, were too small to allow comparisons between the different levels of awareness.

5.6 FUTURE RESEARCH

Future research that builds or questions the findings reported in this thesis is recommended to further understand the nature of misinformation effects and its implications for understanding consumer behaviour. The directions for future research set out in this section are not intended to be exhaustive, but offer directions that address some of the limitations of the current study and further understand the effects of communications on consumer behaviour.

To better understand whether the reduced detail encoded into memory from the lower attention in the schema consistent condition, and when forming an impression when there was schema inconsistency, was for the target item or context details, future studies could investigate the use of other dependent or diagnostic measures. In some studies investigating misinformation effects, participants are asked to attribute each item to a source (e.g. Anastasi, Rhodes, and Burns 2000; Hekkanen, and McEvoy 2002). By measuring source for all items there would be greater certainty about the memory for the misinformation item when it was not indicated, and also for the correct item when it was not selected. For the context information, a battery of statements similar to that used by Anastasi and colleagues (2000) and by Stern and Rotella (2000) could indicate the extent of context detail accompanying recall of what item was present in the service encounter.

Only one design element was targeted in the current study. Future studies could look at targeting a broader number of design items. While some misinformation effect studies have targeted multiple items in a single scene (e.g Nemeth, and Belli 2006), no study has done this in a systematic way to shift recall so that another category is recalled. For example, in a café context the cup type, art, staff uniform and aspects of the furniture could be changed from those more likely to be found in a take-away to those found in a

restaurant, and vice versa. This type of study may show greater effects on store quality measures, or increase the chances the misinformation is detected. Alternatively, the consistent use of misinformation around a schema could increase misinformation effect for individual items. This type of study could also investigate the type of design elements that are the most conducive to misinformation and their impact on store impressions.

In the current study, a frequency of buying measure helped clarify the results for the interaction of schema consistency and encoding goals. In a study by Cowley and Janues (2004) investigating the effects of familiarity on misinformation effects, the familiarity measure used the approach developed by Ariely, Hoeffler and West (2001), in which familiarity is based on both depth (frequency of experience) and breadth (variation in experience). Future studies investigating schema effects and encoding goals could include this more detailed approach to see whether familiarity is a moderator of either of these measures.

An important issue for future research is how and why consumers that accept the misinformation subsequently report lower expectations for the food and coffee. Is it possible that consumers accept the misinformation on one level and react to the misleading information on another level? Recent work has shown that consumers do react to blatantly persuasive message when primed at a non-conscious level (Chartrand, Dalton, and Fitzsimons 2007; Laran, Dalton, and Andrade 2010). The recent studies show reactance effects when consumers are primed with persuasive messages. The findings reported here may be indicating that at some level consumer's own misinformation acceptance is understood and subsequently reminds them of the persuasive attempt, leading to reactance on other aspects of the consumer environment.

Finally, an interesting discovery is that misinformation does not mislead if the consumer is trying to notice aspects of the environment and is facing an unexpected setting. Research has yet to focus on the consequences of misleading a consumer beyond their next purchase intention. What happens when the consumer buys a low quality juice from a retailer after being misled? What happens when the upmarket restaurant turns out to be more like a take-away restaurant? Answers to these questions could help understand the impact of misinformation effects over the course of a consumer's relationship with a retailer.

5.7 SUMMARY

In conclusion, the study of misinformation effects in post-event communication is a new and promising area of investigation in the field of consumer behaviour. In this field, misinformation effects research offers the potential for greater understanding of the effects of advertising on consumers and how communication becomes integrated into their overall consumption experience. In the broader field of cognitive psychology, misinformation effect research is longer established and continues to assist in understanding the malleable nature of memory and how information from disparate sources across time and place can become integrated into memories of an event.

The findings reported in this thesis provide a valuable contribution to understanding the nature and scope of misinformation effects. The study also contributes to the field of consumer behaviour by further understanding the effect communication has on the market place by changing customers' recollections and the associated evaluations. More specifically, this study sought to contribute to the body of knowledge by addressing the following questions:

What, if any, is the moderating effect of prior expectations on a person's susceptibility to accept misinformation about a previous experience? Will a person's encoding goals moderate the effects of prior expectations on misinformation acceptance?

Results from the study answer both these questions with a 'yes'. Results showed that consistency between the schema a person was using and their experience led to increased misinformation acceptance compared to those who experienced an inconsistency between the schema and experience. Also, results from the study show that if a person is trying to remember the details

of the experience they could escape the effects of misinformation when there is an inconsistency between expectations and experience.

Results from the study are consistent with the source monitoring framework. A prediction from the framework is that a decline in source discriminating information would lead to an increase in source misattribution. This prediction was found to be correct under different conditions used in the study. When there was consistency between an experience and expectations, attention to detail declined, resulting in less diagnostic information available to correctly identify the target item, leading to a misinformation effect. When a recall encoding goal was used, the greater attention to detail was further enhanced by the presence of misinformation, leading to an absence of a misinformation effect.

In terms of the ramifications of misinformation acceptance, results from the study also showed that misinformation acceptance is linked to changes in store quality perceptions, including price. In addition, the study showed that the recall of the target item interacted with the schema in such a way that if the item recalled was inconsistent with the schema, merchandise quality evaluations were lower than if they were consistent. This result is consistent with the outcome seen in studies investigating disconfirmation effects on satisfaction in a service setting.

Given the ramifications for marketing practice and the implications for understanding memory, research investigating post-event misinformation effects should continue. This thesis was undertaken to further the understanding of this phenomenon and its application to understanding consumer behaviour. Results from this study have contributed to the current body of knowledge and provides implications for industry regulators, communication managers, and directions for future research.

APPENDICES

APPENDIX 1: CAFÉ VIDEO SCREEN SHOTS

Below are key scene frames from the café video and the time the frame appeared. The cup used as the target item appears from scene 1:38 minutes and ends at scene 2:18 minutes.

00:00

00:20

00:35

01:05

01:17

01:38

01:50

02:05

02:10

02:18

02:24

02:45

02:53

03:00

03:10

APPENDIX 2: QUESTIONNAIRE

The questionnaire used in the main study was administered using DirectRT 2004 by Empirisoft Corporation, a computer software programme designed specifically for psychology studies.

The descriptions below show the text that appeared on screen for each of the conditions. Screen headings showing the manipulation were not shown on the screens during the study.

Screen 1: Introduction to Study

Introduction and Instructions

Impression Goal Manipulation: People form impressions about the places they see and visit. The study you are assisting with investigates the design of new café, called Café Sarina. You will be shown a video of the inside of this café from a first person perspective. Later in the study you will be asked to complete a short questionnaire about your impressions.

Recall Goal Manipulation: The study you are assisting with investigates the design of a new café called Café Sarina. In this study you will be shown a video of the inside of this café from a first person perspective. When watching the video please pay attention to the people you see and what they do. Later in the study you will be asked to complete a short memory test about what you saw in the video.

Screen 2: Take-Away Style Café Expectation Condition

Before watching the video of Café Sarina, please carefully read the following description of the café.

Restaurant Style Café Expectation Manipulation: Café Sarina is located on a busy street that has a mix of offices, clothing stores, restaurants and other restaurant style cafes. The café is open from early to late evening and is also open for weekend shoppers. The café focuses on high quality food, coffee and service. Relative to a nearby take-away café, prices are higher.

Take-Away Style Café Expectation Manipulation: Café Sarina is located on a busy street that has a mix of offices and is next to a busy train station. Although there is some space for people to sit down and drink their coffee, the café is designed to cater for the morning crowds that come in to buy their coffee on their way to their offices. The café offers light meals, and focuses on coffee and fast service. Relative to a nearby restaurant style café, Café Sarina's prices are lower.

