OllscoilnahÉireann, CorcaighNational

University of Ireland, Cork

Meaning and Measurement of Mating Intelligence

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For the degree of

Doctor of Social Sciences

University College Cork

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2019

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Declaration

I hereby declare that the PhD thesis submitted is the authors own work and has not been submitted for another degree, either at the University College Cork or elsewhere.

_____ Date: _____

Eliana da Silva Monteiro

Acknowledgements

The completion of this thesis owes much to those who have helped me along the way.

God for giving me all that was necessary from the start.

My beloved family Mauro, Ana Luisa and Mariana for all love, patience and time. I couldn't have done it without your precious support.

My adviser Dr Sean, who led me with inspiring wisdom, kindness and patience. Who showed me the way in a manner that makes each moment of the journey possible and enjoyable. Who makes each meeting full of lessons that go far beyond an academic agenda.

My second adviser Dr Rob King, who was present when I asked and most needed him.

My unforgettable director Rosalee Santos Crespo Istoe and professors MariseJurberg, MarcioSchiavo and Pedro Jurberg who inspired and support me stating this journey.

Daniel Maduro who kindly helped me with technical issues.

More than two thousand Irish and Brazilian participants, who kindly gave their time to help us hopefully help others thousands of o people construct health and happier long-term relationships.

Abstract

This thesis addresses the concept of Mating intelligence to the exploration of individual differences in the development of successful and fruitful relationships. The document is divided into 3 parts.Part 1 explores the theoretical domain of Mating Intelligence (MI). A number of concernsare raised about its coherence in relation to its claim to be an 'evolutionary informed'construct. The place of mating intelligence within the 'intelligence' domain is alsoquestioned and it is concluded that the construct does not enjoy a robust theoretical status.Part 2 proceeds to examine the measurement properties of the MI construct as operationallydefined by Geher and colleagues. A total sample of 2031 people from Ireland and Brazil were usedin five empirical studies reported in this part of the thesis. These studies were designed toexaminea) the generalizability of the MI test scores;b) the psychometric quality of MI measures; c) the robustness of the item domain; d) the equivalence of scores across culture ande) the concurrent validation of the construct.The conclusion was disappointing and demonstrated very little support for a psychometricdomain underpinning the Mating Intelligence construct.Part 3 attempted to extend the studies beyond Mating Intelligence and was primarily basedon a Grounded Theory study utilising Romantic Competence Theory. The emerging theoryprovided a basis for a new tentative model of relationship maintenance that may informintervention in relationship counselling. A final study of Sexual Strategies theory using aqualitative Thematic Analysis rounds off the thesis.The final conclusion is that Mating Intelligence is a suboptimal construct that offers very
little in an applied understanding of relationship maintenance.

Keywords: Mating Intelligence, Mate relationships, Mating preferences, Marriage satisfaction, Romantic Competency

PREFACE

From Darwin (1871)to the present day, various biological mechanisms have been proposed as crucial for the explanation of mating selection (Anderson, 1994). Many of these proposals have received significant attention from evolutionary ethicists, psychologists and philosophers of biology (Buss, 1989; Kokko, Brooks, Jennions, & Morley, 2003; Schmitt, 2005)

More recently, a new theoretical construct termed Mating Intelligence (MI) has received empirical attention (Geher & Miller, 2007). This emphasises the necessary cognitive abilities needed to navigate mating interactions successfully. Since its inception as a relatively popularisticconcept, MI has been the target of considered scientific criticism. For Instance, according to Bracanovic (2010), the theory is insufficiently discriminating. He stated that "the theory seems too adjustable to two contradictory observational results" and "too compatible with too many different theories"(Bracanovic, 2010, p. 10). In a similar vein, Mayer and Cobb (2000) admitted that "sexual choice theory sometimes sounds as if it could potentially explain anything, and hence explains nothing" (p. 27). This suggests that the entire area of sexual choice theory including the new focus on Mating Intelligence requires research that will identify both the sufficiency and the specificity of the constructs involved.

The main focus of this thesis began as a study of the meaning and measurement of Mating Intelligence. Nevertheless, despite this academic focus, there was a major applied motivation behind this study which was more centred on relationship formation and maintenance. According to David Buss (1994), 90% of people get married or begin a relationship at a particular stage of life to constitute a family and this is the basic structure of human society. However, in western society, almost two-thirds end in separation and divorce with all the attendant social difficulties that may accrue to families. Also, there is an

increasing awareness of the extent to which some intimate relationships involve abuse (Desmarais et al., 2012).

The researcher comes from a relationship therapy background and began the process of this study with the hope that, in defining the features of MI, the proposed study might inform therapeutic interventions on intimate partner abuse as well as sex and relationship education in schools. Unlike most evolutionary psychology concerns that tend to focus on behavioural displays of physical qualities, such as strength, virility, and athleticism, the theory of mating intelligence focuses on psychological qualities such as confidence, kindness, creativity, intelligence, resourcefulness, status, humour, and mental health. These qualities are presented in the MI conceptualisation as a mental*fitness indicator* and are posited to relate to *mating mechanisms*(Geher & Kaufman, 2011).

Many researchers (Fisher, Aron, & Brown, 2005; Holmes & Johnson, 2009; Schmitt, 2005; Tifferet & Kruger, 2010) note that people use different criteria to choose their partner depending on whether they are seeking a long or short term relationship. Typically these researchers show that choosing a partner does not come down to chance, raher there are criteria involved in the choice; ranging from physical and social qualities to personality characteristics. It is widely argued (Tifferet& Kruger, 2010) that, even though there is often no conscientious awareness of the criteria being used, humans are constantly evaluating possible partners.The theory of Mating Intelligence posits that the key to a satisfactory choice comes down to the accurate evaluation of the potential partner's characteristics (Geher& Kauffman, 2011).

Following from this, it is assumed that there are individual differences in the ability to access what individuals want and what their partner can offer. This ability to assess one's own feelings and understand if one's partner has what is needed for a successful relationship

is then observed as a special ability to choose a satisfactory romantic partner with ease (Geher & Kaufman, 2011).

Seen this way sexual selection theory is only part of the concept of MI. Indeed, it may be more instructive in testing its viability by referring to the variety of psychological work on different theories about intelligence.More specifically, models of Interpersonal and Intrapersonal Intelligence dovetail closely with Mating Intelligence. These may be defined respectively as “An ability to recognise and understand one’s own moods, desires, motivations, and intentions”, and “An ability to recognise and understand other people’s moods, desires, motivations, and intentions” (Davis, 2011, p. 488). It is also clear that the concept of Emotional Intelligence (Mayer, Salovey, Caruso, & Cherkasskiy, 2011) which describes the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and control emotion in self and others, is also of central relevance to MI.

The proposed study seeks to examine whether the concept of Mating Intelligence merits an independent status and, if so, how it may best be measured to maximise its explanatory potential. As the reader will see, attractive though the idea of an evolutionary informed construct is, the Mating Intelligence concept was found innadequate on a number of levels. This led to a different orientation where we considered the viability of a relationship competencies model instead.

This Thesis consists of 3 parts each presenting a brief prelude followed by chapters describing specific studies. Each part is rounded up by a short general discussion and conclusions. There are 10 Chapters in the thesis that describe 7 discrete studies and 3 literature reviews.

Part 1: Literature Review and Theoretical Bases

The focus of part 1 is the theoretical basis of mating intelligence. As would be expected the mating intelligence construct comprises an evolutionary informed model of human mating behaviour as well as a notional use of the domain of human intelligence. Part 1 opens with a prelude outlining the significant place that the studies in the areas of Mating and Intelligence have within the scientific literature, noting that only recently both areas were theoretically integrated. Then, it introduces the construct of mating intelligence as a potential way of predicting longer term relationship success and also of a model for identifying essential facets which may be the focus for training in young adults.

