

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

Priming good parenting: Can positive affective priming influence fathers' causal attributions and consequent disciplinary responses for child misbehaviour?

A thesis submitted in partial fulfilment of the requirements for the degree of
Doctor of Clinical Psychology

at Massey University, Palmerston North,
New Zealand.

Kayla Louise Mackie

2017

ABSTRACT

This thesis combines affective priming with the cognitive processes and behavioural sequences found in parenting decisions, to explore whether a father's attributions for child misbehaviour and consequent disciplinary responses can be influenced by a priming intervention. Forty eight fathers of children aged between 5 and 12 years were questioned on their opinions regarding the causes of child behaviour, and how they would choose to respond to or discipline such behaviour, before and following a priming intervention consisting of full-colour images of fathers interacting with their children. These primes differed in content in both emotional valence and the fathering roles depicted dependent upon the group to which participants were randomly assigned. These groups were General Positive, General Negative, Evolutionary Positive, and Evolutionary Negative priming images. Results showed that all research groups were successfully primed, as measured by a word completion task, however consistent and expected changes in attributions for child behaviour and disciplinary choices did not occur due to the priming intervention. Proposed reasons for this include unforeseen priming effects obscuring the main effect, additional corrective cognitive factors altering or obscuring the priming effect, or difficulties with the way the cognitive and behavioural changes were measured. Proposed methods for further exploration in future research regarding how to translate a priming effect into meaningful and consistent change are discussed. Priming as an adjunctive parenting intervention remains an interesting and worthwhile consideration, and ideas around utilisation of this technique are discussed in light of the results of this research.

PREFACE

This thesis started its life as an honour's project, undertaken in 2011 with the guidance of my supervisor, Professor Ian Evans. I was interested in anything to do with child psychology and parenting, and Ian had a project in mind regarding priming for parents. A pilot of the current project was therefore conceived. Although just 12 fathers were interviewed and undertook a priming intervention, it provided the valuable groundwork for a doctoral thesis on the same subject. With what we learned from attempting a priming intervention with those 12 fathers we were able to design the current experiment and expand the sample size. In the five years I've been working on this topic, I've learned so much about fathering and priming that I will take with me into the next part of my career as a practicing child and family psychologist.

This thesis has been the biggest and most challenging project I've ever undertaken, and it couldn't have happened without the help and support of many people. Firstly and most importantly my family, who have backed me through more than eight years of study to the conclusion of this research project. The largest thank you must go to my parents, who have helped me financially, emotionally, practically – in every way imaginable, so that I could stick with this process until the very end. It is because of my Dad, who always told me I could do anything I wanted, that I had the courage to try out for the competitive Clinical Psychology program in the first place. My extended family have been confident that I would finish this project even when I wasn't sure of it myself; I will always value your belief in me.

I only managed to write this thesis with the guidance of many very smart and talented people. A huge thank you goes to my supervisors, all of whom contributed to essential aspects of the project. Dr Heather Buttle, although we did not get to work together in person much, you provided inspiration for the research design that proved crucial to the meaningful interpretation of the results. Associate Professor John Podd – it may not have seemed like much at the time, but without your guidance in data quantification and ideas for statistical analysis, I wouldn't have even known where to start googling. And of course Professor Ian Evans, who contributed so much

to this thesis – from the early ideas through to the final writing, across the five years we worked on this topic. Without you this thesis would certainly not exist.

Finally, my sincerest gratitude goes to the forty eight fathers who took time out of their incredibly busy lives to talk with me for an hour about their parenting experiences. Every single one of you gave me valuable insight into your lives, opening up about difficult topics and offering your honest experiences to the world of academic research. I hope you find the outcomes of your participation as interesting and thought-provoking as I did.

TABLE OF CONTENTS

TABLE OF CONTENTS	iii
LIST OF TABLES	iv
LIST OF FIGURES	vi
INTRODUCTION	1
LITERATURE REVIEW	6
Priming	6
The Mechanism of Affective Priming	11
Affective Priming in Non-Laboratory Conditions	15
Schema Theory	20
Measurement of the Affective Priming Effect	22
The Evolution of Paternal Care	24
The Social and Historical Context of Fatherhood	32
Parenting and Discipline	37
The Application of Affective Priming to Parenting Cognitions and Behaviours	43
MATERIALS AND METHOD	46
Participants	46
Materials	47
Design	50
Procedure	51
Hypotheses	54
RESULTS	55
Observational Data	55
Recognition Task Results	55
Priming Analysis	55
Descriptive Analysis	59
Statistical Analyses	93
DISCUSSION	99
Implications	100
Priming as a Clinical Intervention	108
Limitations and Future Considerations	111
CONCLUSION	117
REFERENCES	121
APPENDICES	132

LIST OF TABLES

Tables	Page
Table 1	Mean elicitation of prime content related words following a priming intervention..... 57
Table 2	Mean elicitation of positive and negative words following a priming intervention..... 58
Table 3	Pearson’s correlations between all measured variables across all groups on pre-test..... 60
Table 4	Pearson’s correlations between all measured variables across all groups on pre-test, following dataset recalculation..... 61
Table 5	Pre-test means for all groups and all dependent variables, overall..... 63
Table 6	Pre-test means for all groups and all dependent variables, scenario pair 1..... 64
Table 7	Pre-test means for all groups and all dependent variables, scenario pair 2..... 65
Table 8	Pre-test means for all groups and all dependent variables, scenario pair 3..... 66
Table 9	Pre-test means for all groups and all dependent variables, scenario pair 4..... 67
Table 10	Pre-test and post-test means, all groups, overall, blaming and forgiving attributions..... 69
Table 11	Pre-test and post-test means, all groups, overall, harsh and constructive parenting actions..... 71
Table 12	Pre-test and post-test means, scenario pair 1, blaming and forgiving attributions..... 73
Table 13	Pre-test and post-test means, scenario pair 1, harsh and constructive parenting actions..... 75
Table 14	Pre-test and post-test means, scenario pair 2, blaming and forgiving attributions..... 77
Table 15	Pre-test and post-test means, scenario pair 2, harsh and constructive parenting actions..... 79
Table 16	Pre-test and post-test means, scenario pair 3, blaming and forgiving attributions..... 81

Table 17	Pre-test and post-test means, scenario pair 3, harsh and constructive parenting actions.....	83
Table 18	Pre-test and post-test means, scenario pair 4, blaming and forgiving attributions.....	85
Table 19	Pre-test and post-test means, scenario pair 4, harsh and constructive parenting actions.....	87
Table 20	Means and SDs for attributions for child behaviour, pre- and post-test, by affective prime emotional valence.....	89
Table 21	Means and SDs for responses to child behaviour, pre- and post-test, by affective prime emotional valence.....	91

LIST OF FIGURES

Figures	Page
Figure 1	Pre-test means for all groups and all dependent variables, overall..... 63
Figure 2	Pre-test means for all groups and all dependent variables, scenario pair 1..... 64
Figure 3	Pre-test means for all groups and all dependent variables, scenario pair 2..... 65
Figure 4	Pre-test means for all groups and all dependent variables, scenario pair 3..... 66
Figure 5	Pre-test means for all groups and all dependent variables, scenario pair 4..... 67
Figure 6	Pre-test and post-test means, overall, blaming attributions..... 70
Figure 7	Pre-test and post-test means, overall, forgiving attributions..... 70
Figure 8	Pre-test and post-test means, overall, harsh parenting actions..... 71
Figure 9	Pre-test and post-test means, overall, constructive parenting actions..... 72
Figure 10	Pre-test and post-test means, scenario pair 1, blaming attributions..... 74
Figure 11	Pre-test and post-test means, scenario pair 1, forgiving attributions..... 74
Figure 12	Pre-test and post-test means, scenario pair 1, harsh parenting actions.... 76
Figure 13	Pre-test and post-test means, scenario pair 1, constructive parenting actions..... 76
Figure 14	Pre-test and post-test means, scenario pair 2, blaming attributions..... 77
Figure 15	Pre-test and post-test means, scenario pair 2, forgiving attributions..... 78
Figure 16	Pre-test and post-test means, scenario pair 2, harsh parenting actions.... 79

Figure 17	Pre-test and post-test means, scenario pair 2, constructive parenting actions.....	80
Figure 18	Pre-test and post-test means, scenario pair 3, blaming attributions.....	81
Figure 19	Pre-test and post-test means, scenario pair 3, forgiving attributions.....	82
Figure 20	Pre-test and post-test means, scenario pair 3, harsh parenting actions....	83
Figure 21	Pre-test and post-test means, scenario pair 3, constructive parenting actions.....	84
Figure 22	Pre-test and post-test means, scenario pair 4, blaming attributions.....	85
Figure 23	Pre-test and post-test means, scenario pair 4, forgiving attributions.....	86
Figure 24	Pre-test and post-test means, scenario pair 4, harsh parenting actions....	87
Figure 25	Pre-test and post-test means, scenario pair 4, constructive parenting actions.....	88
Figure 26	Pre-test and post-test means, by affective prime emotional valence, blaming attributions.....	90
Figure 27	Pre-test and post-test means, by affective prime emotional valence, forgiving attributions.....	90
Figure 28	Pre-test and post-test means, by affective prime emotional valence, harsh parenting actions.....	91
Figure 29	Pre-test and post-test means, by affective prime emotional valence, constructive parenting actions.....	92
Figure 30	Pilot comparison ratings of paired child misbehaviour scenarios.....	137

INTRODUCTION

The affective priming effect, whereby exposure to a particular stimulus influences a person's response to a subsequently presented stimulus, has been understood as an implicit memory process for decades, and it has been shown to impact human decision making or responses in such diverse situations as retail, voting, racial prejudice, judgment of strangers, and more (Klauer, 1997). People can be primed through exposure to a range of diverse stimuli, everything from images and words to odours and sounds, and this typically short-lived but effective technique has been used to, intentionally or unintentionally, influence people in subtle ways in many domains of their lives. Human memory and cognitive processing are complex and involve numerous interacting and complementary mechanisms, and the affective priming paradigm has been instrumental in helping us form theories around how implicit memory and non-conscious cognitive processes work.

Research which has demonstrated that campaign advertisements prime people to base voting decisions on the issues featured – or primed – in those advertisements and campaigns suggest there is a powerful everyday impact priming can have in influencing human behaviour (Donovan, Tolbert, & Smith, 2008; Druckman, Jacobs, & Ostermeier, 2004; Druckman, 2004). We are primed tens, perhaps even hundreds, of times per day in various ways, the most deliberate of which is probably through the use of advertising, and while unconscious evaluation can be quickly altered, changed or superseded by conscious evaluations that follow them, the impact that priming can have in our lives is nonetheless notable. After all, these non-conscious cognitive processes exist for a reason, and must be an important part of our cognitive functioning. The question, then, is in what ways can priming be deliberately used to influence people in important areas of their lives? If we can be primed to consider particular factors when purchasing something or voting, can we also be primed to make different and perhaps even better decisions in other parts of our lives? Could parenting behaviours be influenced by priming methods?

Parenting can be conceptualised as a complex set of human behaviours comprising many varied interactions between an adult and a child (Geary, 2000). Where parenting behaviour in humans comes from is an interesting question to consider. Like any other behaviour it has an evolutionary basis, but the extent to which current manifestations of parenting are influenced by our ancestral evolutionary past is a source of intense debate. The fact that mothers and fathers tend to play different parenting roles and have done to a greater or lesser degree through much of our recorded history suggests sex-based differences in males and females have been acted on by environmental pressures and, therefore, shaped by evolution (Geary, 2000; Gray & Anderson, 2010). However, undoubtedly societal and cultural influences are present also and for much of human history mothers and fathers have had complementary but differing roles in raising children (Geary, 2000). Neither of these are obligatory, as children survive and thrive on a regular basis with only one parent, and frequently with neither of their biological parents, present (Geary, 2000), however there are certainly general correlates in child outcomes with various parenting styles and roles. How parents conceptualise their role in their child's lives is important, because this will of course influence their interactions with their children, the decisions they make, and how they work with their partner – or do not work with their partner - in parenting.

There are many, many decisions to be made on a day to day basis as a parent, and those decisions which impact the nature and quality of the interactions between a parent and their child are arguably the most important. One of the most difficult jobs parents have is understanding their child's behaviour and then choosing, based on various contextual and personal factors, how they will respond to that behaviour. Parents have many fun and enjoyable roles to play for their children, but equally they are charged with setting boundaries, keeping their children safe, teaching and enforcing appropriate social behaviour, and responding when children break their rules. In the case that their child's behaviour is undesirable parents have the choice to respond with a disciplinary action in order to correct the behaviour, in the hope of preventing the child engaging in it in the future, or at least lessening the frequency and severity of that behaviour.

Parents face many challenges in this domain. Parenting is no longer confined to the privacy of the immediate family, if indeed it ever was. Parenting has, for some time now, been a hotly debated and emotive political topic, relating to everything from the benefits and support society can and should offer to parents of young children, to the often appallingly high rates of child abuse in many developed nations. There are necessary legal constraints around parenting – for example, aiming to ensure all children receive a minimum standard of care – and there are also more controversial legal influences upon parenting – New Zealand’s so-called “anti-smacking law”, which removes the legal defence of reasonable force should parents use physical disciplinary methods, is a good example of this. Parents may feel judged by not only their partner, their extended family, their friends and their child’s various teachers and coaches, but also by the media, the government, and society. Legal and political influences upon parenting are necessary and useful in many instances, but few would argue that parenting is not a stressful, confusing, contradictory and exasperating challenge for most, if not all, parents at various times in their children’s upbringing. Parents may experience a great deal of pressure to “get it right” and, given that there is no single accepted parenting method, and that parenting manuals vary hugely in how they recommend parents should go about raising their children, it is no wonder that parenting children is often anecdotally referred to as the hardest thing a person will ever do.

Additionally, with the emergence of feminist thought in the 20th century and the subsequent challenges to traditional gender roles, further societal influences upon parenting have taken hold (Callister, 1999). The traditional nuclear family is no longer the overwhelming majority of family types, and more and more families are dealing with the realities of divorce, separation, blended families, and changes in expectations for mothers and fathers alike (Callister, 1999). Previously constrained but clear-cut roles for mothers and fathers have been replaced to an ever-greater degree by more freedom, and a corresponding need for greater flexibility from both to make life work for their unique family situations (Callister, 1999). Mothers are not always or even often stay-at-home mothers anymore and fathers can be stay-at-home fathers more often than in the past. Consequently, both mothers and fathers are interacting with their children in

ways that were less common than in our recent past. What it means to be, and what is involved in being, a Mum and a Dad has changed quite dramatically in the 21st century (Callister, 1999).

Academic research has also been interested in parenting for many years, and has explored it from many different perspectives. A great deal of literature exists within this domain, and continues to emerge alongside changing expectations and needs for modern parents. And no wonder; as long as people continue to have children, the way in which we raise them will remain an interesting and emotive topic. Generally academic research has focused more on mothers, who in many societies spend the most time with their children of the adults in the family, although literature pertaining specifically to fathers is available in lesser quantities too. There are always more questions to be answered, however, and parenting in local contexts is well worth academic exploration. More research with fathers which explores their specific circumstances, experiences and the unique role they can play as a parent is also required, especially as traditional fathering roles are challenged and fathers can exercise greater freedom in how they choose to be involved in their children's upbringing, but also have different expectations placed on them by their families and society.

Combining the domains of parenting and priming has been initiated to a limited degree, with some research exploring the priming of particular parenting styles and priming to influence parental response to infant crying (Crouch, Skowronski, Milner, & Harris, 2008). There is plenty remaining to be explored in this area though, and an abundance of interesting research is emerging in the domain of applying priming to facets of people's day to day lives. While priming is an established process within experimental psychology, and a useful method for understanding implicit memory processes, arguably the most relatable and fascinating research will look at how people can be subtly but measurably pushed in one direction or another through either non-intentional or intentional priming. Advertisers and marketers have been exploring the use of priming in a very intentional way for material gain, with varying degrees of success, but priming is somewhat less often applied as a social influencer.

This research aims to answer several questions about priming and parenting, and in particular it seeks to answer those questions with specific reference to fathers. The first, and the most important, is whether fathers can be primed to be less blaming and more forgiving, and consequently more constructive and less harsh in their discipline, of their children when they misbehave. While disciplining children is a necessary and normal part of parenting, it is vital for the wellbeing of children and child-related outcomes that as many parents as possible are appropriate and effective in their use of discipline, balancing boundary setting with responsive warmth and avoiding harmful disciplinary techniques. The second important question is whether the content of relevant affective primes; that is, what specific prime is actually used to influence father's decision making and thought processes, impacts the presence and the strength of the priming effect. Ultimately, this research aims to give fathers in New Zealand a greater voice within the academic literature, and add to our understanding of both being a father in New Zealand and our understanding of how priming can influence this particular group in regards to their parenting experiences and choices.

Specifically, this thesis seeks to explore whether positive affective primes in the form of colour images of fathers interacting with children in positive, loving ways will reduce fathers' blaming attributions and harsh parenting actions, and increase their forgiving attributions and constructive parenting actions, when their children misbehave. At the same time I seek to find out whether negative affective primes of fathers interacting with children in harsh, cold, or dismissive ways will influence fathers to be less forgiving and constructive, and more blaming and harsh, in their interactions with their children. Furthermore, I will explore whether primes which tap into the evolved roles of fathers have a more powerful effect in either of the proposed directions – negative or positive. This information may allow us to understand how priming could be used as an adjunctive parenting intervention, to influence fathers' emotional experiences with their children and perhaps, as a result, even improve the father-child relationship in the realm of discipline and managing difficult child behaviours.

LITERATURE REVIEW

This thesis seeks to combine the fields of affective priming, evolutionary theories regarding fatherhood, and parenting and discipline. The following literature review considers these topics and their relations to one another, with specific reference to how priming can be applied to the unique cognitive and behavioural aspects of being a father.

Priming

To apply priming to parenting in a meaningful way, it is first necessary to understand the theoretical background of priming both as a cognitive effect and as an intentionally employed intervention for cognitive change. Priming is an implicit memory process where the response to a particular stimulus is influenced by the viewing and evaluation of an earlier stimulus, known as the prime (Klauer, 1997; Murphy & Zajonc, 1993). The earliest type of priming to be examined in detail was semantic priming, through experiments such as those conducted by Meyer and Schvaneveldt (1971), which showed that people more quickly decided that a string of letters was a recognisable word when that word followed a semantically related word – for example, when NURSE followed DOCTOR rather than BREAD. Affective priming, which is the topic of this thesis, is proposed to occur when affectively valenced information influences the subsequent affective evaluation of the information following it - a type of priming connected with people's emotions and their emotional judgements of specific stimuli (Hermans, De Houwer, & Eelen, 1996; Klauer, 1997). For example, consider how a parent might feel upon viewing a nice picture of their child, perhaps taken during an activity for which the parent's feel pride such as receiving an award at a school assembly, and how this may impact their subsequent interactions with that child. Further, you could imagine how hearing something negative about their child – perhaps their child's teacher reporting bad behaviour at school – and how this might colour a parent's experiences with that child immediately afterwards. Everything from their emotions and their thought patterns, to their actions when interacting with their child, might be coloured by the emotive experience concerning that child they had beforehand. These are just some examples of

the principle behind affective priming; research shows that people evaluate stimuli as positive or negative early in the elicitation of emotion (Klauer, 1997). In some situations, people make affective judgments of a stimulus before they make cognitive judgments of the same stimulus, and in contexts where this occurs affective judgments can be made with minimal stimulus input and without cognitive processing (Klauer, 1997; Lai, Hagoort, & Casasanto, 2012; Murphy & Zajonc, 1993; Zajonc, 1984).

Thus, the affective priming effect is assumed to result from the unconscious, automatic and unconditional immediate affective evaluation that humans make of stimuli as they are presented and before cognitive appraisal of the stimulus occurs, judging it as good or bad, liked or disliked, pleasant or unpleasant (Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Hermans, Baeyens, & Eelen, 1998; Klauer, 1997; Murphy & Zajonc, 1993). Theoretical models from a diverse array of domains including learning psychology, social psychology, neurophysiology, and emotion research have proposed that the human cognitive system includes a mechanism, potentially one that is separate to the cognitive mechanism that deals with the meaning of a stimulus, for the automatic evaluation of some incoming stimulus information that crudely and very quickly rates that information as good, positive and/or pleasant or bad, negative, and/or unpleasant (Bargh & Ferguson, 2000; Fazio et al., 1986; Hermans et al., 1998; Murphy & Zajonc, 1993; Klauer & Musch, 2002; Winkielman, Zajonc, & Schwarz, 1997). Given the volume of information presented to the sensory systems every second, in some contexts human attentional processes must attend to only the most relevant subset of information and process it in a crude and elementary way as quickly as possible in order to allow deeper cognitive processing to follow once irrelevant information has been discarded through this primary evaluation mechanism (Fazio, 2001; Klauer, 1997). Furthermore, this evaluation should be automatically and without conscious control applied to incoming stimuli in every sensory modality (Hermans et al., 1998). Following this evaluation of the initial stimulus, later affectively congruent stimuli tends to be evaluated more quickly or are otherwise impacted by the initial evaluation, and this in turn may affect both thought and behaviour (Hermans et al., 1996; Klauer, 1997).

The theory of information processing that incorporates affective priming as relating to a cognitive mechanism by which our brains process and evaluate information is linked with theories within human evolution. Human information processing is not simply focused on acquiring knowledge; rather, it must allow humans to react with appropriate speed and instinct to an environment containing risks and opportunities, dangers and hostilities (Klauer, 1997). An automatic process that occurs without the need for attention, awareness of the initiation or operation of the process, and without requiring general processing resources or interfering with current cognitive actions is necessary and adaptive (Klauer, 1997). Fazio (2001) suggests that certain stimuli can bias our attention allocation for stimuli that follows it, meaning we will pay more visual attention towards certain stimuli based on the stimuli that preceded it – even what we “see”, in terms of what our unconscious visual processing system elects to focus upon or discard, is a function of this subtle but important automatic cognitive process. Related to this theory is the suggestion that automatic evaluation mechanisms exist so that humans can quickly evaluate new information and then prioritise negative information for further attention and processing (Klauer, 1997; Peeters & Czapinski, 1990). Labelled the negativity effect and observed in various experiments of human attention and thought, this automatic vigilance towards negative information may reflect the survival need to be aware of and therefore respond to threats more quickly than anything else in the environment (Hermans, Spruyt, De Houwer, & Eelen, 2003; Ito, Larsen, Smith, & Cacioppo, 1998; Klauer, 1997; Peeters & Czapinski, 1990).

The unconscious and automatic nature of the affective priming effect has been supported by experiments showing that the priming effect is not diminished when participants are under cognitive load, suggesting that it occurs even when cognitive processing resources are focused on other tasks (Klauer, 1997). Additionally, experiments exploring masked priming – where participants are entirely unaware of the presentation of a prime prior to a target stimulus – lend further support to the idea that priming occurs automatically and without conscious awareness (Banse, 1999; Greenwald, Klinger, & Liu, 1989; Hermans et al., 2003; Klauer, 1997; Winkielman et al., 1997). The priming effect was also demonstrated to be maintained when participants were

deliberately asked to ignore the prime stimulus, indicating people do not always have conscious control of a basic level of affective processing even when they try to ignore certain stimuli (Hermans et al., 1998). These findings all support the theoretical model of human information processing described previously.

Traditional priming manipulation experiments have considered priming to be an automatic process if the time between the participant viewing the prime and being presented with the target stimulus is 300 ms or less (Hermans, De Houwer, & Eelen, 2001; Hermans et al., 2003; Klauer, 1997; Storbeck & Clore, 2008). The interval between onset of the prime and onset of the target is called the stimulus onset asynchrony, or SOA, and when the SOA is greater than 300 ms it is predicted that attention and strategy factors may influence the participant's response to the target stimulus as well as or instead of the priming effect (Hermans et al., 2001; Klauer, 1997; Storbeck & Clore, 2008). However, in some contexts affective priming has been shown to occur more readily under suboptimal conditions – including a longer SOA – than cognitive or semantic priming (Murphy & Zajonc, 1993). In fact, Winkielman et al. (1997) discovered that an initial priming experiment effect could carry over into later experiments using the same participants, thus indicating that affective priming can be robust and enduring in nature in some circumstances. In the general understanding of the mechanism of priming it is strongly believed that knowledge of a prime and its intention to alter a participant's evaluation, judgement or response is sufficient to obliterate the priming effect (Murphy & Zajonc, 1993). However, Winkielman et al. (1997) further demonstrated that awareness of an affective stimulus and the influence it could be expected to have did not always prevent a participant from being affectively primed, and in fact could strengthen the process under some specific circumstances.

Additionally, affective priming is goal-independent. That is, priming occurs whether the person is to perform an evaluative task with the information given to them or not (Klauer & Musch, 2002). This means that priming can influence the affective judgment of a target stimulus whether the person intends to make evaluations of that stimulus or not (Klauer & Musch, 2002). These findings, taken together, suggest that the unconscious affective evaluation system humans

possess is often inaccessible to cognitive processes, operating under all conditions to crudely assess the affective value of stimuli regardless of any factors operating upon the person's cognition at the time, and is at times impervious to any attempted cognitive correction based upon expectation (Klauer and Musch, 2002; Murphy & Zajonc, 1993; Winkielman et al., 1997).

Affective priming research most commonly investigates the priming effect using affectively polarised words as the priming stimuli (Bargh, Chaiken, Gendler, & Pratto, 1992; Chaiken & Bargh, 1993; Fazio et al., 1986; Hermans, De Houwer, & Eelen, 1994). However, there is research demonstrating the priming effect occurring with such diverse prime and target stimuli as simple line drawings (Giner-Sorolla, Garcia, & Bargh, 1994), odours (Hermans et al., 1998), and complex real life colour pictures (Banse, 2001; Fazio, Jackson, Dunton, & Williams, 1995; Hermans et al., 2003), the latter of which has also been demonstrated to be more powerful as priming stimuli than the traditionally presented words (Fazio et al., 1995). Some research suggests that priming stimuli which are personally meaningful to the participants can elicit a stronger priming effect than less meaningful stimuli (Banse, 2001). The demonstration of the priming effect occurring with diverse stimuli is important for the support of the model, which states that all incoming stimuli in all sensory modalities should be evaluated in a nonconscious, automatic, and extremely quick manner in order for the process to be advantageous to people dealing with a constant stream of incoming information (Hermans et al., 1998). In theory, we can expect that any stimulus processed by our senses could feasibly act as a prime under the right circumstances.

In summary, evaluation of information in our environment can happen either with conscious awareness and judgment, as argued by Lazarus (1982), or through a preconscious process or processes through which all incoming information is automatically judged at a crude affective level before conscious processes become involved (Bargh & Ferguson, 2000; Fazio, 2001; Klauer, 1997). If we accept the latter theory, this preconscious process influences the allocation of attention, the encoding and storage of information in memory, evaluation of the

immediate situation, and in response to this evaluation even the individual's behaviour (Fazio, 2001; Klauer, 1997; Murphy & Zajonc, 1993; Zajonc, 1984).

However, the variability in results relating to the affective priming effect suggests we should avoid a simplistic or overly generalised understanding of the cognitive mechanisms of information processing. Current knowledge in this area suggests the spontaneous evaluative response related to affective priming is common and advantageous to humans in allowing rapid assessment of threats and opportunities in their environment, but also brief and in some circumstances easily disrupted by further controlled cognitive processing (Klauer, 1997; Murphy & Zajonc, 1993; Zajonc, 1984), as well as only occurring in specific situations and contexts, most likely at times when it was advantageous to early human populations for this kind of rapid but shallow processing to take place (Lai, Hagoort, & Casasanto, 2012). It is highly likely that many diverse factors influence whether a person is primed or not in any given circumstance, including both factors relating to how the priming manipulation is designed and delivered, to individual personality factors and even moment to moment changes in attention, perception, and context.

The Mechanism of Affective Priming

To further our understanding of the complexities of priming, and therefore understand how we might use priming intentionally to influence parents, it is useful to consider what may be happening in a person's cognitive processing when a priming effect occurs. There are several theories that attempt to account for the psychological and neurological mechanisms related to the priming effect. The most common, spreading activation theory, suggests that perceiving a prime activates its representing node in a lexical or semantic network within the observer's mind, and the activation then spreads to nodes of consistent targets, thereby facilitating how the target is processed when the prime and the target are evaluatively consistent (Fazio, 2001; Musch & Klauer, 2003; Neely, 1991). This accounts for semantic priming occurring under short SOAs, and as such being considered an automatic process, and assuming that the spreading activation mechanism is short lived it can also explain why some priming experiments have failed to find a

priming effect at longer SOAs (Klauer, 1997). Spreading activation has also been proposed to account for affective priming; however, this is contradicted by the finding that affective priming can, under some circumstances, occur under suboptimal priming conditions such as with longer exposures and SOAs, and be longer-lasting and more robust than spreading activation would suggest (Murphy & Zajonc, 1993; Winkielman et al., 1997).

In spreading activation theory, Storbeck and Clore (2008) suggest that a person's affective state at the time of priming either facilitates or inhibits the priming effect. Research indicates that whether the priming effect occurs in a participant or not can be dependent upon the participant's own affect, or mood, at the time of presenting the prime (Hermans et al., 1996; Ratcliff & McKoon, 1988; Storbeck & Clore, 2008). Experiments focused on this effect have typically found that positive affect facilitates affective priming, while negative affect inhibits the priming effect (Ratcliff & McKoon, 1988; Storbeck & Clore, 2008).

A proposed explanation for this is that positive affect promotes associations between subjects (spreading activation) while negative affect impairs them (Storbeck & Clore, 2008). Therefore, whether an individual is primed or not in any given experimental condition can be dependent upon such diverse factors as the experimental design, length of prime presentation, stimulus onset asynchrony, and the emotional state of the person at the time of their participation (Hermans et al., 2001; Klauer, 1997; Ratcliff & McKoon, 1988; Robinson, Ode, Moeller, & Goetz, 2007; Storbeck & Clore, 2008). And, in experiments which deliberately manipulate participant emotional states or reactions, it may be expected that a weaker or absent priming effect is obtained in negative affect conditions, though this in itself can also be influenced by individual differences in participants, such as personality traits and even gender (Hermans et al., 1998; Robinson et al., 2007; Storbeck & Clore, 2008). As an example relevant to this thesis, under this proposed mechanism for affective priming, we might expect a stronger priming effect to be obtained for participants who view cheerful, loving images of fathers interacting with their children. On the other hand, a weaker priming effect, or even absence of an effect, might be observed in participants viewing upsetting or negative images of parents being unkind,

dismissive, or punishing towards their children. Spreading activation as a mechanism appears useful as an explanation for the affective priming effect because it is consistent with the affective primacy hypothesis, and the proposed automatic and non-conscious character of priming (Klauer, 1997). It may not, however, be a comprehensive and complete explanation for affective priming under all circumstances, and additional potential mechanisms should also be considered.

The Stroop mechanism suggests that affective priming occurs with both automatic and attentional processes combining to result in an evaluative decision regarding the target stimulus (Fazio, 2001; Klauer, 1997). This proposed mechanism has been compared to the attentional manipulation that is demanded by the Stroop task, which requires subjects to ignore or suppress distracting information, in the form of the written word, in order to produce the correct answer – naming the coloured ink the word is written in - as quickly as possible (Fazio, 2001; Musch & Klauer, 2003). Affective priming experiments which have demonstrated this mechanism show that when participants are asked to ignore distractor information (the prime), they are unable to do so completely. The prime influences their response to the target stimulus, in a way that is analogous to the finding that in trying to suppress the distractor of the written word, response time for naming the coloured ink is increased (Fazio, 2001; Klauer, 1997). This mechanism accounts for affective priming requiring the subject to make an evaluative response to the target stimulus. However, it does not account for affective priming occurring in tasks not requiring an evaluative decision to be made, also known as goal-independent priming (Klauer & Musch, 2002).

The affective matching mechanism attempts to account for a broader set of priming effects than the Stroop mechanism, and addresses the failure of spreading activation to account for evaluatively inconsistent primes inhibiting the priming effect, and for the Stroop mechanism to account for goal-independence in priming (Klauer & Musch, 2002). The affective matching mechanism assumes that evaluations of target and prime are automatic and spontaneously judge evaluative consistency irrespective of the primed person's goals or tasks in relation to the priming, that evaluative consistency between prime and target induces a general feeling of plausibility while evaluative inconsistency induces a general feeling of implausibility, and that the feeling of

either implausibility or plausibility influences participant response (Klauer & Musch, 2002). With respect to the final point, a feeling of plausibility facilitates affirmative responses and inhibits negative responses, while a feeling of implausibility facilitates negative responses and inhibits positive responses (Klauer & Musch, 2002). Therefore, evaluatively inconsistent primes would inhibit the priming effect, as seen in research by Storbeck and Clore (2008) for example, where an affirmative response is required (Klauer & Musch, 2002). This mechanism accounts for many priming effects seen in lexical decision tasks (Klauer & Musch, 2002). However, the mechanism cannot be easily tested to show what role, if any, it may play in a task not requiring an affirmative or negative response as the measure of the priming effect.

The retrieval/decision or compound cue theory rejects spreading activation as an incomplete theory of the priming mechanism, instead suggesting that the prime and the target together activate retrieval of information from long-term memory (Ratcliff & McKoon, 1988). It is proposed that the extent to which prime and target are connected to each other in memory corresponds to the strength of the compound (prime and target together) cue, which is stronger than either the prime or the target alone (Ratcliff & McKoon, 1988). Spreading activation presumes an active process whereby the prime activates a retrieval mechanism within long-term memory based upon semantic networks and interconnected memory nodes (Musch & Klauer, 2003; Ratcliff & McKoon, 1988) whereas compound cueing presumes a passive process whereby the prime and target combined offer a more powerful memory retrieval process than the target alone, thereby facilitating faster cognitive processing (Ratcliff & McKoon, 1988). This theory of the priming mechanism accurately explains why priming tends to occur when the prime and target are either related to each other or related to some common target in memory (Musch & Klauer, 2003; Ratcliff & McKoon, 1988).

Given great variation in results and outcomes of priming research, with unexpected yet replicable results occurring in many elements of priming investigations from study to study, even to the extent of priming effects not being obtained under conditions previously established as ideal for priming to occur, it is clear that currently the cognitive mechanisms of affective or indeed

even semantic priming are not yet well understood, or at least that many explanations are sometimes possible for a single observed priming effect (Banse, 2001). Even in more basic priming investigations, findings such as the fact that the priming effect can be modulated by what tasks participants perform prior to and independently of the experiment challenge even the most simple premise of priming being a purely automatic and unconditional process operating through the mechanism of spreading activation – an understanding of semantic priming that was once considered universal (Klauer, 1997). Given the many diverse ways affective priming can be applied experimentally and in our day to day lives it may be that various mechanisms play greater or lesser roles under different circumstances, with several or even all of the proposed mechanisms contributing to the affective priming effect at different times or in an additive or complementary manner (Fazio, 2001; Klauer, 1997; Klauer & Musch, 2002; Storbeck & Clore, 2008). In the present research, I assume that any of the mechanisms discussed in this section may be relevant to a greater or lesser degree. Design of the experimental paradigm used for this thesis aimed to take this into account as much as possible, particularly in terms of how I chose to measure the expected priming effect.