Press 'space bar' to watch the video.

Screen 3: Café Service Encounter Video

Subjects then saw a video of Café Sarina that lasted 3-minutes before automatically moving to Screen 4.

Screen 4: Introduction to First Filler Task

In the following section of the study you are asked to complete a series of short questions.

This section will take around 15 minutes to complete.

To answer the questions, type the letter that matches your answer.

If you are unable to answer a question, then provide your best estimate.

Press 'space bar' to continue.

Screens 5 to 20: Filler Task (Order Randomly Assigned)

Filler questions randomly selected from a list of fifteen questions until the list exhausted. See Appendix 3 for filler questions.

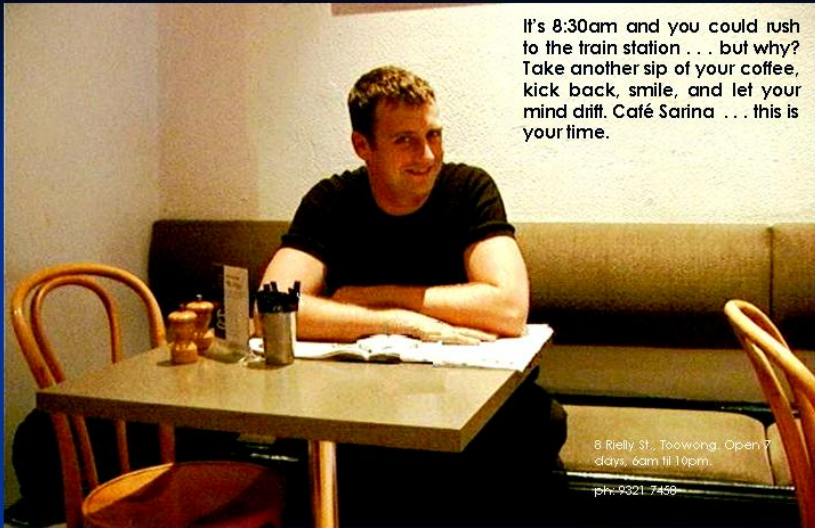### Screen 21: Introduction to Information Manipulation

Café Sarina Draft Magazine Advertisement

Café Sarina's owners are placing an advertisement in the local newspaper to increase awareness of the café — the café you saw in the short video at the beginning of the study. Shown on the next slide is a draft copy of the advertisement.

After you have studied the draft advertisement, press the 'space bar' and complete the series of questions relating to the advertisement.

Press 'space bar' to continue.

Screen 22: Neutral Magazine Advertisement Manipulation

It's 8:30am and you could rush to the train station . . . but why? Take another sip of your coffee, kick back, smile, and let your mind drift. Café Sarina . . . this is your time.

8 Rielly St., Toowong. Open 7 days, 6am til 10pm.
ph: 9321 7458

Press the 'space bar' to continue.

Screen 22: Misinformation Magazine Advertisement Manipulation (Cappuccino Cup)

It's 8:30am and you could rush to the train station . . . but why? Take another sip of your coffee, kick back, smile, and let your mind drift. Café Sarina . . . this is your time.

8 Rielly St., Toowong. Open 7 days, 6am til 10pm.
ph: 9321 7458

Press the 'space bar' to continue.

Screens 23 to 27: Magazine Advertisement Scale Questions (Order Randomly Assigned)

Using a scale of '1' to '9', how clearly does the advertisement state the location of the café? Where '1' is the lowest score and '9' is the highest.

Using a scale of '1' to '9', how likely would this advertisement increase your interest in visiting the café? Where '1' is the lowest score and '9' is the highest.

Using a scale of '1' to '9', how likely is would this advertisement give a good impression of the café? Where '1' is the lowest score and '9' is the highest.

Using a scale of '1' to '9', how would you rate the clarity of the advertisement's layout? Where '1' is the lowest score and '9' is the highest.

Using a scale of '1' to '9', how would you rate how easy it is to understand what the advertisement is trying to communicate? Where '1' is the lowest score and '9' is the highest.

Screens 28 to 29: Magazine Advertisement Open-Ended Questions (Order Randomly Assigned)

Other than to persuade you to visit the café, what do you feel the advertisement was trying to communicate?

_____

_____

_____

What type of person do you feel this advertisement is trying to appeal to?

_____

_____

_____

Screen 30: Introduction to Second Filler Task

In the following section of the study you are asked to complete a series of short questions.

This section will take around 15 minutes to complete.

To answer the questions, type the letter that matches your answer.

If you are unable to answer a question, then provide your best estimate.

Press 'space bar' to continue.

Screens 31 to 46: Filler Task (Order Randomly Assigned)

Filler questions randomly selected from a list of fifteen questions until the list exhausted. See Appendix 3 for filler questions.

Screen 47: Introduction to Memory Task

In the next section of this study you are shown a series of images and asked which image most closely reflects the one you recall seeing in the <u>video of Café Sarina</u> and how clearly you recall seeing that item.
Beneath each image that you are shown there are three words: Remember, Familiar, Plausible. Where . . .

- **'Remember'** means you can picture the item;
- **'Know'** means you cannot clearly recall the item, but you have a sense of knowing that it was the item; or
- **'Plausible'** means you cannot recall, but the item seems the most likely.

When indicating which item you recall seeing, also indicate the word that best describes your memory for that item (remember, know or plausible).

Press the 'space bar' to see examples.

Screens 48 to 53: Item Recognition

Participants see one of three randomly selected item recognition tasks, which is then followed by a question on their decision confidence. Below is an example of a sequence.

Screen 48

Shown below are three different types of cups, please tick the box beneath the image that most closely reflects the type you recall seeing in the **video of Café Sarina** and best reflects your memory for that item.

Type ONE number that best reflects the item you can recall and how clearly you can recall it.

1 ☐ Remember	4 ☐ Remember	7 ☐ Remember
2 ☐ Know	5 ☐ Know	8 ☐ Know
3 ☐ Plausible	6 ☐ Plausible	9 ☐ Plausible

The answer you just gave may or may not be correct. How confident are you that your answer is correct?

Screen 49

Using a scale of '1' to '9', where '1' is **not at all confident** and '9' is **completely confident**, please indicate how confident you are about your previous response.

Screen 50

Shown below are three different types of furniture, please tick the box beneath the image that most closely reflects the type you recall seeing in the **video of Café Sarina** and best reflects your memory for that item.

Type ONE number that best reflects the item you can recall and how clearly you can recall it.

1 ☐ Remember	4 ☐ Remember	7 ☐ Remember
2 ☐ Know	5 ☐ Know	8 ☐ Know
3 ☐ Plausible	6 ☐ Plausible	9 ☐ Plausible

Screen 51

Using a scale of '1' to 9', where '1' is **not at all confident** and '9' is **completely confident**, please indicate how confident you are about your previous response.

Screen 52

Shown below are three different types of pictures, please tick the box beneath the image that most closely reflects the type you recall seeing in the **video of Café Sarina** and best reflects your memory for that item.

Type ONE number that best reflects the item you can recall and how clearly you can recall it.

1 ☐ Remember	4 ☐ Remember	7 ☐ Remember
2 ☐ Know	5 ☐ Know	8 ☐ Know
3 ☐ Plausible	6 ☐ Plausible	9 ☐ Plausible

Screen 53

Using a scale of '1' to 9', where '1' is **not at all confident** and '9' is **completely confident**, please indicate how confident you are about your previous response.

Screen 54: Introduction to Café Quality Impression

On the following screens are statements regarding the café you saw in the video, Café Sarina. Using a scale of '1' to '9', please indicate how strongly you agree or disagree with each of these statements.