Chapter 1 then proceeds to present a literature review on the purported evolutionary basis to this construct. This involves a brief history of evolutionary thought, with particular reference to the Darwinian Theory of Sexual Selection, as well and the criteria for mating success. Particular reference is made to the work of David Buss and Sexual Strategy Theory which appears to have greatly influenced the development of the construct of mating intelligence (Buss, 1988a, 2003, 2008).

Chapter 2 takes up the notion that the construct represents a special form of intelligence and briefly reviews the development of the concept of intelligence, both historically and theoretically. A short thematic analysis is attempted of the various definitions of intelligence. Of particular note here are the modular models of intelligence espoused by Gardner (1983) as these most closely resemble the evolutionary approach espoused in Mating Intelligence theory.

Chapter 3 explores the role that Mating Intelligence may occupy in differential psychology. Here we discuss the relationship between Mating Intelligence and Personality via research on mating strategies and mate preferences.Ultimately, particular attention falls

upon the similarities and differences between the concepts of Emotional Intelligence and Mating Intelligence as they appear to be ‘sister’ constructs.

Part 1 then concludes with a discussion and conclusions that highlight some of the limitations and of the construct as it currently stands.

Part 2: The Measurement of Mating Intelligence

Part 2 explores the measurement of Mating Intelligence and seeks to evaluate the extent to which the underlying model is reflected in the construct being measured. It starts with a prelude that provides a brief overview of the scientific foundation of Mating Intelligence Scales (MIS), before embarking on a number of empirical chapters.

Chapter 4 presents a Meta-Analysis of the psychometric status of the MIS typically known as a Reliability Generalisation approach. We utilise a random effects model with moderators including the sex of the respondent. This is the first study undertaken for the present thesis.

Chapter 5 reports an empirical psychometric exploration of MIS using a Classical Test Theory analysis and a Confirmatory Factor Analyses on a large sample of young Irish adults. The MIS is found wanting in these analyses. This is followed by a further study in which a larger item pool is utilised in an attempt to improve and clarify the underlying measurement model.

Chapter 6 investigates the specificity of the MI construct. The objective is to ascertain to what extent variance in the MIS is attributable to a specific construct or to other extraneous constructs such as Self-Esteem and Emotional Intelligence. The subsequent variancedecompositionutilised a range of concurrent measures and so this chapter also encapsulates a concurrent validation study.

Chapter 7 describes a cross-national study in which a Brazillian sample is compared to our Irish sample. The development of a Portugese version of the measurement portfolio

composed of 9 different scalesis described and the statistical analysis of cross-national bias is carried out.

Part 2 concludes with a short discussion in which the overall findings are summarised and the implications for Mating Intelligence research are highlighted.

Part 3: Moving Beyond Mating Intelligence as an Explanatory Construct

In Part 3 the research moves from Mating Intelligence as an explanatory construct towards a Romantic Competency Model. This is necessitated by the findings in part 2 which required a refocusing of the research.

Chapter 8 presents a Review of The concept of Romantic Competence and sets the scene for a qualitative study on long-term mating.

Chapter 9 summarises the results of a qualitative study using Constructivist Grounded Theory, on satisfaction in Long-term Relationships. Twenty Brazillian Couples who have been together for long enough to rear offspring to reproductive age (20 years) took part in the study.

Finally, chapter10summarises a qualitative examination of Irish and Brazilian preferentialmating traits in an attempt to feed back into Sexual Strategy theory in order to justify an evolutionary informed basis for examining relationship formation and mate selection.

A final Discussion rounds off the thesis.

PART 1

LITERATURE REVIEW AND THEORETICAL BASES

Prelude to Part 1:

The Place of Mating Intelligence within the scientific literature

Research on the areas of Mating and Intelligence has a long history within the scientific literature. The thousands of articles published in both fields guarantee them a significant place in the scientific study of human behaviour and functioning. However, curiously, the integration of the two areas into 'Mating Intelligence' (MI) is a relatively new development (Geher & Kaufman, 2007). The union of Mating and Intelligence has produced a whole new area of research that has great popular appeal but has generated controversy in the scientific community. In this chapter, we aim to consider the place that the concept of Mating Intelligence occupies within the scientific literature.

Geher and Kaufman (2007, 2013) emphasised the fact that there has been a history of mutual neglect between mating research and Intelligence research for over a century. They reported a wide-scale review purporting to consider the whole scientific literature of more them 51 million papers from 1950 to 2005, and stated that the combination of "mating" and "intelligence" appears in only 40 relevant articles. These 40 articles are only twice as many as would be expected by chance (24), given the base-rate frequency of mating (0.000857) and intelligence (0.000543) in the literature. In fact, "mating" is less like to be associated with "intelligence" than with "cockroach" (168 papers), "Norway" (178), or "steel" (182).

It is Geher and Kaufman's contention that human intelligence research has neglected the central adaptive challenge in the life of any sexually reproducing species: finding mates and having offspring.

Mating Intelligence did not emerge as a coherent construct in the scientific literature until 2005, and it is still poorly defined and under developed. The next chapters will attempt

to examine aspects of mating and intelligence research separately to examine what the juxtaposition of the two implies for a theory of mating intelligence.

As evidence of the poorly defined nature of MI, the literature cited in the area is varied and often tangential to each other. It is possible to identify three discrete areas of research all with negligible overlap. The first area relates to assortative mating for intelligence, which is of particular interest in behavioural genetics (Hugh-Jones, Verweij, St. Pourcain, & Abdellaou, 2016; Woodley et al., 2016). The second relates to mating preferences for intelligence, creativity, adaptability, and other aspects of general intelligence in the evolutionary psychology literature on human mate choice (Buss, 1989; Dunbar, 1997; Haselton & Miller, 2006; Kenrick, Sadalla, Groth, & Trost, 1990; Li, Bailey, Kenrick,& Linsenmeier, 2002; Scheib, 1994; Scheib, 1997; Whyte & Torgler, 2015).This is perhaps, the most cited research in the MI literature and it is consistent with Geher and Miller's (2007) assertion that Mating Intelligence is an 'evolutionarilly informed' concept.

Finally, there has been work undertaken in the clinical psychology literature on mental illness that links to mating competence. Many disorders undermine successful mating, such as Borderline Personality Disorder (Skodol et al., 2002); Asperger's Syndrome and Autism (Baron-Cohen & Wheelwright, 2004).Narcissistic Personality Disorder (Buss &Shackelford, 1997; Gabriel, Critelli, & Ee, 1994; Robins & Beer, 2001) and Antisocial personality disorder (psychopathy) (Dunsieth et al., 2004; Krueger et al., 2002). It is generally accepted that these disorders severely reduce long-term mating success, relationship satisfaction, and marital stability (Grant et al., 2004; Skodol et al., 2002), for this reason, they may 'be partly viewed as disorders of Mating Intelligence' (Geher & Miller, 2007, p. 7) . However, it is worth noting that antisocial personality disorder often increases the rate of short-term sexual encounters in males (Moffitt, Caspi, Harrington, & Milne,

2002)which may be considered by Geher and Miller (2007) as an indicator of high MI. This raises a major issue in defining mating intelligence.

Chapter 1

Mating Intelligence as an Evolutionary Informed Construct

1.1. The Development of Evolutionary Science

Most scientific studies concerning human mating behaviour have their roots in the evolutionary theory derived from Darwin's work (Darwin 1859; 1871). However, the revolutionary idea that one type of organism could evolve from another ancestral kind is not new. In fact, the idea was mooted by some of the first pre-Socratic Greek philosophers, such as Anaximander and Empedocles (Kirk, Raven, & Schofield, 1983).

Later, Aristotle claimed that all natural things, not only living things, have an intended role to play in a divine cosmic order. This made his view of science very compatible with a dogmatic religious hegemony and his views became the conventional understanding of the Middle Ages and were integrated into Christian learning.

In the 17th century, the new methods of modern science moved away from the purely descriptive Aristotlean approach. And slowly, the explanatory theories of natural phenomena regarding physical laws took root in the biological sciences. According to this new method, physical laws were the same for all visible things, and they did not require the existence of any fixed natural categories or divine cosmic order.