Affective Priming in Non-Laboratory Conditions

While an extensive and robust body of research exists demonstrating the existence of the priming effect under various technical conditions such as length of prime exposure and nature of the priming stimuli, some research has taken affective priming a step further and aimed to demonstrate and explore affective priming outside of laboratory conditions, including the exploration of how priming can change or affect people's every day experiences. This focus in priming experimentation aims to understand how affective priming influences people in their day to day lives, and two of the most interesting and well-researched examples of this are the influence of affective priming on people's voting decisions, and affective priming in advertising to influence brand recognition, brand associations, and ultimately purchase habits or decisions. Affective priming is also proposed to be a mechanism contributing to judgmental biases in racial prejudice, in-group bias, and halo errors (Klauer, 1997). These examples are of particular salience

to this thesis, as they demonstrate quantifiable changes in various human behaviours following a priming intervention.

Druckman et al. (2004), Druckman (2004), and Donovan et al. (2008) demonstrated that election campaigns influence voters by priming the criteria or policy issues they focus on when making voting decisions. An election campaign's media coverage primes exposed and attentive voters to rely on issues emphasized in the campaign when choosing who to vote for, although they did not have an impact on the vote of non-attentive voters, or those who are not engaged with the campaign (Druckman et al., 2004). This has important implications for election candidates and their campaign teams. By getting the issues most favourable to them well-represented in the media, candidates can potentially increase the number of people voting for them by priming attentive voters to focus on those issues when making voting decisions (Druckman, 2004). Additionally, this research demonstrated that election campaigns can prime voters to consider individual candidates on the basis of certain personal characteristics, such as leadership, honesty, and integrity (Druckman, 2004).

Donovan et al. (2008) additionally demonstrated that state-specific referendums can prime voters to consider the issue within the referendum when considering not only the referendum itself, but also which candidates to vote for based upon the stance each candidate takes on the referendum issue. This is an interesting example of a separate element of the election process unintentionally influencing voters in the general election, through the mechanism of priming (Donovan et al., 2008). Druckman (2004) and Druckman et al. (2004) also explored how campaigns can prime voters to focus on particular issues which highlight favourable personality traits in the candidate. The priming of attentive voters to focus on and base voting decisions on candidate characteristics through the focus on these characteristics in election campaigning was replicated in another political priming study conducted by Balmas and Sheaffer (2010) in Israel. Both of these studies took into account the effect of pre-existing party loyalty on voting decisions. Furthermore, Mendelberg (1997) demonstrated that racially loaded campaign messages could prime white voters with existing prejudices against African American people to give greater

negative weight in their voting decisions to government efforts to reduce racial inequality, and to view social support policies supporting African American people as illegitimate and unnecessary. This occurred even when there may have been no conscious intent to campaign on racial issues, thus – perhaps inadvertently – allowing candidates to campaign in a way that increased support of conservative and prejudiced white voters without appearing racist themselves (Mendelberg, 1997).

Yi (1990) showed that print advertisements can influence consumer behaviour through both cognitive and affective priming. The context of the advertisement (namely where or how the advertisement is presented – in the case of magazine advertisements, the article which precedes or is associated with it) can prime the activation of certain cognitive attributes in the reader or viewer and thereby guide their interpretation of product information in the ad, through the activation of schemas relevant to the cognitive attributes primed by the ad context (Yi, 1990). Secondly, advertisements will generally have an affective valence – either positive or negative – which can prime an affective reaction which can affect a viewer's attitude toward the ad, and in turn influence evaluations of the depicted brand (Yi, 1990). Ultimately, Yi (1990) was able to show that priming a certain product attribute in an advertisement increases the likelihood that this attribute will subsequently be used to evaluate the information presented in the ad, and therefore impacts how effective the advertising will be. Additionally, affective priming in the advertisement, by having an overall positive affective tone presented prior to the ad, significantly improved individual's attitude toward the brand, suggesting elicitation of positive affect before observing print advertisements increases advertising effectiveness (Yi, 1990). Analogous to this, some research has indicated that the TV program that precedes TV adverts can have an affective priming effect on how people respond to the ad, which positive or cheerful programs priming a more positive response to advertisements (Goldberg & Gorn, 1987). This has important real-world implications for advertisers, as it suggests their advertisements will be more effective dependent upon the time of their presentation and the cognitive and affective information that precedes them (Goldberg & Gorn, 1987; Yi, 1990).

Custers and Aarts (2007) demonstrated that priming goal concepts relating to behaviours or outcomes can promote motivational activity which contribute towards reaching these goals, even when people are not aware of this type of motivation. Following positive affective priming people have been demonstrated to be more persistent and effortful in tasks related to the goal (Custers & Aarts, 2007). Crucially, however, the priming must be positive in affect for this outcome to be achieved, suggesting that affective processes are essential in the promotion or inhibition of nonconscious motivational behaviours relating to achieving goals (Custers & Aarts, 2007). In other words simply priming a goal concept is not sufficient to promote motivation to achieve that goal; the primed goal concept must already exist in the person's mind and be associated with positive affect (Custers & Aarts, 2007). Priming a person who does not value or desire fitness will not increase their motivation to start jogging. However, priming someone who does value and desire fitness is likely to increase their motivation and effort in pursuing that goal, and thus influence their fitness-related behaviour (Custers & Aarts, 2007). While this research explored achievement of a specific goal under an experimental setting it is presumed these results can be extrapolated to people's everyday lives and personal goals, and thus poses interesting questions regarding personal motivation, success, and persistence in working towards goals in any realm of a person's life.

Payne (2001) discussed how automatic evaluative processes may contribute to racial profiling even when participants genuinely believe they are making accurate judgments not influenced by stereotyping or generalisation. Priming experiment participants have been shown to make more stereotype-consistent errors when under time pressure to produce a response following presentation of the target stimulus, suggesting that in the absence of adequate perceived time to consciously evaluate incoming information, people will default to activated schemas in order to make quick decisions (Draine & Greenwald, 1998; Payne, 2001). Where these schemas contain negative racial information, participant response may be negatively affected (Payne, 2001). This may have contributed to a slew of racial profiling errors made by law enforcement officers in the United States, for example. While the officers in question genuinely believed at the

time of their action that their lives were in danger, it is proposed that their automatic evaluation of a suspect based on visual characteristics such as race contributed to their perception of a neutral action by the suspect as an aggressive or threatening action, leading to the officers being more likely to engage with a violent response (Payne, 2001).

Particularly relevant to the topic of this thesis, Grecco, Robbins, Bartoli and Wolff (2012) demonstrated that priming increased disclosure and could promote healthier and more positive thinking in therapy clients, and that this in turn would promote greater efficacy of therapy and more positive outcomes. If priming could be similarly used to induce positive thinking in parents in regards to their children and their children's behaviour, it might feasibly influence more positive parenting outcomes. Furthermore, they suggest that negative priming is ineffective in inducing behavioural change, suggesting that focusing on positive outcomes of certain behaviours rather than the negative consequences of alternative behaviours is important in priming-based interventions (Grecco et al., 2012).

Importantly, the research outlined in this section demonstrates a measurable priming effect having an influence on human behaviour beyond the laboratory and in a more lasting manner than experimental designs manipulating the cognitive priming effect in isolation tend to show. This traditional priming research may have made some progress in uncovering the conditions under which priming occurs reliably. However, it does not necessarily progress to explaining how priming occurs in people's day to day lives, and certainly the external and internal factors that influence whether a person will be subject to priming in any given real-life situation, and how they will respond, has not been comprehensively explored. Given the countless and often subtle or non-obvious factors that can moderate priming in people's lives – everything from individual factors to minute differences in the priming modality – this is unsurprising. It is also often not clear whether pure priming effects are the only contributory factors to the results obtained in applications of priming to daily activities and contexts, as controlled cognitive factors may also come into play. However, the research does appear to suggest that priming is involved

and part of the impact in many measured effects. These findings are essential to how the priming intervention for this thesis is designed and implemented.

Schema Theory

Equally as relevant as the mechanisms and design of the priming intervention itself, is consideration of the cognitive effect priming may activate in the human mind, and the channel by which priming may eventuate in lasting changes in thinking patterns and behaviour. A schema is a pattern of thought in the human cognitive system that organises categories of information and the relationships that exist between them (DiMaggio, 1997). These mental structures or frameworks for ideas and aspects of the world influence how people attend to and process new information, and are another cognitive tool employed in human cognition to speed up information processing and reduce the effort required to undertake that processing in an information-rich world (Kleider, Pezdek, Goldinger, & Kirk, 2007).

A schema is a heuristic tool for encoding and retrieving information into and from memory and we have a schema for every important category or structure that exists in our personal world. By having pre-existing frameworks by which to organise information people can react to new information more quickly and with less cognitive effort, organising their perceptions into memory through the use of these schemata rather than having to process each new piece of information without any basic framework of understanding (DiMaggio, 1997). Schemata are created through individuals' experiences with people, objects and events in the world; through repeated encounters with something we begin to form a generalised framework relevant to it, with the most consistent elements of that experience becoming integral to our schema for it (Baldwin, Carrell, & Lopez, 1990).

Early understandings of schemas and their role on human cognition were developed by Piaget in 1926, who was the first to use the word in his child development theories to describe how children constructed understandings of their world, followed by the integration of schemas into psychology by Bartlett in his schema theory relating to how people remember day to day

information (Bartlett, 1932). Bartlett (1932) proposed that individuals' schemata influenced how they interpret new information foreign to their schemas, and how they recall that information over time. By asking participants to read a short Native American folk tale, with this culture foreign and unfamiliar to them, Bartlett demonstrated that participants changed details of the story when asked to recall it several times over the course of a year, so that it was more in line with their own cultural norms and expectations – or their own schemata. Participants omitted information that was irrelevant to them, transformed details or the order of events and therefore the focus or emphasis on what were the important parts of the story, padded out their personalised new elements of the story to make sense of them or make them comprehensible in the context of the original tale, and even changed the content and style of the story altogether to bring it in line with their own cultural background (Bartlett, 1932). This was a non-deliberate process, with participants genuinely believing their recall reflected the original tale they'd read at the beginning of the experiment. Schema theory was further elaborated by various researchers following Bartlett, and is considered a robust psychological theory of human cognition today.

Schema theory is relevant to priming as priming is theorised to activate an individual's schema relevant to the content of the prime, thus facilitating the rapid and unconscious processing of that information prior to conscious evaluation (Baldwin et al., 1990; Banse, 2001). That is, the interpretation of information relies to some extent on what schema is active at the time the information is presented (Yi, 1990). Schemas vary in accessibility, or the ease to which they are utilised to organise information and make judgments, with inherent accessibility thought to be largely determined by how frequently that schema has been activated in the past (Baldwin et al., 1990; Hansen & Hansen, 1988). However, priming can increase the accessibility of particular schemata; exposure to a particular stimulus puts a schema relevant to that stimulus at the forefront of our mind, thus activating that channel through which new information will pass and stored information will be retrieved (Baldwin et al., 1990; Banse, 2001; Hansen & Hansen, 1988).

Furthermore, research by Banse (1999) and Mikulincer, Hirschberger, Nachmias, and Gillath (2001) suggests that affect is an integral part of some schemas, and affective priming has

a role in influencing people's emotions through the activation of schemas relevant to the affective content of the primes. Using affective priming to activate schemata with positive affective components has been shown to automatically elicit a positive affective reaction (Banse, 1999), even when people are under stress (Mikulincer et al., 2001) further establishing the link between these two processes. In the reverse of this, emotional states can activate emotionally-related schemata and thus influence people's behaviour, decision-making and experiences following this activation even in a wide range of tasks (Bower, 1981). There is a robust body of literature demonstrating the activation of particular schemata through priming, including sex role schemas (Hansen & Hansen, 1988), relationship schemas (Baldwin et al., 1990; Banse, 1999) a negativity bias schema (Robinson et al., 2007), attachment schemas (Mikulincer et al., 2001) and racial stereotype schemas (Draine & Greenwald, 1998; Mendelberg, 1997; Payne, 2001).

Baldwin et al., (1990) further wondered whether relationship schemas could be modified from a problematic or toxic state to one that was healthier and caused less interpersonal difficulties through the same method, concluding that further research was needed into how schemas alter over time and what makes a particular schema rigid or flexible. This thesis assumes fathering-related primes will activate a relevant parenting or fathering schema, and explores how this may influence the thoughts and behaviours of fathers as a result.

Measurement of the Affective Priming Effect

In any experimental paradigm concerning priming it is necessary to consider how we will know if the participants have been primed successfully, in order to interpret either a change or lack of change following the priming intervention. Measuring whether a person has been primed by exposure to a particular affective stimulus can be done in several ways, and many of these methods have extensive support within the literature following repeated testing under laboratory conditions of affective priming and the conditions under which it does or does not occur. When measuring the priming effect under real-world, or non-laboratory, conditions there are several

requirements for a good measure that will demonstrate clearly to researchers whether a participant has been primed by exposure to their chosen stimulus or not.

A simple, effective and well-supported method for measuring the priming effect under real-world conditions is the word completion task (Tiggemann, Hargreaves, Polivy, & McFarlane, 2004). A good measure of schema activation following affective priming is reactive to environmental contingencies, is simple to administer, and does not take long to complete (Tiggeman et al., 2004). Furthermore, because priming is considered to be an automatic process that occurs without conscious awareness, any assessment of it should measure implicit, rather than explicit, processing – the measure should therefore be indirect and subtle, with the purpose of the measure being as nonobvious as possible (Tiggeman et al., 2004).

A word-stem completion task can be considered a simple, straightforward and indirect measure of schema activation in response to affective priming (Tiggeman et al., 2004). In a 2004 article by Tiggeman et al. it was demonstrated that a word-stem completion task could successfully measure a weight and appearance related schema activation when the word completion task was developed and administered under a set of specific parameters. Following this set of parameters, word completion tasks were presumed to be able to be developed through a pilot task for any given subject area. Furthermore, a priming effect demonstrated by word stem completion has been experimentally demonstrated to decay within hours rather than milliseconds or seconds, as is the case with many priming effects (Shimamura, 1986). This makes it an ideal measure of the priming effect under non-laboratory conditions, where presentation of the priming effect measure cannot for experimental design or practical reasons be immediately presented to the participant following presentation of the prime using carefully controlled stimulus onset asynchronies.

A robust body of literature exists demonstrating measurement of the priming effect using pronunciation tasks (Bargh, Chaiken, Raymond, & Hymes, 1996; Hermans et al., 1994), lexical decision tasks (Hill & Kemp-Wheeler, 1989), and word fragment completion tasks (Tiggeman et

al., 2004). The measure selected is dependent upon the individual characteristics of the priming being undertaken in a given experiment, and under appropriate conditions each of these is an effective measurement tool (Tiggeman et al., 2004). For example, measurement of whether an individual has been primed in highly controlled laboratory conditions where distractions and thus possible experimental confounds have been minimised can be more subtle, accurate, and definitive than measurement of a priming effect occurring in the real world, such as when someone views an advertisement on their TV.

While priming is usually conceptualised as a very brief phenomenon, certain types of priming experiments have demonstrated a more lasting priming effect, including priming in perceptual identification and word fragment completion, stem completion and free association, and facilitation in cognitive skills (Graf, Shimamura, & Squire, 1985, Ratcliff & McKoon, 1988, Shimamura 1986, Tulving, Schacter, & Stark, 1982). And of course, most notably, affective priming appears to be significantly more robust and long-lasting than semantic priming under some conditions (Winkielman et al., 1997). Where real-life priming occurs, a technique such as measuring the reaction time of a participant in a lexical decision task is likely to be difficult to practically utilise. However, asking participants to undertake a word-stem completion task, where it has been shown that priming effects last for hours after presentation of the prime, may be more useful (Tiggeman et al., 2004).

The Evolution of Paternal Care

As an understudied and unique group in human societies, fathers are particularly interesting to me and therefore their experiences and roles as parents are central to this thesis. Fathers, specifically, were chosen as participants because of how unusual fatherhood is as a set of human behaviours. Therefore, it is interesting to consider how men came to be fathers, how they parent relative to mothers, and where this set of complex behaviours may have come from. Furthermore, I wished to consider the unique roles of fathers in terms of how this could be applied to the content of the priming images that would be used for the thesis. This section explores fatherhood in detail, from both evolutionary and sociocultural perspectives, to form a foundation

for how we understand fathers as a group and how I choose to prime fathers as a research group for this thesis.

Fatherhood is a social and historical construct that has changed – and will continue to change – over time (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Gray & Anderson, 2010). Parenting, like any other human behaviour, has been and will continue to be shaped by a variety of external pressures: societal norms, historical consequences and, at least to some extent, evolutionary pressures in early human history (Cabrera et al., 2000; Gray & Anderson, 2010). Some form of fatherhood or paternal investment is found in most human societies and, overall, paternal investment appears to be advantageous but not necessary for infant survival in most contexts for humans as a species (Geary, 2000).

Evolutionary pressures during the early development of modern humans have almost certainly impacted on how fathers became involved in parenting and what roles they played, and both in the past and today these pressures interact with social and cultural norms to shape general human behaviour around parenting (Daly, Salmon, & Wilson, 1997; Gray & Anderson, 2010). The theoretical expectation is that men would show little paternal investment unless paternal investment resulted in a competitive advantage for children compared to father-absent peers in ancestral environments (Daly et al., 1997; Geary, 2000). Unravelling biological and social influences on parenting is a complicated task and is often considered scientifically and socially controversial. However, it is clear that human fathers are unusual; in only 3-5% of mammalian species do fathers provide paternal care to offspring (Bensch & Thornhill, 1999; Geary, 2000; Gray & Anderson, 2010; Salgado, 2013). Additionally, most of our closest animal relatives – the various species of great apes – differ from us in terms of paternal involvement, with many providing either very limited or no paternal care or even contact with juveniles (Geary, 2000; Gray & Anderson, 2010). This suggests that at some point in our evolutionary history humans have been exposed to different pressures relating to the provision of parenting (or lack thereof) than the majority of mammal species, or have responded differently to similar environmental pressures with paternal care as an effective strategy (Geary, 2000; Gray & Anderson, 2010).

Paternal investment across species may be an example of convergent evolution, whereby unrelated and dissimilar species are exposed to similar ecological and social conditions under which they independently develop the same survival strategy (Geary, 2000). Specifically, the expression of paternal investment across species is, at the most simple level, associated with paternity certainty and the strength of the relation between paternal investment and offspring survival (Benshoof & Thornhill, 1979; Daly et al., 1997; Geary, 2000). This means that paternal care is most commonly (though not always) found in circumstances where there is high paternity certainty, offspring survival rates are improved by paternal protection and/or provision, and paternal care does not severely restrict mating opportunities for males with other females or confers a strong enough reproductive advantage to make up for lost mating opportunities (Anderson, Kaplan, & Lancaster, 1999; Anderson, Kaplan, Lam, & Lancaster, 1999; Benshoof & Thornhill, 1979; Geary, 2000).

Humans, like other mammals, exhibit significant sex-linked differences in reproductive rates, with females having a much lower potential reproductive rate than males due to obligatory gestation and post-partum care (Benshoof & Thornhill, 1979; Geary, 2000; Salgado, 2013). So, while the females of most mammalian species, including humans, can be considered biologically biased towards parental care as the most effective strategy for passing on genetic material, in the vast majority of mammalian species males are biologically biased towards investing their energy into finding more mates over parenting existing offspring (Benshoof & Thornhill, 1979; Geary, 2000; Salgado, 2013). However, when care from both parents is required to allow or enhance offspring survival, selection will favour social monogamy and paternal investment regardless of physiological sex-linked differences (Geary, 2000; Marlowe, 1999). As evidence for this, some research suggests that paternal provisioning and investment lowers infant and child mortality risks (Geary, 2000). This is true for both preindustrial and developing country human populations, where there is a consistent relationship between stable family units with a present and living father and lower infant and child mortality rates, and up to 38% higher mortality for unemployed or absent fathers who are unable or unwilling to provide for their children (Geary, 2000; United

Nations, 1995). Even in societies where resources are plentiful and child mortality is very low, male socioeconomic status – presumed to be correlated with his ability to provide for offspring – shows some correlation with infant mortality (Geary, 2000).

Various other aspects of human biology at different stages of evolution provide further clues as to the reason a very rare mammalian behaviour – paternal investment – may have emerged as a consistent and common behaviour in humans as a species. Hominid evolution shows a decrease in sexual dimorphism from humanoid ancestors such as *Australopithecus afarensis* and *Australopithecus anamensis* as compared to modern humans, and less sexual dimorphism is associated with a higher likelihood of paternal care and investment in mammalian species (Geary, 2000; Rall, 1977). This is theorised to be because in species where sexual dimorphism is most evident, male competition for mates is a more significant driving factor for behaviour and this prevents paternal care from being an efficient strategy for reproductive success, whereas in species with less sexual dimorphism males have spent less resources on strength and ability to fight for mates, so paternal care again becomes a valid strategy to pursue to enhance overall reproductive fitness (Geary, 2000; Rall, 1977).

Another way humans differ from our closest primate relatives is in brain size; there was a threefold increase in brain volume from the *Australopithecines* to modern humans, and presumably a corresponding increase in intelligence (Geary, 2000). Increased brain size has provided humans with significant survival advantages overall but has also corresponded to a lengthening of the juvenile period from ten years in the *Australopithecine* species to nearly twenty years in modern humans (Geary, 2000). This increased vulnerability for human infants compared to other primate infants, and a prolonged period of dependency on parents, may have increased the cost of a lack of male paternal investment and precipitated a shift to increased paternal investment during this evolutionary period (Benshoof & Thornhill, 1979; Geary, 2000).

Furthermore, we can consider how relative to the primarily or even exclusively herbivorous great apes, human fathers in their early evolutionary period – from *Australopithecines*

through to early modern humans – could, through hunting and provisioning, provide more valuable resources to their offspring than is the case for many mammals (Benshoof & Thornhill, 1979). It is perhaps noteworthy that large herbivores are rarely monogamous, whereas social monogamy and paternal investment can more commonly be found in social carnivores, presumably because having a father present and invested is of considerable benefit to offspring through the provisioning of calorically valuable meat (Benshoof & Thornhill, 1979; Marlowe, 1999). We also know that *Homo erectus* showed a considerable increase in coordinated, organised hunting behaviour relative to the *Australopithecines*, which were primarily scavengers, and it is theorised that *Homo erectus* may have likewise shown a change in social living arrangements, with paternal care emerging during this period of human evolution (Benshoof & Thornhill, 1979; Marlowe, 1999).

An evolved tendency towards monogamy in humans may have been predated by a combination of high paternity certainty in humans relative to closely related primate species, survival and social advantages to children, and restricted mating opportunities for males occurring through a variety of methods (Benshoof & Thornhill, 1979; Daly et al., 1997; Geary, 2000; Strassman, 1981). A significant proposed method is concealed ovulation in females – higher levels of paternal investment tend to be found in species where ovulation is not externally visible to males, as is the case with humans - in fact, humans are the only primates with completely concealed ovulation, suggesting at some point in human evolutionary history selection may have occurred to favour concealed ovulation which was not applied to other primate species (Benshoof & Thornhill, 1979; Geary, 2000; Strassman, 1981). Concealed ovulation is proposed to extend the sexual connection between males and females and thus facilitate pair bonding, a necessary condition for the development of relationships between parents which allow for increased paternal investment from fathers (Benshoof & Thornhill, 1979; Geary, 2000; Strassman, 1981).

Given the evidence discussed, I believe it is likely that under some conditions and at some point in our evolutionary past, men benefited reproductively by shifting some of their effort from mating to parenting. We also know that paternal investment is not obligate as many children

survive and thrive in the absence of father involvement (Geary, 2000). Additionally, in contexts where infant and child mortality is very low, many men continue to focus reproductive efforts on parenting rather than mating, when logic might suggest that turning efforts towards mating may better serve male reproductive success (Geary, 2000). It may be that paternal investment in these low mortality contexts is a by-product of selection for such investment in harsher ancestral environments, or it may be that paternal investment in low mortality environments improves “quality” of offspring by providing social advantages to them, thus meaning that fewer more advantaged children are more beneficial than a greater number of less competitive children (Geary, 2000). Specifically, research suggests that paternal investment of both time with children and income results in upward social mobility of children, including higher adult socioeconomic status later in their lives (Anderson & Kaplan, 1999; Geary, 2000). In fact, paternal investment explains four times more variance in educational outcomes than maternal investment (Geary, 2000). Paternal investment can also contribute to child psychological and social wellbeing, with children who engage in paternal play – particularly “rough and tumble” play, showing improved emotional regulation and social competence (Geary, 2000). In fact, there appears to be evidence for at least some impact of paternal investment upon a varied range of offspring outcomes, from drug use and other criminal or delinquent activities, through to mental illness and relationship preferences or styles (Anderson et al., 1999).

Humans are also unusual in another way. Even rarer than paternal care in mammals as a whole is paternal care provided by males to non-genetic offspring, although it isn’t unheard of in the animal world, especially amongst non-human primates (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999). This is certainly seen often in humans; there is a clear propensity for human males to knowingly parent, and therefore invest in, non-genetic children of their current partners, usually children from the woman’s previous relationships (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999; Marlowe, 1999; Marsiglio, 1992). Unique issues sometimes arise out of this behavioural tendency; for example, children are more likely to be abused and killed by a non-related male in their mother’s life than their biological father (Daly & Wilson,

1996; Marlowe, 1999). Nevertheless, throughout the world there are many step-fathers providing excellent, involved, empathic parenting to non-genetic children, a behaviour which may seem the antithesis to the basic evolutionary theory that male paternal care exists to enhance male reproductive success.

Some research does suggest that where genetic and stepchildren co-reside a father may unconsciously provide slightly more attention and even resources towards his own children over his step children (Flinn, 1988). And yet, an additional aspect of the theory accounts for non-genetic parenting behaviour; that is, that women are likely to reject partners who are cold or dismissive towards their existing children, but be more attracted to men who attempt to connect with and care for their children (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999). Therefore, male parental investment in non-genetic children can be thought of as a mating or relationship strategy, rather than a parenting strategy. This behaviour enhances (and in fact is often necessary for) male success, in terms of longevity, quality or both, in forming and maintaining a relationship with a woman they are interested in who already has children from a previous relationship (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999; Marlowe, 1999). Evidence for this theory is offered by La Cerra (1994) who demonstrated female subjects responded positively to images of men interacting with babies, and negatively to pictures of men ignoring a crying baby, while this effect was not found in male participants.

Overall, paternal investment into non-genetic children has been demonstrated to be a function of both genetic success (increased fitness and survival of children) and relationship, or mating, success (increased access to and quality of a relationship for the purpose of many benefits, including but not limited to increasing future reproductive success) (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999; Marlowe, 1999). Additionally or alternatively, the theory of reciprocal altruism states that if the cost of altruism is low to the provider and the benefit is high to the receiver, reciprocal altruism can evolve even where it does not confer a direct evolutionary advantage to the donor (Trivers, 1971). Humans may be an extreme example of a cooperative breeding species, where males and females work together to raise offspring that are not always

their own (Salgado, 2013). This may have emerged from another reproductive quirk unique to humans; while we have the largest and slowest to mature offspring of all primates, we also have the shortest birth intervals (Salgado, 2013). This means that women can, and frequently do, produce another child before the first one has any measure of independence or self-sufficiency and in ancestral environments this may have necessitated a cooperative breeding strategy to allow required or optimal care for more than one dependent child at a time (Salgado, 2013).

Critics of evolutionary theories for paternal investment have argued that from a mating investment perspective, there would be no reason for an older male to continue investing in a relationship with a post-menopausal woman, or indeed for any male to invest time and effort in a relationship with a woman if he does not intend to have children with her (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999). However, long term monogamous relationships are often advantageous for both men and women in many ways outside of producing children. Division of labour, reciprocity, companionship and support, and economic advantages may all account for ongoing investment in relationships into old age, when mating investment is clearly no longer a primary focus (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999). In fact, it is theorised that social monogamy and pair bonding necessarily predated the provision of paternal care in humans, perhaps meaning that even when paternal care is not a necessary outcome of a relationship, humans are biologically predisposed to form serial monogamous relationships because in ancestral environments this relationship strategy was advantageous (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999). Additionally, investment into one's grandchildren can be considered an ongoing form of paternal care which does benefit one from a reproductive success perspective (Anderson et al., 1999; Anderson, Kaplan, Lam et al., 1999).

Genetic factors have been proposed to account for between 18% and 25% of individual differences in paternal investment for fathers, and may account for either direct genetic influences on parental investment or, more likely, indirect influences such as personality traits that correlate with higher paternal investment (Geary, 2000). This means that unique environmental effects account for the majority of individual differences in paternal investment (Geary, 2000). It is

important to note that current research does not establish causality when looking at paternal investment, child outcomes and evolutionary or biological history. Further research which takes genetic influences and compares maternal and paternal investment is needed. However, it is likely that paternal investment does improve child outcomes in many ways to at least some degree, and it is also likely that our evolutionary history has contributed to the development of paternal behaviour to some degree, as have responses to social and ecological conditions (Geary, 2000). Certainly, there are features of human evolution which have been critical in allowing paternal care to emerge as a common human behaviour, when it is so rare amongst mammals in general. I argue that taking into account the evolutionary and ancestral aspects of fatherhood is essential in understanding fathers today, and therefore essential in the design of research such as this thesis so that it is relevant and responsive to father's unique experiences.

The Social and Historical Context of Fatherhood

Considering only the ancestral human experience and how fatherhood subsequently evolved under these conditions does not provide us with a complete picture of the modern father sufficient for this thesis. Social and historical influences have further important effects on human behaviour; when an individual's social world is set up to favour parental care, this may further influence the development of social norms relating to paternal investment (Geary, 2000). Individual men are highly variable in their attitude towards monogamy versus polygamy, as are individual woman, but fathers in monogamous and stable relationships with their partners are more likely to provide more and higher quality paternal care than fathers divorced or separated from their partners (Amato, 1987; Geary, 2000). There are myriad social reasons for this: fathers are less likely to be the custodial parent following a separation, for example (Geary, 2000). The quality of the relationship also impacts how much time fathers spend with their children, with factors such as good communication, low conflict and high spousal supportiveness being associated with greater provision of paternal care (Amato, 1987; Geary, 2000). Maternal care is not associated with the parental relationship to the same degree (Amato, 1987; Geary, 2000).

In many industrial societies monogamy is socially directed; today it is common for polygynous marriage to be prohibited by law (Geary, 2000; Marlowe, 2000). The cultural development of socially imposed monogamy is not well understood, but has unsurprisingly correlated with higher average paternal investment in these societies (Geary, 2000; Marlowe, 2000). Statistically speaking, when social and ecological conditions do not impose monogamy more men tend to invest more in finding extra mates and having more children, whereas when monogamy is socially and ecologically directed more men invest more heavily in parenting (Geary, 2000; Marlowe, 2000). There are vast individual differences within each of these conditions, possibly related to social and genetic factors for individual men, but generally speaking this trend is reliable and observable in many societies, past and present, throughout the world (Geary, 2000).

There is much debate over what the traditional roles of fathers included; however, in the Western world at least, research suggests that the most overwhelmingly common role of the traditional father in the 20th century was still that of the breadwinner, or provider (Cabrera et al., 2000; Callister, 1999). The historical role of the father as breadwinner or provider, while probably influenced by pressures on human populations in our evolutionary history, also made sense in the 19th and 20th century from a practical societal perspective (Cabrera et al., 2000). Before the trend that saw a steadily increasing proportion of women in the workforce it was men who worked during the day; between the two World Wars and even into the 1950's this tended to mean men being away from home for most of the day (Chang, Schwartz, Dodge, & McBride-Chang, 2003; Cabrera et al., 2000). This naturally left mothers, the only parent at home for the majority of the time, in charge of coordinating and carrying out the majority of the nurturing, daily care, and discipline of any children (Chang et al., 2003; Cabrera et al., 2000; Feldman et al., 2010).

The provider role reflects the gender-based socialisation of men as being responsible for giving their family everything they needed to be comfortable and happy and the necessary "trap" this necessitated, as the better a father provided for his family in material and income terms the less he could be home to spend time with them (Callister, 1999; Marlowe, 1999). Human paternal

care is proposed to have emerged initially with the role of fathers as providers, under the assumption that caring for young children alone was difficult for mothers in early evolutionary history. In all human societies, when men are active participants in their family's lives they typically spend less of their time in direct childcare than women do, and more in indirect care tasks such as provisioning – a pattern that is still dominant even today in societies heavily influenced by gender equality movements (Callister, 1999; Gray & Anderson, 2010; Marlowe, 1999).

Historically, fathers have had more choice in how they define their parental roles and responsibilities than mothers have, and for this reason motivation for paternal involvement is an interesting and important topic to consider (Cabrera et al., 2000; Salgado, 2013). Broadly speaking, the traditional Western family was the stable, child-rearing, married couple with the father in a long-term career in paid work and the mother the at-home parent or part-time worker, often in various fields rather than a single career (Callister, 1999). New Zealand fits neatly into that general mould; in the 1980's in New Zealand, less than 5% of fathers of preschool aged children were not in work (Callister, 1999). For a significant period of time it was possible to support a family on a single income in New Zealand, and for many families it became the social and cultural norm for the male partner to work while the female partner decreased or ceased her work when deciding to have children (Callister, 1999). There have always been exceptions to this norm, but the economic and social conditions of the nineteenth and twentieth centuries are behind much of what we consider to be the “nuclear family” – two parents and children, with the male partner providing the bulk of the income (Callister, 1999).

This model of family has been in steady decline, though, and consequently, many men over the last two decades and today are facing challenges to their “traditional” roles, such as that of provider. Unemployment and the loss of paid work, excessive working hours, non-custodial or shared parenting arrangements, decreased marriage rates, decreased fertility, and blended families are just a few of the increasingly common influences upon traditional family units which, at times, can exert dramatic changes on what family life looks like (Callister, 1999; McLoyd, 1989). In

order to adapt to familial diversity, men may have found they needed to alter their expectations of the roles they are able and willing to play in raising their children (Callister, 1999). With rapid social and economic changes comes a growth in diversity of fatherhood roles, but perhaps also a growth in ambiguity which some individuals may find hard to manage (Callister, 1999; McLoyd, 1989).

Having a good job and reliable future-earning prospects has historically been a key factor in marriage and family decisions. We can see this reflected statistically, as marriage rates tend to decrease during economic recessions (Callister, 1999; McLoyd, 1989). Therefore, changes in the workforce, job market, and paid employment structures and opportunities have an impact on the traditional role of men as providers and primary income earners (Callister, 1999; McLoyd, 1989). Through the 1980's and 1990's it increasingly became the case that finding permanent long-term employment, or a job that paid enough to support a family without a secondary wage, was difficult and also coincided with participation from women in the workforce continuing to increase (Callister, 1999; McLoyd, 1989). Today, supporting a family on a single income is much more uncommon, even if families would like to be able to do so (Flynn & Harris, 2015). The outcome of this, in particular the increase of women in the workforce over the last 20 years, including a substantial increase of mothers with young children in the workforce, has meant that more fathers have been able to participate more in childcare and child-raising, sometimes even being enabled to stay home and be a full time carer to their children (Callister, 1999, Flynn & Harris, 2015).