Press the 'space bar' to continue.

Screens 55 to 65: Café Quality Impression

Participants see one of ten randomly selected quality questions. Below is an example of a sequence.

Screen 55

Based on your impressions, what score from '1' to '9' would you give the cafe for how likely the coffee purchased from the café would be of high quality? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 56

Based on your impressions, what score from '1' to '9' would you give the café for how likely the food purchased from the café would be of high quality? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 57

Based on your impressions, what score from '1' to '9' would you give the café for how likely customers would be treated well in this café? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 58

Based on your impressions, what score from '1' to '9' would you give the café for how likely employees would give customers personal attention? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 59

Based on your impressions, what score from '1' to '9' would you give the café for how likely employees would be willing to help customers? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 60

Based on your impressions, what score from '1' to '9' would you give the café for how likely it would offer high quality service? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 61

Based on your impressions, what score from '1' to '9' would you give the café for how likely the employees would be too busy to respond to customers requests promptly? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 62

Based on your impressions, what score from '1' to '9' would you give the café for how likely it would be a pleasant place to have coffee? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 63

Based on your impressions, what score from '1' to '9' would you give the café for how likely it would have a pleasant atmosphere? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 64

Based on your impressions, what score from '1' to '9' would you give the café for how likely it would be clean? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 65

Based on your impressions, what score from '1' to '9' would you give the café for being attractive? Where '1' is the lowest score you can give, and '9' is the highest.

Screen 66

What price would you expect to pay for a cup of coffee at this café? Please enter the amount in the text box and then press enter. ____

Screen 67

What price would you expect to pay for a salad at this café? Please enter the amount in the text box and then press enter. ___

Screens 68 to 72: Personal Classification

Screen 68

Are you . . .
1) Male   2) Female

Screen 69

What is your year of birth?   Type Year _____

Screen 70

On average, how many times would you buy a cup of coffee or tea? Would it be . . .
1) 1 or more times a day
2) Less than once a day but more than once a week
3) Once a week
4) Less than once a week but more than once a fortnight
5) Once a fortnight
6) Less than once a fortnight

Screen 71

On average how many times would you visit a café?
 1) 1 or more times a day
2) Less than once a day but more than once a week
3) Once a week
4) Less than once a week but more than once a fortnight
5) Once a fortnight
6) Less than once a fortnight

Screen 72

What is the main language spoken in your home?
1) English   2) Other

Screen 73: Study Intent
Thank you for assisting with this research

Just one last question!

Can you briefly write in the text box what you believe was the main purpose of this study.

Your answer will be used to help interpret the results.

APPENDIX 3: FILLER TASKS

Each filler task contained fifteen questions unrelated to the memory study. Questions were selected to provide uniform difficulty regardless of first language spoken or numeracy skills. Question order was randomised.

Filler Task 1

'Gibe' is to 'taunt' as 'badinage' is to . . .
a) Prank   b) Repartee   c) Pleasantry d) Witticism   e) Joke

Which of the following is the odd one out?
a) Neptune   b) Saturn   c) Pluto   d) Ganymede   e) Uranus

Which of the following is the odd one out?
a) Cube   b) Square   c) Sphere   d) Cylinder   e) Octahedron

What word is the opposite in meaning to 'evasive'?
a) Zealous   b) Exact   c) Open   d) Caustic   e) Brave

What word completes the following sentence . . . Plead, Label, Album, Lusty,
a) Frown   b) Utter   c) Lunch   d) Dream   e) Charm

What is the state flower for New South Wales?
a) Kangaroo Glove b) Lotus   c) Waratah   d) Hibiscus   e) Dubbo Rose

Which of the following is the odd one out?
a) Skit b) Emeritus   c) Lampoon   d) Clerihew   e) Parody

What number comes next in the following string of numbers? 34, 7, 29, 11, 23, 16, 16, 2,
a) 3   b) 5   c) 8   d) 11   e) 13

Which of the following words is an antonym for 'rebuke'?
a) Heckle   b) Evaluate   c) Worship   d) Extol   e) Barrack

Which of the following words is a synonym for 'marvel'?
a) Amaze   b) Gaze   c) Miracle   d) Vision   e) Harm

What number comes next in the following string of numbers? 1, 3, 4, 7, 11, 18,___
a) 28   b) 32   c) 35   d) 21   e) 29

Which two words below have the same relationship as 'Doubt: Conviction'?
a) Faultless: Exemplary   b) Fastidious: Slender   c) Courage: Resolution

d) Instinct: Constancy   e) Routine: Abnormal

Which of the following words is an antonym for 'profligate'?
a) Abstruse   b) Deficient   c) Profligate   d) Secure   e) Chaste

Which of the following words is a synonym for 'upsurge'?
a) Expand   b) Delight   c) Diminish   d) Offend   e) Upend

Which of the following words is synonym for 'asphyxiate'?
a) Affix   b) Smother   c) Profligate d) Secure   e) Suffocate

Filler Task 2

What number comes next in the following string of numbers? 1, 2, 3, 7, 22, __
a) 52   b) 68   c) 126 d) 154 e) 155

Which of the following is the odd one out?
a) cube   b) square   c) sphere   d) cylinder   e) octahedron

What word is a synonym for 'logistics'?
a) validity   b) management   c) strength   d) resources e) record

Which of the following words is an antonym for 'rebuke'?
a) heckle   b) evaluate c) worship   d) extol   e) barrack

Which two numbers below have the same relationship as '482:34'?
a) 218:24   b) 946:42   c) 687:62   d) 299:26   e) 749:67

Which two letters below have the same relationship as "a:c"?
a) n:p b) f:s   c) z:d   d) f:h   e) i:j

Which number comes next in the following sequence? 25, 40, 55, 85, 130, __
a) 207 b) 190 c) 205 d) 250 e) 275

Which of the following is the odd one out?
a) Newcastle b) Canberra   c) Woy Woy d) Armidale e) Bathurst

What number comes next in the following sequence? 1, 3, 5, 7, 9, __
a) 13   b) 10   c) 15   d) 7   e) 11

What word completes the following sequence? Snake, alpaca, parrot, rabbit, ___

a) bear   b) fish   c) monkey   d) fox e) ape

Which number comes next in the following sequence? 15, 20, 35, 40, 55, __
a) 70   b) 60   c) 65   d) 80   e) 85

'Drake' is to 'bull' is the same as 'doe' is to '___'
a) sheep   b) buck   c) ram   d) sow   e) rooster

"Amature" is to "professional" is the same as "consummate is to "___"
a) forward   b) tardy   c) inept   d) erskin   e) wilful

Which letter comes next in the following sequence? b, c, e, h, m, __
a) a   b) z   c) e   d) h   e) u

Which word completes the following sequence? Vernuf, nafrat, rogan, axaza,_____
a) afrat   b) zerlin   c) elanan   d) hobuf   e) ulnat

APPENDIX 4: EXPLORATORY RESEARCH MODERATOR'S GUIDE

Introduction: 10 minutes

- Introduce yourself and thank participants for their assistance.
- Advise participants that notes will be taken and names are collected for administrative reasons. However, the confidentiality of their comments will be maintained and that no personally identifiable information will be maintained.
- Have participants introduce themselves by giving their name, course they are undertaking, and what year of study they are currently enrolled.

Café Categorization: 10 minutes

- When we think of types of restaurants we can think of many different types. Takeaway, family restaurants, ethnic food, pubs, and fine dining. Likewise there are different types of cafés. Thinking about different types of cafés what types come to mind?
- When types are exhausted, write down each type of café on a piece of paper and have participants position each type relative to each other on a 3x3 matrix.
- Discuss why certain café types are together/ apart and what possible dimensions there in the types.