This scientific approach facilitated the development of new theoretical approaches as the first fully formed theory of evolution developed by Jean-Baptiste Lamarck was published in 1809 although its explanatory power depended on individual metamorposis which we now know to be unrealistic(Galera, 2016). Later work by the avian zoologist Edward Blyth (1835) examined the area of variation and artificial selection in terms of domestication and his work greatly influenced Darwin(Beatty, 2016)

Alfred Russel Wallace also made a significant contribution to evolutionary theory. He sent his paper “On the tendency of varieties to depart indefinitely from the original type”to Charles Darwin in March 1858 spurring Darwin on to publish the work he had been agonising over for 30 years. In the same year, Darwin published a joint paper with Wallace cementing Wallace’s position as one of the discoverers of one of the most profound aspects of biology, evolution (Darwin & Wallace, 1858).

One year later, Darwin revolutionised the history of human science with the book *Origin of Species*. He was influenced by thinkers as the above mentioned and his many observations and theoretical speculations in a five-year voyage on HMS Beagle. His theory of evolution by natural selection established the leading scientific approach for studies in areas of Biology and Evolutionary Psychology.

Darwin defined Natural Selection as the“principle by which each slight variation (of thetrait), if useful, is preserved” (Darwin, 1859, p.49). The concept was simple: individuals that adapt better to their environment are more likely to survive and reproduce. According to him "...elaborately constructed forms, so different from each other, and dependent on each other in so complex manner..." developed from the simplest forms of life on a few simple principles (Darwin, 1859, p. 489).

Natural selection is the process by which traits that improve the chances of survival and reproduction become more common in the next generations of a population due to three facts: phenotypic variation, differential fitness and heritability of fitness (Lewontin, 1970).

Phenotypic variation results from differences within populations of organisms on morphology, physiology and behaviour. Differential fitness is showed by different traits which confer different rates of survival and reproduction. Heritability of fitness refers to the fact that traits can pass from one generation to another.

It is worth mentioning that mutations are also important mechanisms of variations. Evolution is the process of mutation followed by natural selection. It is the combination of natural selection and mutation that permits biological complexity and adaptation to arise. However, an absolute central issue in evolution is heredity. Darwin knew nothing of genes as Mendel's work had only been published in German at this point but he was sufficiently far sighted to realise that characteristics that enhanced survival would have a greater probability of being passed on down the generations.

1.2. Sexual Selection Theory

Ten years after the publication of 'The Origin of Species' Darwin parted company with Wallace and developed a second complimentary, theory of selection which came to be called Sexual Selection. In this publication, *The Descent of Man and Selection about Sex*(Darwin, 1871) he further explained variations among and within human populations..

Darwin developed this theory after noticing that certain individuals of a species have an advantage in the mating field over others of the same sex and species. Intriguingly, these benefits could even be contrary to the individual's survival. The impractical animal features such as a peacock's long tails or the bright colours of some male birds are good examples of this. Darwin argued that the peacock's tail has evolved because females choose males with these characteristics, perhaps because a large tail indicates good physical health. He realised that, such males may be more vulnerable to predation and have a short life, but due to the foibles of the peahen, these individuals reproduce more in the little time they have, and perpetuate their genes. Therefore, the contradiction between what the female likes and what is most risky to male survival is more apparent than real.

Darwin described two causal processes by which selection could occur in his theory of sexual selection. The first one he named intrasexual selection or same-sex competition. In

it, members of the same sex compete with one another by intimidating, deterring or defeating each other in order to gain access to partners. The victors gain the advantage of preferential mating access to members of the opposite sex. This increases the chances of their genes being passed on.

The second causal process Darwin labelled intersexual selection. In it, members of one sex will exhibit their characteristics to make themselves attractive to the opposite sex. Those who present the desired characteristics will have more chances to be chosen and so pass on their genes. Therefore, if the features they present have some degree of heritability, they will increase in frequency over time.

For example, if females prefer a male who is physically strong, then a male who exhibits this characteristic will have more chances to be selected as a mate. Consequently, they will have a higher probability of passing on their genes to future generations who will be more likely to present these features.

In his book, Darwin claims that sexual selection takes shape in the physical appearance of different human populations. Darwin's theory considers sexual selection as a special case of natural selection. The key difference between both is that natural selection acts on traits which increase fitness, whereas sexual selection benefits any adaptation which enhances mating success or the number of copulations.

The Impact of Sexual Selection Theory

Gould (1997)emphasised that Darwin's theory provoked profound impact and opposition on 19th century thought. To the author, the radicalism of natural selection is in its power to"dethrone some of the deepest and most traditional comforts of Western thought" (Gould, 1997, p. 44). Namely, the long-standing beliefs that placed humans in a unique and

exalted place in the natural world and a gracious creator whose desire reflected in nature's order and design.

Anderson (1994) said that the theory of sexual selection met, even more, resistance than the theory of natural selection. For instance, Alfred Russel Wallace rejected the entire concept of sexual selection. In his view, the differences between males and females traits could be explained by naturalselection.

So, this theory remained in the background in the biological sciences, with occassional important developments (ie Fisher, 1915; 1930) that did not catch the public imagination. Sexual selection served the theory of evolution incidentally until the 1960s and 70s. At this point the growth of Sociobiology (Tinbergen, 1953; Wilson 1975) and genetic game theory models (Haigh, 1975), began to generate a new rush of empirical studies.

Robert Trivers, an American evolutionary biologist and sociologist, was one of themajor contributors to the dissemination of Sexual Selction theory. He made a meaningful theoretical contribution to the understanding of the reasons why the female lead the selection process. According to Trivers (1972), the greater is the investment in the success of reproduction (regarding effort, the dedication of time and value of gametes) the higher is the possibility of leading the process of choosing.

Thus, for humans, women are the primary investors. They have the most precious gametes since they are rarer than those of men because every woman releases an average of 350 mature eggs throughout reproductive life, while men release millions of sperm in each ejaculation. They invest nine months in gestation and are also primarily responsible for raising children, while men, theoretically, only invest the time of intercourse.

As a result, women need to be very selective in choosing the person who will be the father of her children. They need to pick one with the greater future possibilities of becoming an excellent resource provider, a long-term companion and a protector of her and their

offspring, at least until they are ready for reproduction. So she takes a *monogamous strategy* (Sviatopolk-Mirsky, 2001).

Interestingly, short-term relationships could also be part of this monogamous strategy. For instance, Shackelford, Goetz, LaMunyon, Quintus, and Weekes-Shackelford (2004), reported that women sometimes use short-term relationships to identify and conquer a long-term relationship. For this reason, they prefer short-term sexual partners who are not already involved in relationships and are potentially long-term partners.

On the other hand, men do not have to think in the long term. It is true that they must show their long term mate suitability to females, but their orientation is to select females who simply demonstrate fertility characteristics. Therefore, males may adopt a *polygamous strategy*(Sviatopolk-Mirsky, 2001).

Other authors also defend the existence of different mating strategies between and within the sexes (Buss &Schmitt, 1993). Within this framework, mating strategies have been defined as "integrated sets of adaptations that organise and guide an individual's reproductive effort" (Gangestad & Simpson, 2000, p. 575). In table 1aexemplar summaries of the mating decisions and the roles played by preferences and self-assessments of both genders is presented.

According to this evolutionary perspective, males attract mates by the display of their various resources. For instance by the morphological and behavioural characteristics which demonstrate their ability to raise children, and care for them and females. In contrast, women indicate fertility by the morphological display of their secondary sexual characteristics, such as breast development, fat deposits on hips and buttocks and body hair, which becomes visible at puberty. Thus, the resources presented by men will influence femalechoice, and female fertility attributes will affect malechoice. Triver's ideas grew from his work observing deer while others generalised this work to humans (see Buss, 2005).