While the role of provider is posited to have been vital in the evolutionary and social history of human paternal care, cultural and societal diversity means that there is not, and never has been, one universally accepted fathering role that we can analyse in isolation. If anything, diversity in the meaning of fatherhood and how fathers influence children continues to increase (Cabrera et al., 2000). Moving into the 21st century we began to see a shift in several major societal trends: an increase in the number of women in the labour force; an increasing proportion of absent fathers; for those fathers present in their children's lives, increased direct involvement with their children; and increased cultural diversity in Western families leading to a greater

diversity of family structures and culturally sanctioned fatherhood roles (Cabrera et al., 2000; Marsiglio, 1992). With this comes some changes in the roles that fathers' play; where the typical 20th century father was the breadwinner, or provider, the typical role of 21st century father may be the involved co-parent (Cabrera et al., 2000; Callister, 1999).

How, then, have these trends and role changes affected the children who live within these family units, and how should we understand these roles in relation to how we might prime fathers in a meaningful and relevant way to their unique experiences? The increase in absent fathers seems to reflect the continually increasing social acceptability of divorce and separation, alongside an increasing incidence of blended families (Cabrera et al., 2000; Marsiglio, 1992). On the other hand for those fathers who remain within or in touch with the family unit, increased involvement with their children – both in terms of time and tasks they are required to undertake – seems to be the trend (Cabrera et al., 2000). The father in the role of the involved co-parent, therefore, may play an equal part in deciding on how to discipline children and in applying disciplinary strategies (Cabrera et al., 2000; Gray & Anderson, 2010) and a sensitive understanding of how fathers experience this role will be helpful in informing how to interact with fathers in research so as to capture their fathering experiences. Additionally, the single father in sole custodial care of his children, or in a shared care arrangement providing a significant or even equal portion of the childcare to his ex-partner, is an increasing reality (Ministry of Justice, 2009).

From the child's perspective, the presence or absence of a father figure in a child's life can have a significant impact on behavioural outcomes and wellbeing of that child (Amato, 1987; Cabrera et al., 2000; Lamb, 2004). Father absence or lack of attachment seems to particularly impact boys; research shows that sons growing up without a positive father relationship are at increased risk of problems with poor school performance and issues in psychosocial adjustment and self-control (Cabrera et al., 2000; Lamb, 2004). Girls may also be negatively impacted by a poor relationship with their fathers, although effects on daughters seem to be less dramatic and consistent (Cabrera et al., 2000). Furthermore, it is not simply the presence of a father figure that

impacts child outcomes; the quality of the relationship between child and father is perhaps more important (Cabrera et al., 2000; Marsiglio, 1992). Father attachment has been shown to positively impact a child's wellbeing, social competence, and cognitive development, even when confounding factors such as socioeconomic status are controlled for (Cabrera et al., 2000; Lamb, 2004).

What is certain from this analysis is that fathers play a distinct role from mothers in children's lives, and that understanding the reality of these roles requires careful consideration from professionals in order to adequately appreciate the unique place that fathers occupy in society. While an involved and supportive father is not necessary for a child's ultimate success, and while an absent father appears to be preferable to an abusive one, where a father (or father-figure) is involved, he appears to play a unique and influential role in his children's upbringing and outcomes. This should be taken into consideration when designing research that aims to explore and influence fathers' roles in their children's lives, and how they interact with their children in either positive or negative ways.

Parenting and Discipline

With fathers becoming more involved in the discipline of their children than ever before, one question to consider is whether priming may influence disciplinary choices made by fathers in response to child misbehaviour. Like mothers, in the course of their day to day interactions with their children, many fathers may develop a consistent parenting style over time. Parenting style relates to how responsive a parent is to their child's needs, and how demanding they are in relation to their child's behaviour (Baumrind, 1991). Responsive parents are warm and supportive, encouraging in their children individuality and the ability to self-regulate, while demanding parents supervise their children, expect family integration, and discipline disobedience (Baumrind, 1991). An authoritarian parent is demanding but lacks responsiveness, demanding obedience from their children without moderating their requirements according to context and individual needs of the child (Baumrind, 1991). An authoritative parent is both

demanding and responsive, demonstrating a willingness to be assertive in making disciplinary choices when necessary, without being intrusive or excessively harsh (Baumrind, 1991). While neither of these styles is inherently wrong nor right, within them we may find various typical disciplinary tendencies, with authoritarian parents being more likely to be harsh disciplinarians.

Disciplinary parenting practices can be understood on a continuum ranging from harsh to constructive (McKee et al., 2007; Weiss, Dodge, Bates, & Pettit, 1992). Harsh discipline may be verbal, including practices such as yelling, threatening or name-calling (Chang et al., 2003; McKee et al., 2007). Harsh discipline may also be physical in nature, for example smacking or hitting (Chang et al., 2003; McKee et al., 2007). What is considered harsh discipline differs across cultures, countries, legal systems and individuals. However, harsh discipline has been broadly defined in the literature to include cursing, name-calling, threats of emotional or physical harm, and any kind of physical action intended to cause pain, shock, fear or other negative emotions (Chang et al., 2003; Runyan et al., 2010; Simons, Whitbeck, Conger, & Chyi-In, 1991). At the most extreme end of the continuum, harsh parenting crosses into the territory of child maltreatment or abuse (Simons et al., 1991).

On the other hand, constructive discipline is age-appropriate and consistent, occurs in the context of parental warmth and involvement, and occurs alongside effective parental monitoring of child behaviour. Classically authoritative parents demonstrate this type of responsive, but also appropriately demanding, parenting (Kerr, Capaldi, Pears, & Owen, 2009). Any parenting behaviours which include support, physical affection, problem solving, or problem resolution can be considered constructive, even when undertaken in a disciplinary context (Sanders, 2008). Assertive or constructive discipline may include negative consequences for the child, however negative emotional judgments of the child themselves are avoided, and there is an emphasis on learning why the behaviour was wrong and solving problems the behaviour may have caused (Sanders, 2008). Specific constructive or assertive disciplinary techniques include (but are not limited to) establishing and discussing clear rules; age-appropriate interactions, requests and

responses; logical consequences for unwanted behaviours; quiet time and time out, and planned ignoring (Sanders, 2008).

Runyan et al. (2010) provides the most recent estimates available of rates of disciplinary measures across a variety of cultural communities. Moderately harsh verbal punishment (screaming and yelling at children) is extremely commonplace across cultures, ranging from 70% - 95%, while severely harsh verbal punishment (threatening abandonment or physical harm) varies widely by country, from quite common to quite rare. Across studies, rates of smacking vary from 26% of parents to 76% of parents, indicating that even in the places where this form of discipline is rarest one quarter of parents will utilise it. Rates of hitting with an object vary hugely, with 70.5% in one community compared to 5.6% in another. Slapping or hitting the child on the head varied even more, from a low of 4% to a high of 80%. Harsher physical discipline (beating the child) was reported at high rates of 24-29% in two communities, while very harsh physical discipline (choking, smothering or burning) is rare across all countries, at less than 5% in all measured communities. Overall, anywhere from 55-89% of parents engage in moderate physical punishment of their children.

If rates of harsh discipline are generally high, then how children are affected by this type of parenting is an important question to consider. While most research in the area of discipline focuses on the extremes of physical harm where children can legally be considered to be subject to abuse, there is some evidence that “everyday violence”, or the often socially acceptable application of physical punishment to children and adolescents, may have an important impact on adolescent development (Weiss et al., 1992). A modest but significant correlation was found between variations in non-abusive physical discipline and later child aggression (Deater-Deckard, Dodge, Bates, & Pettit, 1998). Furthermore, even reports of low levels of harsh physical discipline have been associated with increased parent report of both externalising and internalising child difficulties (McKee et al., 2007).

If we consider child outcomes more specifically, early research (Simons et al., 1991; Strassberg, Dodge, Pettit, & Bates, 1994; Weiss et al., 1992) suggested that both verbal and physical harsh discipline have been reliably associated with an increased likelihood of childhood externalising disorders, which include behaviours such as acting out, aggression, and non-compliance. More recent studies (Capaldi, Pears, Kerr, & Owen, 2008; Chang et al., 2003; Criss, Pettit, Bates, Dodge, & Lapp, 2002) have consistently confirmed this relationship. Furthermore, harsh verbal discipline has been associated with increased incidence of childhood internalising disorders, which include behaviours typically associated with anxiety and depression (Deater-Deckard & Dodge, 1997; McKee et al., 2007). In one eye-opening study, children who were physically abused in their first five years of life were found to be at four times the base risk rate for clinically significant externalising behaviour five years later (Deater-Deckard & Dodge, 1997). As discussed previously, however, it does not require legally abusive violence towards children to increase risk of adverse behavioural outcomes (Deater-Deckard et al., 1998). The finding that exposure to abusive or harsh physical parenting practices was correlated with a later increased chance for participation in violence by the child persisted even when marital violence, child temperament, and socioeconomic status were controlled for (Weiss et al., 1992).

Boys are more likely to be subjected to harsh physical discipline than girls, especially by their fathers (Chang et al., 2003; McKee et al., 2007; Simons et al., 1991) and the highest rates of both physical and verbal harsh punishment has been suggested to occur for 7- to 11-year-old children (Runyan et al., 2010). Harsh discipline by fathers seems particularly likely to have a negative effect on sons' externalising behaviour, and has been linked to increased aggression towards others in boys (Chang et al., 2003; Deater-Deckard & Dodge, 1997; McKee et al., 2007; Weiss et al., 1992). The likelihood of experiencing harsh discipline decreases into adolescence, and while this is certainly positive it underlines a worrying fact that young children, at a more vulnerable age, are at the highest risk of experiencing harsh discipline (McKee et al., 2007).

McLoyd (1990) further argues that the quality of parenting is the most proximal influence upon a child's behaviour, with factors such as poverty, parental divorce, single-parenting, and

lack of a stable living arrangement considered to indirectly affect child behavioural outcomes through the impact these factors may have upon parent resources and behaviour, rather than directly. That is, it is not poverty itself that causes an increased risk for aggressive behaviour in affected children, but rather the negative effect poverty may have on a parent's ability to be warm, consistent, affectionate and appropriate in their parenting of the child (Deater-Deckard & Dodge, 1997; McLoyd, 1990). While some children have a genetic propensity for aggressive behaviour, environmental effects such as parenting style are likely to also make an important contribution to child behavioural outcomes (Deater-Deckard & Dodge, 1997). The negative effects of harsh discipline can be reduced by positive parenting; that is, warmth, respect and trust in the parent-child relationship. But the negative outcomes are not mitigated entirely, so parenting interventions cannot simply focus on increasing positive parenting; they must aim to eliminate or at least reduce the use of harsh discipline (McKee et al., 2007). The long term negative outcomes of child behavioural disorders and difficulties are significant. Aggressive and oppositional behaviour disorders are stable and if left untreated are significantly associated with later delinquency, drug and alcohol abuse, family violence, unemployment, and mental health difficulties (Capaldi et al., 2008; O'Leary, 1995).

Parents vary widely in their parenting styles and specific techniques, and the question of how any individual person comes to parent children in the way that they do is a complex one to explore. There is robust evidence for a modest intergenerational transmission of parenting practices, techniques and beliefs; that is, to at least some extent, the parenting behaviours an individual engages in can be predicted by their own parents' behaviours towards them as children (Belsky, Jaffee, Sligo, Woodward, & Silva, 2005; Capaldi et al., 2008; Conger, Neppl, Kim, & Scaramella, 2003; Kerr et al., 2009). To some extent harsh parenting may actually arise from the stressors of a low socioeconomic lifestyle (Capaldi et al., 2008). Low socioeconomic status is associated with a variety of risk factors also considered to drive poor parenting; a lack of community resources, daily instability and stress, risky neighbourhood environments, and younger age of entry into parenthood (Capaldi et al., 2008). In particular, premature entry into

parenthood may be an instrumental risk factor for poor parenting by men – younger men are typically less skilled fathers, even when confounding effects which may predispose someone for young parenthood are controlled for (Capaldi et al., 2008).

People exposed to high rates of aggressive discipline may develop a parenting philosophy which promotes strict physical discipline as the most effective way to respond to child behaviour (Capaldi et al., 2008; Simons et al., 1991). Experiencing harsh parenting as a child may also cause the development of a personality type that leads to aggressive behaviour generally – people who are short-tempered and irritable in their interpersonal relationships, including but not limited to their relationships with their own children (Simons et al., 1991). Alternatively, people who experienced harsh parenting as a child may learn a set of basic disciplinary behaviours including yelling and hitting, which are used without thought or planning in a reflexive response to their child's behaviour (Capaldi et al., 2008; Simons et al., 1991).

There are many environmental influences upon a person's parenting behaviours too. Marital discord and financial difficulties are both conditions under which harsh, rejecting, insensitive and/or inconsistent parenting may develop, and of course the two often go hand in hand (Belsky, 2012; O'Leary, 1995; McCoy, George, Cummings, & Davies, 2013; Simons et al., 1991). Alternatively, a supportive and warm marital relationship and financial success are correlated with the development of sensitive, supportive, affectionate parenting styles (Belsky, 2012; McCoy et al., 2013). This suggests a notable environmental influence upon parenting behaviours for some people. Research has demonstrated a link between parental emotional state, child-parent relationship, and perception of their child with the types of parenting practices or styles a parent tends to engage in (Darling & Steinberg, 1993; Rodriguez & Green, 1997). Unsurprisingly, emotional states are proposed to influence such broad parenting practices as autonomy granting, ignoring behaviour, punitiveness, treating the child as a burden, strictness, use of fear as a method of control, and expressions of affection (Darling & Steinberg, 1993; Rodriguez & Green, 1997).

Fathers with traditional sex-role ideologies – those who view men and woman as having distinct roles within a family and who associate holding a traditional role such as provider or breadwinner with success and achievement – are more likely to be harsh disciplinarians if required to become a more involved co-parent without being given a choice about the matter, such as when a job loss forces the previously unemployed mother to seek work and become a primary family provider (McLoyd, 1989). As with most complex behaviours, parenting is likely learned and developed in a variety of ways which differs between individuals and cultures, with a combination of genetic, learned, and environmental factors contributing to an individual’s personal parenting style.

So, if the overall base rate of children exposed to harsh parenting may be quite high, and the consequences of prolonged harsh, inconsistent and/or rejecting parenting for children can be significant, it is important to consider how this may be changed over time. This change could occur at the level of parenting practices, by promoting constructive and consistent disciplinary practices and reducing harsh, inconsistent parenting practices. Or, this change could occur at the level of the parent-child relationship, by promoting a warm and affectionate relationship context within which discipline occurs. Ideally, changes will occur at both levels – parents who feel warm, affectionate and caring towards their children are likely to be more open towards learning specific constructive discipline techniques, and more open towards committing to reduce their use of physical punishment. Research that demonstrates how parenting is vulnerable to environmental factors suggests that, for many people, parenting is not a fixed set of behaviours. Certain environmental interventions or contexts may be able to cause changes in how parents interact with their children. Affective priming may be one such intervention.

The Application of Affective Priming to Parenting Cognitions and Behaviours

Given the demonstrated ability of priming interventions to change human behaviour in subtle but significant ways it is reasonable to consider whether the complex set of human

behaviours which contribute to parenting children may be open to moderation through affective priming.

Evans (2009) investigated using positive affective priming to mediate child behaviour therapy for the teachers, families and caregivers involved by increasing acceptance towards and engagement with the child. In this investigation Evans (2009) suggested that the short-lived and transitory nature of the affective priming effect precluded it from being a treatment in and of itself. However, it could be utilised as an adjunct to treatment to enhance treatment outcomes, thus demonstrating a clinical application for affective priming. Furthermore, Evans (2009) theorised affective priming could work through alteration of the schema a significant adult in the child's life has in relation to that child. Whether this transient and short-term positive affective change could be eventually translated into long-term schematic alterations is as yet unclear, but would be an interesting clinical perspective to explore for the technique of repeated affective priming over time.

In an experiment related to this project, Amor-Ponter, Ulloa, and Evans (2008) explored whether positive affective primes could influence mothers to use less physical disciplinary strategies in response to their children's behaviour. They successfully showed that positive emotive images enhanced forgiveness towards children in this group (Amor-Ponter et al., 2008). Similarly, Mikulincer et al. (2001), in their experiment relating to using affective priming to activate secure base attachment schemas, used positive, loving images of a mother and baby as an affective prime to activate the schema of secure attachment. This was demonstrated to successfully activate positive emotional reactions in participants even if they experienced attachment difficulties (Mikulincer et al., 2001).

While specific affective priming-based parenting interventions are currently uncommonly explored, this demonstrates there have been some connections made in the literature between affective priming and parenting. From these, we are able to extend investigations into how affective priming may be utilised to influence how parents think and feel about their children,

and their children's behaviour, and perhaps even how parents interact with their children and respond to behavioural challenges. Ideally this will involve positive changes in understanding of child behaviour and consequently, how parents interact with their children in enacting disciplinary strategies for misbehaviour, in order to ultimately improve child outcomes.

MATERIALS AND METHODS

Participants

The participants were 48 fathers of a child or children aged between 5 and 12 years from around New Zealand. There were no exclusion criteria for the fathers' ages, occupations, ethnicity, relationship status or relation to their child (biological, adopted, stepchild or foster child), as long as they engaged at least part time in parenting one or more children within the stated child age range. Fathers of children younger than 5 and older than 12 were excluded as parenting pre-school aged children and teenagers was considered to be significantly different to parenting school-aged children. It was felt by the researcher that this age group was most likely to be consistently parented by involved fathers and that the challenge of parenting adolescents, with their increasing need for independence, would not have begun yet.

The participants were all men located in the North Island of New Zealand within the Manawatu, Greater Wellington and Taranaki regions. The age range was 26 to 62, with both the mean and median age being 42. Ethnicities of participants included New Zealand European (41), New Zealand Maori (2) and Other (5). Thirty eight of the participants were married and ten were unmarried, though this reflected their relationship status at the time of their participation in the research and not necessarily their relationship status with the mother of the child they considered for their participation in the research. Overall this was a highly-educated sample, with 10 participants having a high school qualification or less, 21 having a degree-level qualification, 12 having a trade or technical qualification, and 5 having a postgraduate level qualification. The participants were randomly sorted into one of the four research groups, with each group consisting of 12 participants. The only way in which it is known that the groups differed systematically was in which set of priming images they viewed and as much as possible the aim was to eliminate systematic differences through group randomisation.

Participants for this research were primarily obtained through contacts with the researcher, advertisement (Appendix A), and word of mouth. The largest proportion of

participants were gained through people known to the researcher, and these participants were encouraged to pass the research details on to others they knew that met the criteria. Thus, there was a snowball method employed for recruitment. Although some participants were approached by the researcher, many contacted the researcher of their own volition in order to participate (both after hearing about the research from other participants and from viewing advertisements) suggesting a high level of interest in the research topic of parenting by the participants involved. All of the participants requested a summary of the research findings be made available to them upon completion of the research.

Materials

Priming images. The initial pool of images used as the priming stimuli for this research project were selected by using an internet search to obtain forty high quality, freely available, colour photographic images considered to be relevant to each of the four groups by the researcher, as based on the literature review regarding the evolution of paternal roles and general parenting roles. These groups were called General Positive, General Negative, Evolutionary Positive, and Evolutionary Negative, representing the two independent variables – prime content and prime emotional valence. Images in the Evolutionary Negative and Evolutionary Positive group were chosen to represent the evolved roles of fathers as discussed in the paternal behaviour evolution section of the literature review. Images for the General Negative and General Positive group were chosen to depict fathers interacting with their children in either affectively positive (loving, warm) or affectively negative (cold, dismissive, disinterested or harsh) ways, without reference to specific fathering roles. The actual images used for each group are included in Appendix B.

Child misbehaviour scenarios. Fathers' opinions on child misbehaviour were measured by presenting them with pre-selected examples of a child engaging in bad behaviour, and asking them to imagine what their thoughts and reactions might be if their child behaved as described. The scenarios selected for this task were very short descriptions depicting common misbehaviour of moderate severity, where parents would expect to need to intervene in some manner but without

requiring severe intervention from other sources (such as the child's school or the police). For example, one scenario used in the research was: your child knows they are not supposed to play soccer in the backyard, but they do so anyway and break a window. Participants were asked to imagine their own child engaging in the described behaviour and the scenarios were presented at the beginning of the paper questionnaires. The complete set of child misbehaviour scenarios given to participants can be found in Appendix C.

In order to measure the impact of the priming four of the misbehaviour scenarios were given prior to the priming task, and four were given following it. For this reason each child misbehaviour scenario had been matched to a pair. A 'scenario pair' therefore refers to two child misbehaviour scenarios that are deliberately as similar as possible to each other without being completely identical, one of which was given to participants before the priming task, and one of which was given after the priming task. The eight misbehaviour scenarios used for the research were selected from an initial pool of seventeen scenarios. These eight scenarios were selected after asking a random sample of nine mothers and fathers to rate the seventeen scenarios on factors including severity, embarrassment caused to the parent, financial consequences of the misbehaviour, disrespect of parental authority, and impact of the behaviour on other people (such as other children). Scenario pairs were chosen by selecting the scenarios that had a close match in wording, and on these rated factors. The pilot ratings of the eight selected scenarios can be seen in Appendix G.

Because the scenario pairs were similar but not identical by necessity, there is some issue with whether any observed change from pre- to post-test may be due to differences between paired scenarios, rather than because of the priming intervention that occurred in between them. To mitigate this possibility, the order that the scenario pairs were given to participants was randomised. If we label each scenario pair A and B, half the participants received scenarios A prior to the priming intervention and scenarios B following the priming intervention. The other half of the participants received the scenarios in the reversed order.

Attribution and disciplinary choice questionnaires. Ratings of participant attributions for their child's misbehaviour, and disciplinary responses for child misbehaviour, were done through the use of a paper Likert-type scale which asked participants to rate each of 11 causal attributions, and eight disciplinary response options, by how likely or unlikely they would be to endorse or utilise them. Response options included Extremely Likely, Very Likely, Somewhat Likely, Somewhat Unlikely, Very Unlikely, and Extremely Unlikely. Traditionally Likert-type include a neutral option in the centre of the scale (neither Likely nor Unlikely) however this was omitted to add a forced choice element to the scale, as the neutral item is sometimes selected when participants are not sure about their answer, eliminating the need to think carefully on it and make a considered indication of opinion. Participants were encouraged to utilise the whole scale as they saw fit to express their personal opinions.

The 11 causal attributions and 8 disciplinary choices each participant was asked to consider for the eight child misbehaviour scenarios they were given were chosen based on literature around parenting, to cover a range of common thoughts regarding child behaviour and possible responses to that behaviour. The attributions were chosen to cover a spectrum from forgiving to blaming, with forgiving attributions tending to focus on external factors for behaviour, and blaming attributions tending to focus on internal or child-blaming explanations for behaviour. A full list of the attributions rated by participants can be found in Appendix D. The disciplinary responses covered a spectrum from harsh to constructive, again based on findings in parenting literature. The attributions and disciplinary responses chosen aimed to give a reasonably broad and varied understanding of the parenting experiences of many different fathers from different circumstances and with different beliefs. Examples of the attributions participants were asked to rate include 'this is typical behaviour for a child this age' and 'they want to annoy me'. Examples of disciplinary responses participants were asked to rate include 'smack your child' and 'tell your child they are bad'. The participants were not able to add other attributions or disciplinary responses outside of those provided by the researcher, as the huge amount of possible thoughts and actions in response to child misbehaviour would have been impossible to quantify

for analysis purposes. A full list of the disciplinary or response options included in the questionnaire can be viewed in Appendix E. Appendix H shows how each item was conceptualised as blaming, forgiving, harsh, or constructive.

Computer program. A program was designed specifically for this research project, to be run on a Windows laptop during participant interviews. This program included collection of demographic information, presentation of the priming images on fixed time schedules, the word completion priming task including randomised selection of the word stems, and a recognition task.

Design

This research was a 2 (within groups/repeated measures) x 2 x 2 (between groups) design, with the independent variables being (a) content of the primes; (b) the emotional valence of the primes, and (c) time (before and after exposure to the primes). The dependent variables were participant attributions for child misbehaviour and consequent disciplinary choices. Each of the four groups included in this project were measured on how forgiving or blaming their attributions for child misbehaviour were, and how constructive or harsh their disciplinary choices were, both prior to and following a priming task. The four groups included were: General Positive, General Negative, Evolutionary Positive, and Evolutionary Negative. The General Positive group viewed images of fathers engaging with a child or children in a generally positive way – for example, playing a game or hugging. The General Negative group viewed images of fathers interacting with children in generally negative ways, for example yelling at a child. The Evolutionary Positive group viewed images of father's in positive evolutionary roles fathers played and continue to play, such as teaching a child how to ride a bike or providing for the family. Specifically, the roles of teacher and provider are emphasised in these images. The Evolutionary Negative group viewed images of fathers in evolutionary-consistent roles which may be associated with negative emotional experiences – for example, protecting a child from danger or rescuing a child in a disaster. The images viewed by each group are included in Appendix B.

Following the literature discussed, I assumed the following for this research design: that affective priming, while robustly demonstrated to occur under certain strict laboratory conditions, can also occur in the real world when prime exposure is lengthy and stimulus onset asynchrony is undetermined. Furthermore, this effect can be robust and enduring, and may potentially persist to not only activate relevant parenting or fathering schemas, but also to influence changes in attitude and behaviour. In these cases the priming effect may be moderated to a greater or lesser extent by other cognitive processes; however, the priming effect is still salient and involved in the ultimate outcomes being measured.

Procedure

Administrative tasks. All participants were seen in person for this research, in order to ensure clear instructions could be given for the entire experimental process and questions could be asked by participants throughout. It was considered particularly important for the supervision of the word completion task to occur in person, as it was vital to the research design that participants understood the instructions for this part of the experiment. Participants were all given a hard copy of the information sheet for the research at the beginning of the interview time (Appendix I), and given time to read this and ask questions. Participants then signed a paper consent form (Appendix J) before entering demographic information onto the computer program designed for this project.

Measurement of attributions and disciplinary choices. Participants were asked to imagine one of their own children within the stated age range of 5-12 years old engaging in the behaviour described in four concurrently presented child misbehaviour scenarios. No directions on which child to choose if they had more than one child in the correct age range were given. Participants were asked to imagine the same child for each scenario, and to rate both their thoughts about their child's misbehaviour, or causal attributions, and their possible responses or disciplinary actions for that behaviour, on the Likert questionnaires provided in paper form for this task. It was explained that there were no right or wrong answers as this was only an opinion task, and all children and parents are different.

Priming task. The affective priming task was carried out by exposing each group of participants to six relevant affective priming images, as determined by the group they were randomly assigned to. Participants viewed the images on a laptop computer for ten seconds per image, with a priming measurement occurring immediately following the presentation of each image. Participants were not told the purpose of the image viewing other than it being a memory task, in line with priming research that suggests the priming effect occurs unconsciously. However, to ensure attention to the images, participants were told there would be a recognition task later and they would be asked to recall which images they had seen.

Measurement of the priming task. Whether a priming effect occurred following the participant's viewing of the selected images was measured using a word completion task. Participants were given five word stems of three letters each to complete immediately following the presentation of each priming image. From an initial pool of 101 parenting related words generated through the use of a dictionary and thesaurus, these word stems were developed through a pilot with 17 participants (6 males and 11 females aged between 24 and 61). The pilot was used to form a word stem pool of 33 word stems, each of which could be completed with at least one parenting-related word and at least one reasonably high frequency non-parenting related word. The pilot further ensured only those word stems which generated a parenting-related word less than 50%, but more than 0% of the time, were included in the priming measure. If priming had occurred, it was inferred that parenting-related words should be selected on the word stem completion with higher frequency than was achieved in the non-primed pilot participants. In order to mask the intent of this word completion task participants were told it was a measure of English competence, as required for their participation in the research. They were also asked to complete each word stem with the first word that came to mind and not to correct their initial answers even if other words occurred to them that could also compete each word stem. I observed this phase of the procedure closely and reminded participants not to correct their answers as necessary.

Recognition task. In line with research showing that priming effects are obtained only when participants are attentive to the priming stimulus, participants were asked to pay close

attention to the images they viewed as they would be asked to remember them later. This was achieved through the use of a recognition task once all other experimental tasks were completed. Participants viewed ten images on the laptop, six of which were the images they had viewed previously as part of the priming slideshow and four of which were randomly selected distractor images. They were asked to select ‘yes’ or ‘no’ to indicate whether they had viewed the images before.

Debrief. Upon the participant completing the research tasks, an unscripted debrief was conducted. This involved asking the participant what they thought the purpose of the research was, particularly the viewing of the images, as well as providing a full explanation of what I was investigating for those interested and answering any questions they might have had.

Analysis of attributions and disciplinary responses. While all participants received the full questionnaires found in Appendix D and E, it was noted during data collection that some items on the questionnaires were more ambiguous, unclear, or unnecessary than was anticipated during the research design process. Some items, such as the disciplinary response item ‘Tell your child off’, prompted requests for clarification from many participants. Others, such as the disciplinary response option ‘Time out’, could not be unambiguously coded as a constructive response due to controversy in parenting literature around use of this method of discipline. As a result I chose to discard some items from the questionnaires at the data analysis phase. This was done in order to measure the constructs of blaming, forgiving, harsh and constructive as clearly as possible. A list of omitted questionnaire items can be found in Appendix F.

For data quantification, the Likert response options were given numerical codes between 1 and 6 based on how strongly blaming, forgiving, harsh, and constructive they were considered. For example, if a participant circled “very unlikely” on a blaming attribution such as ‘they want to annoy me’, they would be given a 1 for that response. If they circled ‘extremely likely’ they would score a 6 for that response. All of the blaming items on the questionnaire were combined to give each participant an overall blaming score for each child misbehaviour scenario. This was

repeated for the forgiving, harsh, and constructive items, for each child misbehaviour scenario the participants responded to.

Analysis for these data included simple observations of participant engagement and responses, descriptive statistics, and factorial repeated measure ANOVAs run for each dependent variable. Furthermore, both a combined analysis of all four scenario pairs the participants responded to combined, and each scenario pair separately, was conducted.

Hypotheses

The hypotheses for this study are:

1. Participants who viewed negative priming images would become more blaming and harsher on post-test, and less forgiving and constructive on post-test, relative to pre-test.
2. The participants who viewed positive priming images would become less blaming and harsh, and more forgiving and constructive, on post-test relative to pre-test.
3. A larger change in these directions will be obtained by the evolutionary prime content groups relative to the general prime content groups.

RESULTS

Observational Data

The participants, without exception, were well-engaged in the research process. All the participants involved were focused on the various tasks presented to them, took a reasonable amount of time to consider their answers and respond accordingly, and appeared to be making a concerted effort to apply the research scenarios to their own experience of parenting. There was no evidence of participants being unfocused, rushed, or thoughtless in their manner of answering and responding to each task, with none taking less than 30 minutes to complete the research. Similarly, participants appeared to find the research straightforward and easy to engage with once it was explained, with no participant taking longer than 45 minutes to complete or requiring excessive guidance.

Participants frequently demonstrated expected emotional reactions when viewing the priming images. Several images in the General Positive priming set generated reactions such as “cute”. Images in the General Negative set generated the most consistent and predictable participant reactions, with frequent acknowledgement of the negative nature of the pictures being viewed, and statements such as “that’s not too good”. Participant reactions were unprompted and not formally measured in this research design; however, this provided some observational evidence of the images provoking the expected emotional reactions.

Recognition Task Results

All participants recalled at least 5 out of the 6 images they viewed correctly, with almost all correctly recalling all 6. No participant mistakenly identified a non-viewed image as one they had viewed. This demonstrates adequate attention was paid to the priming images.

Priming Analysis

The preliminary analysis aimed to show whether or not the participants had been primed by their exposure to the fathering-related slideshow presented to them during their research

interview. It was expected that all four groups would be successfully primed, but that the Evolutionary Positive group would demonstrate the strongest effect. It was also expected that the two negative groups may show a weaker, though still measurably successful, priming effect compared to the two positive groups.

Data for two participants, both from the Evolutionary Negative group, were omitted due to technical problems that occurred during data collection. Table 1 demonstrates that the research sample was successfully primed, as measured by their elicitation of parenting-related words on a word completion task. A pilot sample, who were not shown any images and who were thus not expected to show a priming effect, was run both to validate the use of the word completion task as an effective priming measurement, and to provide a baseline against which to compare the primed research sample. As shown in Table 1, the research participants overall (all groups combined) demonstrated nearly double the unprompted elicitation of parenting-related words than the pilot participants (40% parenting-related words in the research participants, compared to 20.3% in the pilot participants).

Table 1 also shows that the strongest priming effect was obtained for the Evolutionary Positive group participants, as expected, (46.7%) closely followed by the General Positive group participants (42.8%). The two Negative priming groups – General Negative and Evolutionary Negative – were still primed successfully, as shown by comparison to the Pilot participant word elicitation rate (36.7% for General Negative and 34.1% for Evolutionary Negative, compared to 20.3% for the pilot group). However this priming effect was, as expected, slightly weaker for the negative groups than the two positive groups. Additionally, it is important to note that no groups obtained a prime-relevant word generation rate over 50%. This was also expected and suggests that the participants overall were not consciously trying to generate parenting-related words. Overall, these results indicate that the research sample can be considered to have been successfully primed by the presentation of relevant fathering images, with significant priming effects obtained for all groups and the strongest priming effect obtained for the positive affect groups. Furthermore, also as expected, the groups who viewed evolutionary relevant images

demonstrated a slightly stronger priming effect than those who viewed images with general parenting content.

Table 1

Mean elicitation of prime content related words following a priming intervention

Group	Elicitation of Prime-Relevant Words
Pilot	20.3%
Overall Sample	40.0%
General Positive Group	42.8%
General Negative Group	36.7%
Evolutionary Positive Group	46.7%
Evolutionary Negative Group	34.1%

Secondly, Table 2 shows that the priming analysis considered the overall proportion of negative and positive-toned words spontaneously elicited by the participants, in comparison to the pilot comparison group. The words that both the pilot and the research sample participants generated to complete their given word stems were coded as either positive, negative, or neutral/ambiguous, regardless of whether they were related to parenting. This was to investigate whether the positive affective priming groups generated more positively coded words than the pilot group, and whether the negatively coded groups generated more negatively coded words than the pilot group. This would be evidence that the images these groups were given as primes had the desired positive or negative emotional impact upon the research sample participants.