Prototype Analysis: 30 minutes

- The next part of the discussion is more specifically about your expectations when it comes to different types of places where you buy coffee and sit down. Before we go any further, I am going to hand out some pieces of paper. You will notice they each have a description of a type of café at the top [write in café types from café categorization section]. Also with each type of café is a list of broad design elements found in any café. What I would like each of you to do is under each category choose from each of the alternative images for the one that best suits your expectations for that type of café and write the letter on the back of the image in the space provided. If more than one image matches your expectations, them write the one you would most expect. If none, then write what you would expect. At the bottom of the form please provide a description of your general design expectations for that type of café. Please be as specific as possible, but do not free associate. By that I mean, do not make things up as you go along. Once you have finished we will discuss what each of you have written.

- Go around group and have them discuss what items they had for each category and why they had them for a particular type of café.
- Discuss reasons for differences or no differences between elements chosen for a type of café.

DEBRIEF: 5 MINUTES
- Summarise discussion procedure.
- Thank for their assistance.
- Reiterate the importance of their help and allow participants to ask any questions.

SELF-COMPLETION FORM

LOCATION TYPE CAFÉ

SHOPPING CENTRE CAFÉ
Furniture: _____
Cup: _____
Counter: _____
General: _____

HIGH STREET SIDEWALK CAFÉ
Furniture: _____
Cup: _____
Counter: _____
General: _____

RESTAURANT CAFÉ
Furniture: _____
Cup: _____
Counter: _____
General: _____

HOTEL CAFÉ
Furniture: _____
Cup: _____
Counter: _____
General: _____

_____ CAFÉ (INSERT TYPE)
Furniture: _____
Cup: _____
Counter: _____
General: _____

IMAGE TYPE CAFÉ

VALUE FOR MONEY CAFÉ

Furniture: _____

Cup: _____

Counter: _____

General: _____

SOPHISTICATED CAFÉ

Furniture: _____

Cup: _____

Counter: _____

General: _____

HIGH QUALITY CAFÉ

Furniture: _____

Cup: _____

Counter: _____

General: _____

LOW QUALITY CAFÉ

Furniture: _____

Cup: _____

Counter: _____

General: _____

APPENDIX 5: TARGET OBJECT SELECTION SURVEY

The questionnaire shown below was used to assist in target item selection. To reduce order bias from the way the items were presented, two versions of the below questionnaire were fielded. The second version showed items in the reverse order. The first part of the questionnaire on impressions of the shown café was used to provide a context to the item selection and did not form part of the analysis.

Survey Introduction

The following questionnaire is regarding the design of cafés. The first section of the questionnaire shows a photograph of a café called Café Sarina and asks you to rate that café on various image statements. The second section asks you to rate various items that are found in different cafés on how likely you believe that design of the item would be found in a particular type of café.

When answering the questions please place an 'X' on the line that best represents your opinion. Please use the entire scale when answering in the questions.

Please complete each section in turn before answering questions in the next section.

Café Image

The below photo is of a café called Café Sarina. Please look at this photo and form an impression of what you would expect from this café. After forming your impression, complete the questions given below.

Coffee purchased from this café would be of high quality

Strongly Disagree									Strongly Agree

Customers could be expected to be treated well in this café

Strongly Disagree									Strongly Agree

This café would be a pleasant place to have coffee

Strongly Disagree									Strongly Agree

This café store is clean

Strongly Disagree									Strongly Agree

Employees of this café could be expected to give customers personal attention

Strongly Disagree									Strongly Agree

This store would offer high quality service

Strongly Disagree									Strongly Agree

Food purchased from this café would be of high quality

Strongly Disagree									Strongly Agree

This café's employees would be willing to help customers

Strongly Disagree									Strongly Agree

This café is attractive

Strongly Disagree									Strongly Agree

Employees of this café would not be too busy to respond to customer's requests promptly

Strongly Disagree									Strongly Agree

This café has a pleasant atmosphere

Strongly Disagree									Strongly Agree

Expectations

This section of the questionnaire relates to the design of items found in cafés. Shown on the following pages are designs of various items that may or may not be found in different types of cafés. For each design of an item please indicate how likely, or unlikely, you believe that you would find that **type of design** for that item in a particular type of café.

The two types of cafés looked at in this study are as follows:
- A restaurant café that focuses on high quality food, coffee and service and sells at higher prices.
- A take-away café that focuses adequate quality food, coffee and service and sells at lower prices.

When answering the questions please place an 'X' on the line that best represents your opinion. Please use the entire scale when answer in the questions.
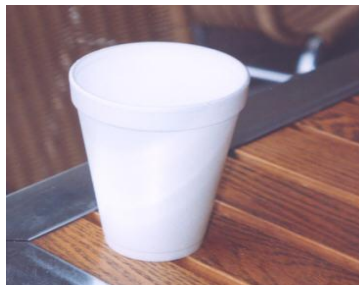

Definitely would not find in a
restaurant café

Definitely would find in a
restaurant café

Definitely would not find in a
take-away café

Definitely would find in a take-
away café

Definitely would not find in a
restaurant café

Definitely would find in a
restaurant café

Definitely would not find in a take-away café

Definitely would find in a take-away café

Definitely would not find in a restaurant café

Definitely would find in a restaurant café

Definitely would not find in a take-away café

Definitely would find in a take-away café

Definitely would not find in a restaurant café

Definitely would find in a restaurant café

Definitely would not find in a
take-away café

Definitely would find in a take-
away café

Definitely would not find in a
restaurant café

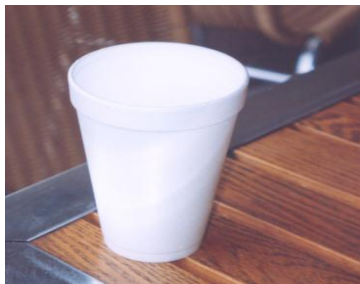Definitely would find in a
restaurant café

Definitely would not find in a
take-away café

Definitely would find in a take-
away café

Definitely would not find in a
restaurant café

Definitely would find in a
restaurant café

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take-away café

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restaurant café

Definitely would not find in a
take-away café

Definitely would find in a take-
away café

THIS IS THE END OF THE QUESTIONNAIRE

APPENDIX 6: TARGET OBJECT VALIDATION SURVEY

Taking into account the two different café descriptions; two versions of the survey were administered with one café description. For each café description there were two versions of the questionnaire, each with a different order of the items shown.

Café Image and Design Elements Survey

The following questionnaire is part of a broader study on people's expectations about retail environments. In this survey you are asked to read a description of a café then complete a set of questions on your impressions. **Please do not turn the first page over until you complete all questions on this page**.

Café Description

Take-Away Style Café: Café Sarina is located on a busy street that has a mix of offices, clothing stores, restaurants and other restaurant style cafes. The café is open from early to late evening and also open for weekend shoppers. The café focuses on high quality food, coffee and service. Relative to a nearby take-away café, prices are higher.

Restaurant Style Café: Café Sarina is located on a busy street that has a mix of offices and is next to a busy train station. Although there is some space for people to sit down and drink their coffee, the café is designed to cater for the morning crowds that come in to buy their coffee on their way to their offices. The café offers light meals, and focuses on coffee and fast service. Relative to a nearby restaurant style café, Café Sarina's prices are lower.