Table 1

Summary of Mating Decisions and the Role Played by Preferences and Assessments Thein

Sex	**Mate tactic decision**
♂	Preferably short-term; mainly based on the adaptive contingency of general self-esteem on the mate value sociometer.
♀	Preferably long-term; mainly based on ecological cues (pathogen prevalence, environmental harshness); strategic pluralism possible.

Mate choice decision						
Mate Tactic decision	Sex	Condition preference	Resource preference	Attachment preference	Variety preferences	Role of self-assessment in decision making
Long-term	♂	+	-	+	-	Adjust condition preferences according to mate-value sociometer (which tracks a combination of own conditions and resources relative to male competitors)
	♀	+	+	++	(+)[1]	Adjust combination of conditions preferences according to mate-value sociometer(which tracks conditions and resources relative to female competitors)
Short-term	♂	(+)[2]	-	-	++	None known
	♀	++	(++)[3]	-	-	None known

Note. ++: Very important, + important,-: unimportant,[1] strategic pluralist possible to satisfy both the conditions and the resources preferences, [2]only minimum thresholds necessary, [3]possibly a substitute for the condition preference when resources can be received immediately. Reprinted from: Mating intelligence Sex, relationships, and the mind's reproductive system. Geher, G., & Miller, G., New York, US (2007, p.65)

It is generally assumed that these morphological and behavioural characteristics are privileged in mate selection because they are indicators of reproductive fitness and will be passed on to their offspring, even with minor changes.Human secondary sexual characteristics are interpreted as signs of attraction. Although they are not crucial for fertilisation, as only the reproductive organs participate in this function, they act as signals of readiness and are relevant to the initial approach that could culminate in the reproduction of the species.

The area of mating psychology has a particular interest in these secondary sexual characteristics in the attraction of mates. This area also focuses on the role of some unconscious psychological processes that underlie the domain of human mating such as the

effect of ovulation on attraction or the nature of humans as a courtship device (Miller, Tybur, & Jordan, 2007; Pipitone & Gallup, 2008).

Advances in the Sexual Selection Theory

Many researchers obseve that sexual selection theory is one of the most important theories in evolutionary biology (Anderson, 1994;Fisher, 1930; Kokko et al., 2003; Trivers, 1972). It has also provided a theoretical foundation for much research on human mating preferences (Buss, 1989; Buss, 2003; Buss & Angleitner, 1989; Buss & Schmitt, 1993; Kenrick & Keefe, 1992; Miller, 2000; Townsend & Wasserman, 1998).

As might be expected with the rise of interest in Sexual Selection there have been many conceptual and empirical developments that have advanced the theory since Dawrin's inception.

The first advance involve the concept of intersexual selection, and intrasexual selection. Initially, intersexual selection was seen mainly as *female choice* and intrasexual selection as a male-against-male competition. However, research with humans, largely pioneered by David Buss and his colleagues, has shown that both processes apply to men and women. Both sexes compete for getting high-quality mates (Buss, 1988a; Schmitt & Buss, 1996; Tooke & Camire, 1991). Both have elaborate and accurate mate preferences (Buss, 1989; Buss & Schmitt, 1993; Kenrick & Keefe, 1992; Li et al., 2002). Both have their tactics of mating attraction (Buss, 1988a), derogation of competitors (Buss & Dedden, 1990), tactics of mate retention (Buss & Shackelford, 1997) and tactics of mate poaching (Schmitt, 2004b; Schmitt & Buss, 2001).

The second advance is the importance of goodgenes in both mate preferences and mate competition. Hypotheses about their importance in mating appears to have originated with Fisher (1915) and became increasingly recognisedas a critical and complex process in

human mating (Gangestad & Simpson, 2000; Gangestad & Thornhill 1997; Greiling & Buss, 2000; Miller, 2000; Schmitt & Buss, 2000).

The third development has been the increasing recognition that the two components of sexual selection can be casually related to each other (Buss, 1988a); e.g., if women prefer men who can provide resources or offer protection, males will compete against each other to show their resources and protection abilities. The victor will have access to the mate, and this will increase the probability of their characteristic's stay over time. Conversely, men's preferences can, in turn, influence the evolution of female mate preferences. So, subjective preferences of one sex can come to shape the phenotype of other sex over evolutionary time.

A final development has been the increasing recognition of the importance of sexual conflict and its relationships to sexual selection (Arnqvist & Rowe, 2005). The field of human mating has been growing with research in domains like sexual aggression and coercion (Buss, 1988b; Malamuth, Huppin, & Paul, 2005; Thornhill & Palmer, 2000), sexual harassment (Browne, 2006), and sexual deception (Haselton, Buss, Oubaid, & Angleitne, 2005).

1.3. Mating Intelligence in an Evolutionary Context

Darwin predicted that Psychology would develop an evolutionary basis. He said: "In the distant future, I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation"(Darwin, 1859, p. 488).

His prediction became real with the development of Evolutionary Psychology, which has its roots in Darwin's theory of natural selection. This theoretical approach examines psychological structures from an evolutionary perspective. Its goal is to identify which

human psychological traits developed through a gradual process of adaptations due to natural selection or sexual selection in human evolution.

Evolutionary psychologists argue that much of human behaviour is the product of psychological adaptations that were developed to solve common problems in human ancestral environments (Buss, 2005; Confer et al., 2010). These psychological adaptations were provided to humans by natural selection, in a similar way that it generated humans' anatomical and physiological adaptations.

Evolutionary psychology also posits that most contents and processes of the brain are unconscious and are based and implicated in many complicated neural mechanisms. The bain is an information processing device that produces behaviour in response to both: external and internal inputs. Many of these specific mechanisms - each sensitive to different classes of information or inputs- will combine to produce manifest behaviour.

There is no doubt that the place of Mating Intelligence within the scientific literature today is linked to Sexual Selection Theory.However, according to Geher and Kaufman (2013), Mating Intelligence differs from the broader domain of mating psychology because Mating intelligence focuses on a relatively high-level cognitive process – the role of intelligence that underlies the area of human mating. It is interested in a more abstract and more intellectual nature of human psychology in the area of mating than biologists such as Trivers.

Mating is one of the major areas of research in Evolutionary Psychology. Geher and Miller (2007, p. 9) stated that “Mating processes influence reproductive success more directly than any other class of human behaviour”. They emphasised the important role of sexual reproduction in human evolution. The importance of the mating domain is also emphasised by Buss (2015, p. 103) who explained that “because differential reproduction is the engine

that drives the evolutionary process, the psychological mechanisms surrounding reproduction should be especially strong targets of selection".

Mating intelligence studies are generally encapsulated within the field of Evolutionary Psychology, and is defined as: "the cognitive ability that bears on mating-relevant outcomes – in short: the mind's reproductive system"(Geher & Miller, 2007). According to its authors, this new construct involves cognitive processes that are applied only in the domain of human mating, sexuality and intimate relationships. As such, it links closely to the modular model of evolutionary psychology esposed by Cosmides and Tooby (2000). Geher and Miller go on to argue that the construct encompasses both species-typical psychological adaptations (for instance, the perceptual, cognitive, and decision-making processes for evaluating as individual's potential as a long-term mate), and a group of individual differences in the efficiencies, parameters, and design details of those traits.

Often, the psychological adaptations to solve adaptive mating problems require formidable cognitive skills. Mind reading is one of them. Mind reading addresses how well a person can read the mating-relevant thoughts and feelings of the opposite sex. To Geher and Kaufman (2013), it is a core element of mating intelligence. It isimportant to evaluate and evoke mating interest, to monitor a mate's commitment, to predict a partner's infidelity or defection, and to complete successful deception (Geher & Miller, 2007).

Geher and Kaufman (2013) stated that "when it comes to cross-sex mind-riding, male and female strengths match male and female mating psychology – Supporting the idea that mating intelligence partly depends on one's sex" (p.139).

In a study that examined accuracy in judging short and long-term desires, the authors found a major difference between sexes. In it, men were more accurate at knowing women's long-term desires (compared to women at understanding men's long-term desires) whereas women were much better than men at guessing the short-term desires of the opposite sex.