Table 2

Mean elicitation of positive and negative words following a priming intervention

Group	Negative Words	Positive Words
Pilot	11%	9.8%
Overall Sample	11.2%	21%
General Positive Group	6.6%	25.3%
General Negative Group	15%	14.2%
Evolutionary Positive Group	6.9%	24.8%
Evolutionary Negative Group	17.4%	19.5%

Table 2 shows that the pilot sample, who were not exposed to any primes prior to completing the same word stems as given to the research participants, spontaneously generated very similar proportions of negatively and positively valenced words. Both of these proportions were low overall; close to 80% of the words generated by the pilot sample were ambiguous or neutral in their emotional valence. In contrast, the General Positive group and the Evolutionary Positive group showed very similar proportions of both negative and positive words generated. These groups both demonstrated a significant increase in the proportion of positive words generated compared to the pilot sample, with close to 25% of all words they generated being positively emotionally valenced. These groups were also very similar in their elicitation of negative words, which was proportionally lower than what occurred in the pilot sample and significantly lower than the proportion of positive words generated by these groups. This shows that, for the positively valenced groups in this research sample, the priming images they were shown prior to undertaking the word completion task had the expected emotional influence upon the participants.

The General Negative group demonstrated a higher elicitation of negative word completions than the pilot sample. However, this group also showed a slight increase in elicitation of positive words compared to the pilot sample group. Nevertheless, the generation of positive words occurred at a slightly lower proportion than the generation of negative words for

this group. This demonstrates a negative affective priming effect occurred, resulting in the expected elicitation of both negative and parenting related words. However, this effect was notably weaker than the priming effect occurring for the positive affective priming groups.

Finally, the Evolutionary Negative group demonstrated the highest proportion of negative words generated of all the groups, as expected. However, this group also generated a higher proportion of positively valenced words than expected. While the proportion of positive words was not as high as seen in the two positive affective priming groups, it was higher than the General Negative and the Pilot groups, to a significant degree. It is theorised that while the pictures viewed by the Evolutionary Negative group were intended to portray negative emotions such as fear and worry, that because these images frequently depicted fathers in protective roles, positive emotions such as love, protectiveness and relief may have also been elicited in these participants. Therefore, it seems likely that this group is not a clear example of negative affective priming.

Descriptive Analysis

Correlations between key variables. To investigate whether the variables being measured can be considered pure constructs and whether these constructs were measured in an accurate way by the questionnaire given to the participants, a correlation analysis was undertaken using SPSS on the pre-test data across all participant groups (Table 3). I expected to observe significant positive correlations between Blaming Attributions and Harsh Parenting Actions, and between Forgiving Attributions and Constructive Parenting Actions. This correlational analysis found significant positive correlations between Blaming and Harsh, Harsh and Constructive, and Blaming and Constructive. Blaming and Forgiving, Forgiving and Harsh, and Forgiving and Constructive were not significantly correlated. Consistent with the results demonstrated it was expected that Blaming and Harsh would be significantly positively correlated. However, the finding that Harsh and Constructive, and Blaming and Constructive, are significantly positively correlated was unexpected. This suggests participants in this sample could be both Harsh and Constructive in their disciplinary choices, and that Blaming

attributions did not mean the participants would be consistently Harsh and not Constructive in their disciplinary choices. These results further suggest that some items in the questionnaire may not have been measuring the Blaming, Harsh, Forgiving, and Constructive constructs as clearly as anticipated, and this is consistent with some items being identified during data collection by participants as being ambiguous, irrelevant, or confusing. Alternatively or additionally, Blaming/Forgiving and Harsh/Constructive may not be clear, unambiguously opposite constructs as initially expected, which is not uncommon in constructs relating to human cognition.

Table 3

Pearson's correlations between all measured variables across all groups on pre-test

		Correlations			
		Blaming	Forgiving	Harsh	Constructive
Blaming	Pearson Correlation	1	.268	.466**	.457**
	Sig. (2-tailed)		.066	.001	.001
	N	48	48	48	48
Forgiving	Pearson Correlation	.268	1	.136	.111
	Sig. (2-tailed)	.066		.357	.453
	N	48	48	48	48
Harsh	Pearson Correlation	.466**	.136	1	.348*
	Sig. (2-tailed)	.001	.357		.015
	N	48	48	48	48
Constructive	Pearson Correlation	.457**	.111	.348*	1
	Sig. (2-tailed)	.001	.453	.015	
	N	48	48	48	48

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Given these correlation results a decision was made to recalculate the data set after discarding ambiguous and confusing items from the initial questionnaire. It was noted during data collection that many participants found some of the questionnaire items either unclear or redundant, based on queries I received for clarification. Specifically, items which did not make sense for all given child misbehaviour scenarios, items which could be interpreted several different ways, and items that were too similar to other items, were discarded. This left three

items measuring each dependent variable to be included in the final analysis. The questions omitted from analysis can be seen in Appendix F.

The correlation between key variables was then repeated on the recalculated data set. As shown in Table 4, this showed that Blaming and Harsh and Blaming and Constructive were significantly positively correlated. Once again, this was expected for Blaming and Harsh but not expected for Blaming and Constructive. With this data set the correlation between Harsh and Constructive remains positive but is no longer statistically significant. Furthermore, the correlation between Blaming and Constructive has reduced, meaning it is now significant at the 0.05 level but no longer at the 0.01 level, as it was previous to data recalculation.

Table 4

Pearson's correlations between all measured variables across all groups on pre-test, following dataset recalculation

		Correlations			
		Blaming	Forgiving	Harsh	Constructive
Blaming	Pearson Correlation	1	.102	.416**	.306*
	Sig. (2-tailed)		.492	.003	.034
	N	48	48	48	48
Forgiving	Pearson Correlation	.102	1	.081	-.031
	Sig. (2-tailed)	.492		.584	.832
	N	48	48	48	48
Harsh	Pearson Correlation	.416**	.081	1	.263
	Sig. (2-tailed)	.003	.584		.071
	N	48	48	48	48
Constructive	Pearson Correlation	.306*	-.031	.263	1
	Sig. (2-tailed)	.034	.832	.071	
	N	48	48	48	48

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

While these results do not unambiguously correct for expected correlations between the constructs used in this research, there is some clarification in how the constructs relate to each other when compared to the unaltered data set. What this appears to show is that blaming

attributions are correlated with increased rates of both harsh and constructive disciplinary actions, a finding that is not entirely unexpected as parents may feasibly increase their disciplinary actions across the board in response to negative attributions, rather than increasing only their harsh parenting actions. And, in reality, it is entirely feasible for people to have both blaming and forgiving thoughts at the same time about a child and their behaviour. With these factors in mind, this correlation was considered sufficient evidence for the utility of continuing with the altered data set, having discarded confusing, irrelevant or ambiguous items from the calculated outcomes. All analysis from this point forward uses the recalculated data set.

Comparison of pre-test means.

Despite measures taken to reduce the potential impact of the child misbehaviour scenarios not being ideal or perfect pairs, which could cause any change pre- to post-test reflecting a perceived difference in the paired scenarios rather than occurring due to the priming intervention, it is acknowledged that in this type of research design imperfections in scenario pair matching may have persisted. To investigate whether issues such as these may have influenced outcomes, and also to check that no individual group was unusually blaming, forgiving, harsh or constructive relative to the other groups before a priming intervention was administered, the pre-test means for the four groups of participants were compared for all the child misbehaviour scenario pairs. The pre-test means for the overall data set, including results for all four scenario pairs analysed together, can be seen in Table 5 and Figure 1.

Table 5

Pre-test means for all groups and all dependent variables, overall

Group	Blaming	Forgiving	Harsh	Constructive
General Positive	Mean: 2.47	Mean: 3.22	Mean: 2.40	Mean: 4.26
	SD: 0.49	SD: 0.77	SD: 1.06	SD: 0.86
General Negative	Mean: 2.40	Mean: 3.17	Mean: 1.98	Mean: 4.34
	SD: 0.62	SD: 0.39	SD: 0.78	SD: 0.62
Evolutionary Positive	Mean: 2.18	Mean: 3.65	Mean: 1.72	Mean: 4.71
	SD: 0.42	SD: 0.70	SD: 0.54	SD: 0.44
Evolutionary Negative	Mean: 2.67	Mean: 3.35	Mean: 2.26	Mean: 4.79
	SD: 0.80	SD: 0.47	SD: 0.96	SD: 0.63

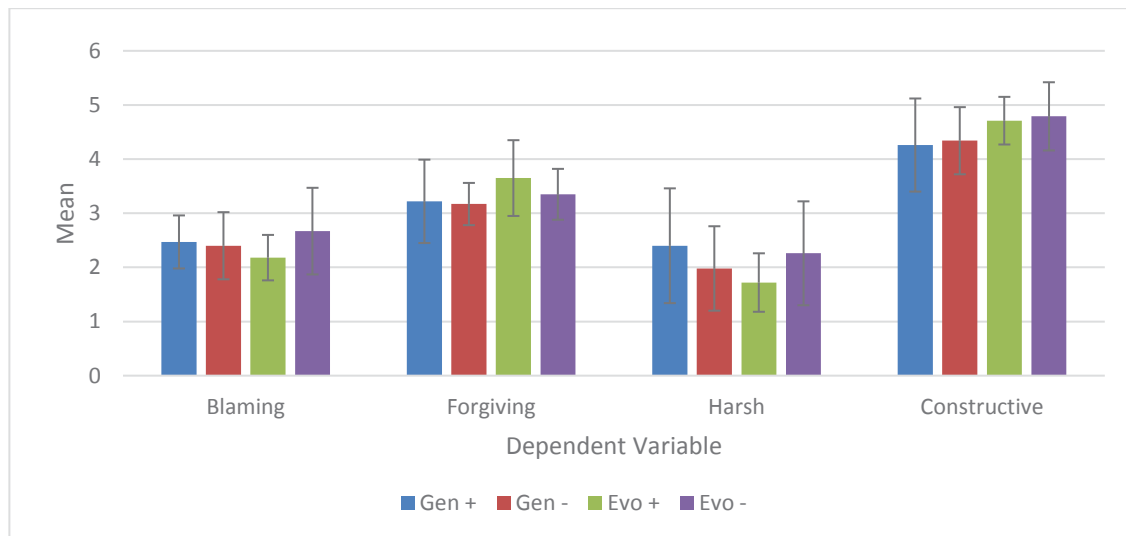


Figure 1. Pre-test means for all groups and all dependent variables, overall.

The pre-test means comparison for Scenario Pair 1 is shown in Table 6 and visually presented in Figure 2.

Table 6

Pre-test means for all groups and all dependent variables, Scenario Pair 1

	Blaming	Forgiving	Harsh	Constructive
General Positive	Mean: 2.50 SD: 0.69	Mean: 3.61 SD: 1.14	Mean: 2.67 SD: 1.27	Mean: 4.08 SD: 1.18
General Negative	Mean: 2.17 SD: 0.56	Mean: 3.72 SD: 0.71	Mean: 2.06 SD: 0.79	Mean: 4.28 SD: 0.76
Evolutionary Positive	Mean: 2.17 SD: 0.83	Mean: 4.14 SD: 0.77	Mean: 1.86 SD: 0.72	Mean: 4.97 SD: 0.66
Evolutionary Negative	Mean: 2.45 SD: 0.89	Mean: 3.59 SD: 0.68	Mean: 2.36 SD: 1.17	Mean: 4.56 SD: 0.86

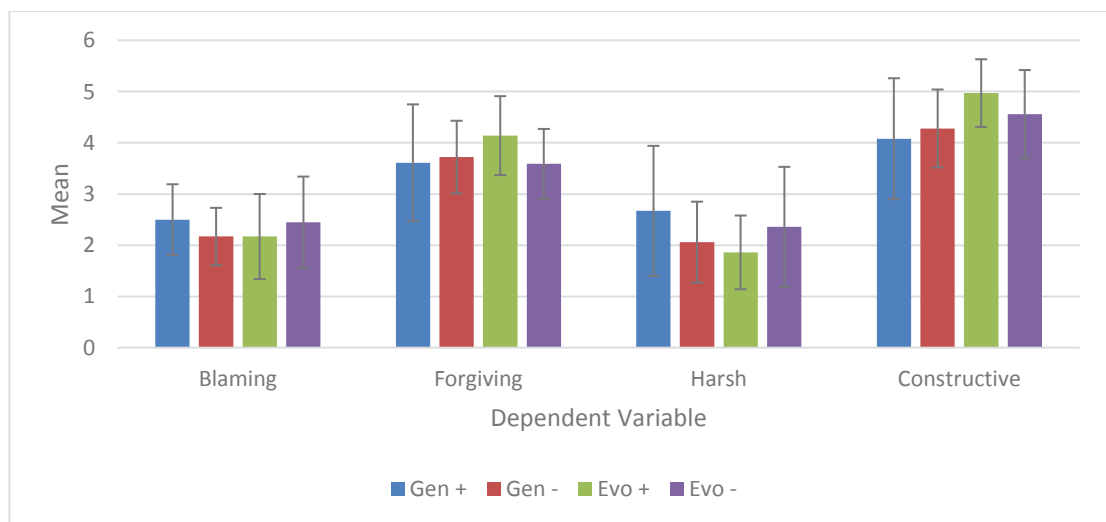


Figure 2. Pre-test means for all groups and all dependent variables, Scenario Pair 1.

The pre-test means comparison for Scenario Pair 2 is shown in Table 7 and visually presented in Figure 3.

Table 7

Pre-test means for all groups and all dependent variables, Scenario Pair 2

Group	Blaming	Forgiving	Harsh	Constructive
General Positive	Mean: 2.31	Mean: 3.19	Mean: 2.31	Mean: 4.92
	SD:0.59	SD: 0.86	SD:1.02	SD: 0.73
General Negative	Mean: 2.44	Mean: 3.22	Mean: 2.00	Mean: 4.78
	SD: 0.66	SD: 0.72	SD: 0.88	SD: 0.66
Evolutionary Positive	Mean: 2.00	Mean: 3.86	Mean: 1.81	Mean: 4.83
	SD: 0.40	SD: 0.72	SD: 0.58	SD: 0.80
Evolutionary Negative	Mean: 2.50	Mean: 3.61	Mean: 2.17	Mean: 5.33
	SD: 0.82	SD: 0.53	SD: 1.10	SD: 0.59

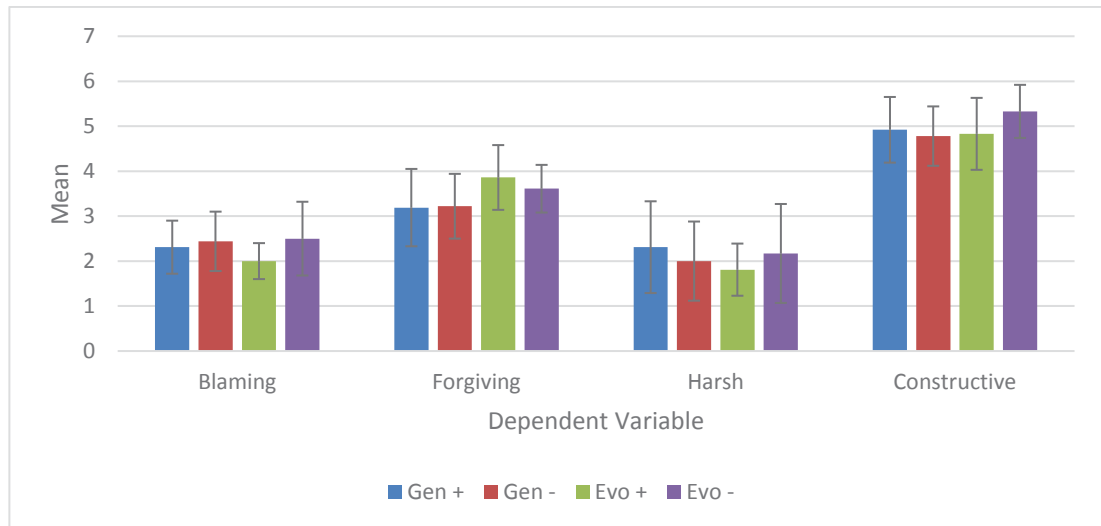


Figure 3. Pre-test means for all groups and all dependent variables, Scenario Pair 2.

The pre-test means comparison for Scenario Pair 3 is shown in Table 8 and visually presented in Figure 4.

Table 8

Pre-test means for all groups and all dependent variables, Scenario Pair 3

Group	Blaming	Forgiving	Harsh	Constructive
General Positive	Mean: 2.22	Mean: 2.83	Mean: 2.36	Mean: 4.06
	SD: 0.46	SD: 0.69	SD: 1.09	SD: 0.93
General Negative	Mean: 2.25	Mean: 2.86	Mean: 2.06	Mean: 4.06
	SD: 0.57	SD: 0.33	SD: 0.87	SD: 0.76
Evolutionary Positive	Mean: 1.97	Mean: 3.45	Mean: 1.75	Mean: 4.67
	SD: 0.66	SD: 1.00	SD: 0.60	SD: 0.53
Evolutionary Negative	Mean: 2.69	Mean: 3.14	Mean: 2.47	Mean: 4.75
	SD: 0.98	SD: 0.46	SD: 1.08	SD: 0.79

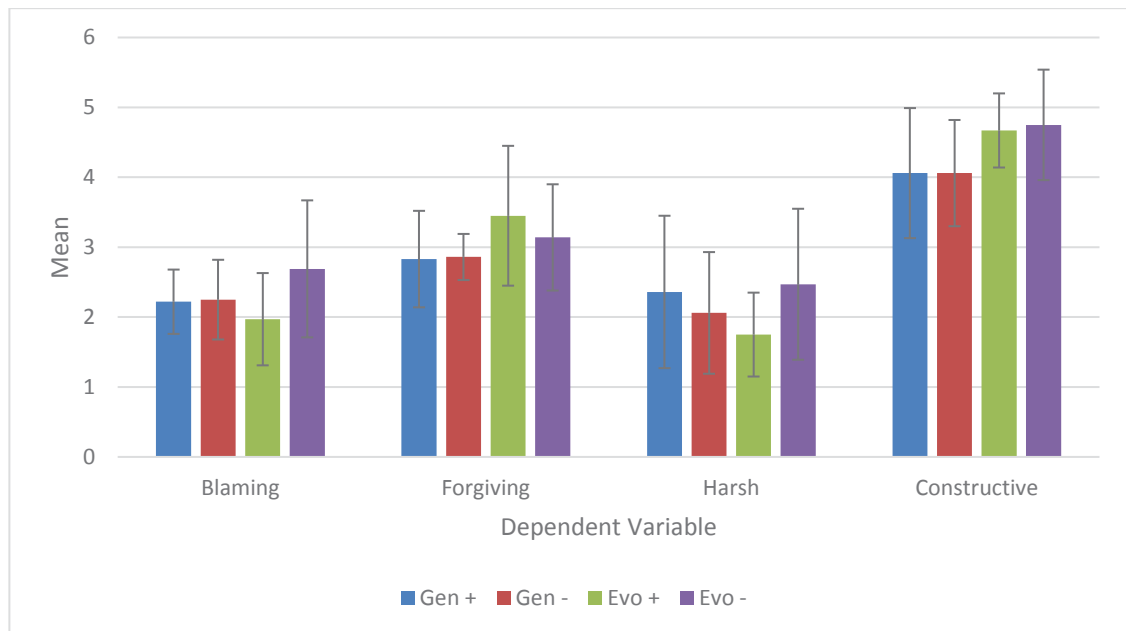


Figure 4. Pre-test means for all groups and all dependent variables, Scenario Pair 3.

The pre-test means comparison for Scenario Pair 4 is shown in Table 9 and visually presented in Figure 5.

Table 9

Pre-test means for all groups and all dependent variables, Scenario Pair 4

Group	Blaming	Forgiving	Harsh	Constructive
General Positive	Mean: 2.83	Mean: 3.25	Mean: 2.25	Mean: 4.00
	SD: 0.90	SD: 0.87	SD: 1.16	SD: 1.10
General Negative	Mean: 2.78	Mean: 2.83	Mean: 1.86	Mean: 4.22
	SD: 1.00	SD: 0.46	SD: 0.81	SD: 0.83
Evolutionary Positive	Mean: 2.58	Mean: 3.17	Mean: 1.44	Mean: 4.36
	SD: 0.80	SD: 1.22	SD: 0.57	SD: 0.88
Evolutionary Negative	Mean: 3.03	Mean: 3.08	Mean: 2.06	Mean: 4.53
	SD: 1.08	SD: 0.98	SD: 0.86	SD: 1.00

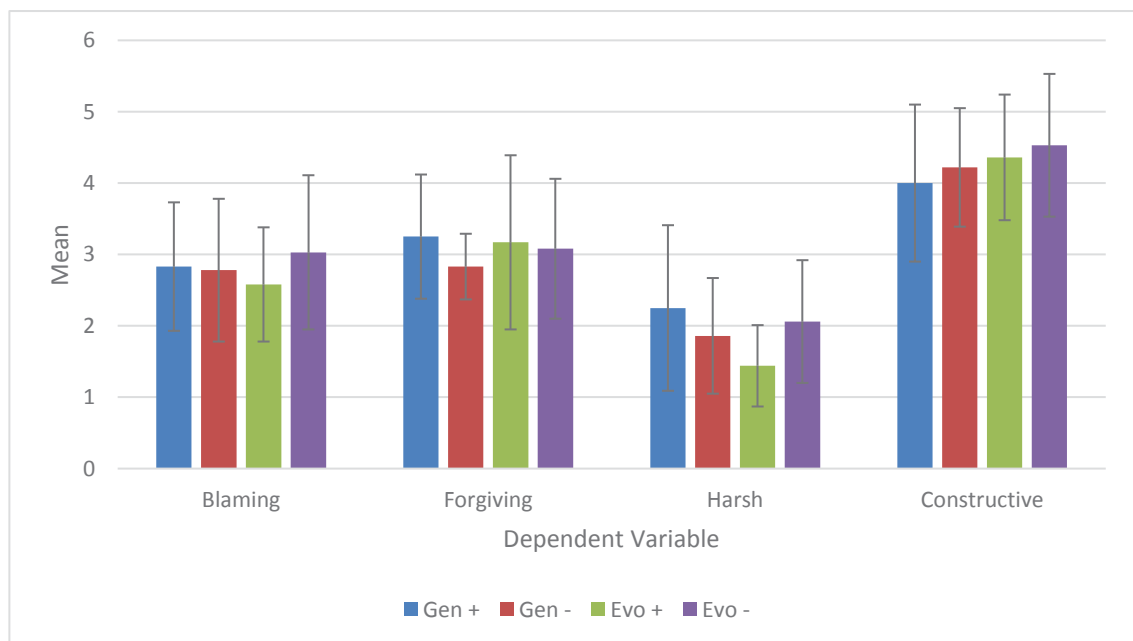


Figure 5. Pre-test means for all groups and all dependent variables, Scenario Pair 4.

Ideally, we would like each of the four groups to be as similar as possible at pre-test, before any priming intervention is applied, on the four dependent variables of blaming attributions, forgiving attributions, harsh parenting actions, and constructive parenting actions. This would mean any change from pre-test to post-test is more likely to be caused by the priming intervention than large group discrepancies. The analysis of pre-test means shows the four groups were often reasonably similar in how blaming, forgiving, harsh, and constructive the participants naturally were before any intervention was applied, either overall or as measured by each scenario pair. However, it is noted that the Evolutionary Positive group was consistently the least harsh and least blaming group on pre-test across all child misbehaviour scenarios. This group was also consistently the most forgiving group on pre-test, though not the most constructive – often, the Evolutionary Negative group was the most constructive, with the exception of on Scenario Pair 1. This suggests that random assignment did not serve to perfectly equalise the four groups prior to the priming intervention. However, the pre-test group mean differences were not so large as to prevent further analysis.

This analysis also showed a potential ceiling and floor effect, which was particularly apparent for the disciplinary actions. That is, this sample overall were already very low on harsh parenting actions, and high on constructive parenting actions, prior to any priming intervention taking place. This means that regardless of the strength of a priming intervention there may have been limited room for movement in the downwards direction for harsh parenting (the sample was almost as low on harshness as the questionnaire allowed) or the upwards direction for constructive parenting (the sample was already highly constructive in their disciplinary choices). Implications of these effects are considered in the discussion.

Pre- to post-test group means. Group means are compared pre- to post-test for all groups on all four scenario pairs together (labelled ‘overall’ analysis). Expected results were for blaming attributions and harsh parenting actions to increase, and forgiving attributions and constructive parenting actions to decrease, for the negatively valenced groups at post-test following the priming intervention as compared to their pre-test scores. I expected the opposite pattern for the positively valenced groups, and for the evolutionary groups to show a greater degree of change in these directions than the general groups.

Table 10 and Figure 6 show that all four groups became more blaming on post-test compared to pre-test, following a priming intervention. This was as expected for the negatively valenced groups, but contrary to expectations for the two positively valenced groups.

Table 10

Pre-test and post-test means, all groups, overall, blaming and forgiving attributions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Blaming	Blaming	Forgiving	Forgiving
General Positive	Mean: 2.47	Mean: 2.61	Mean: 3.22	Mean: 3.26
	SD: 0.49	SD: 0.45	SD: 0.77	SD: 0.93
General Negative	Mean: 2.40	Mean: 2.61	Mean: 3.17	Mean: 3.17
	SD: 0.62	SD: 0.58	SD: 0.39	SD: 0.47
Evolutionary Positive	Mean: 2.18	Mean: 2.31	Mean: 3.65	Mean: 3.77
	SD: 0.42	SD: 0.48	SD: 0.70	SD: 0.89
Evolutionary Negative	Mean: 2.67	Mean: 2.92	Mean: 3.35	Mean: 3.27
	SD: 0.80	SD: 1.00	SD: 0.47	SD: 0.53

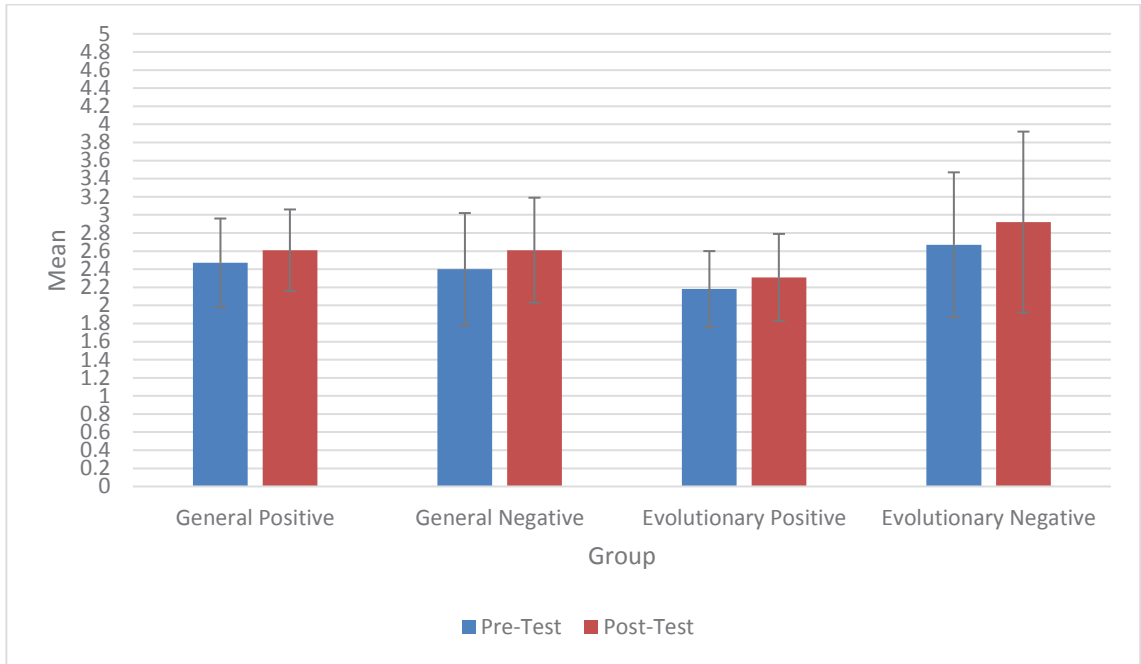


Figure 6. Pre-test and post-test means, overall, blaming attributions.

Table 10 and Figure 7 show that both the positively valenced groups became more forgiving on post-test relative to pre-test, and the Evolutionary Negative group became less forgiving while the General Negative group exhibited no change in how forgiving they were on post-test relative to pre-test.

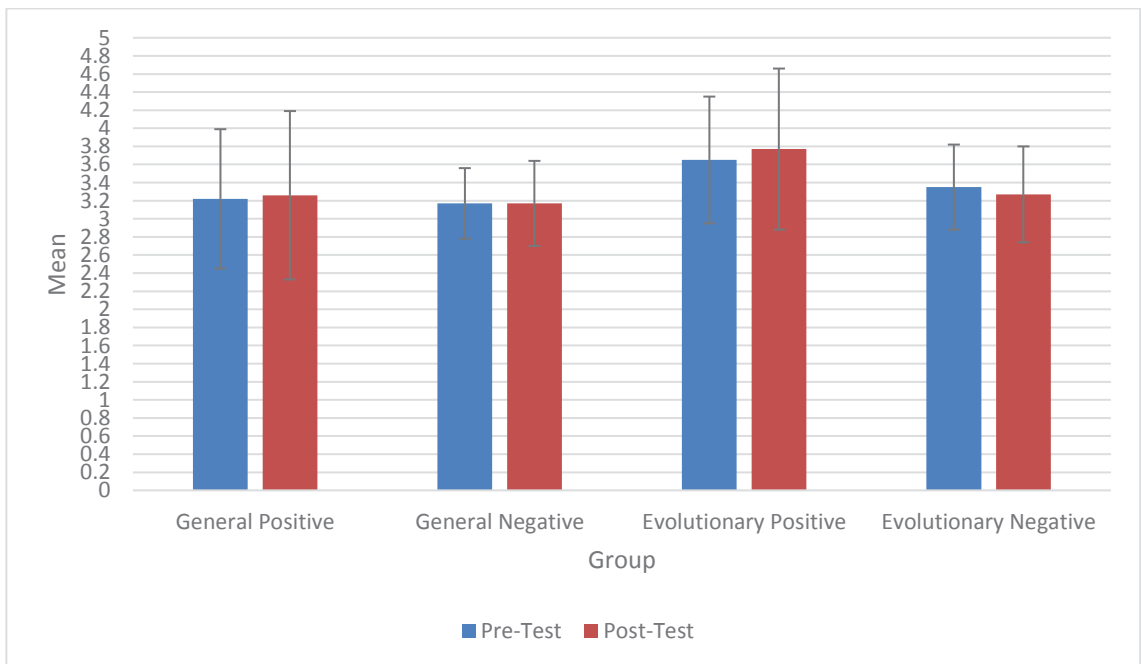


Figure 7. Pre-test and post-test means, overall, forgiving attributions.

Table 11 and Figure 8 show that the General Positive and Evolutionary Negative groups became less harsh on post-test relative to their pre-test scores. The General Negative and Evolutionary Positive groups became harsher on post-test relative to their pre-test score

Table 11

Pre-test and post-test means, overall, harsh and constructive parenting actions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Harsh	Harsh	Constructive	Constructive
General Positive	Mean: 2.40	Mean: 2.38	Mean: 4.26	Mean: 4.24
	SD: 1.06	SD: 1.06	SD: 0.86	SD: 0.91
General Negative	Mean: 1.98	Mean: 2.11	Mean: 4.34	Mean: 4.42
	SD: 0.78	SD: 0.97	SD: 0.62	SD: 0.61
Evolutionary Positive	Mean: 1.72	Mean: 1.78	Mean: 4.71	Mean: 4.58
	SD: 0.54	SD: 0.60	SD: 0.44	SD: 0.61
Evolutionary Negative	Mean: 2.26	Mean: 2.17	Mean: 4.79	Mean: 4.67
	SD: 0.96	SD: 0.87	SD: 0.63	SD: 0.65

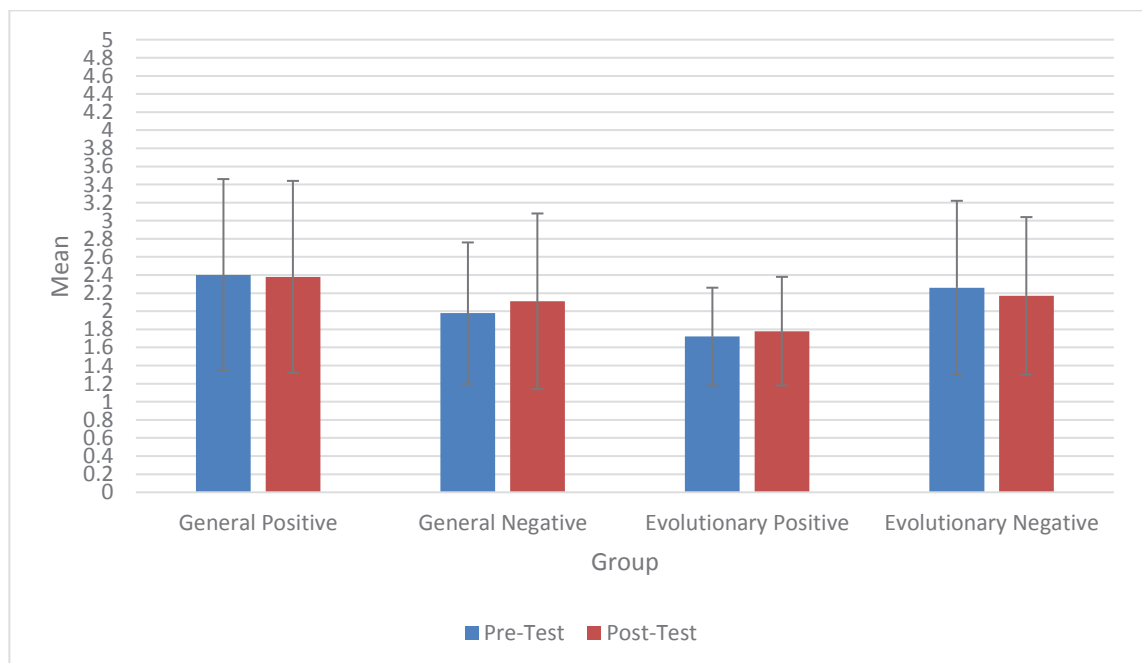


Figure 8. Pre-test and post-test means, overall, harsh parenting actions.

Table 11 and Figure 9 show the General Positive, Evolutionary Positive, and Evolutionary Negative groups all became less constructive on post-test relative to pre-test, with only the General Negative group becoming more constructive on post-test.