Based on the above description please indicate how likely or unlikely you believe this café would serve customers with the types of cups shown below by placing an '**X**' on the line that best represents your opinion. Please use the entire scale when answering in the questions.
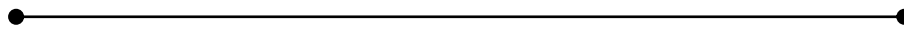
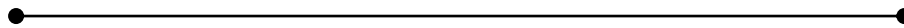Definitely would not
find in this type of café

Definitely would find in
this type of café

Definitely would not
find in this type of café

Definitely would find in
this type of café

Definitely would not
find in this type of café

Definitely would find in
this type of café

Café Interior

Below is an image of the Café Sarina described on the previous page.

Q4   Having seen this image of the café, has this changed your expectations?

More likely to expect this type of cup	1 ☐	1 ☐	1 ☐
Just as likely – no change	2 ☐	2 ☐	2 ☐
Less likely to expect this type of cup	3 ☐	3 ☐	3 ☐

To assist with the research please provide the following information about yourself.

C1   Are you . . .   1 ☐ Male   2 ☐ Female
C2   What year where you born?   Year (   )
C3   On average, how often would you buy a cup of coffee or tea?
C4   On average how often would you visit a café?

	C3 Buy Coffee/ Tea	C4 Visit Café
One or more times a day	1 ☐	1 ☐
Less than once a day but more than once a week	2 ☐	2 ☐
Once a week	3 ☐	3 ☐
Less than once a week but more than once a fortnight	4 ☐	4 ☐
Once a fortnight	5 ☐	5 ☐
Less than once a fortnight	6 ☐	6 ☐

APPENDIX 7: ETHICS APPROVAL

The research undertaken for this thesis had ethics approval from the University of Sydney's Human Research Ethics Committee, reference number 7361.

In accordance with the Human Research Ethics Committee approval, all participants in the study signed an approved consent form. This consent form is shown on the following pages.

THE UNIVERSITY OF SYDNEY

SUBJECT INFORMATION STATEMENT AND CONSENT FORM

"Service Encounters"

The design and layout of a service environment can both affect the way that way people perceive a service provider and affect the overall service experience. Understanding how people perceive a service environment is of key importance to marketers trying to manage a customer's experience. In this study you are invited to assist in research that will contribute to our understanding of consumer behaviour and decision making as they relate to service encounters.

If you decide to participate in this study you will be required to spend approximately 60 minutes today by watching a video and completing a series of questionnaires. In the study you will be asked to indicate your impressions regarding the café that you see in the video and an advertisement about that café. Later you will be asked to complete a number of other questionnaires that relate to the study, which include questions about yourself and your experiences with café. This information is used for classification and analysis purposes only. After the study you will be debriefed about the nature of the study. If you would like feedback on the results of the study, top-line results will be available from Seán McNally a month after completion of the study.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or except as required by law. If you give us your permission by signing this document, we plan to publish the results in the Journal of Consumer Research. In any publication, information will be provided in such a way that you cannot be identified.

Complaints may be directed to the Manager – Ethics Administration, The University of Sydney, SYDNEY 2006 AUSTRALIA (phone (02) 9351 4811, fax (02) 9036 9310, email gbriody@mail.usyd.edu.au).

Your decision whether or not to participate will not prejudice your future relations with the Club or the University of Sydney. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you have any questions, please feel free to ask us. If you have any additional questions later, Seán McNally on (02) 9460 0 945 will be happy to answer them.

You will be given a copy of this form to keep.

You are making a decision whether or not to participate. Your signature indicates that, having read the information provided above, you have decided to participate.

Signature of subject _____ Signature of witness _____

Please PRINT name_____ Please PRINT name_____

Date   _____ Nature of Witness _____

Signature(s) of investigator(s)   _____

Please PRINT Name   _____

REVOCATION OF CONSENT

I hereby wish to **WITHDRAW** my consent to participate in the research proposal described above and understand that such withdrawal **WILL NOT** jeopardise any treatment or my relationship with the University of Sydney.

Signature   _____   Date _____

Please PRINT Name   _____

APPENDIX 8: REFERENCES

Aaker, D. A. and D. M. Stayman (1992). "Implementing the Concept of Transformational Advertising." Psychology and Marketing **9**(3): 237-253.

Alba, J. W. and L. Hasher (1983). "Is Memory Schematic?" Psychological Bulletin **93**(2): 203-231.

Anastasi, J. S., M. G. Rhodes and M. C. Burns (2000). "Distinguishing between Memory Illusions and Actual Memories Using Phenomenological Measurements and Explicit Warnings." American Journal of Psychology **113 (1)**(Spring): 1-26.

Anderson, J. R. (1974). "Retrieval of Propositional Information from Long-Term Memory." Cognitive Psychology **6**(4): 451-474.

Anderson, J. R. (1983). The Architecture of Cognition. Cambridge, MA,, Harvard University Press.

Anderson, J. R. (1983). "A Spreading Activation Theory of Memory." Journal of Verbal Behaviour and Verbal Learning **22**: 261-295.

Anderson, J. R. and G. H. Bower (1973). Human Associative Memory. Washington DC, Winston.

Ayers, M. S. and L. M. Reder (1998). "A Theoretical Review of the Misinformation Effect: Predictions from an Activation-Based Memory Model." Psychonomic Bulletin and Review **5**(1): 1-21.

Babin, B. J. and L. Babin (2001). "Seeking Something Different? A Model of Schema Typicality, Consumer Affect, Purchase Intentions and Perceived Shopping Value." Journal of Business Research **54**(2): 89-96.

Baker, J. (1986). The Role of the Environment in Marketing Services: The Consumer Perspective. The Services Challenge: Integrating for Competitive Advantage. J. Shanahan. Chicago, American Marketing Association**:** 79-84.

Baker, J., D. Grewal and A. Parasuraman (1994). "The Influence of Store Environment on Quality Inferences and Store Images." Journal of the Academy of Marketing Science **22**(4): 328-339.

Baker, J., A. Parasuraman, D. Grewal and G. B. Voss (2002). "The Influence of Multiple Store Environment Cues on Perceived Merchandise Value and Patronage Intentions." The Journal of Marketing **66**(2): 120-141.

Bartlett, F. C. (1932). Remembering. Cambridge, Cambridge University Press.

Bateson, J. E. G. and M. K. Hui (1992). "The Ecological Validity of Photographic Slides and Videotapes in Simulating the Service Setting." Journal of Consumer Research **19**(September): 271-281.

Bayen, U. J., G. V. Nakamura, S. E. Dupuis and C.-L. Yang (2000). "The Use of Schematic Knowledge About Sources in Source Monitoring." Memory and Cognition **28**(3): 480-500.

Bekerian, D. A. and J. M. Bowers (1983). "Eyewitness Testimony: Were We Misled?" Journal of Experimental Psychology: Learning, Memory and Cognition **9**(1): 139-145.

Belli, R. F. (1989). "Influences of Misleading Postevent Information: Misinformation Interference and Acceptance." Journal of Experimental Psychology: General **118**(1): 72-85.

Belli, R. F. (1993). "Failure of Interpolated Tests in Inducing Memory Impairment with Final Modified Tests: Evidence Unfavorable to the Blocking Hypothesis." American Journal of Psychology **106**: 407-427.

Belli, R. F., P. D. Windschutle, T. T. McCarthy and S. E. Winfrey (1992). "Detecting Memory Impairment with a Modified Test Procedure: Manipulating Retention Interval with Centrally Presented Event Items." Journal of Experimental Psychology: Learning Memory and Cognition **18**: 356-367.

Bitner, M. J. (1990). "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses." Journal of Marketing **54**(2): 69-82.

Bowers, J. M. and D. A. Bekerian (1984). "When Will Postevent Information Distort Eyewitness Testimony?" Journal of Applied Psychology **69**: 466-472.