These results dovetail nicely with evolutionary studies that have focused on asymmetries across the sexes costs associated with making poor mating decisions. For instance, the tendency of overestimating males' focus on sexuality may be linked to men's commitment-scepticism, as shown in their stereotypicaly mate sexual preferences for short-term strategies.

In the adaptation scenario, it is also possible to observe the two most important domains of mating intelligence: Courtship Displays and Mating Mechanisms. Table 2 shows the definitions of features of these two domains.

Table 2
Defining Features of the Two Major Domains of Mating Intelligence

	Courtship Displays	**Mating Mechanism**
Definition	Displays of intellect, personality, emotions, and creativity that are attractive to potential mates	Cognitive processes that deal with mating-relevant issues
Example	Ray Charles vocal and piano virtuosity	Paying attention to cues regarding whether one's mate has cheated sexually
Relationship to mating	Indirect	Direct
Focus	Focus is on some area that is not tied directly to mating (e.g., social extraversion, linguistics, art, poetry)	Focus on specific aspects of mating (e.g., assessing mating value, analysing clues of infidelity)
Purpose	To attract high-quality mates	To help people navigate the water of human mating

Note. Reprinted from: Mating intelligence unleashed: The role of the mind in sex, dating, and love. Geher, G., & Kaufman, S. B. New York, NY, US (2013, p.18). Oxford University Press.

Mating mechanisms are distinct from Courtship displays as they involve cognitive processes that deal with mating-relevant issues. It is clearly dedicated to helping both sexes deal with the mating game whereas courtship displays are explicitly about something altogether different and only indirectly related to mating.

'Our twofold theory of mating intelligence suggests that half of mating intelligence – mating mechanisms – is dedicated to helping us deal with stimuli tied to mating, whereas the other half – courtship displays – is only indirectly related to mating and is, essentially,

designed to help us acquire high-quality mates by advertising ourselves as good mating prospects' (Geher & Kaufman, 2013, p. 17).

According to the authors, during the mate-selection, in general, both sexes engage in courtship displays and use mating mechanisms to assess the courtship displays of others. For example, when trying to attract a mate, men could use physical courtship displays (such as strength, virility, athletics) and psychological courtship displays (such as social extraversion, kindness, sense of humour) as well as mating mechanisms (such as assessing mating value, analysing clues of infidelity, detecting deception).

However, these two components can overlap. For instance, kindness can be used both as courtship display or a mating mechanisms for maintaining a healthy and harmonious relationship (Geher & Kaufman, 2013).

Evolutionary Criteria for Mating Success

"The MI construct is a novel conception of how humans integrate reproductively relevant information into a course of action aiming for mating success through synthesising signals into adaptive behaviour" (Geher, Kaufman, Garcia, Kaufman, & Dawson, 2016).

Mating success is the ultimate goal of all strategies in human mating. After all, the level of mating intelligence can only really be determined by how successful an individual is in mating, much as an individual's level of numerical intelligence is gauged by how successfully they perform on numerical tasks. Mating successhas been used as a proxy for Reproductive Success (RS) in post-contraceptive societies (Camargo, Geher, Fisher, & Arrabaca, 2013). However, the definitions of *success*vary greatly.

For instance, in pre-contraceptive societies Mating Success was a synonymofReproductive Success (RS). For post-contraceptive societies, Pèrusse (1993)suggested an equation based on the number of coital acts, the number of different partners, and the probability of successful impregnation to predict the number of offspring a

man could generate. Others just measure one's total number of sexual partners (e.g. Gangestad & Simpson, 1990) or measure overall sexual behaviour that consists of several variables including first copulation, number of total sex partners, and extra-pair copulations (Hughes, 2004; Rhodes, Simmons, & Peters, 2005).

Camargo et al. (2013)included measures of the quality of participants' most recent short- and long-term sexual relationship in their study. According to them, the current measures at that time did not account for relationship quality, which is theorised to have increased RS.

Another way of investigating the criteria for successfull mating is based on an evolutionary framework established by Darwin's theory of sexual selection, with significant modern advances. Thus, identifying the major adaptive problems of mating is the key to assessing how intelligently they are solved (Geher & Kaufman, 2013). This presents a logical issue since no humans' ancestors died without direct descendants. All of them are the product of the reproductive success of their ancestors who were able to solve the major adaptive problems to mate and reproduce successfully. Therefore the differential elements in mating intelligence are rather suspect.

1.4. Sexual Strategy Theory

David Buss and Schmitt (1993) claimed that both genders faced different adaptive mating problems during their human evolutionary history, at least in some domains. So, it is likely that they adopt different strategies to solve their problems. Sexual strategy theory clarifies the strategies adopted by both genders to solve their mating problems. In their development of the Mating Intelligence construct Geher and his colleagues make much use of sexual strategy theory and so it merits some detailed consideration. In doing this we rely

heavilly on Buss and Schmitt (1993) as, it appears, so did Geher. David Buss and Schmitt (1993)summarised the following core principles.

1. During human evolutionary history, men and women adopted short-term or long-term mating strategies, under particular conditions, when the reproductive benefits were superior to the costs.
2. The adaptive problems solved by short-term sexual strategy must be opposite to those addressed by long-term reproductive strategy.
3. The minimal parental investment of men compared to women's investment explain why men invest a more substantial proportion of their total mating effort to short-term mating than women do.
4. Both sexes have some similar problems. However, their reproductive opportunities and limitations are different. The adaptive problems that they must solve also differ when pursuing a short-term or long-term strategy.
5. Historically, menand women had to solve several reproductive limitations to efficiently pursue a short-term or long-term mating strategy (See table 3).
6. Men and women have developed distinct psychological mechanisms to solve their adaptive problems effectivily in short-term and long-term matings.
7. Men and women evolved sexual strategies that are constituted by their psychological mechanisms and their behaviour manifestations in the temporal contexts in which strategy is activated. Strategies are defined as "evolved a solution to adaptive problems, with no consciousness or awareness on the part of the strategist implied"(Buss & Schmitt, 1993, p. 206).

How successful men and women are in the area of mating is determined by how they solve their adaptive mating problems. Thus, their ability to solve their adaptive mating problems is presented as a crucial factor for assessing how mating intelligent they are. The

adaptive problems both sexes confront in short-term and long-term mating contexts are presented in Table 3.

Table 3

Mate Selection Problems Men and Women Confront in Short-term and Long-term Mating Contexts

Type of mating	Men	Women
Short-term	1. Problem of partner number.	1. Problem of immediate resource extraction.
	2. Problem of identifying which women are sexually available.	2. Problem of evaluating short-term mate as possible long-term mates.
	3. Problem of minimising cost, risk, and commitment.	3. Problem of gene quality.
	4. Problem of fertility.	4. Problem of mate switching, mate expulsion, or mate backup.
Long-term	1. Problem of paternity confidence.	1. Problem of identifying men who are able to invest.
	2. Problem of female reproductive value.	2. Problem of identifying men who are willing to invest.
	3. Problem of commitment.	3. Problem of physical protection commitment.
	4. Problem of good parenting skills.	4. Problem of commitment.
	5. Problem of gene quality.	5. Problem of good parenting skills.
		6. Problem of gene quality.

Note. Reprinted from: Sexual Strategies Theory: An evolutionary perspective on human mating. *Psychological Review*, 100(2), 204-232. Buss, D. M., & Schmitt, D. P. New York, NY, US (1993, p.207). Oxford University Press.

Trivers (1972)had already argued that men and women'sdifferent problems are directly related to their parental investment (defined as "any investment by the parent in an individual offspring that increases the offspring's chances of surviving and hence reproducing of the cost of parent's ability to invest in other offspring" (p. 139). Taking his point of view, metaphorically, it is possible to compare both investments as different shares in the stock market. In this *biological stock market* woman invests in long-term, so she needs to make more careful choices. Her *shares(eggs)* are rarer and therefore more valuable. A maninvests in short-term, his*shares(sperms)* are abundant and therefore very undervalued in

the market. However, he can make several investments (inseminate several women) at the same time compensating the disadvantage.