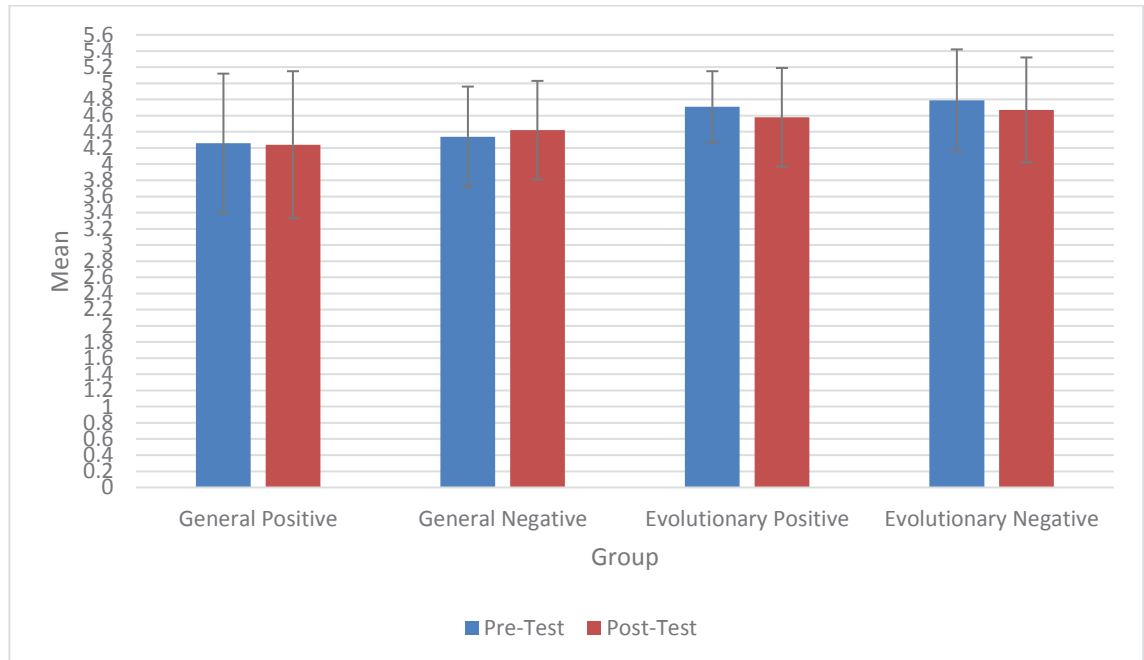


Figure 9. Pre-test and post-test means, overall, constructive parenting actions.

Pre- to post-test group means, by scenario pair. The previous section of analysis considers the group results pre- to post-test with all four scenario pairs combined into an overall pre- and post-test mean. However, due to the potential difficulty of scenario pairs not being perfectly matched (see Appendix G), it was also necessary to consider the group pre- to post-test changes for each scenario pair. A scenario pair is two scenarios which were matched as closely as possible on content and factors such as severity of misbehaviour, one of which was given prior to the priming intervention and one of which was given following the priming intervention. This analysis considers each scenario pair in isolation rather than combining all four scenario pairs together. The same pattern of results as in the previous section was expected.

The content of each scenario pair can be found in Appendix C.

Scenario Pair 1. Table 12 and Figure 10 show that for Scenario Pair 1, the General Negative, Evolutionary Positive, and Evolutionary Negative groups all became more blaming on post-test relative to pre-test. There was no change pre- to post-test on this variable for the General Positive group. The largest change was observed for the Evolutionary Negative group, as expected. The Evolutionary Positive group showed change in the direction contrary to expectations, however also the smallest change in terms of magnitude compared to the two negatively valenced groups.

Table 12

Pre-test and post-test means, Scenario Pair 1, blaming and forgiving attributions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Blaming	Blaming	Forgiving	Forgiving
General Positive	Mean: 2.50	Mean: 2.50	Mean: 3.61	Mean: 3.70
	SD: 0.69	SD: 0.52	SD: 1.14	SD: 0.98
General Negative	Mean: 2.17	Mean: 2.31	Mean: 3.72	Mean: 3.50
	SD: 0.56	SD: 0.48	SD: 0.71	SD: 0.64
Evolutionary Positive	Mean: 2.17	Mean: 2.25	Mean: 4.14	Mean: 4.11
	SD: 0.83	SD: 0.57	SD: 0.77	SD: 0.73
Evolutionary Negative	Mean: 2.45	Mean: 2.97	Mean: 3.59	Mean: 3.47
	SD: 0.89	SD: 1.15	SD: 0.68	SD: 0.80

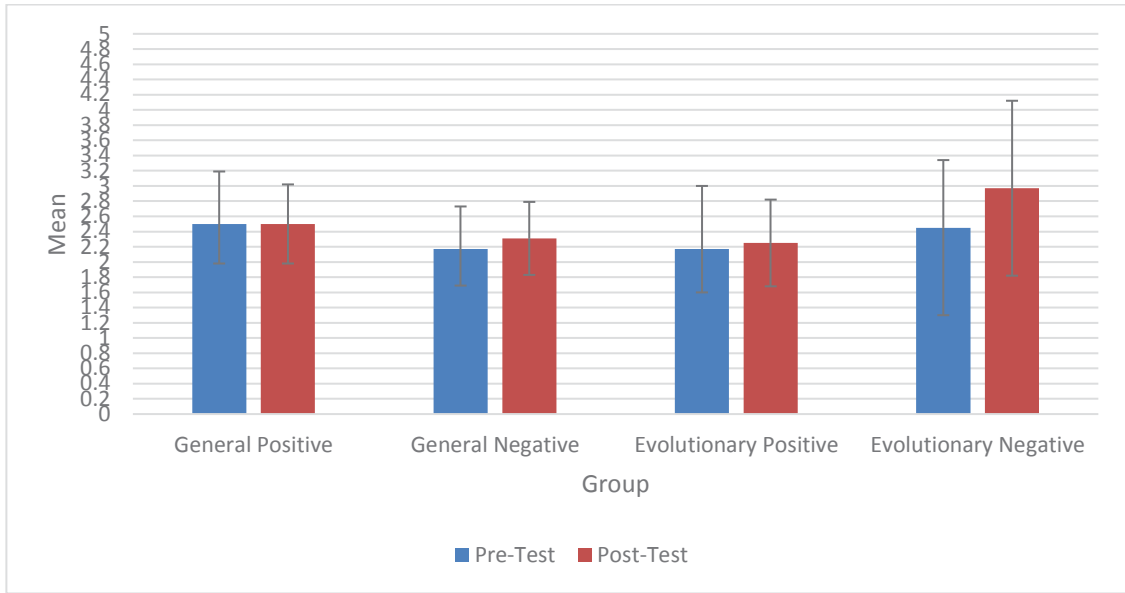


Figure 10. Pre-test and post-test means, Scenario Pair 1, blaming attributions.

Table 12 and Figure 11 show that the General Negative, Evolutionary Positive, and Evolutionary Negative groups all became less forgiving on post-test relative to pre-test, following their priming intervention. Once again, this was contrary to expectations for the Evolutionary Positive group; however, the change was extremely small when compared to the magnitude of decrease in forgiving attributions for the negatively valenced groups. The General Positive group became more forgiving on post-test relative to pre-test, as expected.

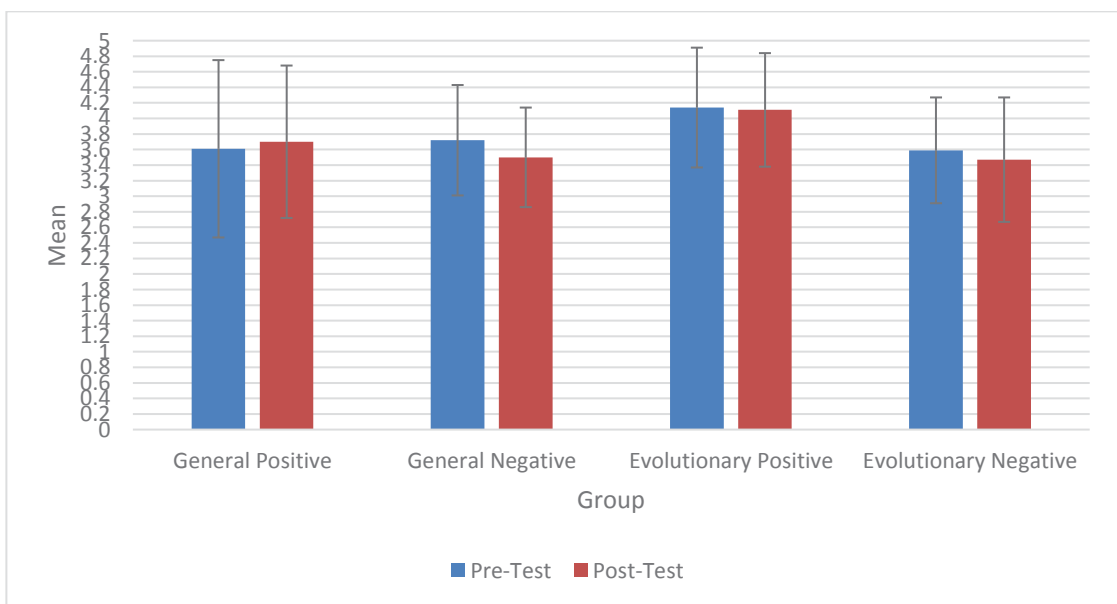


Figure 11. Pre-test and post-test means, Scenario Pair 1, forgiving attributions.

Table 13 and Figure 12 show that for Scenario Pair 1 the General Negative, Evolutionary Positive, and Evolutionary Negative groups became harsher on post-test compared to their respective pre-test scores. This was as expected for the negatively valenced group and contrary to expectation for the Evolutionary Positive group. However, the General Positive group became less harsh on post-test, as expected.

Table 13
Pre-test and post-test means, Scenario Pair 1, harsh and constructive parenting actions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Harsh	Harsh	Constructive	Constructive
General Positive	Mean: 2.67	Mean: 2.36	Mean: 4.08	Mean: 4.05
	SD: 1.27	SD: 1.14	SD: 1.18	SD: 1.23
General Negative	Mean: 2.06	Mean: 2.22	Mean: 4.28	Mean: 4.42
	SD: 0.79	SD: 1.08	SD: 0.76	SD: 0.74
Evolutionary Positive	Mean: 1.86	Mean: 2.08	Mean: 4.97	Mean: 4.83
	SD: 0.72	SD: 1.00	SD: 0.66	SD: 0.36
Evolutionary Negative	Mean: 2.36	Mean: 2.44	Mean: 4.56	Mean: 4.58
	SD: 1.17	SD: 1.07	SD: 0.86	SD: 1.10

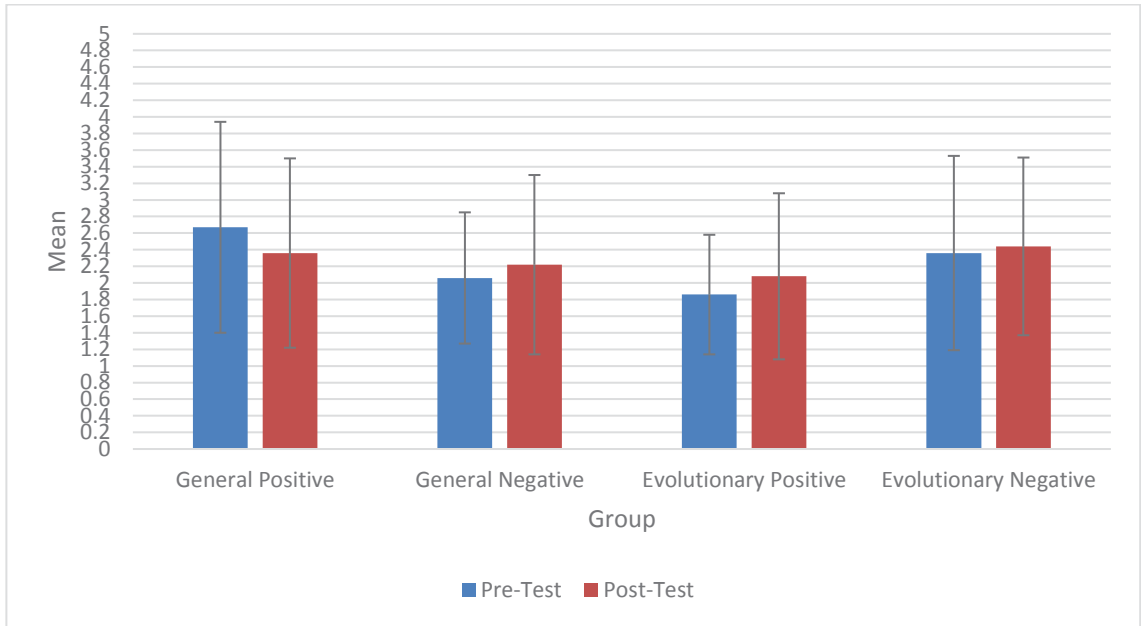


Figure 12. Pre-test and post-test means, Scenario Pair 1, harsh parenting actions.

Table 13 and Figure 13 show that for Scenario Pair 1 the General Positive and Evolutionary Negative group demonstrated such small changes from pre- to post-test as to be considered negligible. The General Negative group became more constructive and the Evolutionary Positive group became slightly less constructive, both contrary to expectations.

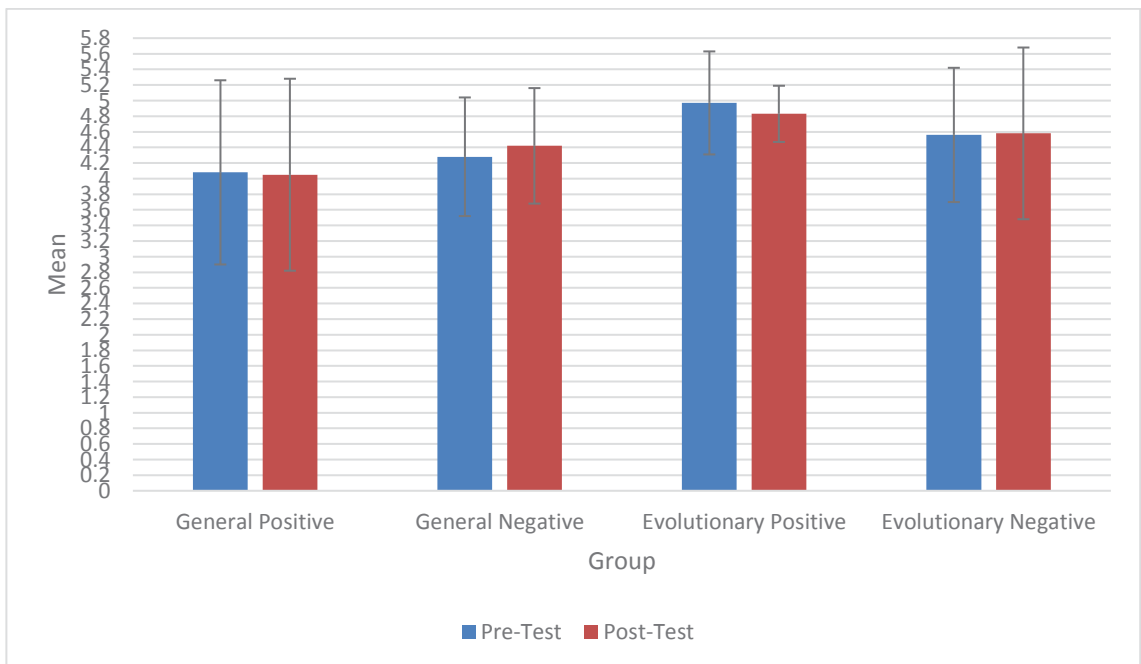


Figure 13. Pre-test and post-test means, Scenario Pair 1, constructive parenting actions.

Scenario Pair 2. For Scenario Pair 2, Table 14 and Figure 14 show that the opposite pattern to what was expected occurred, with the positively valenced groups becoming more blaming on post-test and the negatively valenced groups becoming less blaming, though for all but the General Positive group the changes were so small as to be considered negligible.

Table 14

Pre-test and post-test means, Scenario Pair 2, blaming and forgiving parenting attributions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Blaming	Blaming	Forgiving	Forgiving
General Positive	Mean: 2.31	Mean: 2.53	Mean: 3.19	Mean: 3.25
	SD:0.59	SD: 0.39	SD: 0.86	SD: 0.97
General Negative	Mean: 2.44	Mean: 2.39	Mean: 3.22	Mean: 3.20
	SD: 0.66	SD: 0.53	SD: 0.72	SD: 0.80
Evolutionary Positive	Mean: 2.00	Mean: 2.08	Mean: 3.86	Mean: 3.72
	SD: 0.40	SD: 0.45	SD: 0.72	SD: 1.16
Evolutionary Negative	Mean: 2.50	Mean: 2.55	Mean: 3.61	Mean: 3.28
	SD: 0.82	SD: 1.12	SD: 0.53	SD: 0.56



Figure 14. Pre-test and post-test means, Scenario Pair 2, blaming attributions.

Table 14 and Figure 15 show that the General Negative, Evolutionary Positive and Evolutionary Negative groups all became less forgiving on post-test relative to pre-test, which was expected for the negatively valenced groups. Also as expected, the General Positive group became slightly more forgiving on post-test relative to their pre-test scores.

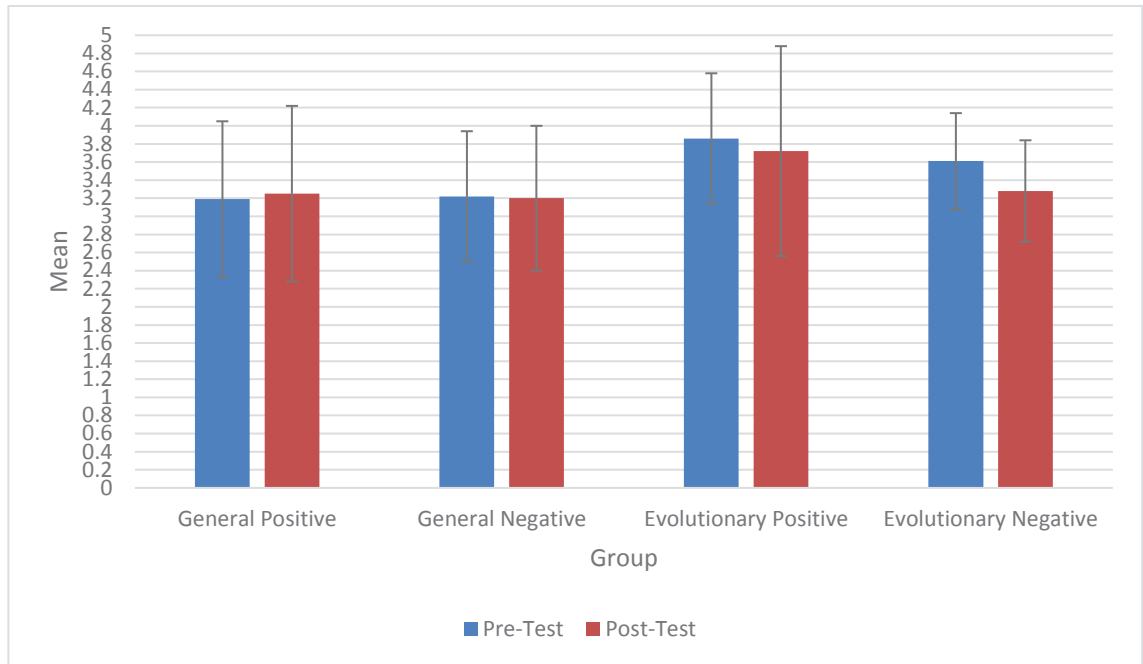


Figure 15. Pre-test and post-test means, Scenario Pair 2, forgiving attributions.

For Scenario Pair 2, Table 15 and Figure 16 show that only the General Negative group showed an expected direction of change on the Harsh variable, becoming harsher on post-test relative to pre-test. The General Positive group also became harsher on post-test, contrary to expectations, and the Evolutionary Negative group became less harsh, contrary to expectations. In the case of the latter group the change was extremely small in magnitude, while the Evolutionary Positive group showed no change pre- to post-test for this scenario pair.

Table 15

Pre-test and post-test means, Scenario Pair 2, harsh and constructive parenting actions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Harsh	Harsh	Constructive	Constructive
General Positive	Mean: 2.31 SD:1.02	Mean: 2.42 SD: 1.02	Mean: 4.92 SD: 0.73	Mean: 4.83 SD: 0.66
General Negative	Mean: 2.00 SD: 0.88	Mean: 2.31 SD: 1.23	Mean: 4.78 SD: 0.66	Mean: 4.75 SD: 0.68
Evolutionary Positive	Mean: 1.81 SD: 0.58	Mean: 1.81 SD: 0.61	Mean: 4.83 SD: 0.80	Mean: 4.89 SD: 0.59
Evolutionary Negative	Mean: 2.17 SD: 1.10	Mean: 2.08 SD: 0.81	Mean: 5.33 SD: 0.59	Mean: 5.20 SD: 0.48

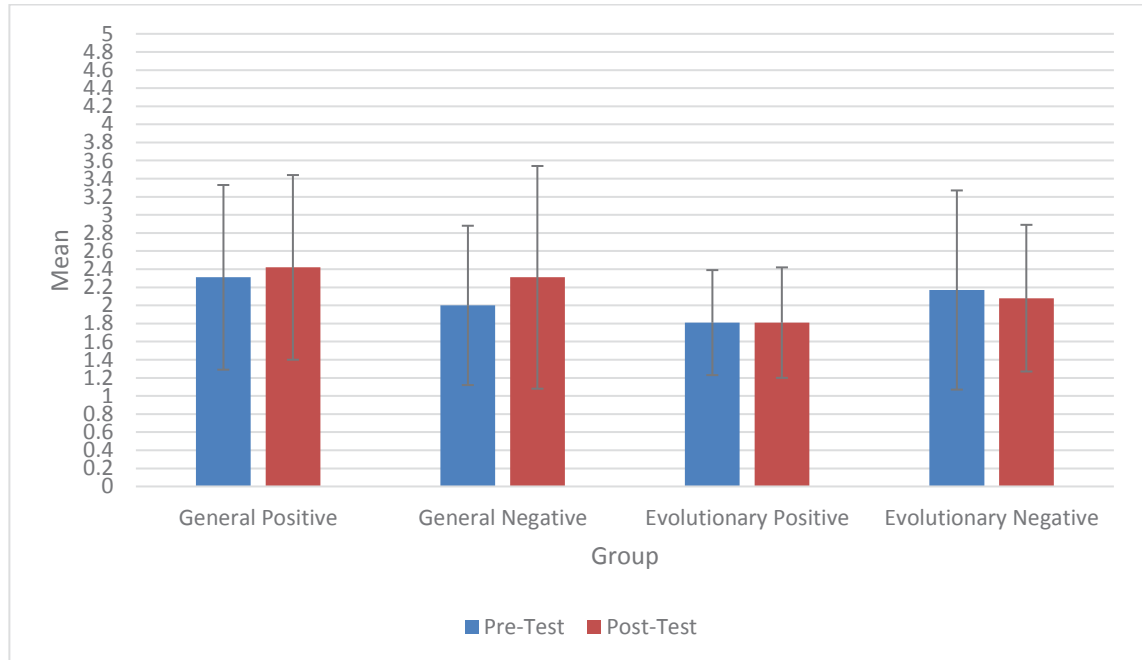


Figure 16. Pre-test and post-test means, Scenario Pair 2, harsh parenting actions.

Table 15 and Figure 17 show that for Scenario Pair 2 the General Positive, General Negative, and Evolutionary Negative groups all became less constructive on post-test compared to their pre-test scores. The Evolutionary Positive group became slightly more constructive. Change from pre- to post-test on this variable, for this scenario pair, were small in magnitude across all four groups.

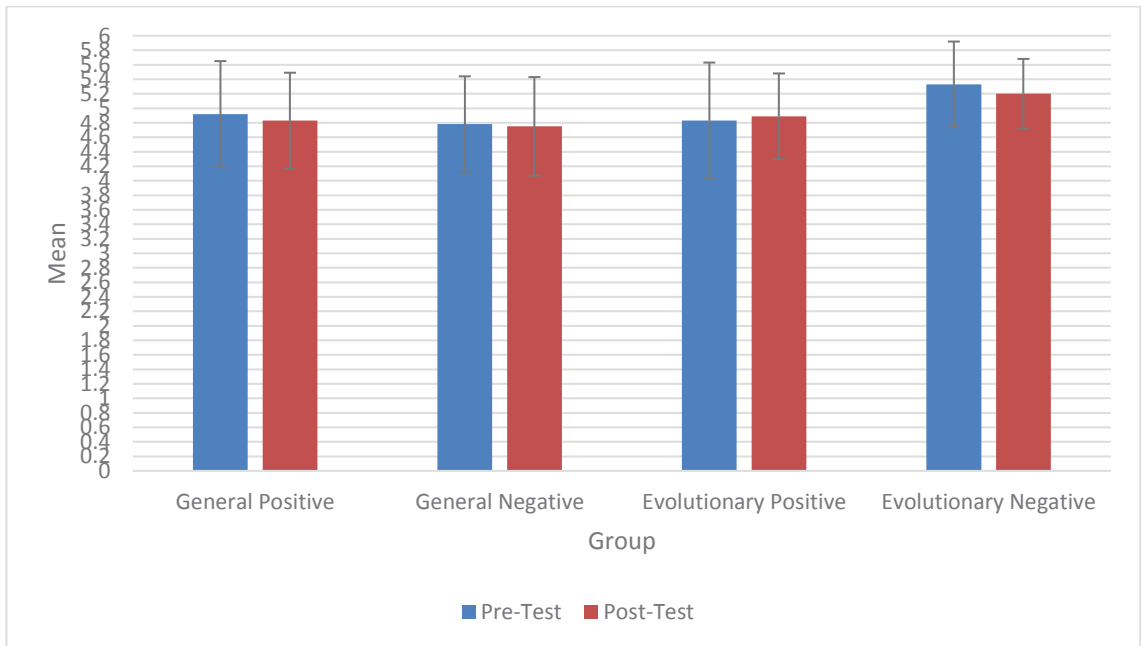


Figure 17. Pre-test and post-test means, Scenario Pair 2, constructive parenting actions.

Scenario Pair 3. On Scenario Pair 3, Table 16 and Figure 18 show that all groups

became more blaming on post-test relative to pre-test.

Table 16

Pre-test and post-test means, Scenario Pair 3, blaming and forgiving attributions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Blaming	Blaming	Forgiving	Forgiving
General Positive	Mean: 2.22	Mean: 2.70	Mean: 2.83	Mean: 2.92
	SD: 0.46	SD: 0.66	SD: 0.69	SD: 1.04
General Negative	Mean: 2.25	Mean: 2.56	Mean: 2.86	Mean: 3.00
	SD: 0.57	SD: 0.61	SD: 0.33	SD: 0.43
Evolutionary Positive	Mean: 1.97	Mean: 2.17	Mean: 3.45	Mean: 3.75
	SD: 0.66	SD: 0.50	SD: 1.00	SD: 0.92
Evolutionary Negative	Mean: 2.69	Mean: 2.86	Mean: 3.14	Mean: 3.17
	SD: 0.98	SD: 0.96	SD: 0.46	SD: 0.75

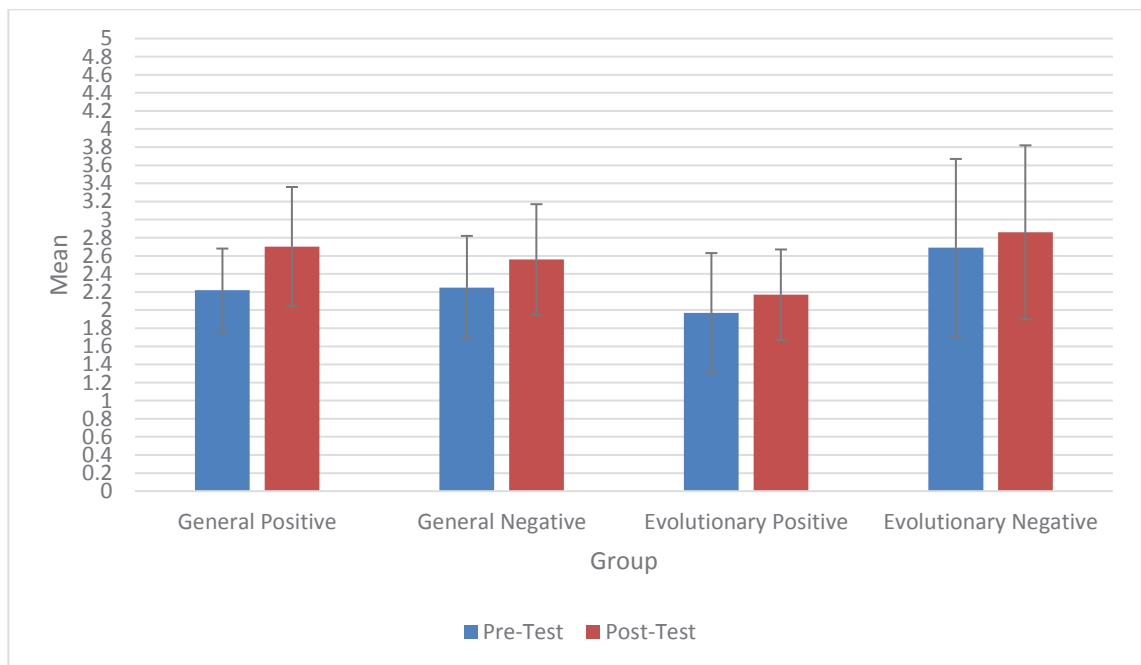


Figure 18. Pre-test and post-test means, Scenario Pair 3, blaming attributions.

Additionally, Table 16 and Figure 19 show that all groups on this scenario pair became more forgiving on post-test compared to pre-test, with the largest change being observed for the Evolutionary Positive group, as expected.

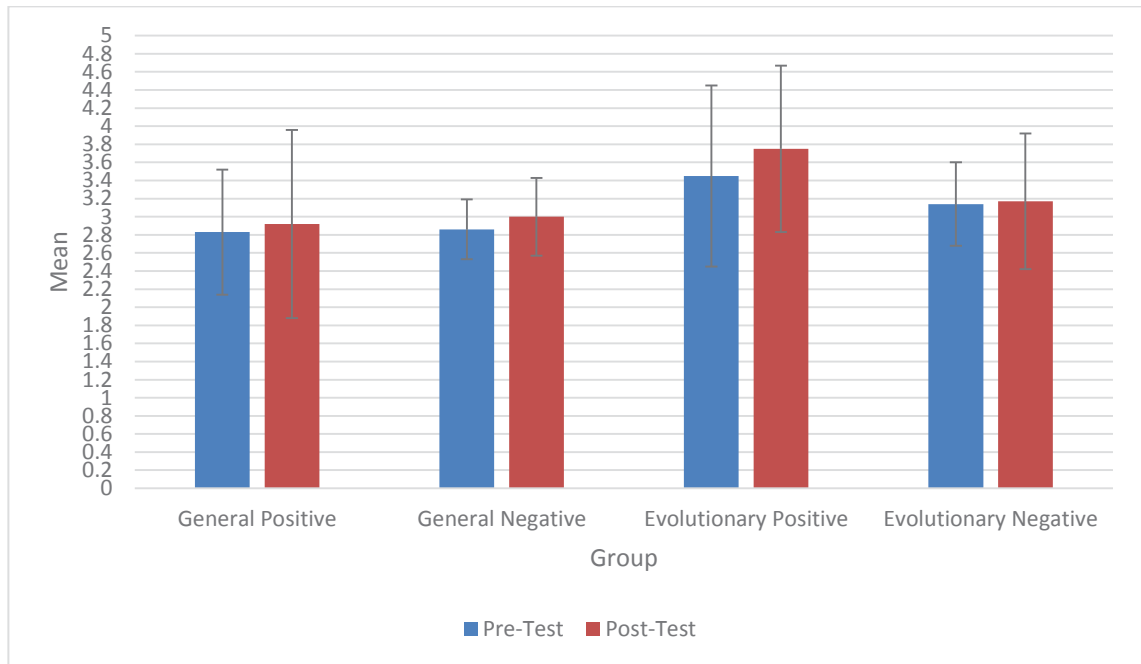


Figure 19. Pre-test and post-test means, Scenario Pair 3, forgiving attributions.

For Scenario Pair 3, Table 17 and Figure 20 show that both of the positively valenced groups showed no change in harshness on post-test. The negatively valenced groups both demonstrated a decrease in harshness following the priming intervention, though in the case of the General Negative group, the change was very small.

Table 17

Pre-test and post-test means, Scenario Pair 3, harsh and constructive parenting actions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Harsh	Harsh	Constructive	Constructive
General Positive	Mean: 2.36 SD: 1.09	Mean: 2.36 SD: 1.16	Mean: 4.06 SD: 0.93	Mean: 3.94 SD: 1.18
General Negative	Mean: 2.06 SD: 0.87	Mean: 1.97 SD: 0.91	Mean: 4.06 SD: 0.76	Mean: 4.33 SD: 0.70
Evolutionary Positive	Mean: 1.75 SD: 0.60	Mean: 1.75 SD: 0.83	Mean: 4.67 SD: 0.53	Mean: 4.42 SD: 0.92
Evolutionary Negative	Mean: 2.47 SD: 1.08	Mean: 1.97 SD: 0.83	Mean: 4.75 SD: 0.79	Mean: 4.64 SD: 0.73

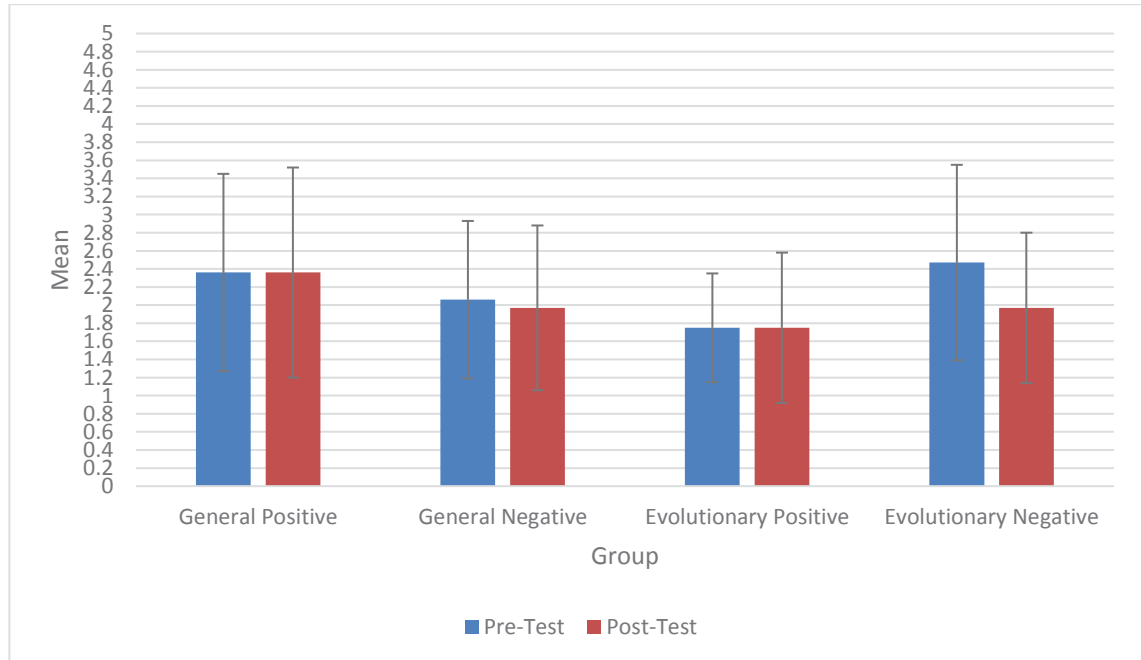


Figure 20. Pre-test and post-test means, Scenario Pair 3, harsh parenting actions.