Braun, K. A. (1999). "Postexperience Advertising Effects on Consumer Memory." Journal of Consumer Research **25**(March): 319-334.

Braun, K. A., R. Ellis and E. F. Loftus (2002). "Make My Memory: How Advertising Can Change Our Memories of the Past." Psychology in Marketing **19**(1): 1-23.

Braun, K. A. and E. F. Loftus (1998). "Advertising's Misinformation Effect." Applied Cognitive Psychology **12**: 569-591.

Braun-LaTour, K. A., M. S. LaTour, J. E. Pickrell and E. F. Loftus (2004). "How and When Advertising Can Influence Memory for Consumer Experience." Journal of Advertising **33**(4): 7-19.

Braun-LaTour, K. A. and G. Zaltman (2006). "Memory Change: An Intimate Measure of Persuasion." Journal of Advertising Research **46**(1): 57-72.

Brewer, W. F. and J. C. Treyens (1981). "Role of Schemata in Memory for Places." Cognitive Psychology **13**(2): 207-230.

Brown, S. P. and D. M. Stayman (1992). "Antecedents and Consequences of Attitude toward the Ad: A Meta-Analysis." Journal of Consumer Research **19**(1): 34-51.

Carlston, D. E. (1980). "The Recall and Use of Traits and Events in Social Inference Processes." Journal of Experimental Social Psychology **16**(4): 303-328.

Chandler, C. C. (1991). "How Memory for an Event Is Influenced by Related Events: Interference in Modified Recognition Test." Journal of Experimental Psychology: Learning, Memory and Cognition **17**(1): 115-125.

Chartrand, T. L., A. N. Dalton and G. J. Fitzsimons (2007). "Nonconscious Relationship Reactance: When Significant Others Prime Opposing Goals." Journal of Experimental Social Psychology **43**: 719-726.

Chase, R. B. and D. A. Tansik (1983). "The Customer Contact Model for Organizational Design." Management Science **29**(9): 1037-1050.

Christiaansen, R. E. and K. Ochalek (1983). "Editing Misleading Information from Memory: Evidence for the Coexistence of Original Postevent Information." Memory and Cognition **11**(5): 476-475.

Churchill, G., Jr, and S. , C. (1982). "An Investigation into the Determinants of Customer Satisfaction." Journal of Marketing Research **14**: 491-504.

Cohen, C. E. (1981). "Person Categories and Social Perception: Testing Some Boundaries of the Processing Effect of Prior Knowledge." Journal of Personality and Social Psychology **40**(3): 441-452.

Cole, W. G. and E. F. Loftus (1979). "Incorporating New Information into Memory." American Journal of Psychology **92**: 413-425.

Collins, A. M. and E. F. Loftus (1975). "A Spreading-Activation Theory of Sematic Processing." Psychological Review **82**(6): 407-428.

Cook, T. C. and D. T. Campbell (1979). Quasi-Experimentation: Design and Analysis Issues for Field Settings. Boston, Houghton Mifflin.

Cowley, E. and M. Caldwell (2001). Truth, Lies and Videotape: The Impact of Personality on Memory for Consumption Experience. Working Paper. University of New South Wales.

Cowley, E. and E. Janus (2004). "Not Necessarily Better, but Certainly Different: A Limit to the Advertising Misinformation Effect on Memory." Journal of Consumer Research **31**(1): 229-235.

Darden, W. R., O. Erdem and D. K. Darden (1983). A Comparison and Test of Three Causal Models of Patronage Intentions. Patronage Behavior and Retail Management. R. F. Lusch. New York, North-Holland**:** 29-43.

Deighton, J. (1984). "The Interaction of Advertising and Evidence." Journal of Consumer Research **11**(3): 763-770.

Dodson, C. S., P. W. Holland and A. P. Shimamura (1998). "On the Recollection of Specific- and Partial-Source Information." Journal of Experimental Psychology: Learning, Memory, and Cognition **24**(5): 1121-1136.

Dodson, C. S. and M. K. Johnson (1993). "Rate of False Source Attributions Depends on How Questions Are Asked." American Journal of Psychology **106**(4): 541-557.

Donaldson, W. (1996). "The Role of Decision Processes in Remembering and Knowing." Memory and Cognition **24**(4): 523-533.

Finke, R. A., M. K. Johnson and G. C. Shyi (1988). "Memory Confusions for

Real and Imagined Completions of Symmetrical Visual Patterns."

Memory and Cognition **16**(2): 133-137.

Friedman, A. (1979). "Framing Pictures: The Role of Knowledge in

Automatized Encoding and Memory for Gist." Journal of Experimental

Psychology: General **108**(3): 316-355.

Frost, P. (2000). "The Quality of False Memories over Time: Is Memory for

Misinformation "Remembered" or "Known"." Psychonomic Bulletin

7(3): 531-536.

Gardiner, J. M., R. I. Java and A. Richardson-Klavehn (1996). "How Level of

Processing Really Influences Awareness in Recognition Memory."

Canadian Journal of Experimental Psychology **50**(1): 114-122.

Gardiner, J. M. and A. J. Parkin (1990). "Attention and Recollective Experience

in Recognition Memory." Memory and Cognition **18**(6): 579-583.

Gardiner, J. M., C. Ramponi and A. Richardson-Klavehn (1998). "Experiences

of Remembering, Knowing, and Guessing." Consciousness and

Cognition **7**(1): 1-26.

Gerrie, M. P., M. Garry and E. F. Loftus (2003). False Memories. Psychology and the Law: An Empirical Perspective. K. Williams. New York, Guildford.

Goff, L. M. and H. L. I. Roediger (1998). "Imagination Inflation for Action Events: Repeated Imaginings Lead to Illusory Recollections." Memory and Cognition **26**(1): 20-33.

Graesser, A. C., S. E. Gordon and J. D. Sawyer (1979). "Recognition Memory for Typical and Atypical Actions in Scripted Activities: Tests of a Script Pointer + Tag Hypothesis." Journal of Verbal Learning and Verbal Behavior **18**: 319-332.

Hair, J. F., jnr., R. E. Anderson., R. L. Tatham. and W. C. Black. (1998). Multivariate Data Analysis. Upper Saddle River, USA, Prentice Hall.

Heath, W. P. and J. R. Erikson (1998). "Memories for Central and Peripheral Actions and Props after Varied Postevent Presentation." Legal and Criminological Psychology **3**: 321-346.

Heckler, S. E. and T. L. Childers (1992). "The Role of Expectancy and Relevancy in Memory for Verbal and Visual Information: What Is Incongruency?" Journal of Consumer Research **18**(4): 475-492.

Hekkanen, S. T. and C. McEvoy (2002). "False Memories and Source-Monitoring Problems: Criterion Differences." Applied Cognitive Psychology **16**(1): 73-85.

Hershberger, R. G. and R. C. Cass (1974). Predicting User Responses to Buildings. Man-Environment Interactions: Evaluations and Applications. D. H. Carson. Stroudsbury, Dowden, Hutchinson & Ross. **2:** 117-134.

Hicks, J. L. and R. L. Marsh (1999). "Attempts to Reduce the Incidence of False Recall with Source Monitoring." Journal of Experimental Psychology: Learning, Memory and Cognition **25**(5): 1195-1209.

Hicks, J. L. and R. L. Marsh (1999). "Remember-Know Judgments Can Depend on How Memory Is Tested." Psychonomic Bulletin and Review **6**: 117-122.

Hirshman, E. and S. Master (1997). "Modelling the Conscious Correlates of Recognition Memory: Reflections on the Remember-Know Paradigm." Memory and Cognition **25**(3): 345-351.