In this biological stock exchange if both receive the return of their investments, whether short or long term, *the biological stock exchange trading* closes at high birth. However, mating investments are complex and often unpredictable as well as the investments in the stock exchange are. To be successful, men and women have to present strategic solutions to different problems they face whatever perusing a short or long-term strategy.

Men's Problems when Confronting a Short-Term Sexual Strategy

Males face a complex and multifaceted problem when they are pursuing a short-term strategy. Their reproductive success depends on the number of women they can have access to and procreate with.

In this context, they face four adaptive problems: (a) partner number, (b) identifying which women are sexually available, (c) minimising cost, risk, and commitment, and (d) identifying which women are fertile. Men's reproductive success will also depend on their ability to solve these problems by using adaptations (Buss & Schmitt, 1993).

The problem of partner number.The biggest problem men face when adopting a short-term strategy is to gain sexual access to the largest possible number of women. According to Buss and Schmitt (1993) to solve this problem men may have evolved sexual psychology that facilitates this process in human evolutionary history.

An overpowering desire for sexual access to a significant number of women is one of the adaptive solutions that men have evolved. Another important one is the relaxation of their standards to accept a broad range of characteristics, e.g, age, intelligence levels, personality traits, and personal circumstances such as being already in a relationship. Low standards increase their chances of accessing a larger number of women. The third one is to gain sexual

access as fast as possible because prolonged time with only one woman prejudices the solution of the number's problem.

*The problem of identifying which women are sexually available.*The solution to the problem of determining which women are sexually available is directly linked to the solution of the number's problem. As men want to have sexual access to a large number of women they are predicted to be less discriminating than females when seeking a short-term relationship. So, males will choose the ones who show signs of sexual accessibility as looseness or promiscuity.

In this mate scenario, women who are prudish, sexually inexpedient, conservative should be avoided. These signs, desired in a long-term strategy, represent a possible waste of time in a short-term plan.

*The problem of minimising cost, risk, and commitment.*The subjacent logic of the short-term strategy is to have the most substantial number of sexual mates at the lowest cost, risk and responsibility. In this scenario, men should shun relationships with women who appear to desire long-term commitment or substantial investment of resources as a requirement to allow sex. The reason is simple "The larger the investment in a particular mating, the few the number of sexual partners given men can access" (Buss & Schimitt, 1993, p.209).

According to the Sexual strategy, during evolution, humans evolved adaptations to solve this problem. One of them is men's preferences for mates who show characteristics valued in the short-term such as fertility, sexual accessibility, and low investment requirements.

*The problem of identifying which women are fertile***.**Men have always endured the adaptive problem of distinguishing which women are fertile. This identification is crucial in

male's sexual life as their primary goal is to procreate. So, it is hypothesised that human evolution developed their ability to solve this problem to avoid invest his time and energy in women who are not able to procreate.

In this context, it is important to distinguish two facets of the ability to bear offspring: fertility and reproductive value. Fertility is the probability of reproduction in the present. Generally, it peaks in the early to mid-20s among humans females. In contrast, the reproductive value is the expected future reproduction, the extent of their contribution to the generations to come (Fisher, 1930). So, women in her early teens typically have a high reproductive value.

Given this consideration, it may be hypothesised that men who seek long-term partners would prefer women with high reproductive value whereas men who want short-term mates would choose women with high fertility value.

However, how can men identify which women are fertile or have a high reproductive value?

According to Buss and Schmitt (1993) to solve this problem men may have evolved a preference for, and an attraction to, women who present the following characteristics:

1. Features of physical appearance like full lips, clear skin, smooth skin, clear eyes, lustrous hair, symmetry, good muscle tone, and absence of lesions,
2. Observable behaviour such as sprightly, youthful gait, and high activity level and
3. Social reputation, for instance, knowledge gleaned from others about a person's age and prior health history.

> To Buss and Schmitt, these physical and behaviour cues provide compelling evidence of women's reproductive capacity. In their point of view "This evolutionary logic leads to a clear prediction: men more than women should

> value relative youth and physical attractiveness in potential mates because of their powerful links with fertility and reproductive value" (Buss &Schimitt, 1993, p.209).

Men's Problems when Confronting a Long-Term Sexual Strategy

Give the advantages that men encounter when pursuing a short-term strategy, it could be argued why he should adopt a long-term sexual strategies. Buss suggested five reasons for using this strategy:

1. Secure women of high mate value by fulfilling standards imposed by them. For instance, use long-term commitment as a pre-requisite for consenting sexual intercourse.
2. Avoiding the cost of not pursuing a long-term mate (e.g., costs of time, energy, and resources especially pronounced in contexts where women are reluctant to mate quickly).
3. Increase the genetic quality of children as "most men can obtain a more desirable if they are willing to invest in a long-term relationship"(Buss &Schimitt, 1993, p.216).
4. Solve the problem of concealed ovulation in women as long-term relationships increase the chances of paternity.
5. The advantages of cooperation and division of labour (e.g. more adequate care and provision).

The major cost of adopting this strategy is that itdecreases the number of women that he could inseminate using a short-term strategy.Buss, argued that "natural selection would be unlikely to produce long-term strategies for men blindly"(Buss &Schimitt, 1993, p.216). Men should have evolved robust preferences about whom they are willing to mate with in a long-term. Their strategy should facilitate solving the following adaptive problems:(a) paternity

confidence, (b) female reproductive value, (c) commitment, (d) good parenting skills, (e) gene quality.

To solve the problem of paternity confidence, men activate Psychological mechanisms such as jealousy. Paying attention to clues of infidelity could be helpful, because this act would have been reproductively damaging to men in the past (Buss, Larsen, Westen, & Semmelroth, 1992; Daly, Wilson, & Weghorst, 1982; Symons, 1979)

Another way to solve, in part, the problem of paternity certainty is to have specific mate preferences for characteristics such as faithfulness, sexual loyalty, and chastity.

In alignement to this adaptive solution, men will avoid behaviours such as promiscuity and sexual experience in potential long-term mates. According to Daly et al. (1982), they signal lowered confidence in paternity, failure to monopolise a woman's reproductive value, and increasing the risk of investing in children that are not genetically related.

To solve the problem of reproductive value men value physical attractiveness and relative youth in long-term mates because of the important clues that these characteristics provide.

Women's Problems when Confronting a Short-Term Sexual Strategy

Even though short-term is not the primary sexual strategy adopted by women, sometimes, they use short-term mating because of some beneficial conditions (Gangestad, 1989; Gangestad & Simmons, 1990). Below there are some problems that they could solve.

*The problem of immediate resource extraction.*Women can often obtain resources, such as gifts, food, jewellery and money, in exchange for short-term copulation. In short-term contexts, women will especially value signs that a man will immediately expend resources on her and will consider undesirable any cues that a man is reluctant to spend money on her quickly(Buss &Schimitt, 1993).

*The problem of evaluating a short-term mate as a possible long-term partners***.**The cost of a reduced mate choice is potentially more costly for women than for men. So, another potential benefit is using the short-term relationship for theevaluation of potential long-term mating partners. This relationship could allow her to evaluate the intention and the characteristics of a potential long-term partner and to discern any deception that might have occurred. Also, they can assess their own mate value.

In this context, women more than men will dislike it if the potential mate is already in a relationship. They will also dislike the attributes of promiscuity in a man because these characteristics signal to women that man is less likely to commit to long-term mateship.