Table 17 and Figure 21 show that the General Positive, Evolutionary Positive, and Evolutionary Negative all showed a decrease in constructive parenting choices following the priming intervention, as expected for the Evolutionary Negative group but contrary to expectations for the two positive groups. The General Negative group, on the other hand, showed an increase in constructiveness, again contrary to expectations.

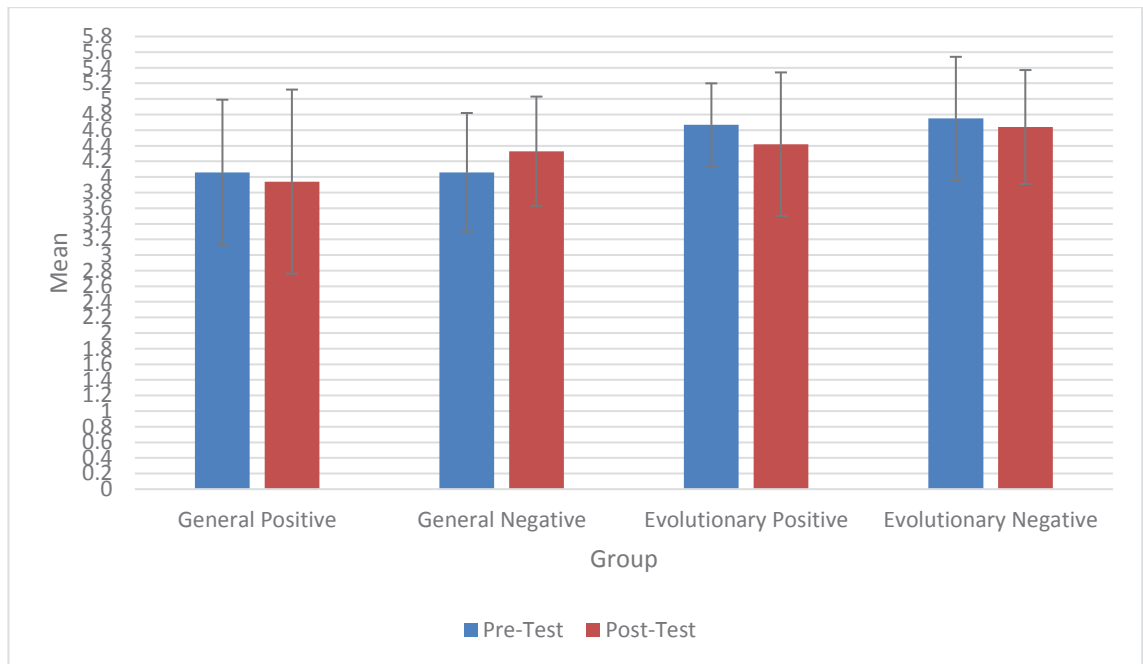


Figure 21. Pre-test and post-test means, Scenario Pair 3, constructive parenting actions.

Scenario Pair 4. For Scenario Pair 4 Table 18 and Figure 22 show that the General Negative, Evolutionary Positive, and Evolutionary Negative groups all became more blaming and more forgiving on post-test, compared to pre-test. The General Positive group became less blaming, as expected.

Table 18

Pre-test and post-test means, Scenario Pair 4, blaming and forgiving attributions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Blaming	Blaming	Forgiving	Forgiving
General Positive	Mean: 2.83	Mean: 2.72	Mean: 3.25	Mean: 3.17
	SD: 0.90	SD: 0.66	SD: 0.87	SD: 1.02
General Negative	Mean: 2.78	Mean: 3.17	Mean: 2.83	Mean: 2.97
	SD: 1.00	SD: 0.94	SD: 0.46	SD: 0.50
Evolutionary Positive	Mean: 2.58	Mean: 2.75	Mean: 3.17	Mean: 3.50
	SD: 0.80	SD: 0.83	SD: 1.22	SD: 1.09
Evolutionary Negative	Mean: 3.03	Mean: 3.33	Mean: 3.08	Mean: 3.17
	SD: 1.08	SD: 1.18	SD: 0.98	SD: 0.44

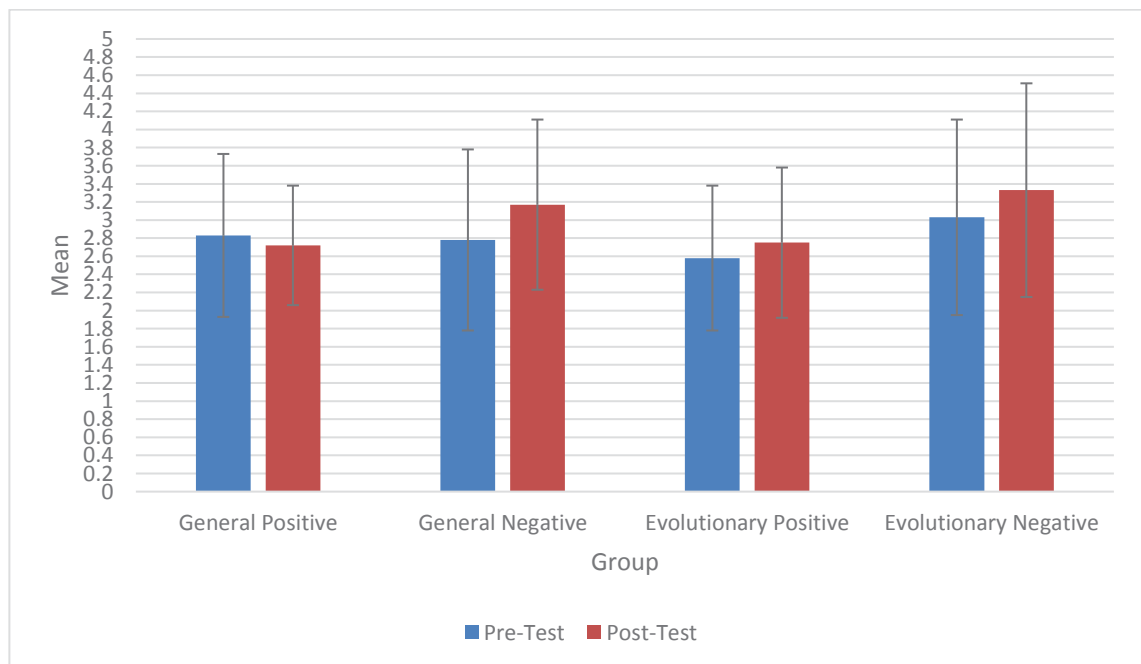


Figure 22. Pre-test and post-test means, Scenario Pair 4, blaming attributions.

Table 18 and Figure 23 show that the General Positive group became less forgiving. Both of the negatively valenced groups became more forgiving, as did the Evolutionary Positive group. Compared to the Evolutionary Positive group the increase in forgiving attributions for the negative groups was small, however in the direction contrary to expectations.

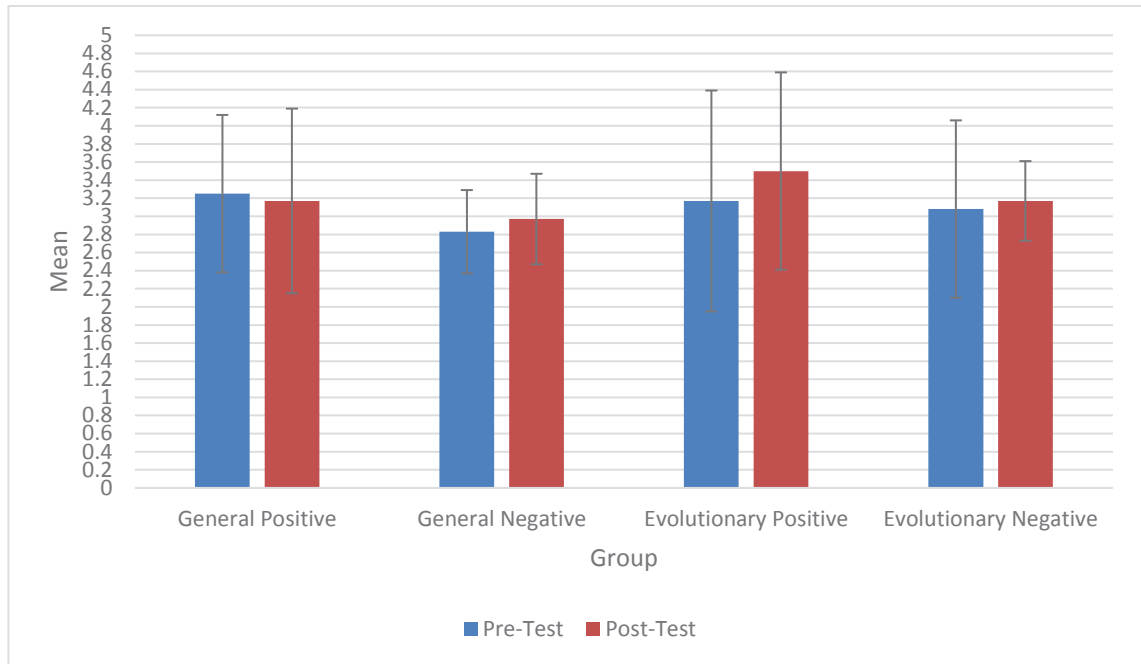


Figure 23. Pre-test and post-test means, Scenario Pair 4, forgiving attributions.

Finally, Table 19 and Figure 24 show that the General Positive, General Negative and Evolutionary Positive groups all became harsher on post-test, while the Evolutionary Negative group became less harsh following their priming intervention.

Table 19

Pre-test and post-test means, Scenario Pair 4, harsh and constructive parenting actions

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Harsh	Harsh	Constructive	Constructive
General Positive	Mean: 2.25	Mean: 2.39	Mean: 4.00	Mean: 4.11
	SD: 1.16	SD: 1.05	SD: 1.10	SD: 1.25
General Negative	Mean: 1.86	Mean: 1.95	Mean: 4.22	Mean: 4.17
	SD: 0.81	SD: 0.88	SD: 0.83	SD: 0.72
Evolutionary Positive	Mean: 1.44	Mean: 1.67	Mean: 4.36	Mean: 4.19
	SD: 0.57	SD: 0.65	SD: 0.88	SD: 1.02
Evolutionary Negative	Mean: 2.06	Mean: 1.97	Mean: 4.53	Mean: 4.25
	SD: 0.86	SD: 1.08	SD: 1.00	SD: 1.06

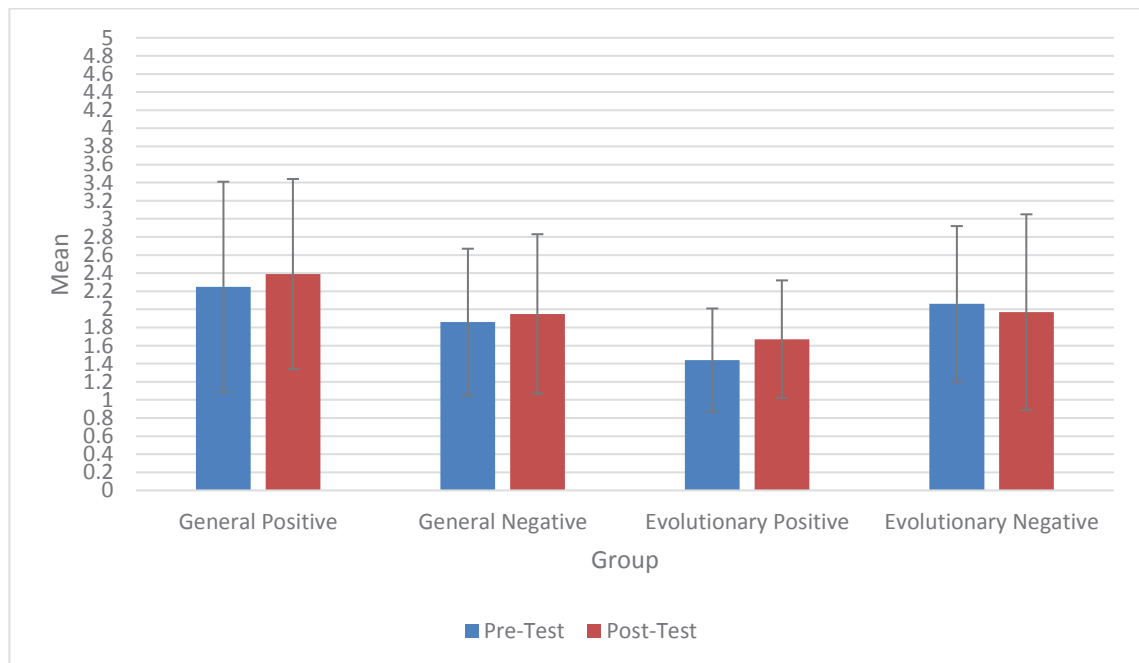


Figure 24. Pre-test and post-test means, Scenario Pair 4, harsh parenting actions.

Table 19 and Figure 25 show that the General Negative, Evolutionary Positive and Evolutionary Negative groups all became less constructive in their parenting choices on post-test, while the General Positive group became slightly more constructive.

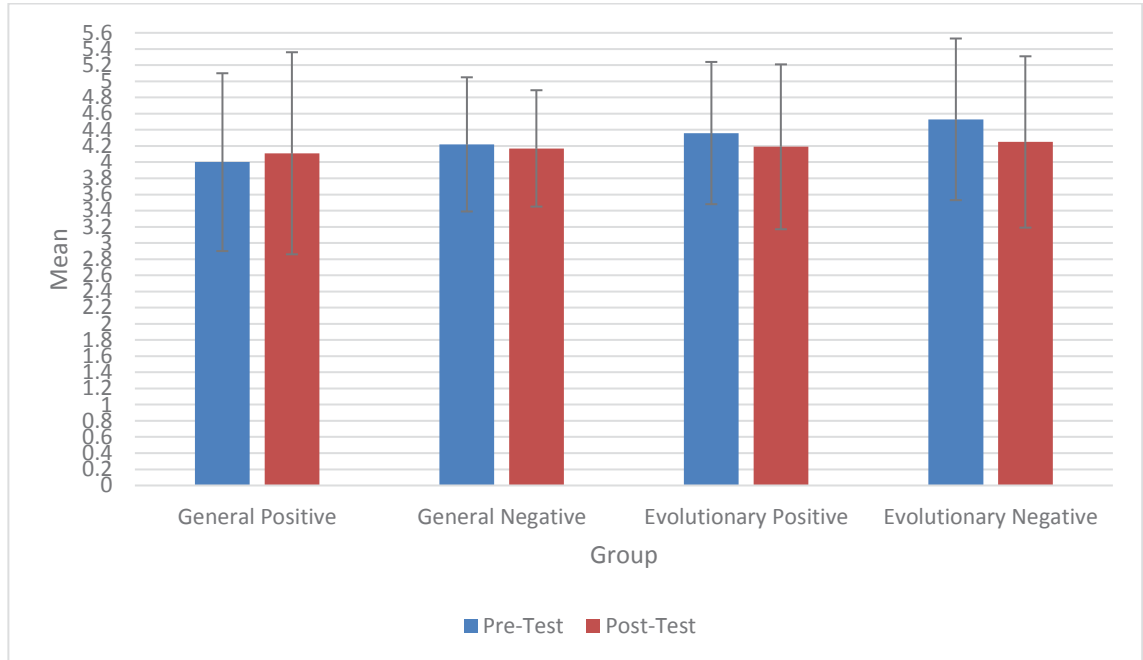


Figure 25. Pre-test and post-test means, Scenario Pair 4, constructive parenting actions.

Analysis by affective prime valence. Preliminary analysis was also undertaken to combine the positively primed groups and negatively primed groups. This ignored the specific content of the primes and demonstrates changes pre- to post-test based on the affective nature of the primes only, as the prime content was expected to alter only the magnitude of the change, not the direction.

Table 20 and Figures 26 and 27 show that a change occurred in the expected direction for the negatively primed groups in the attributions for child behaviour, with these groups overall becoming more blaming and less forgiving on post-test relative to pre-test. A small change in the expected direction was also noted for the positive affective prime groups on the forgiving measure, however not on the blaming measure. This means that, contrary to expectations, the positive affective primed groups became more blaming on post-test relative to pre-test. They did, however, also become more forgiving on post-test relative to pre-test, in line with expectations.

Table 20

Means and SDs for attributions for child behaviour, pre- and post-test, by affective prime emotional valence

Emotional Valence	Pre-Test	Post-Test	Pre-Test	Post-Test
	Blaming	Blaming	Forgiving	Forgiving
Positive Affective Primed Groups	Mean: 2.32 SD: 0.47	Mean: 2.46 SD: 0.48	Mean: 3.44 SD: 0.75	Mean: 3.51 SD: 0.93
Negative Affective Primed Groups	Mean: 2.53 SD: 0.70	Mean: 2.76 SD: 0.81	Mean: 3.26 SD: 0.44	Mean: 3.22 SD: 0.50

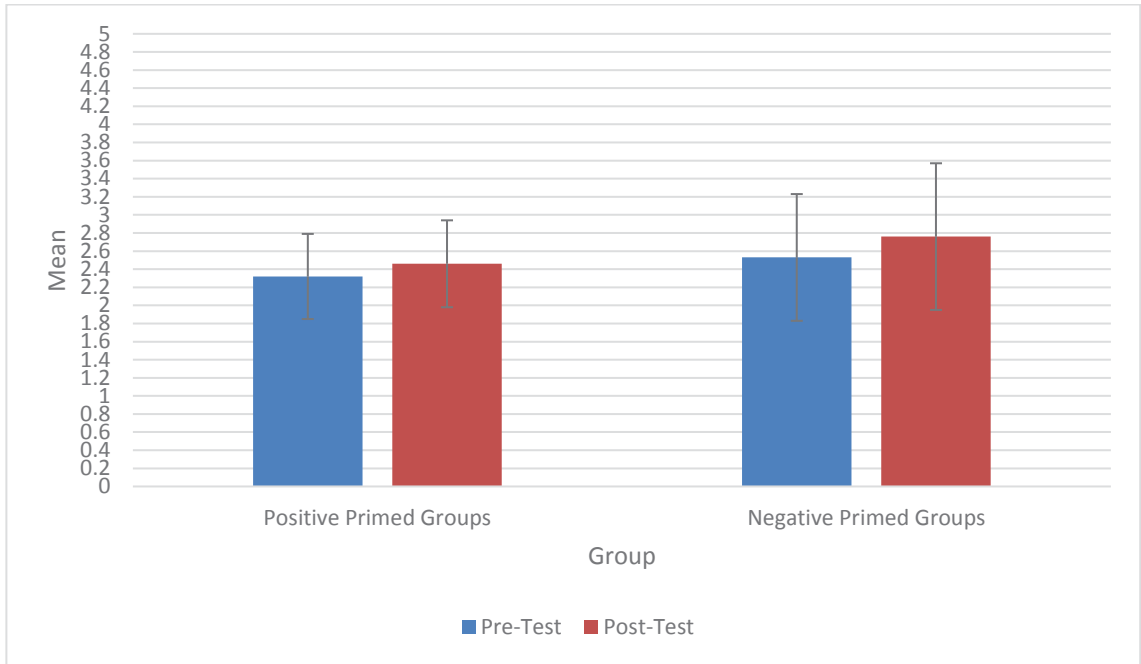


Figure 26. Pre-test and post-test means, by affective prime emotional valence, blaming attributions.

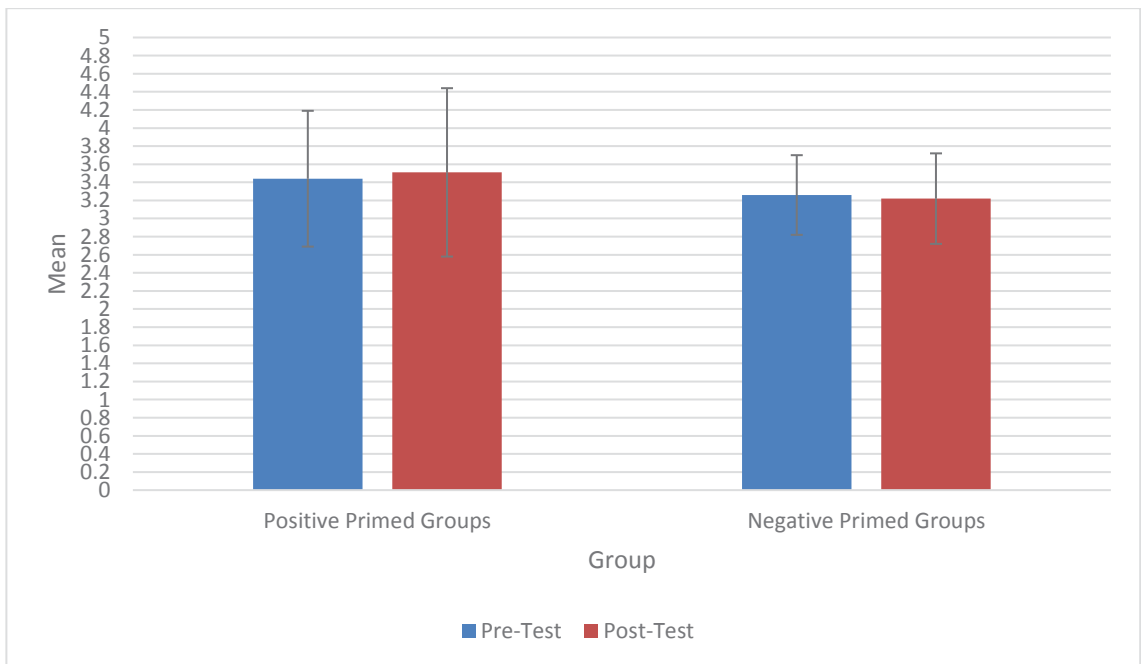


Figure 27. Pre-test and post-test means, by affective prime emotional valence, forgiving attributions.

On the other hand, in the analysis of parenting actions Table 21 and Figures 28 and 29 show that a change in the expected direction was obtained only for the negatively primed groups, with these groups becoming harsher and slightly less constructive in their responses for child misbehaviour on post-test, compared to their pre-test results. The positively primed groups became, overall, harsher and less constructive in their response options after the priming intervention, although it is noted that these changes were very small in magnitude.

Table 21

Means and SDs for responses to child behaviour, pre- and post-test, by affective prime emotional valence

Group	Pre-Test	Post-Test	Pre-Test	Post-Test
	Harsh	Harsh	Constructive	Constructive
Positive Affective Primed Groups	Mean: 2.06	Mean: 2.08	Mean: 4.49	Mean: 4.41
	SD: 0.90	SD: 0.90	SD: 0.71	SD: 0.78
Negative Affective Primed Groups	Mean: 2.12	Mean: 2.14	Mean: 4.57	Mean: 4.54
	SD: 0.87	SD: 0.90	SD: 0.66	SD: 0.63

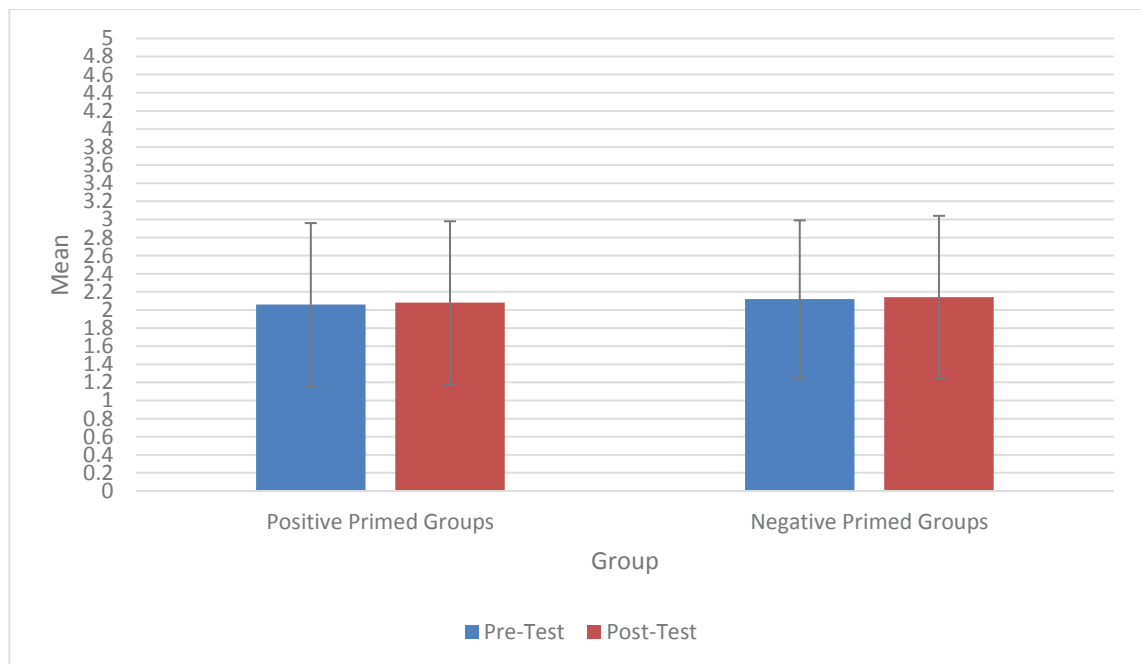


Figure 28. Pre-test and post-test means, by affective prime emotional valence, harsh parenting actions.

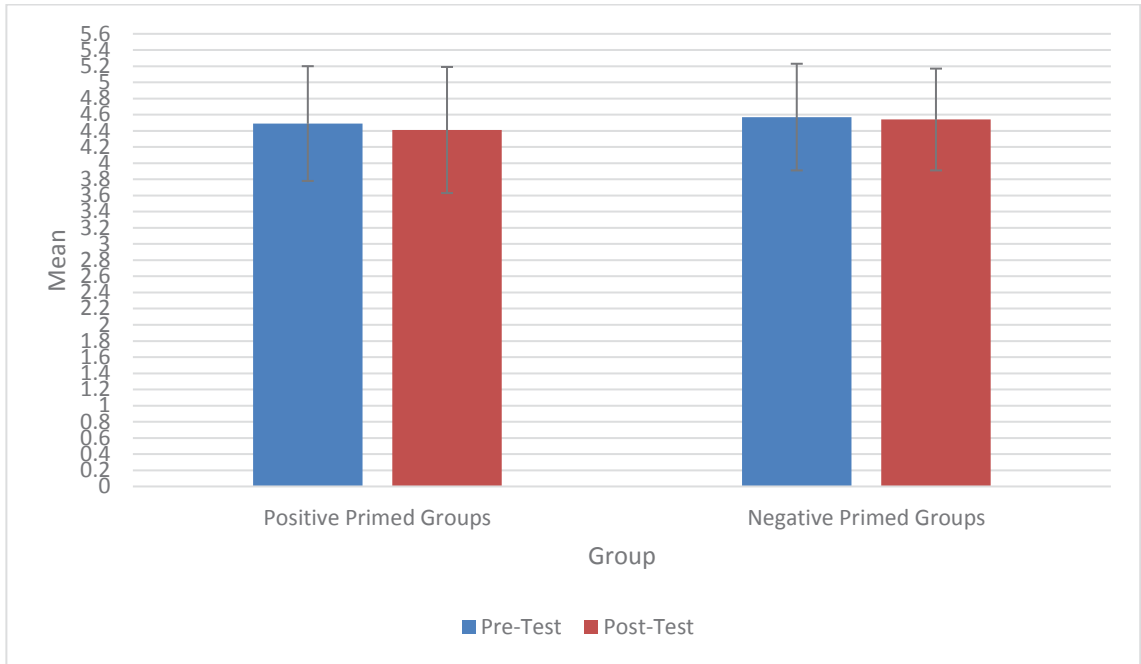


Figure 29. Pre-test and post-test means, by affective prime emotional valence, constructive parenting actions.

Statistical Analyses

The previous section describes the data once quantified and observed in terms of group effects. In most cases, any observed changes in mean from pre- to post-test appeared to be small. The following inferential statistics were conducted to see whether any of the observed changes, while small, were significant. These analyses were run for any observed change, including changes that occurred in the direction contrary to expectations. Any significant interactions and main effects are included in this section, while all scenario analyses where results were non-significant can be found in Appendix K.

Overall analysis, blaming attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of blaming attributions, across two time periods (pre-test and post-test). The independent variables included prime content (images of general parenting interactions or images of parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was blaming attributions towards the participant's own child, as measured across four pairs of child misbehaviour scenarios. An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There were no statistically significant interactions in the level of blaming attributions among the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .059, p = .810$, or between emotional valence of the prime and test time, $F(1,44) = .601, p = .442$, or between prime content and test time, $F(1,44) = .014, p = .907$. The result of main effect of pre-test and post-test was significant, such that participants were significantly more blaming on post-test than on pre-test, $F(1,44) = 9.912, p = .003, \eta^2 = .184$. A medium effect size was evident. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 2.824, p = .100$. The main effect of prime emotional valence was not

significant, $F(1,44) = 2.244, p = .141$; nor was the main effect of prime content, $F(1,44) = .000, p = .984$.

Scenario Pair 1 analysis, blaming attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of blaming attributions, across two time periods (pre-test and post-test). The independent variables included prime content (images of general parenting interactions or images of parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was reported blaming attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 1, Appendix C). An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There were no statistically significant interactions in the level of blaming attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .593, p = .445$, or between emotional valence of the prime and test time, $F(1,44) = 2.839, p = .099$, or between prime content and test time, $F(1,44) = 1.490, p = .229$. The result of main effect of pre-test and post-test was significant, such that participants were significantly more blaming on post-test than on pre-test $F(1,44) = 4.640, p = .037, \eta^2 = .095$. A medium effect size was evident. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 3.696, p = .061$. The main effect of prime emotional valence was not significant, $F(1,44) = .414, p = .523$; nor was the main effect of prime content, $F(1,44) = .187, p = .668$.

Scenario Pair 1 analysis, constructive parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of constructive parenting actions, across two time periods (pre-test and post-test). The independent variables included prime content (images of general parenting

interactions or images of parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was reported constructive parenting actions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 1, Appendix C). An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There were no statistically significant interactions in the level of constructive parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .000, p = .995$, or between emotional valence of the prime and test time, $F(1,44) = .781, p = .382$, or between prime content and test time, $F(1,44) = .352, p = .556$. The result of main effect of time was not statistically significant, $F(1,44) = .000, p = .991$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 1.578, p = .216$. The main effect of prime emotional valence was not significant, $F(1,44) = .013, p = .910$. The result of the main effect of prime content was significant; the evolutionary prime content groups were more constructive, overall, than the general prime content groups, $F(1,44) = 4.706, p = .036, \eta^2 = .097$. A medium effect size was evident.

Scenario Pair 3 analysis, blaming attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of blaming attributions, across two time periods (pre-test and post-test). The independent variables included prime content (images of general parenting interactions or images of parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was reported blaming attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 3, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There were no statistically significant interactions in the level of blaming attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .100, p = .753$, or between emotional valence of the prime and test time, $F(1,44) = .187, p = .668$, or between prime content and test time, $F(1,44) = .879, p = .353$. The result of main effect of pre-test and post-test was significant; participants were significantly more blaming on post-test than on pre-test, $F(1,44) = 6.547, p = .014, \eta^2 = .130$. A medium effect size was evident. There was a significant interaction between emotional valence of the prime and prime content, $F(1,44) = 3.508, p = .028, \eta^2 = .105$. A medium effect size was evident.

Scenario Pair 3 analysis, forgiving attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (images of general parenting interactions or images of parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was reported forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 3, Appendix C). An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There were no statistically significant interactions in the level of forgiving attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .529, p = .471$, or between emotional valence of the prime and test time, $F(1,44) = .233, p = .632$, or between prime content and test time, $F(1,44) = .064, p = .802$. The result of main effect of time was not statistically significant, $F(1,44) = 1.472, p = .231$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 1.879, p = .177$. The main effect of prime emotional valence was not significant, $F(1,44) = 1.130, p = .294$. The

result of the main effect of prime content, however, was significant, $F(1,44) = 5.368, p = .013, \eta_2 = .132$. A medium effect size was evident.

Scenario Pair 3 analysis, harsh parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of harsh parenting actions, across two time periods (pre-test and post-test). The independent variables included prime content (images of general parenting interactions or images of parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was reported harsh parenting actions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 3, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of harsh parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = 2.351, p = .132$. There was a statistically significant interaction between test time and emotional valence, $F(1,44) = 4.613, p = .037, \eta_2 = .095$, with the negative groups becoming less harsh on post-test while the positive groups exhibited no change; however, the interaction between prime content and time was not significant, $F(1,44) = 2.351, p = .132$. The result of main effect of pre-test and post-test was significant, $F(1,44) = 4.613, p = .037, \eta_2 = .095$. A medium effect size was evident. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 2.444, p = .125$. The main effect of prime emotional valence was not significant, $F(1,44) = .055, p = .816$. The main effect of prime content was not significant, $F(1,44) = .593, p = .445$.

Scenario Pair 3 analysis, constructive parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime

content on participants' level of constructive parenting actions, across two time periods (pre-test and post-test). The independent variables included prime content (images of general parenting interactions or images of parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was reported constructive parenting actions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (scenario pair 3, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There were no statistically significant interactions in the level of constructive parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .272, p = .604$, or between emotional valence of the prime and test time, $F(1,44) = 1.257, p = .268$, or between prime content and test time, $F(1,44) = 1.249, p = .270$. The result of main effect of time was not statistically significant, $F(1,44) = .170, p = .682$. There was not a statistically significant interaction between prime emotional valence and prime content, $F(1,44) = .010, p = .919$. The main effect of emotional valence was not significant, $F(1,44) = .700, p = .407$. There was a significant main effect of prime content; the evolutionary prime content groups were significantly more constructive, overall, than the general prime content groups, $F(1,44) = 6.289, p = .016, \eta^2 = .125$. A medium effect size was evident.

DISCUSSION

The hypotheses for this study stated that participants who viewed negative priming images would become more blaming and harsher on post-test, and less forgiving and constructive on post-test, relative to pre-test. The participants who viewed positive priming images would become less blaming and harsh, and more forgiving and constructive, on post-test relative to pre-test. Furthermore, it was expected that a larger change in these hypothesised directions would be obtained by the evolutionary prime content groups, on the grounds that evolutionary-relevant stimuli have special relevance, and that a smaller but potentially still significant change would be obtained by the general prime content groups, on the basis that meaningful primes that relate to common personal experiences would have some power to effect cognitive and behavioural changes.