Hirt, E. R., H. E. McDonald and G. A. Erickson (1995). "How Do I Remember Thee? The Role of Encoding Set and Delay in Reconstructive Memory Processes." Journal of Experimental Social Psychology **31**(5): 379-409.

Hirt, E. R., H. E. McDonald and K. D. Markman (1998). Expectancy Effects in Reconstructive Memory: When the Past Is Just What We Expect. Truth in Memory. K. M. McConkey. New York, Guilford**: 62-89.

Inoue, C. and F. S. Bellezza (1998). "The Detection Model of Recognition Using Know and Remember Judgments." Memory and Cognition **26**(2): 299-308.

Jacoby, L. L., V. Woloshyn and C. Kelley (1989). "Becoming Famous without Being Recognized: Unconscious Influences of Memory Produced by Dividing Attention." Journal of Experimental Psychology: General **118**(2): 115-125.

Johnson, M. K. (1988). Discriminating the Origin of Information. Delusional Beliefs: Interdisciplinary Perspectives. B. A. Maher. New York, Wiley.

Johnson, M. K., D. M. De Leonardis, S. Hashtroudi and S. A. Ferguson (1995). "Aging and Single Versus Multiple Cues in Source Monitoring." Psychology and Aging **10**(4): 507-517.

Johnson, M. K., M. A. Foley and K. Leach (1988). "The Consequences for Memory of Imagining in Another Person's Voice." Memory and Cognition **16**: 337-342.

Johnson, M. K., M. A. Foley, A. G. Suengas and C. L. Raye (1988).
"Phenomenal Characteristics of Memories for Perceived and Imagined
Autobiographical Events." Journal of Experimental Psychology:
General **117**(4): 371-376.

Johnson, M. K., S. Hashtroudi and D. S. Lindsay (1993). "Source Monitoring."
Psychological Bulletin **114**: 3-28.

Johnson, M. K. and K. J. Mitchell (2002). Source Monitoring. Learning &
Memory. J. H. Byrne. New York, Macmillan References USA**:** 628-631.

Johnson, M. K., S. F. Nolde and D. M. De Leonardis (1996). "Emotional Focus
and Source Monitoring." Journal of Memory and Language **35**(2): 135-
156.

Johnson, M. K. and C. L. Raye (1981). "Reality Monitoring." Psychological
Review **88**(1): 67-85.

Koriat, A., M. Goldsmith and A. Pansky (2000). "Toward a Psychology of
Memory Accuracy." Annual Review of Psychology **51**: 481-537.

Kotler, P. (1973). "Atmospherics as a Marketing Tool." Journal of Retailing
49(Winter): 48-64.

Lampinen, J. M. (1996). Recollection of Things Schematic: The Influence of Schemas on Recollective Experience. Unpublished Doctoral Dissertation. Chicago, IL., Northwestern University.

Lampinen, J. M., S. M. Copeland and J. S. Neuschatz (2001). "Recollections of Things Schematic: Room Schemas Revisited." Journal of Experimental Psychology: Learning, Memory and Cognition 27(5): 1211-1222.

Lampinen, J. M., J. S. Neuschatz and D. G. Payne (1996). "Memory Illusions and Consciousness: Examining the Phenomenology of True and False Memories." Current Psychology 16(3/4): 181-225.

Lane, S. M. and M. S. Zaragoza (1995). "The Recollective Experience of Cross-Modality Confusion Errors." Memory and Cognition 23(5): 607-610.

Laran, J., A. Dalton and E. B. Andrade (2010). The Curious Case of Benjamin Backlash: Why Brands Produce Priming Effects and Slogans Produce Reverse Priming Effect. Working Paper, University of of Miami.

Lindquist, J. D. (1974). "Meaning of Image." Journal of Retailing 50: 29-38.

Lindsay, D. S. (1990). "Misleading Suggestions Can Impair Eyewitnesses' Ability to Remember Event Details." Journal of Experimental Psychology: Learning, Memory and Cognition 16(6): 1077-1083.

Lindsay, D. S. and M. K. Johnson (1989). "The Eyewitness Suggestibility Effect and Memory for Source." Memory and Cognition **17**(3): 349-358.

Lindsay, D. S., M. K. Johnson and P. Kwon (1991). "Developmental Changes in Memory Source Monitoring." Journal of Experimental Child Psychology **52**(3): 297-318.

Loftus, E. F. (1975). "Leading Questions and the Eyewitness Report." Cognitive Psychology **7**: 560-572.

Loftus, E. F. (1977). "Shifting Human Colour Memory." Cognition and Memory **5**: 696-699.

Loftus, E. F. (1979). Eyewitness Testimony. Cambridge, USA, Harvard University Press.

Loftus, E. F. (2005). "Planting Misinformation in the Human Mind: A 30-Year Investigation of the Malleability of Memory." Learning and Memory **12**: 361-366.

Loftus, E. F., K. Donders, H. G. Hoffman and J. W. Schooler (1989). "Creating New Memories That Are Quickly Assessed and Confidently Held." Memory and Cognition **17**(September): 607-616.

Loftus, E. F. and H. G. Hoffman (1989). "Misinformation and Memory: The Creation of New Memories." Journal of Experimental Psychology: General **118**: 100-104.

Loftus, E. F., D. G. Miller and H. J. Burns (1978). "Semantic Integration of Verbal Information into Visual Memory." Journal of Experimental Psychology: Human Learning and Memory **4**(1): 19-31.

Loftus, E. F. and J. C. Palmer (1974). "Reconstruction of Automobile Destruction: An Example of the Interaction between Language and Memory." Journal of Verbal Behavior and Verbal Learning **13**: 585-589.

Loftus, E. F., J. W. Schooler and W. Wagnaar (1985). "The Fate of Memory: Comment on Mccloskey and Zaragoza." Journal of Experimental Psychology: General **114**(3): 375-380.

Loken, B. and J. Ward (1990). "Alternative Approaches to Understanding the Determinants of Typicality." Journal of Consumer Research **17**(2): 111-127.

Lovelock, C. H., P. G. Patterson and R. H. Walker (2001). Services Marketing: An Asia-Pacific Perspective. Sydney, Prentice Hall.

Malhotra, N. K. (1983). "A Threshold Model of Store Choice." Journal of Retailing **59**(Summer): 3-21.

Marans, R. W. and K. F. Sprecklmeyer (1982). "Measuring Overall

Architectural Quality." Environment and Behaviour **14**: 652-670.

Marsh, R. L. and J. L. Hicks (1998). "Test Formats Change Source-Monitoring

Decision Processes." Journal of Experimental Psychology - Learning,

Memory and Cognition **24**(5): 1137-1151.

Mazursky, D. and J. Jacoby (1986). "Exploring the Development of Store

Images." Journal of Retailing **62**(Summer): 145-165.

McClelland, J. L. (1995). Constructive Memory and Memory Distortions: A

Parallel-Distributed Processing Approach. Memory Distortions: How

Minds, Brains, and Societies Reconstruct the Past. D. L. Schacter.

Cambrige, USA, Harvard University Press**:** 69-90.

McCloskey, M. and M. Zaragoza (1985). "Misleading Postevent Information

and Memory for Events: Arguments and Evidence against Memory

Impairment Hypotheses." Journal of Experimental Psychology **114**(1):

1-16.

Mitchell, K. J. and M. K. Johnson (2000). Source Monitoring: Attributing

Mental Experiences. The Oxford Handbook of Memory. F. I. M. Craik.

New York, Oxford University Press**:** 179-195.