*The problem of gene quality***.**This is a problem that women face in both long-term and short-term relationships. They want to find a high gene quality provider for their children, which will improve their chances of survival in the long run. The adaptive solution for this problem has the same underluing reasons found in the issue of mate switching, mate expulsion, or partner backup**.**

Women's Problems when Confronting a Long-Term Sexual Strategy

According to Buss &Schimitt (1993), the cost of persuing a long relationship are generally less severe to women than to men. However, women face the following problems when pursuing this sexual strategy:

*The problem of identifying men who are able and willing to invest.*Trivers (1972) proposed that parental investment is a central driving force behind mate selection. He asserted that the sex which invests more in the offspring should be more choosy, whereas the sex who invest less in the offspring should compete more vigorously in intersexual completion (Trivers, 1985).

Among humans, women are the bigger investors and the greater potential losers or winners. So, they value the ability of a man to provide economic and other resources that can be used to invest in their offspring (Buss, 1989).

Women's choice will influence the solution of many other adaptive problems. For instance, when they chose healthy, attractive men who are able and willing to invest in a long-term relationship they are increasing their chances of solving the problems of physical protection, commitment, and gene quality.

Table 4 presents a sampling of some of the vital mating adaptation that can be used in a more or less intelligently/successful way for solving the mating problems portrayed as it was published by David Buss (2008, p. xiv). The mate preferences adaptations are in the first part of the table, and the Intrasexual competition adaptations are in the second part.

Mate Preferences Adaptations

Mate preferences are considered adaptations because it enables humans to make wise decisions when they are choosing a partner (Tadinac & Hromatko, 2007). Several researchers within the field of evolutionary psychology focus on the differences between sexes as the primary explanatory factor for individual differences in mate preferences.

However, it is important to consider others factors that could play an essential role in the final decision of whom will be the target of an individual mate selection. Buss (2008) presented 12 mate preferences and intrasexual competition adaptations that are related to the different judgments and perceptions of themselves, their possible partners, their competitors, their reproductive strategy and local ecology.

Table 4

Mating Intelligence Adaptations: A Selected Sample Framed by Sexual Selection Theory

Mate Preferences Adaptations
1. Calibrate mate preferences to one' current mate value.
2. Calibrate mate preferences to anticipate future mate value trajectory.
3. Calibrate mate preferences to gains or losses of mate value.
4. Adjust mate preferences based on whether on is seeking short-term or long-term mate.
5. Calibrate mate preferences to operational sex ratio.
6. Calibrate mate preferences to parasite prevalence in local ecology.
7. Calibrate mate preferences to a number and quality of available potential mates.
8. Adjust mate preferences based on phase of ovulation cycle.
9. Adjust mate preferences based on the local intensity of intrasexual competition .
10. Adjust mate preferences based on success and failures in mating attempt.
11. Adjust mate preferences based on current adaptive needs (e.g., whether one has dependent children).
12. Adjust mate preferences after a breakup, based in part on assessment of causes of relationship failure (e.g., mate value discrepancy).
Intrasexual Competition Adaptations
1. Deploy initial round of mate-attraction tactics (flirtation, courtship displays) in order to:
a. evaluate interest from target (mind reading).
b. evoke interest from target (mind reading).
c. allow closer and fuller assessment of mate quality.
2. Deploy subsequent round of mate-attraction tactics (courtship displays) designed to:
a. Fulfil the desires of a potential mate (e.g., displays of mate quality; commutability).
b. Escalate commitment.
c. Allow more thorough evaluation of mate quality, compatibility, exploitability, etc.
3. Sexual persistence adaptations.
4. Sexual coercion adaptations.
5. Mate-deception adaptations (e.g., mislead target mate about one's mate value or future intentions) (mind reading).
6. Assess and monitor mate value of key intrasexual rivals.
7. Deter intrasexual rivals through intimidation.
8. Derogate intrasexual rivals to targeted mate.
9. Interfere with intrasexual rival's courtship tactics.
10. Damage social reputation of intrasexual rivals.
11. Mate poaching adaptations, such as…
a. Drive a wedge in existing relationship.
b. Deploy attraction tactics that better fulfil targeted mate's desires.
c. Derogate partner of a targeted mate.
12. Mate retention adaptations, such as…
a. Monitor intrasexual rival's interest in one's mate.
b. Drive off intrasexual rivals.
c. Cloister mate to remove from proximity to intrasexual rivals.

Note. Reprinted from: Foreword: The future of Mating Intelligence. In Geher & G. Miller (Eds.), *Mating Intelligence: Sex, Relationships, and the Mind's Reprodutive System*. Buss, D. M. New York, NY, US (2007, p.xiv). Psychology Press.

Four mate preferences adaptations mentioned are directly related to mate value: calibrate mate preferences to own current mate value, calibrate mate preferences to anticipate future mate value trajectory, calibrate mate preferences to gains or losses of mate value, and

adjust mate preferences after a breakup based in part on assessment of causes of relationship failure (e.g., mate value discrepancy).

In an evolutionary perspective, mate-value has been defined as “The total value of the characteristics that an individual possesses regarding the potential contribution to his or her mate’s reproductive success” (Waynforth, 2001, p. 207). Thus, the total mate value of characteristics will depend on the mate preferences of the opposite sex.

Evolutionary psychologists often claim that physical attractiveness is a critical feature in men’s mate selections whereas social and financial status is more relevant for women partner choices (Buss, 2003; Buss & Schmitt, 1993; Feingold, 1992). As both invest and receive different resources, it is expected that they evaluate various characteristics of a potential mate as well as its features to calibrate mate preferences to their current mate value.

In this context, those who have a high position on characteristics considered necessary by the opposite sex might have higher standards when choosing a mate (Tadinac & Hromatko, 2007).

In these dynamic calibrations and adjustments of mate preferences, many aspects of past, present and future mate trajectory have to be considered. For instance, both sexes have to assess the causes of their failures in past relationships or mating attempts to adjust their mate preferences.

They also have to consider the value of their characteristics in the *mating market* in the present. Moreover, they have to anticipate their future mate value trajectory as well as the gains or losses of mate value.

Another important aspect is to adjust mate preferences based on whether one is seeking a short-term or long-term partner. As I discussed, many researchers report that men

and women use different criteria to choose a partner for a long or short-term relationship, and that they are choosier in the first case (Buss & Schmitt, 1993).

There are three quantitative aspects of calibrating mate preferences: *operational sex ratio, parasite prevalence in local ecology*, and *anumber and quality of available potential mates*.

In the evolutionary biology,operational sex ratio is the ratio of sexually competing males, relative to females that are ready to mate (Kvarnemo & Ahnesjo, 1996). It is of particular importance to mate preferences calibrations when one sex has a higher number of sexually active members than the other.

According to sexual selection theory, which ever sex is more abundant is expected to compete more vigorously and the sex that is less abundant is supposed to be more selective in their mate decisions (Clutton-Brock, 2007). In this context, the operational sex ratio also influences the adjustment of mate preferences based on the local intensity of intrasexual competition.

The same logic could be applied to calibrate mate preferences to the number and quality of available potential mates. The higher the quantity and quality of potential mates the *choosier* is the sex who is selecting.

It is important to note that all adaptations are intertwined. They influence each other all the time. For example, the operational ratio, the number and quality of available mates affect the calibration of mate preferences to parasite prevalence in local ecology.

Thus, in a local environment where there are more sexually competing males than sexually competing females and also a small number of women available it is expected that men would be less discerning to a parasites prevalence. Whereas, in a scenario where the number of sexually competing females is higher than the number of sexually

competingmen,and there are also a small number of men available it is expected that women adjust their mate preferences based on their current adaptive needs.

Among all these mate preferences adaptations there is another one that is also relevant: *adjust mate preferences based on the phase of one's ovulation cycle.* This adaptation relies on the ovulatory shift hypothesis. According to it, the period of ovulation cycle influences women motivations, preferences, cognitions, and behaviours. For instance, women experience higher immediate sexual attraction to men with characteristics that reflect genetic quality on high-fertility days than in low-fertility days of the cycle (Gildersleeve, Haselton, & Fales, 2014).