This research found that all four research groups were successfully primed with a parenting-related priming intervention, as measured by a word completion test. Changes in post-test means relative to pre-test were then calculated for the four groups for the four child misbehaviour scenarios combined, and then for each of the child misbehaviour scenario pairs in isolation. The latter analyses were included because differences in how well the scenario pairs matched each other may have contributed to the outcomes obtained, so it was necessary to explore change occurring across each scenario pair as well as overall, with all scenarios combined. A significant increase in blaming attributions from pre-test to post-test was found for the overall analysis, scenario pair 1, and scenario pair 3. In the case of scenario pair 3, this was in the context of a significant interaction between prime emotional valence and prime content. A significant decrease in harsh parenting actions from pre-test to post-test was found for scenario pair 3, in the context of a significant interaction between time and emotional valence, with the positive groups showing no significant change and the negative groups exhibiting a significant decrease in harsh parenting actions, the direction contrary to expectation. A significant main effect of prime content was found in constructive parenting actions for scenario pair 1 and scenario pair 3, with the evolutionary prime content groups in both cases being more

constructive overall, regardless of time of measurement. A significant main effect of prime content was found in forgiving attributions for scenario pair 3, with the evolutionary groups being more forgiving overall regardless of time of measurement. The expected significant interaction among prime emotional valence, prime content and test time was not found in any analysis conducted.

It should be noted that small effect sizes were expected for this experiment – affective priming is known to have a small but measurable effect upon participants exposed to an intentional priming intervention. However, it is also true that small changes sometimes occurred in the direction opposite to the one that was expected – for example when all groups, not just the negative prime valence groups, became more blaming on post-test relative to pre-test in several analyses, or when negative prime valence groups became less harsh in parenting actions on scenario pair 3, while the positive prime valence groups exhibited no change. Therefore, the main hypothesis that negatively primed groups would consistently become more blaming and harsh, and less forgiving and constructive, while the positive groups would become more forgiving and constructive, and less blaming and harsh, was not supported.

Implications

Given that the expected effect of prime content and prime emotional valence on the dependent variables was not obtained, we can surmise one of three overarching explanations for the observed results in the cases where no significant change was observed. The first is that a cognitive change occurred but not in the expected direction, consistently, for the overall group samples, leading to group results which averaged out at no overall change. It was observed in the individual participant data that some participants changed in the expected direction, some changed in the opposite direction to what was expected, and some did not change at all. There could be myriad reasons for such variable individual results, which will be discussed further. The second is that for the majority of participants no significant cognitive changes occurred upon viewing the images and thus no behavioural changes resulted from this; that is, although a

priming effect occurred, it did not translate into cognitive or behavioural changes in the participants. The third is that cognitive and/or behavioural changes occurred, however the method of measuring these changes did not manage to accurately capture what happened for participants.

Firstly, it is possible that while all four groups of participants were successfully primed, as shown by the word stem completion priming measure analysis, that this priming effect was not consistently and reliably seen to produce statistically significant changes in the four dependent variables in the directions expected. Many different explanations could apply to this finding, the most likely being the addition of unexpected and unmeasured cognitive corrections or alterations to changes occurring because of the priming effect, which may have varied widely for individual participants. This is considered more likely than the priming intervention being unsuccessful due to the measured success of the priming itself – all participant groups demonstrated the expected pattern of results on a word completion test, suggesting their cognitive processes were altered by exposure to parenting-related stimuli at the time of the word completion test, in the form of activated parenting-relating schemata.

While a measure to demonstrate whether a priming effect was obtained was included in the research design, this experiment is not primarily concerned with demonstrating the contexts or factors relating to whether a priming effect will occur, but rather whether, if primed, this induces cognitive and behavioural changes in participants with specific relation to their parenting. Thus, we take the results of the word completion task to show that the participants were successfully primed without reference to factors such as stimulus onset asynchrony, length of time the prime is displayed, and so forth. Under the circumstances of this design there is no reason to assume that this group of fathers would differ systematically from the many populations for which priming has been successfully demonstrated to occur following exposure to complex colour images, especially given the positive results of the word completion measurement task. However, the possibility for further cognitive evaluation occurring subsequent to the priming effect cannot be ruled out. Traditional priming research typically considers any observed effect to be solely due

to priming when the stimulus onset asynchrony (SOA) is less than 300ms (Hermans et al., 2001; Klauer, 1997; Storbeck & Clore, 2008), which was not the case in this research design. Instead, the SOA was deliberately much longer than this, with the stated objective of exploring the priming effect under the specific real-world conditions of a parenting intervention, and therefore it is expected that other cognitive effects may have moderated the priming effect to achieve the observed outcomes.

The application of affective priming to parenting in general, and fathering in specific, is an interesting combination of experimental and social psychology. The priming effect has been exhaustively demonstrated under various highly controlled conditions, although questions still remain around the cognitive mechanisms that underlie priming, around consistently reproducing priming experiment outcomes even under similar or identical conditions, and under what circumstances priming is altered, suppressed, moderated or enhanced by other cognitive processes. These can include deliberate corrective processes if the participants are told, or guess, the purpose of viewing the priming images is to alter their thoughts and behaviours.

Fazio (2001) made a case for reverse priming, or the potential tendency for people to deliberately correct for the biasing effect of a prime. Fazio believed this was particularly likely to occur if a feasible explanation for the prime was not offered, such as if the participants viewed a prime but were asked to ignore it or not otherwise given an explanation for what they were viewing that masked the true intent of the prime. This cognitive effect of deliberate bias correction could be one contributory factor accounting for movement in the direction that was the opposite to what was expected for any given priming intervention in this experiment.

In the research design for this experiment, participants were not given a comprehensive explanation for why they were being asked to view the priming images. They were merely told this was a memory task and to pay attention to the images in order to perform well on the recognition task they would be given later. That is, they were told the priming task was in fact a memory task, but not given an explanation for why the research required a memory task to be

completed. Fazio (2001) suggests that when participants are instructed to ignore a priming stimulus, a reverse priming effect, caused by participants correcting for the influence of the prime, can occur, which often accounts for unexpected results or failure to replicate priming outcomes in a particular experimental paradigm. One question to consider, then, is the believability of the current experimental design for the participants involved. Was an explanation for the memory task required to make this ruse believable, or was it enough to conceptualise what was really an affective priming intervention as a simple memory test without explaining the purpose of this memory test? Fazio specifically suggests framing a priming intervention as a memory test as a useful way of obscuring the true intent of the prime; however, whether the specific experimental design used in this research was effective still merits thought. The informal debrief completed with participants following the experiment's conclusion queried what they thought the purpose of the experiment had been. The majority of participants did not specifically query the inclusion of the priming images or memory (recognition) test, though some noted they had wondered about the purpose of the images. Consideration of how to most effectively mask a priming intervention without complicating the experimental procedure or unnecessarily misleading participants is worthwhile for this type of experimental design.

Secondly, it is possible that although participants were successfully primed, that the priming effect was not powerful enough to cause changes in habitual thought patterns and actions. Despite research demonstrating the robust and long-lasting nature of affective priming under some specific conditions, traditional priming research has often demonstrated that a priming effect that is observed at an SOA of 300ms or less may not be apparent at an SOA of 1000ms. Researchers such as Druckman et al. (2004), Druckman (2004), Donovan et al. (2008) and Yi (1990) have all demonstrated a priming effect that is enduring in nature; however, at this point it is important to consider the difference between successful priming that measurably activates a priming related schema, and successful priming that alters schemas and thus produces significant and consistent changes in attitude and behaviour. Our best demonstrations

of real-world priming come from the fields of advertising and election campaigning. When priming is influencing people in real world, rather than laboratory conditions, advertisers and campaign managers may be relying on repeated exposure to the priming stimulus over time to achieve the desired outcome of influencing voting or purchasing behaviours. For instance, advertisers expect potential consumers to view or read their ads more than once, and election campaigns run for months or even years, depending on the country in question. During these time periods, people may view advertisements or election campaign messages many times, and thus changes in their attitudes and behaviours as a result of being exposed to these priming influences may be the result of multiple condensed exposures over a certain time period, through alteration of individual schemas related to the priming content. The experimental design for this thesis consisted of just a single priming exposure, which may have been insufficient to produce the kind of measurable change we hypothesised would occur.

Another possibility to consider is whether changes did occur in participants' tendencies to experience blaming and forgiving attributions, or to select harsher or more constructive parenting actions, however the way in which we measured participant's attributions and proposed parenting actions did not adequately or accurately capture any potential change. Self-report measures are vulnerable to response bias and in particular this measure was vulnerable to social desirability bias. While participants were encouraged to be truthful in their responses and assured of the anonymity of their data, some may still have been consciously or unconsciously desirous of appearing as the best possible father they could be. A significant tendency to over-ascibe to positive parenting thoughts and actions, or to undersubscribe to negative parenting thoughts or actions, was not noted in the sample as a whole, but given the expected magnitude of changes in this experiment was small, even minor corrections for social desirability reasons may have had an impact on the overall outcome.

A different kind of response error is also possible, in that participants were asked to imagine their child misbehaving in a certain way, and to consider carefully how they would think or react. Observing actual parenting actions when the participants interacted with their

own children was, in a practical sense, difficult, and observing actual thought patterns a participant might have about their child impossible. Nevertheless, it should be noted that considering child misbehaviour in an abstract way and rating the likelihood of experiencing certain thoughts and utilising certain actions while not under the kind of stress that actually experiencing a child misbehaving while in your care can cause, may not be a completely accurate representation of the thoughts and actions a father might actually have under these circumstances. This may be the case even when the participant is trying hard to be truthful and is not concerned about social desirability, even unconsciously. While the child misbehaviour scenarios were the best way we had available to measure a father's thoughts and actions relating to his own child's misbehaviour under these circumstances, it is acknowledged that our results may differ from the results that would be found if fathers were to actually experience their child misbehaving before being asked to rate their thoughts and parenting choices.

However, while the expected interaction effect was not found either for the overall analysis or the scenario pair analyses, it is notable that there was a significant change on post-test, compared to pre-test, on the blaming attributions dependent variable in the case of the overall analysis, scenario pair 1 analysis, and scenario pair 3 analysis. That is, on these analyses all groups became significantly more blaming on post-test compared to their pre-test scores, and this change was not apparently related to either the emotional valence of the primes they observed, or the content of the primes.

One interesting possibility to consider is whether the pre-test child misbehaviour scenarios themselves acted as priming stimuli on the participants, specifically more powerful priming stimuli than the images the participants viewed. The participants in this study each completed four child misbehaviour scenarios prior to the priming intervention, and four scenarios following the priming intervention. As these scenarios are negative in nature, it is interesting to consider whether these negative descriptions of child behaviour were more powerful and more salient to the participants than the briefly presented generalised images of fathers interacting with children. It is, of course, the case that the participants were asked to

carefully consider and imagine their own child engaging in each misbehaviour, and also to focus on them for several minutes, while the priming images did not involve their own children and were only briefly presented. With each exposure to a negative child misbehaviour scenario the participants may have felt increasingly more negative towards their child, with this effect being the cause of the observed increase in blaming attributions that occurred regardless of what priming intervention the participants were exposed to. That is, repeated exposure to negative imagined behaviour by their own children was sufficiently powerful to obliterate the priming effect of the images, and ultimately cause changes in the blaming attributions dependent variable in some circumstances. This explanation is consistent with the negativity bias hypothesis, which states that the human cognitive system will prioritise attentional resources towards negative information due to the evolutionary advantages of doing so in ancestral environments (Hermans et al., 2003; Ito et al., 1998; Klauer, 1997; Peeters & Czapinski, 1990). It may be that participants not only found the scenarios more powerful and meaningful to them, but were also biologically predisposed to focus on these negative descriptions, thus obliterating or altering the intended priming effect of the images.

This effect was not observed for scenario pair 2 or scenario pair 4, so may have been significant for two of the scenario pairs, and overall, and not the other two scenario pairs, due to differences in how well these scenarios were matched. Differences in the paired scenarios may have obscured any influence of cognitive changes resulting from priming. No corresponding decrease in forgiveness was noted either, with this dependent variable not changing significantly from pre- to post-test in either the overall analysis or the pair analyses. However, correlational analysis shows blaming attributions and forgiving attributions are not clearly polar opposites, meaning it is not a given that becoming more blaming should be expected to be associated with also becoming less forgiving.

The decision to consider the evolutionary and social roles of fathers in the content of the primes was because the evolved fatherhood roles may relate to fathering schemas that are fundamental and powerful, thus causing these primes to exert a more powerful priming

influence. While the images used in this experiment did not depict the participants themselves due to practical and design difficulties in doing so, it was hoped that by depicting fathers engaged in the archetypal roles of protector and teacher that they felt connected to, familiar with, and proud of, it would enhance the priming image's relevance to them. However, Banse (2001) argued that personally meaningful primes may carry more weight in priming interventions. This, therefore, may have increased the power of the effect the child misbehaviour scenarios had as potential priming stimuli in their own right. Participating fathers were asked to imagine their own child engaging in the described behaviour of the scenarios, and this may have been more powerful as a cognitive influence to them than pictures of strangers interacting with children, even when this occurred within roles that were highly relevant to them and their experiences.

The failure to see changes in either harsh or constructive parenting behaviours may be attributed to the fact that it is likely easier to shift people's thoughts about their child than their proposed behaviours towards their children, especially on a single exposure to any priming intervention – whether that was images or child misbehaviour scenarios. With the exception of harsh parenting actions in Scenario Pair 3, no significant changes across time were observed for the parenting actions dependent variables. In the one case of a significant change for the parenting actions dependent variables, it is interesting that the change occurred in the opposite direction to expectation, with the positive prime valence groups exhibiting no change and the negative valence prime groups becoming less harsh on post-test relative to pre-test (prime content had no significant interaction effect). In this case, we note that the majority of this change occurred for the evolutionary negative group, with the general negative group contributing only a small amount to the overall observed change. We know from the priming analysis that the evolutionary negative group was not as clearly and unambiguously negative in resultant affect as the general negative group. It is theorised that this is because some of the evolutionary negative priming images depicted fathers protecting or saving their children from danger, which may feasibly have induced positive emotions of pride and relief. We can

speculate that this significant change in harsh parenting actions on Scenario Pair 3 for the evolutionary negative group in particular was influenced by these emotions, contributing to change occurring in the opposite direction to what was expected, although we do not have specific data to confirm this effect from this experimental design.

Priming as a Clinical Intervention

There are two theoretical ways in which affective priming could be used as a clinical intervention. The first is to alter affect and the thoughts and reactions linked to that affect moment to moment. This might be achieved, for example, by exposing people to the priming intervention prior to them engaging in a particular activity or behaviour. The second way is through repeated priming interventions over time, leading to long-term changes in a person's schema relating to that situation, environment, or event. Affective priming may activate schemas relevant to the content of the primes, thus activating a specific channel through which information immediately following the prime will pass. Repeated exposure to a priming intervention may be one method by which schemas are slowly altered over time, leading eventually to corresponding changes in thought patterns and behaviours so people remain consistent with their schematic understanding of that part of their world. There is very little in the way of literature showing priming can be used as a clinical intervention, or adjunctive intervention to increase the success and power of more traditional clinical work. However, I believe that it is worthwhile to explore this potential role for affective priming.

Affective primes of images of fathers interacting with children may activate the fathering/parenting schema and result in automatic elicitation of either positive or negative affect depending on the affective content of the prime pictures. Doing so only once may cause a shift in thoughts and behaviours associated with parenting for some individuals, although not consistently for a group of varied participants. The question is whether a more reliable, consistent, and powerful effect could be obtained through repeated priming interventions over time assisting the gradual development of schematic changes, wherein participants add more

positive and constructive elements to their parenting schema, and reduce the presence or impact of negative parenting attitudes and beliefs.

One interesting finding from this project is that content of the priming stimuli may be less powerful in effecting cognitive or behavioural change than other factors, such as how personally meaningful a prime is to the individual exposed to it. While evolutionary roles of fathers were used to inform the content of priming images, and this was hypothesised to have a larger effect than primes with content less directly applicable to fathering, the initial priming analysis showed no significant difference between the groups in priming outcomes. While the Evolutionary Positive group demonstrated the highest proportion of parenting related words, at 46.7 %, this was only 3.9% higher than the General Positive group. This suggests that all the priming images successfully primed the participants with only minor differences occurring due to content.

One theory discussed earlier is that the negative child behaviour scenarios may have acted as priming stimuli for the participants, as reflected by significantly increased blaming attributions across all groups in three of the five sets of analyses conducted. These scenarios were unique from the priming images in being solely negative in nature, and in being much more personally meaningful to the participants, as they were specifically asked to think of their own child acting in the described manner. Although we do not have a direct measure of the potential priming effect of these scenarios, as it was not foreseen that this type of effect might occur, it cannot be ignored that in several analyses a significant increase of blaming attributions occurred across the board and the negativity of the scenarios themselves may have been the cause. If so, it raises interesting questions about how professionals should interact with parents, especially parents of so-called “problem” children. Do we focus on the negative behaviours and how to counteract or manage them? Or should more time be given to helping parents recognise positive behaviours and traits in their children, regardless of problems with bad behaviour? How much are we influencing the thought processes of parents in a negative direction when we spend an hour of focused time on how terribly a child has been behaving? And what is the potential

effect when this occurs in the context of long-term therapy relationships or group classes, where an hour a week is dedicated to negative thoughts about one's child? While there is no evidence from this research that this is liable to cause significant negative changes in parent's actions towards their children, perhaps it points to the responsibility of professionals, in their work with parents, to step back from specific behaviours every now and then, and see the bigger picture – parents' emotional relationship with their child.

Interestingly, while several analyses demonstrated a significant increase in blaming attributions across all research groups, regardless of the primes they viewed, this was not associated with any predictable significant increase in harsh parenting actions, despite analysis suggesting these factors correlate with each other. In fact, in one case the opposite occurred – on scenario pair 3 a significant effect of time for blaming attributions was observed, while concurrently a significant decrease in harsh parenting actions occurred for the evolutionary negative group. While this could have occurred due to the priming images overriding any possible priming effect of the scenarios, this raises an interesting question regarding how parenting thoughts and attitudes relate to behaviours, with negative in the moment thoughts perhaps not directly causing increased harsh and punitive actions. That is, maybe parents can feel very negative towards their child, and still act in a calm, constructive, and positive manner. If this is the case, professionals working with parents who are struggling may benefit from teaching parents to cope with negative feelings towards their child while not allowing this to influence their parenting actions. However, this finding should be considered in the light of the earlier discussed caveat of possibly not adequately capturing how participants may have felt and behaved under the stress of a real misbehaviour incident, relative to how they report they think they would act when objectively rating a theoretical incident while in a calm, measured emotional state.

This research does not contradict the theory that affective priming could be used as an adjunct to treatment, not as a treatment itself, to enhance treatment effects, as suggested by Evans (2009). It is a common issue in therapeutic interventions with families and significant

adults in a “problem” child’s life that frustrated and despairing adults may feel too negatively towards the child to be able to engage well with positive interventions (Evans, 2009). Positive affective priming has a potential role to play in helping these families to an emotional place where they can believe in the possibility of change and growth.

Along the same lines, affective priming is therefore likely to be effective only for a small subset of parents who feel negatively, and act harshly, towards their children – although there is an argument to be made for increasing positivity and constructive parenting behaviours even for parents who already feel quite positively towards their children. One thing I noted from this sample is that the majority of fathers rate themselves as quite highly forgiving, and very constructive in their parenting, before any interaction with the researcher is undertaken. For these types of fathers priming may have little effect in a useful way. If they are already not very blaming, are highly forgiving, and not particularly harsh but quite constructive, there is little room for positive movement regardless of the power of a priming intervention. Would fathers who admitted they were struggling with the emotional relationship they had with their child have been more influenced by a priming intervention than our sample of relatively happy and content fathers?

Limitations and Future Considerations

Sample size. The sample size obtained for this project was 48 fathers of 5-12-year-old children. This resulted in 12 participants per group. A larger sample size of 15-20 participants per group would have been preferred, but this proved too difficult to obtain in the time available for the research.

Sample variability. While every effort was made to simplify the child misbehaviour scenarios used as measures in this experiment, it is essential to acknowledge that individual differences in interpretation of the scenarios may have been significant. We know that there was some variability between the groups at pre-test, and within groups the variability between participants on the dependent variables at pre-test was quite high. This may have been a

reflection of individual differences in interpreting the child misbehaviour scenarios. For example, it is perfectly feasible that one father may consider their child hitting another child as horrendous behaviour, while another may consider it normal for children to have physical disagreements sometimes.

This difference may have had greater significance in cases where the scenario pairs were not as well matched. For example, scenario pair 3 considered the general theme of children breaking household rules to use technology when they are not supposed to. However, one scenario in this pair described the child getting out of bed at night to play on the computer, while the other described the child watching TV instead of doing homework. It is likely that some fathers in the sample would consider homework vastly more essential and important than others, leading to variability in score based on interpretation of the scenario rather than the priming effect. While randomising the order that scenarios were presented may have helped reduce the impact this effect had on outcome scores, it is unlikely to have mitigated the issue entirely. Future research may wish to take into account the difficulty of matching scenarios even when they are simplified as much as possible (as shown in Figure 30, Appendix G) and, given the differences between measuring a theoretical response versus measuring a real response to actual child misbehaviour, consider how this could be changed within practical constraints of research of this type.

Potential confounding factors. The two most likely confounds in this research were the gender of the child, and the child's birth order. There is research suggesting that parents treat their children differently on the basis of whether they are male or female, and on whether they are the oldest child, or later in the birth order. At this stage of the research inquiry it was necessary to see if the priming effect could be obtained with a group of fathers in general; however, in future research it may be useful to consider the gender or age of the child to be an independent variable and thus recruit groups of fathers based on these factors for further inquiry.

Lack of a measure of emotional state. While research has demonstrated that priming can be inhibited by sad affect, it is hypothesised that the primary emotions elicited by the negative images in both the general and evolutionary priming groups were fear and anger. While it is feasible that images of natural disaster, parental indifference, children being yelled at, and fathers being protective of children in dangerous situations, could elicit sadness, it is unlikely these images elicited only a single, simple emotional state. Furthermore, it is likely that the participants in this study had different emotional reactions to the image sequences depending upon their own life experience, memories, current circumstances, and so forth. It is worth noting that no participant expressed any emotional distress or upset following viewing the images, and that none of the images were selected with the aim of inducing a singular specific emotional state such as sadness. Rather, it was expected that the participants in the negative groups would experience or at least observe more negative emotional states (including sadness, fear, anger, and annoyance) than those in the positive groups.

However, it is noted that no specific measure of participant emotional state was included in the research design. At the time of designing this project I chose not to include an emotional state measure as it would increase the length of participation time and risk disruption to the priming effect, as was seen with the child misbehaviour scenarios themselves potentially acting as primes. An indirect measure of emotional effect was included in the analysis of priming words for negative and positive words, and this indicated a generally expected pattern of negative affect and positive affect following priming image exposure. However, in retrospect a specific measure of emotional reaction to the priming images may have been useful, and should be considered for inclusion in future designs of this type of project.

Response style and interpretation of the questionnaire. Due to the unexpected pattern of results obtained in this experiment it was interesting and useful to look at individual participant responses to the child misbehaviour questionnaires. While the majority of participants responded in a consistent way on the discipline ratings of the questionnaire (i.e., they were either harsh or constructive, and were generally consistent across the various misbehaviour

scenarios), some of the respondents demonstrated more unusual response profiles. For some, when their individual harshness and constructiveness scores are observed, it becomes clear these parents are actually extremely passive – they do not express a strong likelihood of choosing any of the available discipline responses. There is a small chance that some participants utilise very specific disciplinary responses not asked about on the questionnaire. However, given the seven responses cover most common parenting strategies, it is more likely that some of the fathers who participated are very passive parents who do not respond to their child's misbehaviour. They may leave discipline to their partner, or as a family they may be nonresponsive to misbehaviour in their children – for example, ignoring or dismissing bad behaviour for any number of reasons such as tiredness, apathy, distraction, or dismay at the child's behaviour.

The opposite unusual response style was seen in fathers who rated all or many of the discipline response options as likely or very likely to be utilised. This indicated a tendency to respond to misbehaviour with many different responses, both constructive and harsh. These respondents appear to be unselective and perhaps overly responsive to bad behaviour. It is unclear whether these types of participants consider all disciplinary strategies as potentially useful at all times but would actually select only one or two responses in real time, perhaps dependent upon factors such as location of the misbehaviour, how recently the child has been reprimanded for the same behaviour, or whether these respondents actually discipline in many different ways for a single behaviour. While it is considered normal and effective to combine disciplinary strategies in some circumstances – for example, sending your child to time out for hitting a friend and then asking them to apologise when they've calmed down – it is more unusual to see a wide variety of both constructive and harsh disciplinary responses endorsed for one behaviour. While on an individual level this style of parenting response is not problematic but merely reflective of a participant “hedging their bets” and selecting all possible disciplinary responses in this theoretical scenario while understanding that under real world circumstances only one or two strategies would actually be employed – it does become an issue if some participants interpreted the questionnaire this way, while others reflected more closely on the

individualised circumstances of each misbehaviour scenario and rated only their most preferred response highly, despite feeling that many responses were acceptable.

Changes to consider for future iterations of this research may be to change the wording and structure of the questionnaire, or specify exactly which response style is required – either rating all acceptable or likely responses and actions highly, or prioritising only the most likely response or action. Either of these response styles could provide interesting information. The former may provide a general indication of parenting attitudes and preferences, while the latter would ask participants to make a definite decision on their actual parenting actions and attitudes in the moment in response to that scenario. The problem arises when some participants interpret the questionnaire one way and others interpret it the other way, which could be rectified by reducing ambiguity in this area.

The effect of individual schema content on the priming effect. This design did not attempt to measure and define the elements of the participant's personal, unique and individual parenting or specific fathering schemas. As suggested by Tiggeman et al., (2004), it is equally important to first determine that specific stimuli can cause acute changes in relevant schema activation, as it is to then explore the stable individual differences in people's schemas for a particular area of their life. In this design, I demonstrated that exposure to any relevant image of a father and child successfully activates a general parenting schema in a group of fathers, however I did not find that simple activation of these participant's schemas was sufficient to lead to the type of consistent cognitive change I predicted. It is worth considering whether attention to the unique and individual elements that contribute to any given father's personal parenting or, even more specifically, fathering schema could allow primes to be more effective in not only activating a schema but in producing consequent changes in thoughts and behaviour.

A person's parenting schema contains their conception of the caregiving role, their own way of carrying out that role, what children generally need, and what a person's own children are like (Azar, Nix & Makin-Byrd, 2005). Parenting schemas can be considered a type of relational

schema, thus containing regularities in their patterns of interpersonal relationships and interactions (Baldwin, 1992). A fathering schema in particular may contain elements unique to fatherhood, such as a father's belief in the roles a father should and can play in his children's lives, and how he differs from but complements his children's mother in his interactions with his children (Cabrera et al., 2000). It appears from the results of this research that the individual elements of schemas are irrelevant to their activation by primes with any parenting content, but it is the social-cognitive elements of people's schemas that can perhaps be targeted by more specific or repeated prime exposures to achieve behavioural and cognitive changes. Related to this is the important issue of a father's attachment to his children, and additionally his own attachment style from his own upbringing and relationship with his parents (Azar et al., 2005). Attachment may conceivably be a highly important influence upon the development of a father's personal fatherhood schema, and therefore have contributed to the significant individual differences in cognitive and behavioural measures following a priming intervention observed in this sample of fathers.

Future research may want to consider exploring and capturing individual schematic elements in relation to a person's parenting prior to developing the priming intervention. This may be achieved either by using measures or interview techniques designed to discover individual schematic structures and influences, or by targeting a group of fathers likely to have similarly dysfunctional parenting or fathering schemas as suggested by consistent, shared parenting difficulties – for example, a group of fathers referred for parenting support by professionals. Following the successful demonstration of relevant primes activating fathering schemas, a logical progression for this type of research is to explore the many nuanced, varied factors – such as social cognition, attachment, and dysfunctional schematic elements – that may contribute to whether any individual father changes behaviourally or cognitively in a predictable way following a specific priming intervention.

CONCLUSION

While some people have conceivably studied parenting advice sources and thought carefully and at length about how to raise their children, it is likely that most fathers don't ascribe to or have a theory of discipline or parenting, including the majority of those sampled in this research. Rather, most fathers simply react when their children misbehave, responding in the moment of the behaviour according to their attitudes and current emotional state. Their attitudes may have been shaped by many influences – their own upbringing and the beliefs and actions of their parents, their partner's parenting attitudes and decisions, the way members of their peer group tend to raise their children, and so forth. Additionally, a father's model of what "fatherhood" and parenting are may be influenced by the evolutionary history of fatherhood – implicit attitudes and actions relating to the roles ancestral fathers held for generations.

The question of whether we can use priming to change these attitudes is an important one to consider, given that this is an easily applied, cheap, universally accessible intervention. Exactly how that priming should be carried out – including what content the primes should contain, how they are presented, and how unforeseen changes may impact the priming effect, are also important questions to consider. It appears that in the form priming took in this experiment, consistent and expected cognitive and behavioural changes were not achieved in the way predicted prior to the experiment taking place. This is despite a measurable priming effect being achieved for all groups.

The most likely explanation for this finding is that a singular priming exposure was insufficient to cause demonstrable behavioural and cognitive changes in belief, and that in the circumstances most analogous to this experiment – voting and advertising – changes in brand attitudes, purchasing behaviour, and voting decisions are the result of repeated priming exposures leading to schematic changes in attentive individuals. Priming has been demonstrated to cause a cognitive effect in terms of activating a schema – this was successfully demonstrated by a word completion task in this experiment. However, altering schemas and therefore attitudes and behaviours relating to that schema in a consistent, significant way may require more than a

singular priming exposure to consistently produce change across many diverse but interested and attentive individuals.

The second strong possibility for explaining these findings is that the measure of change caused by the priming was insufficient, for one of several reasons. The most significant was that participants were asked to imagine their child misbehaving and rate their likely thoughts and actions in this situation. While most participants were very likely to be as honest as possible, there is a good chance that rating thoughts and behaviours in response to an imagined, abstract misbehaviour may obtain different results than if the participants had been measured actually reacting to their child misbehaving in real time. This was impractical to achieve in reality for this particular project, but may have contributed to the failure to find a consistent expected change in attributions and behaviours despite a measurably significant priming effect occurring.

One attitude change that was demonstrated in this experiment was that exposure to repeated negative thoughts and negative imagined scenarios of their child misbehaving appeared to have the ability to significantly increase father's blaming attributions regarding their child's misbehaviour. This, at least, shows that when a father focuses on the negative aspects of his child's behaviour his thought patterns about his child can change in a negative way. This finding has two important implications; that researchers should be attuned to potentially minor factors contributing to unexpected outcomes in ways that were not foreseen in the experimental design process, and which may have obliterated or altered the priming effect changes caused by the priming images. And, with specific reference to the finding regarding blaming attributions in this experiment, that a focus on negative elements of a child's behaviour can contribute to negative thought patterns about the child in general in a parent. Therefore, parenting interventions should focus on emphasising the positive outcomes of kind, thoughtful, calm parenting rather than emphasising the negative outcomes of harsh parenting as well as highlighting a child's strengths rather than focusing entirely on addressing troublesome behaviour.

Overall, this research demonstrated that priming a fathering or parenting schema is possible with complex colour images of fathers interacting with their children. I argue that this was a successful demonstration of the enduring nature of a priming effect under some conditions. The content of the primes appeared less important than how personally meaningful the primes were, and although there was some effect based on whether the affective primes were negative or positive in their emotional content, this did not significantly impact the priming effect itself. While a single priming intervention was sufficient to activate a relevant schema, it either was not powerful enough to effect consistent schematic changes and result in consistent and predictable attitude and behavioural change, or our method of trying to capture these changes was inadequate. Potentially, some combination of these factors was responsible for the outcomes observed. However, an illustration of how stimuli presented to participants with the intention of being a measure can potentially become a priming stimulus in and of itself was achieved. This highlights the sensitivity and complexity of human cognitive systems, and also points to the danger of negative, personally meaningful information in any form overriding other, more intentionally presented stimuli to cause unintended cognitive changes. The consequences of these changes may be fleeting and small, at least in singular dosages as presented here, but they are nevertheless meaningful in terms of the impact this may have on children when interacting with their parents.

Finally, it should be realised that affective priming is considered to be an adjunctive intervention, most useful when used alongside specific parenting interventions to strengthen any intended effects. It is also likely to be useful only for a small subset of parents who feel quite negatively, and perhaps also behave quite harshly, towards their children. For this small subset affective priming may be helpful when added to whichever parenting intervention they are undertaking. However, the form this priming takes should be carefully considered in light of the findings that unexpected cognitive changes can occur without foresight from the person applying the priming, that calmly and rationally considered misbehaviour might be quite differently experienced by parents than actual misbehaviour occurring when emotions are

running high, and that personally meaningful primes appear more powerful than primes with generic content, even when that content is highly relevant to fathers as a group overall.

Affective priming in the exact form that it was carried out in this study did not produce the kind of consistent and enduring cognitive and behavioural changes we hoped to find with a sample of fathers; however, nonetheless it was demonstrated that fathers can be successfully primed with complex colour images, with these primes activating fathering-relevant schemas. With consideration of the results of this experiment and the proposed reasons I believe we obtained the outcomes that we did, it is very possible that affective priming might yet be a useful adjunctive clinical intervention for fathers struggling with how to warmly and effectively parent their children, particularly those who self-identify problems with emotional connection and positive relationships with their children. Further research, which takes into account the implications, unexpected and yet interesting findings, and limitations of this project, is required to further clarify whether affective priming is worth persisting with in this context. If so, how it might look should be carefully considered based on the design-related findings of this research, but a springboard from which to make these explorations has been achieved.

REFERENCES

- Amato, P.R. (1987). Family processes in one-parent, stepparent, and intact families: The child's point of view. *Journal of Marriage and Family*, 49, 327-337.
- Amor-Ponter, V., Ulloa, M. L., & Evans, I. M. (2008). *The influence of cultural and emotive images on mothers' attributions regarding the nature of misbehaviour and its deserved consequences*. Paper presented at the annual conference of the New Zealand Psychological Society, Christchurch, New Zealand.
- Anderson, K.G., Kaplan, H., & Lancaster, J. (1999). Paternal care by genetic fathers and step fathers I: Reports from Albuquerque men. *Evolution and Human Behavior*, 20, 405-431.
- Anderson, K.G., Kaplan, H., Lam, D., & Lancaster, J. (1999). Paternal care by genetic fathers and step fathers II: Reports by Xhosa high school students. *Evolution and Human Behavior*, 20, 433-451.
- Azar, S.T., Nix, R.L., & Makin-Byrd, K.N. (2005). Parenting schemas and the process of change. *Journal of Marital and Family Therapy*, 31, 45-58.
- Baldwin, M.W. (1992). Relational schemas and the processing of social information. *Psychological Bulletin*, 112, 461-484.
- Baldwin, M.W., Carrell, S.E., & Lopez, D.F. (1990). Priming relationship schemas: My advisor and the Pope are watching me from the back of my mind. *Journal of Experimental Social Psychology*, 26, 435-454.
- Balmas, M., & Sheafer, T. (2010). Candidate image in election campaigns: Attribute agenda setting, affective priming, and voting intentions. *International Journal of Public Opinion Research*, 22, 204-224.