Multhaup, K. S. (1995). "Aging, Source, and Decision Criteria: When False Fame Errors Do and Do Not Occur." Psychology and Aging **10**(3): 492-497.

Neisser, U. (1967). Cognitive Psychology. New York, Appleton-Century-Crofts.

Nemeth, R. J. and R. F. Belli (2006). "The Influence of Schematic Knowledge on Contradictory Versus Additive Misinformation: False Memory for Typical and Atypical Items." Applied Cognitive Psychology **20**(5): 563-573.

Nevin, J. R. and M. A. Houston (1980). "Images as a Component of Attractiveness to Intra-Urban Shopping Areas." Journal of Retailing **56**(Spring): 77-93.

Nunnally, J. C. (1978). Psychometric Theory. New York, McGraw-Hill.

Oliver, R. J. (1980). "A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions." Journal of Marketing Research **17**: 460-469.

Parasureman, A., V. A. Zeithaml and L. Berry (1988). "Servqual: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality." Journal of Retailing **64**(Spring): 12-40.

Parasurman, A., V. A. Zeithaml and L. L. Berry (1994). "Alternative Scales for Measuring Service Quality: A Comparative Assessment Based on Psychometric and Diagnostic Criteria." Journal of Retailing **70**(3): 201-230.

Pezdek, K., T. Whetstone, K. Reynolds, N. Askari and T. Dougherty (1989). "Memory for Real-World Scenes: The Role of Consistency with Schema Expectations." Journal of Experimental Psychology: Learning, Memory and Cognition **15**(4): 587-595.

Puto, C. P. and W. D. Wells (1984). "Informational and Transformational Advertising: The Differential Effects of Time." Advances in Consumer Research **11**(1): 638-643.

Rajaram, S. (1993). "Remembering and Knowing: Two Means of Access to the Personal Past." Memory and Cognition **21**(1): 89-102.

Roediger, H. l., III , J. D. Jacoby and K. D. McDermott (1996). "Misinformation Effects in Recall: Creating False Memories through Repeated Retrieval." Journal of Memory and Language **35**(2): 300-318.

Roediger, H. l., III , M. Meade, L. and E. T. Bergman (2001). "Social Contagion of Memory." Psychonomic Bulletin & Review **8**(2): 365-371.

Rutherford, A. (2001). Introducing Anova and Ancova: A Glm Approach. London, Sage Publications.

Schacter, D. L. (1990). Perceptual Representation Systems in Implicit Memory: Towards a Resolution of the Multiple Memory Systems Debate. The Development of Neural Bases of Higher Cognitive Functions. A. Diamond. New York, Annals of the New York Academy of Sciences. **608**.

Schooler, J. W., R. A. Foster and E. F. Loftus (1988). "Some Deleterious Consequences of the Act of Recollection." Memory and Cognition **16**: 243-251.

Smith, V. L. and C. A. Studebaker (1996). "What Do You Expect?: The Influence of People's Prior Knowledge of Crime Categories on Fact-Finding." Law & Human Behavior **20**(5): 517-531.

Spaniol, J. and U. J. Bayen (2002). "When Is Schematic Knowledge Used in Source Monitoring." Journal of Experimental Psychology: Learning, Memory and Cognition **28**(4): 631-651.

Spreng, R., S. MacKenzie and R. Olshavsky (1996). "A Re-Examination of the Determinants of Consumer Satisfaction." The Journal of Marketing **60**(3): 15-32.

Srull, T. K. (1981). "Person Memory: Some Tests of Associative Storage and Retrieval Models." Journal of Experimental Psychology: Human Learning and Memory **7**(6): 440-463.

Srull, T. K., M. Lichtenstein and M. Rothbart (1985). "Associative Storage and Retrieval Processes in Person Memory." Journal of Experimental Psychology: Learning, Memory and Cognition **11**(2): 316-345.

Srull, T. K. and R. S. J. Wyer (1986). The Role of Chronic and Temporary Goals in Social Information Processing. Handbook of Motivation and Cognition: Foundations of Social Behavior. E. T. Higgins. New York, NY, US, Guilford Press.**:** 503-549.

Stanley, T. and M. Sewal (1976). "Image Inputs to a Probabilistic Model: Predicting Retail Potential." Journal of Marketing **40**(3): 48-53.

Stern, E. R. and C. M. Rotello (2000). "Memory Characteristics of Recently Imagined Events and Real Events Experienced Previously." American Journal of Psychology **113**(4): 569-590.

Suengas, A. G. and M. K. Johnson (1988). "Qualitative Effects of Rehearsal on Memories for Perceived and Imagined Events." Journal of Experimental Psychology: General **117**(4): 377-389.

Tousignant, J. P., D. Hall and E. F. Loftus (1986). "Discrepancy Detection and Vulnerability to Misleading Postevent Information." Memory and Cognition **14**: 329-338.

Tuckey, M. R. and N. Brewer (2003). "The Influence of Schemas, Stimulus Ambiguity, and Interview Schedule on Eyewitness Memory over Time." Journal of Experimental Psychology: Applied **9**(2): 101-118.

Tulving, E. (1985). "Memory and Consciousness." Canadian Psychologist **26**: 1-12.

Tversky, B. and M. Tuchin (1989). "A Reconciliation of the Evidence on Eyewitness Testimony: Comments on Mc Closkey and Zaragoza." Journal of Experimental Psychology: General **118**(1): 86–91.

Underwood, J. and K. Pezdek (1998). "Memory Suggestibility as an Example of the Sleeper Effect." Psychonomic Bulletin and Review **5**(3): 449-453.

Veryzer, R., Jr. and J. W. Hutchinson (1998). "The Influence of Unity and Prototypicality on Aesthetic Responses to New Product Designs." Journal of Consumer Research **24**(March): 374-394.

Ward, J. C., M. J. Bitner and J. Barnes (1992). "Measuring the Prototypicality and Meaning of Retail Environments." Journal of Retailing **68**(2): 194-220.

Winograd, E. (1968). "Retention of List Differentiation and Word Frequency." Journal of Verbal Learning & Verbal Behavior **7**(5): 859-863.

Wright, D. B. and J. N. Stroud (1996). "Memory Quality and Misinformation for Peripheral and Central Objects." Legal and Criminological Psychology **3**(Part 2): 273-286.

Wyer, R. S., T. K. Srull and S. Gordon (1984). "The Effects of Predicting a Person's Behavior on Subsequent Trait Judgments." Journal of Experimental Social Psychology **20**(1): 29-46.

Xu, M. and F. S. Bellezza (2001). "Comparison of the Multimemory and Detection Theories of Know and Remember Recognition Judgments." Journal of Experimental Psychology: Learning, Memory and Cognition **27**(5): 1197-1210.

Zaragoza, M. S. and J. W. I. Koshinder (1989). "Mislead Subjects May Know More Than Their Performance Implies." Journal of Experimental Psychology: Learning, Memory and Cognition **15**: 246-255.

Zaragoza, M. S. and S. M. Lane (1994). "Source Misattributions and the Suggestibility of Eyewitness Memory." Journal of Experimental Psychology: Learning, Memory and Cognition **20**(4): 934-945.

Zaragoza, M. S. and S. M. Lane (1998). "Processing Resources and Eyewitness Suggestibility." Legal and Criminological Psychology **3**(2): 305-320.

Zeithaml, V. (1989). "Consumer Perceptions of Price, Quality and Value: A Means-End Model and Synthesis of Evidence." Journal of Marketing **52**(3): 2-22.

Zimmer, M. R. and L. L. Golden (1988). "Impressions of Retail Stores: A Content Analysis of Consumer Images." Journal of Retailing **64**(Fall): 265-293.