- Banse, R. (1999). Automatic evaluation of self and significant others: Affective priming in close relationships. *Journal of Social and Personal Relationships, 16*, 803-821.
- Banse, R. (2001). Affective priming with liked and disliked persons: Prime visibility determines congruency and incongruency effects. *Cognition and Emotion, 15*, 501-520.
- Bargh, J.A., Chaiken, S., Govender, R., & Pratto, F. (1992). The generality of the automatic attitude activation effect. *Journal of Personality and Social Psychology, 62*, 893-912.
- Bargh, J.A., Chaiken, S., Raymond, P., & Hymes, C. (1996). The automatic evaluation effect: Unconditional automatic attitude activation with a pronunciation task. *Journal of Experimental Social Psychology, 32*, 104-128.
- Bargh, J.A., & Ferguson, M.J. (2000). Beyond behaviorism: On the automaticity of higher mental processes. *Psychological Bulletin, 126*, 925-945.
- Bartlett, F.C. (1961). *Remembering: A study in experimental and social psychology*. Colchester: Spottiswood, Ballantyne & Co., Ltd. (Original work published 1932).
- Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence, 11*, 56-95.
- Belsky, J. (2012). The development of human reproductive strategies: Progress and prospects. *Current Directions in Psychological Science, 21*, 310-316.
- Belsky, J., Jaffee, S.R., Sligo, J., Woodward, L., & Silva, P.A. (2005). Intergenerational transmission of warm-sensitive-stimulating parenting: A prospective study of mothers and fathers of 3-year-olds. *Child Development, 76*, 384-396.
- Benshoof, L., & Thornhill, R. (1979). The evolution of monogamy and concealed ovulation in humans. *Journal of Social and Biological Structures, 2*, 95-106.
- Bower, G.H. (1981). Mood and memory. *American Psychologist, 36*, 129-148.

- Cabrera, N.J., Tamis-LeMonda, C.S., Bradley, R.H., Hofferth, S., & Lamb, M.E. (2000).
Fatherhood in the twenty-first century. *Child Development, 71*, 127-136.
- Callister, P. (1999). Iron John or ironing John? The changing lives of New Zealand
fathers. *Perspectives on Fathering, Palmerston North: Centre for Public Policy
Evaluation, 23-40*.
- Capaldi, D.M., Pears, K.C., Kerr, D.C.R., & Owen, L.D. (2008). Intergenerational and partner
influences on father's negative discipline. *Journal of Abnormal Child Psychology, 36*,
347-358.
- Chaiken, S., & Bargh, J.A. (1993). Occurrence versus moderation of the automatic attitude
activation effect. *Journal of Personality and Social Psychology, 64*, 759-765.
- Chang, L., Schwartz, D., Dodge, K.A., & McBride-Chang, C. (2003). Harsh parenting in
relation to child emotion regulation and aggression. *Journal of Family Psychology, 17*,
598-606.
- Conger, R.D., Neppl, T., Kim K.J., & Scaramella, L. (2003). Angry and aggressive behaviors
across three generations: A prospective, longitudinal study of parents and children.
Journal of Abnormal Child Psychology, 31, 143-160.
- Criss, M.M., Pettit, G.S., Bates, J.E., Dodge, K.A., & Lapp, A.L. (2002). Family adversity,
positive peer relationships, and children's externalizing behavior: A longitudinal
perspective on risk and resilience. *Child Development, 73*, 1220-1237.
- Crouch, J.L., Skowronski, J.J., Milner, J.S., & Harris, B. (2008). Parental responses to infant
crying: The influence of child physical abuse risk and hostile priming. *Child Abuse and
Neglect, 32*, 702-710.
- Custers, R., & Aarts, H. (2007). In search of the nonconscious sources of goal pursuit:
Accessibility and positive affective valence of the goal state. *Journal of Experimental
Social Psychology, 43*, 312-318.

- Daly, M., Salmon, C., & Wilson, M. (1997). *Kinship: The conceptual hole in psychological studies of social cognition and close relationships*. In: Simpson JA, Kenrick DT, editors. *Evolutionary social psychology*. Mahwah, NJ: Erlbaum; 1997. pp. 265–96.
- Daly, M., & Wilson, M. I. (1996). Violence against stepchildren. *Current Directions in Psychological Science*, 5, 77-80.
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, 113, 487-496.
- Deater-Deckard, K., & Dodge, K.A. (1997). Externalizing behavior problems and discipline revisited: Nonlinear effects and variation by culture, context, and gender. *Psychological Inquiry*, 8, 161-175.
- Deater-Deckard, K., Dodge, K.A., Bates, J.E., & Pettit, G.S. (1998). Multiple risk factors in the development of externalizing behavior problems: Group and individual differences. *Developmental Psychopathology*, 10, 469-493.
- DiMaggio, P. (1997). Culture and cognition. *Annual Review of Sociology*, 23, 263-287.
- Donovan, T., Tolbert, C.J., & Smith, D.A. (2008). Priming presidential votes by direct democracy. *The Journal of Politics*, 70, 1217-1231.
- Draine, S.C., & Greenwald, A.G. (1998). Replicable unconscious semantic priming. *Journal of Experimental Psychology*, 127, 286-303.
- Druckman, J.N. (2004). Priming the vote: Campaign effects in a U.S. senate election. *Political Psychology*, 25, 577-591.
- Druckman, J.N., Jacobs, L.R., & Ostermeier, E. (2004). Candidate strategies to prime issue and image. *The Journal of Politics*, 66, 1180-1202.

- Evans, I.M. (2009). Positive affective priming: A behavioural technique to facilitate therapeutic engagement by families, caregivers, and teachers. *Child and Family Behavior Therapy*, 32, 257-271.
- Fazio, R.H. (2001). On the automatic activation of associated evaluations: An overview. *Cognition and Emotion*, 15, 115-141.
- Fazio, R.H., Jackson, J.R., Dunton, B.C., & Williams, C.J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, 69, 1013-1027.
- Fazio, R.H., Sanbonmatsu, D.M., Powell, M.C., & Kardes, F.R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology*, 50, 229-238.
- Flinn, M.V. (1988). Step-and genetic parent/offspring relationships in a Caribbean village. *Ethology and Social Biology*, 9, 335-369.
- Flynn, S., & Harris, M. (2015). *Mothers in the New Zealand workforce*. Paper presented at the LEW16 conference, Wellington, 27–28 November 2014. Available from www.stats.govt.nz.
- Geary, D. C. (2000). Evolution and proximate expression of human paternal investment. *Psychological Bulletin*, 126, 55-77.
- Giner-Sorolla, R., Garcia, M.T., & Bargh, J.A. (1994). The automatic evaluation of pictures. *Social Cognition*, 17, 76-96.
- Goldberg, M.E., & Gorn, G.J. (1987). Happy and sad TV programs: How they affect reactions to commercials. *Journal of Consumer Research*, 14, 387-403.
- Graf, P., Shimamura, A.P., & Squire, L.R. (1985). Priming across modalities and priming across category levels: Extending the domain of preserved function in amnesia. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 11, 386-396.

- Gray, P.B., & Anderson, K.G. (2010). *Fatherhood: Evolution and human paternal behavior*. Massachusetts, United States of America: Harvard University Press.
- Grecco, E., Robbins, S.J., Bartoli, E., & Wolff, E.F. (2012). Use of nonconscious priming to promote self-disclosure. *Clinical Psychological Science, 1*, 1-5.
- Greenwald, A.G., Klinger, M.R., & Liu, T.J. (1989). Unconscious processing of dichoptically masked words. *Memory and Cognition, 17*, 35-47.
- Hansen, C.H., & Hansen, R.D. (1988). How rock music videos can change what is seen when boy meets girl: priming stereotypic appraisal of social interactions. *Sex Roles, 19*, 287-316.
- Hermans, D., De Houwer, J., & Eelen, P. (1994). The affective priming effect: Automatic activation of evaluative information in memory. *Cognition and Emotion, 8*, 515-533.
- Hermans, D., De Houwer, J., & Eelen, P. (1996). Evaluative decision latencies mediated by induced affective states. *Behaviour Research and Therapy, 34*, 483-488.
- Hermans, D., Baeyens, F., & Eelen, P. (1998). Odours as affective-processing context for word evaluation: A case of cross-modal affective priming. *Cognition and Emotion, 12*, 601-613.
- Hermans, D., De Houwer, J., & Eelen, P. (2001). A time course analysis of the affective priming effect. *Cognition and Emotion, 15*, 143-165.
- Hermans, D., Spruyt, A., De Houwer, J., & Eelen, P. (2003). Affective priming with subliminally presented pictures. *Canadian Journal of Experimental Psychology, 57*, 97-114.
- Hills, A.B., & Kemp-Wheeler, S.M. (1989). The influence of context on lexical decision times for emotionally aversive words. *Current Psychology, 8*, 219-227.

- Ito, T.A., Larsen, J.T., Smith, N.K., & Cacioppo, J.T. (1998). Negative information weighs more heavily on the brain: The negativity bias in evaluative categorizations. *Journal of Personality and Social Psychology*, 75, 887-900.
- Kerr, D.C.R., Capaldi, D.M., Pears, K.C., & Owen, L.D. (2009). A prospective three generational study of fathers' constructive parenting. *Developmental Psychology*, 45, 1257-1275.
- Klauer, K.C. (1997). Affective priming. *European Review of Social Psychology*, 8, 67-103.
- Klauer, K.C., & Musch, J. (2002). Goal-dependent and goal-independent effects of irrelevant evaluations. *Personality and Social Psychology Bulletin*, 28, 802-814.
- Kleider, H.M., Pezdek, K., Goldinger, S.D., & Kirk, A. (2008). Schema-driven source misattribution errors: Remembering the expected from a witnessed event. *Applied Cognitive Psychology*, 22, 1-20.
- La Cerra, M.M. (1994). *Evolved mate preferences in women: Psychological adaptations for assessing a man's willingness to invest in offspring*. (Dissertation). Retrieved from Dissertation Abstracts International: Section B: The Sciences and Engineering, Vol 55.
- Lai, V. T., Hagoort, P., & Casasanto, D. (2012). Affective primacy vs. cognitive primacy: Dissolving the debate. *Frontiers in Psychology*, 3, 1-8.
- Lamb, M.E. (Ed.). (2004). *The role of the father in child development*. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Lazarus, R.S. (1982). Thoughts on the relations between cognition and emotions. *American Psychologist*, 37, 1019-1024.
- Marlowe, F. (1999). Showoffs or providers? The parenting effort of Hazda men. *Evolution and Human Behavior*, 20, 391-404.

- Marlowe, F. (2000). Paternal investment and the human mating system. *Behavioral Processes*, 51, 45-61.
- Marsiglio, W. (1992). Stepfathers with minor children living at home. *Journal of Family Issues*, 13, 195-214.
- McCoy, K.P., George, M.R.W., Cummings, E.M., & Davies, P.T. (2013). Constructive and destructive marital conflict, parenting, and children's school and social adjustment. *Social Development*, 22, 641-662.
- McKee, L., Roland, E., Coffelt, N., Olson, A.L., Forehand, R., Massari, C., ... Zens, M.S. (2007). Harsh discipline and child problem behaviors: The roles of positive parenting and gender. *Journal of Family Violence*, 22, 187-196.
- McLoyd, V.C. (1989). Socialisation and development in a changing economy: The effects of paternal job and income loss on children. *American Psychologist*, 44, 293-302.
- McLoyd, V.C. (1990). The impact of economic hardship on black families and children: Psychological distress, parenting, and socioemotional development. *Child Development*, 61, 311-346.
- Mendelberg, T. (1997). Executing Hortons: Racial crime in the 1988 presidential campaign. *Public Opinion Quarterly*, 61, 134-157.
- Meyer, D.E., & Schvaneveldt, R.W. (1971). Facilitation in recognising pairs of words: Evidence of a dependence between retrieval operations. *Journal of Experimental Psychology*, 90, 227-234.
- Mikulincer, M., Hirschberger, G., Nachmias, O., & Gillath, O. (2001). The affective component of the secure base schema: Affective priming with representations of attachment security. *Journal of Personality and Social Psychology*, 81, 305-321.

- Ministry of Justice. (2009). *Family court statistics in New Zealand in 2006 and 2007*. Retrieved from <http://www.justice.govt.nz/assets/Documents/Publications/Family-Court-Statistics-in-New-Zealand-in-2006-and-2007-full-report-PDF.pdf>
- Murphy, S.T., & Zajonc, R.B. (1993). Affect, cognition and awareness: Affective priming with optimal and suboptimal stimulus exposures. *Journal of Personality and Social Psychology, 64*, 723-739.
- Musch, J., & Klauer, K.C. (Eds.). (2003). *The psychology of evaluation: Affective processes in cognition and emotion*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.
- Neely, J.H. (1991). Semantic priming effects in visual word recognition: A selective review of current findings and theories. In D. Besner & G.W. Humphreys (Eds.), *Basic processes in reading: Visual word recognition* (pp. 264-336). New Jersey: Lawrence Erlbaum Associates.
- O'Leary, S. G. (1995). Parental discipline mistakes. *Current Directions in Psychological Science, 4*, 11-13.
- Payne, B. K. (2001). Prejudice and perception: The role of automatic and controlled processes in misperceiving a weapon. *Journal of Personality and Social Psychology, 81*, 181-192.
- Peeters, G., & Czapinski, J. (1990). Positive-negative asymmetry in evaluations: The distinction between affective and informational negativity effects. In W. Stroebe & M. Hewstone (Eds.). *European Review of Social Psychology* (Vol. 1, pp. 33-60). Chichester, England: Wiley.
- Rall, K. (1977). Sexual dimorphism in mammals: Avian models and unanswered questions. *The American Naturalist, 111*, 917-938.
- Ratcliff, R., & McKoon, G. (1988). A retrieval theory of priming in memory. *Psychological Review, 95*, 385-408.

- Robinson, M.D., Ode, S., Moeller, D.K., & Goetz, P.W. (2007). Neuroticism and affective priming: Evidence for a neuroticism-linked negative schema. *Personality and Individual Differences, 42*, 1221-1231.
- Rodriguez, C.M., & Green, A. J. (1997). Parenting stress and anger expression as predictors of child abuse potential. *Child Abuse and Neglect, 21*, 367-377;
- Runyan, D.K., Shankar, V., Hassan, F., Hunter, W.M., Jain, D., Paula, C.S., ... Bordin, I.A. (2010). International variations in harsh discipline. *Pediatrics, 126*, 1 - 11.
- Salgado, M. (2013). The evolution of paternal care. In A.M. Greenberg, W.G. Kennedy & N.D. Bos (Eds.), *Social Computing, Behavioral-Cultural Modeling and Prediction* (pp.1-10). Washington DC, USA: Springer Berlin Heidelberg.
- Sanders, M.R. (2008). Triple P-Positive Parenting Program as a public health approach to strengthening parenting. *Journal of Family Psychology, 22*, 506-517.
- Shimamura, A. P. (1986). Priming effects in amnesia: Evidence for a dissociable memory function. *The Quarterly Journal of Experimental Psychology, 38*, 619-644.
- Simons, R.L., Whitbeck, L.B., Conger, R.D., & Chyi-In, W. (1991). Intergenerational transmission of harsh parenting. *Developmental Psychology, 27*, 159-171.
- Storbeck, J., & Clore, G.L. (2008). The affective regulation of cognitive priming. *Emotion, 8*, 208-215.
- Strassberg, Z., Dodge, K.A., Pettit, G.S., & Bates, J.E. (1994). Spanking in the home and children's subsequent aggression towards kindergarten peers. *Development and Psychopathology, 6*, 445-461.
- Strassman, B. I. (1981). Sexual selection, paternal care, and concealed ovulation in humans. *Ethology and Sociobiology, 2*, 31-40.

- Tiggeman, M., Hargreaves, D., Polivy, J., & McFarlane, T. (2004). A word-stem completion task to assess implicit processing of appearance-related information. *Journal of Psychosomatic Research, 57*, 73-78.
- Trivers, R.L. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology, 46*, 35-57.
- Tulving, E., Schacter, D.L., & Stark, H.A. (1982). Priming effects in word-fragment completion are independent of recognition memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 8*, 336-342.
- Weiss, B., Dodge, K.A., Bates, J.E., & Pettit, G.S. (1992). Some consequences of early harsh discipline: Child aggression and a maladaptive social information processing style. *Child Development, 63*, 1321-1335.
- Winkielman, P., Zajonc, R.B., & Schwarz, N. (1997). Subliminal affective priming resists attributional interventions. *Cognition and Emotion, 11*, 433 – 465.
- Yi, Y. (1990). Cognitive and affective priming effects of the context for print advertisements. *Journal of Advertising, 19*, 40-48.
- Zajonc, R.B. (1984). On the primacy of affect. *American Psychologist, 39*, 117-123.

APPENDICES

Appendix A: Research Advertisement

[Print on Massey University departmental letterhead]

[Logo, name and address of Department/School/Institute/Section]

Parenting and Fatherhood: Causal Attributions and Disciplinary Responses for Child Misbehaviour

Doctoral Research project

I am a Clinical Psychology student at Massey University Palmerston North and I am currently seeking participants for a doctoral research project.

I would like to speak to fathers of a child or children aged 3 – 12 years about topics such as bad behaviour, discipline, parenting, and fatherhood.

Your participation would involve a brief interview of about one hour, answering a questionnaire and looking at some pictures.

This is a great opportunity to discuss parenting in a research context, share your experience and views of being a father, and help us make father's voices from all over New Zealand heard.

For more information please contact:

Kayla Mackie

kaylamackie@windowslive.com

0277170706

Appendix B: Priming Images

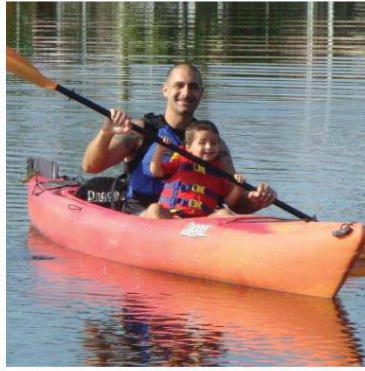
Group 1: general positive.



Group 2: general negative.



Group 3: evolutionary positive.



Group 4: evolutionary negative.



Appendix C: Child Misbehaviour Scenarios

Scenario pair 1: property damage following deliberate rule breaking.

1 A Your child isn't allowed to use their cricket set in the backyard, but they do so anyway and break a window.

1 B You have told your child not to kick a soccer ball around in the backyard, but one day they did and the ball broke a glass window.

Scenario pair 2: child physically lashes out at another child.

2 A Your child and their friend have a disagreement, and your child hits their friend.

2 B Your child has a friend over on the weekend. They have an argument and your child throws something at their friend.

Scenario pair 3: breaking a rule to use desirable technology.

3 A You ask your child to finish their homework before watching TV. When you go to check on them later that night they are watching TV and haven't even started their homework.

3 B Your child isn't allowed to use the computer at night. When you get up for a drink of water you discover they have snuck onto the computer and are playing games.

Scenario pair 4: public misbehaviour resulting in embarrassment for parent.

4 A You take your child to the supermarket with you and they ask for a chocolate bar. You say no and your child starts complaining and crying loudly, causing other people in the supermarket to look.

4 B You are shopping at the Warehouse and your child asks for a toy which you have already told them they have to save up for. They start loudly making a scene and calling you unfair and mean.

Appendix D: Attributions for Child Misbehaviour Questionnaire

Child Misbehaviour Scenario

What do you think is causing your child's behaviour?

A. They want attention

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

B. They do not like to share

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

C. They want to annoy me

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

D. They think they are the boss

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

E. It is not your child's fault

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

F. They have poor social skills

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

G. They are too young to know any better

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

H. This is a typical behaviour for a child this age

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

J. They made a mistake

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

K. They want to make me look bad

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

L. They don't respect the rules

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

Appendix E: Parenting Actions for Child Misbehaviour Questionnaire

How would you respond to or discipline your child?

A. Tell your child off

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

B. Smack your child

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

C. Take away a privilege or promised treat

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

D. Explain what they did wrong and ask them to fix it

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

E. Ask your child to apologise

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

F. Time out

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

G. Yell at your child

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

H. Tell your child they are bad

Extremely Unlikely	Very Unlikely	Somewhat Unlikely	Somewhat Likely	Very Likely	Extremely Likely
--------------------	---------------	-------------------	-----------------	-------------	------------------

Appendix F: Items Omitted From Analysis

- They want attention
- They do not like to share
- It is not your child's fault
- They have poor social skills
- They don't respect the rules
- Tell your child off
- Time out

Appendix G: Scenario Pilot Graph

Note: Scenarios are labelled consistently with the labels provided in Appendix C. Please see Appendix C for the content of each misbehaviour scenario.

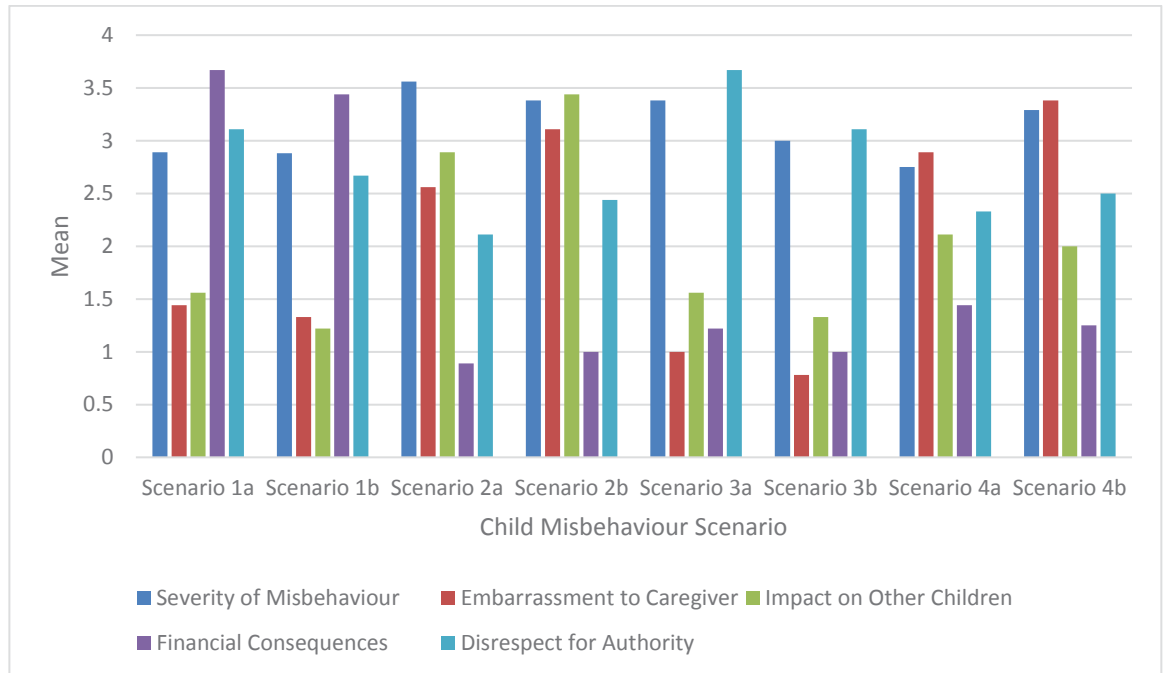


Figure 30. Pilot comparison ratings of paired child misbehaviour scenarios.

Appendix H: Categories of Questionnaire Response Items

Blaming responses.

- They want to annoy me
- They think they are the boss
- They want to make me look bad

Forgiving responses.

- They are too young to know any better
- This is typical behaviour for a child this age
- They made a mistake

Harsh discipline responses.

- Smack your child
- Yell at your child
- Tell your child they are bad

Constructive discipline responses.

- Take away a privilege or promised treat
- Ask your child to apologise
- Explain what they did wrong and ask them to fix it

Appendix I: Information Sheet

[Print on Massey University departmental letterhead]

[Logo, name and address of Department/School/Institute/Section]

Parenting and Fatherhood: Causal Attributions and Disciplinary Responses for Child Misbehaviour

INFORMATION SHEET

My name is Kayla Mackie and I'm a student in the Massey University Doctor of Clinical Psychology program in Palmerston North. As part of the requirements for my degree I'm conducting a research project which aims to understand fathers experience of raising and disciplining their children in New Zealand.

This project explores how fathers understand and respond to their children's misbehaviour in a variety of situations. It involves a brief interview with the researcher during which participants will be asked to answer a variety of questions about children's bad behaviour in a range of different situations. I would like to invite you to participate in this research.

If you have received this information sheet your name may have been obtained from persons known to the researcher who felt you might be interested in the research, such as friends, or you may have responded to an advertisement placed in local childcare facilities. You are eligible to take part if you are the father of at least one child aged from 3 years to 12 years old, and are able to speak English fluently. Up to 90 participants will be involved in this research project in order to cover a large sample of fathers from New Zealand and learn about their understanding of, and responses to, bad behaviour from their children. If you choose to participate in this research you will be reimbursed for costs incurred to travel to a location to speak with the researcher (where relevant) in the form of petrol vouchers. There is no risk of harm or discomfort to yourself should you choose to participate.

Participating in this research will involve an interview with the researcher which will take about an hour of your time. During this interview participants will be asked to read about child misbehaviour, answer questions about child misbehaviour, view some pictures, and fill in several forms for demographic and administration information.

The data collected from participants for this project will be analysed using statistical software and reported in the form of group means, meaning no individual participant will be able to be identified in the final research report. Only the researcher and research supervisors will have access to individual data and it will be stored in secure locked files for one year after the research is completed. Individual data will be destroyed at the end of this time period using methods approved by Massey University. All participants will be entitled to obtain a summary of the project findings if they would like to. **If you would like a summary of findings please notify the researcher now. These will be emailed to participants upon conclusion of the research project.**

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;

- withdraw from the study at any time until publication of the research;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

Researcher:

Kayla Mackie

kaylamackie@windowslive.com

0277170706

Research Supervisor:

Professor Ian Evans

i.m.evans@massey.ac.nz

Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application **13/23**. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Chair, Massey University Human Ethics Committee: Southern B, telephone 06 350 5799 x 8729, email humanethicsouthb@massey.ac.nz

In the event that this research has raised questions or issues for you about your parenting, relationships or family, the researcher would like to provide contact details for a registered family therapy counselor. This counselor may be contacted at your own request and contact with the researcher should you undertake this process is welcomed.

Relationships Aotearoa – Palmerston North

Phone: 357 6483

Westside Chambers, Lvl 1

151 The Square

Palmerston North 4410

Appendix J: Consent Form

[Print on Massey University departmental letterhead]
[Logo, name and address of Department/School/Institute/Section]

***Parenting and Fatherhood: Causal Attributions
and Disciplinary Responses for Child
Misbehaviour***

PARTICIPANT CONSENT FORM

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: **Date:**
Full Name - printed

Appendix K: Non-Significant Statistical Results

Overall analysis, forgiving attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across four pairs of child misbehaviour scenarios. An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There was not a statistically significant interaction in the level of forgiving attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .358, p = .553$, between emotional valence of the prime and test time, $F(1,44) = .718, p = .401$, or between prime content and test time, $F(1,44) = .000, p = .995$. The result of main effect of time was not statistically significant, $F(1,44) = .061, p = .806$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = .808, p = .374$. The main effect of prime emotional valence was not significant, $F(1,44) = 1.699, p = .199$. The main effect of prime content was not significant, $F(1,44) = 2.911, p = .095$.

Overall analysis, harsh parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across four pairs of child misbehaviour

scenarios. An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of harsh parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = 2.289, p = .137$, between emotional valence of the prime and test time, $F(1,44) = .010, p = .922$, or between prime content and test time, $F(1,44) = .495, p = .485$. The result of main effect of time was not statistically significant, $F(1,44) = .187, p = .667$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 2.662, p = .110$. The main effect of prime emotional valence was not significant, $F(1,44) = .060, p = .808$. The main effect of prime content was not significant, $F(1,44) = .897, p = .349$.

Overall analysis, constructive parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across four pairs of child misbehaviour scenarios. An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of constructive parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .294, p = .590$, between emotional valence of the prime and test time, $F(1,44) = .304, p = .584$, or between prime content and test time, $F(1,44) = 2.455, p = .124$. The result of main effect of time was not statistically significant, $F(1,44) = 1.126, p = .294$. There was no statistically significant interaction between emotional valence and prime

content, $F(1,44) = .014, p = .907$. The main effect of prime emotional valence was not significant, $F(1,44) = .309, p = .581$. The main effect of prime content was not significant, $F(1,44) = 3.811, p = .057$.

Scenario Pair 1 analysis, forgiving attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 1, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of forgiving attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .352, p = .556$, between emotional valence of the prime and test time, $F(1,44) = 1.073, p = .306$, or between prime content and test time, $F(1,44) = .000, p = .1.000$. The result of main effect of time was not statistically significant, $F(1,44) = .553, p = .461$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 1.604, p = .212$. The main effect of prime emotional valence was not significant, $F(1,44) = 2.147, p = .150$. The main effect of prime content was not significant, $F(1,44) = .803, p = .375$.

Scenario Pair 1 analysis, harsh parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions

or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 1, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of harsh parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = 3.356, p = .074$, between emotional valence of the prime and test time, $F(1,44) = .999, p = .323$, or between prime content and test time, $F(1,44) = 1.751, p = .193$. The result of main effect of time was not statistically significant, $F(1,44) = .236, p = .629$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 1.928, p = .172$. The main effect of prime emotional valence was not significant, $F(1,44) = .009, p = .924$. The main effect of prime content was not significant, $F(1,44) = .232, p = .633$.

Scenario Pair 2 analysis, blaming attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 2, Appendix C). An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There was not a statistically significant interaction in the level of blaming attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .621, p = .435$, between emotional valence of the prime and test time, $F(1,44) = 2.137, p = .151$, or between prime content and test time, $F(1,44) = .113, p = .738$. The result of main effect of time was not statistically significant, $F(1,44) = 1.021, p = .318$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 1.668, p = .203$. The main effect of prime emotional valence was not significant, $F(1,44) = 1.656, p = .205$. The main effect of prime content was not significant, $F(1,44) = .668, p = .418$.

Scenario Pair 2 analysis, forgiving attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 2, Appendix C). An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant, however as all other assumptions for this test were met analysis was continued.

There was not a statistically significant interaction in the level of forgiving attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .071, p = .791$, between emotional valence of the prime and test time, $F(1,44) = .433, p = .514$, or between prime content and test time, $F(1,44) = 1.380, p = .246$. The result of main effect of time was not statistically significant, $F(1,44) = 1.085, p = .303$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = .642, p = .427$. The main effect of prime emotional valence was not

significant, $F(1,44) = .749, p = .392$. The main effect of prime content was not significant, $F(1,44) = 3.710, p = .061$.

Scenario Pair 2 analysis, harsh parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 2, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of harsh parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .577, p = .452$, between emotional valence of the prime and test time, $F(1,44) = .087, p = .769$, or between prime content and test time, $F(1,44) = 1.811, p = .185$. The result of main effect of time was not statistically significant, $F(1,44) = .793, p = .378$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 1.672, p = .300$. The main effect of prime emotional valence was not significant, $F(1,44) = .049, p = .826$. The main effect of prime content was not significant, $F(1,44) = 1.344, p = .253$.

Scenario Pair 2 analysis, constructive parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime

emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 2, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of constructive parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .434, p = .513$, between emotional valence of the prime and test time, $F(1,44) = .131, p = .720$, or between prime content and test time, $F(1,44) = .005, p = .943$. The result of main effect of time was not statistically significant, $F(1,44) = .265, p = .609$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 2.502, p = .121$. The main effect of prime emotional valence was not significant, $F(1,44) = .813, p = .372$. The main effect of prime content was not significant, $F(1,44) = 2.227, p = .143$.

Scenario Pair 4 analysis, blaming attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 4, Appendix C). An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There was not a statistically significant interaction in the level of blaming attributions between the emotional valence of the prime, the content of the prime, and test

time, $F(1,44) = .710, p = .404$, between emotional valence of the prime and test time, $F(1,44) = 2.259, p = .140$, or between prime content and test time, $F(1,44) = .211, p = .648$. The result of main effect of time was not statistically significant, $F(1,44) = 3.088, p = .086$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = .413, p = .524$. The main effect of prime emotional valence was not significant, $F(1,44) = 2.036, p = .161$. The main effect of prime content was not significant, $F(1,44) = .038, p = .846$.

Scenario Pair 4 analysis, forgiving attributions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 4, Appendix C). An alpha level of .05 was utilised for this analysis. Results for Levene's test were significant; however, as all other assumptions for this test were met analysis was continued.

There was not a statistically significant interaction in the level of forgiving attributions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = 1.097, p = .301$, between emotional valence of the prime and test time, $F(1,44) = .003, p = .958$, or between prime content and test time, $F(1,44) = .651, p = .424$. The result of main effect of time was not statistically significant, $F(1,44) = 1.097, p = .301$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = .048, p = .827$. The main effect of prime emotional valence was not significant, $F(1,44) = 1.316, p = .257$. The main effect of prime content was not significant, $F(1,44) = .723, p = .597$.

Scenario Pair 4 analysis, harsh parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 4, Appendix C). An alpha level of .05 was utilised for this analysis. Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of harsh parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .718, p = .401$, between emotional valence of the prime and test time, $F(1,44) = 1.485, p = .229$, or between prime content and test time, $F(1,44) = .084, p = .773$. The result of main effect of time was not statistically significant, $F(1,44) = 1.513, p = .225$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = 3.030, p = .089$. The main effect of prime emotional valence was not significant, $F(1,44) = .007, p = .935$. The main effect of prime content was not significant, $F(1,44) = 1.697, p = .199$.

Scenario Pair 4 analysis, constructive parenting actions. A mixed between-within subjects ANOVA was conducted to assess the impact of prime emotional valence and prime content on participants' level of forgiving attributions, across two time periods (pre-test and post-test). The independent variables included prime content (general parenting interactions or parenting interactions specific to fathers' evolutionary roles in childcare) and prime emotional valence (positive or negative). The dependent variable was forgiving attributions towards the participant's own child, as measured across a single pair of child misbehaviour scenarios (Scenario Pair 4, Appendix C). An alpha level of .05 was utilised for this analysis.

Results for model assumptions of normality, homogeneity of covariance, and linearity were satisfactory.

There was not a statistically significant interaction in the level of harsh parenting actions between the emotional valence of the prime, the content of the prime, and test time, $F(1,44) = .020, p = .888$, between emotional valence of the prime and test time, $F(1,44) = .481, p = .492$, or between prime content and test time, $F(1,44) = 1.582, p = .215$. The result of main effect of time was not statistically significant, $F(1,44) = .948, p = .336$. There was no statistically significant interaction between emotional valence and prime content, $F(1,44) = .002, p = .961$. The main effect of prime emotional valence was not significant, $F(1,44) = .216, p = .645$. The main effect of prime content was not significant, $F(1,44) = .597, p = .444$.