Intrasexual Competition Adaptations

Intrasexual competition is common in both sexes (Fisher et al. 2013) and can be defined as the fight between members of the same sex for accessing members of the opposite sex . In humans, men and women competing with same-sex individuals to gain access to a sexual partner (Buunk & Fischer, 2009) and each sex adopts the best strategies to achieve their goal whatever pursuing a short or long-term strategy.

The intrasexual adaptations include initial mate-attraction tactics (e.g., flirtation, courtship displays) to evaluate interest from the target, evoke interest from them, and allow closer and fuller assessment of mate quality. Subsequent mate attraction tactics involve intense commitment; sexual persistence and sexual coercion adaptations; mate deception adaptations; adaptations that are aiming to monitor, intimidate, and derogate intrasexual rivals; mate poaching adaptation, and mate retention adaptation (Buss & Shackelford, 2008).

Figure 1 shows a diagram that summarises how the Mating Success *Engine* works.Based on Darwin's Theory of Natural and Sexual Selection, the diagram reviews some key components that are involved in mating success. It starts with a sexual selection that is a

form of natural selection, and involves an Intrasexual competition and Intersexual selction that will influence mate decisions to solve their Mating Problems. Mate Preferences adaptations and Intrasexual Competition adaptations are also made to active Mating Success. This result could influence any other 'part of the engine'.

*Figure 1.*Mating Success Engine.

1.5.Conclusions

Mating Intelligence emerges as a concept from the domain of Sexual Selection with a evolutinary theory. In particular it utilises many of the themes in Sexual Strategy Theory as espoused by David Buss and his colleagues. Thus, the evolutionary informed element of the construct is clear but rather narrow. It is clearly stated that MI may be viewed as a form of mental module that developed as our ancestors sought to negotiate mate selection pressures that arose in our Pleistocene past. In this, the notion falls within the accepted evolutionary psychology approach pioneered by Cosmides and Tooby (2000) in which the human mind may be viewed as a form of swiss army knife, made up of discrete tools for different functions.

One reservation with the theoretical 'informers' of MI is that they are predicated on the notion that the process of mating is completed at point of copulation. In other words, the basis of mating intelligence is that those with a higher quotient will have more sexual partners. In a simple way, this makes sense – the more sexual partners, the more offspring that should accrue. Unfortunately this only works for males, and only in situations where few resources are required to successfully rear such offspring. In situations where females outnumber males by a significant degree this might make sense, because the females might be relied upon to provide the child rearing and protection role. However, this argument does not sit well with what little we know of human origins.

It is always possible to criticise evolutionary psychologists by pointing out that we actully know very little about the challenges that faced our Pleistocene anscestors, and so much of the theorizing about the discrete evolved functions of the brain are based upon assumptions (Buller, 2005). However, it is fairly clear from archeological evidence, that our ancestors lived in relatively small groups much as our chimpanzee relatives do today. Given the fact that human offspring are closely balanced in terms of sex ratio we might also assume a relative balance of males and females. These do not seem to be the obvious conditions for cavalier male sexuality as implied by 'the more partners - the more offspring' model. Added to this, the great vulnerability of a newborn human and the long period of dependence while learning and development occur, suggests that an 'all hands on deck' approach to reproduction would be required.

In Darwinian evolution, it should be remembered it is not the fathering of a child that ensures a male's characteristics are passed into the gene pool but rather the fathering of a child AND ascertaining that child reaches reproductive age. In other words it is important that parents become grandparents for the process of gene dissemination to occur. If humans were like fish and thousands of offspring emerged from a coupling, caring for the offspring

would not matter so much, because statistical laws would say that some will survive to pass on ones genes. However, constrained in a small social group with partners who produce one highly dependent child per year, it would seem plausible that the mating challenges our ancestors faced were more geared towards successful long-term pair-bonding and child protection than obtaining many copulatory partners.

This does not undermine the mating intelligence concept in its essence but in operationalising the construct it is clear that a male oriented and short-term focus has been prioritised, and this is a major weakness. This point will be returned to in later sections of the thesis. For now it is worth noting that the characteristics relevant to successful long-term pair bonding might include communication skills, adaptability to change, tolerance and emotional control, all of which humans have to varying degrees but these are not characteristics that take centre stage in the mating intelligence literature.

Recall mating intelligence implies that there is a challenge to master and mating success is a central aspect in defining the concept, just as mathematical intelligence implies ones ability to master mathematical challenges. How we define mating success is critical to how we define mating intelligence. As we have seen, defining mating success in terms of sexual conquest misses the Darwinian point that offspring must be produced and protected to adulthood .

A point that is often made by the critics of evolutionary psychology is that behaviour is as much governed by culture and situational context as by biological givens (Karmiloff-Smith, 1992; Buller, 2005; Richerson & Boyd, 2005). Sexual behaviour has seen radical change since the technological development of birth control. It may be argued that this change is too recent to have had any evolutionary significance and this would certainly be true if Tooby and Cosmides (1990) seminal position were held. Alternatively, a more pluralist evolutionary psychology might argue that behavioural flexibility is the primary

evolved function in human beings rather than a series of specific modular functions. This is essentially the argument of Richerson and Boyd (2005) and it undermines the expectation that human sexual behaviour is determined by the challenges faced by our Pleistocene ancestors.

In summary, the evolutionary information that spurred the development of the mating intelligence construct is rather narrow and tends to assume that mating success is inextricably linked to finding multiple partners. This is not, strictly, a useful Darwinian principle for mating success. The lack of nuance in the account of how evolutionary theory informed the concept of mating intelligence raises some concerns about the explanatory power of the model when it comes to contemporary human mating.

Chapter 2

Mating Intelligence from an *Intelligence* Perspective

Chapters 1 attempted to explore the evolutionary aspects that lie behind Mating Intelligence and the assertion of Geher and Kauffman that it is an 'evolutionary informed construct'. This chapter takes up directly the notion that the construct is conceived as a form of intelligence.

The first part of the chapter very briefly reviews the development of the concept of intelligence both historically and theoretically. After that, based on a Thematic Analyse of 85 definitions of intelligence, there is a discussion about the historical changes and challenges to define intelligence and its consequences to the scientific studies on the area of intelligence and, more particularly, mating intelligence.

2.1. The Scientific Study of Human Intelligence

The topicof intelligence has always aroused human curiosity. From the earliest Greek philosophers to the present day, many writers have expressed their ideas about the nature of intelligence (Sternberg, 1990). Plato believed that it was the love of learning and the love of truth. Whereas, St. Augustine believed that superior intelligence could lead people away from God. On the other hand, Thomas Hobbes in Leviathan argued that superior intelligence involved a quick wit and the ability to see similarities between different things, and differences between similar things. This idea certainly influenced some subsequent measures of intelligence and modern intelligence tests.

It is interesting to note that measurement implies the idea of difference. For example, to measure people's intelligence, it is necessary to believe that people differ in intelligence. However, not all theorists shared this belief and it was often held that intelligence was a common and constant feature in human beings(Mackintosh, 2011a). For

example, Adam Smith in *The Wealth of Nations* argued that the division of labour was responsible not only for the wealth but also for the apparent differences in the talents of a philosopher and a street porter. Charles Darwin wrote: "...I have always maintained that, excepting fools, men do not differ in intellect, only in zeal and hard work"(Galton, 1908, p. 290). It was Galton who made him change his mind.

However based on the more common belief that people differ in their level of intelligence, many scientists have proposed measures of intelligence to elaborate the differences between people(Binet, Simon, & Kite, 1916; Gardner, 1983; Mayer, Caruso, & Salovey, 2000; Spearman, 1904).

Measures of Intelligence

The first attempts to measure differences in mental ability were made by Galton and Mc Keen Cattell. They did not claim that their collection of tests (with their focus on sensory function or reaction time) would provide a general measure of intelligence, but their work contributed to open the way for research in this area. However, for many the pioneering research into intelligence came at the turn of the 20th century under the auspices of the British psychologist, Charles Spearman (1904). Spearman formulated the theory of a single general mental energy that varied between people that came to be called General Intelligence or g. He had carried out a number of experiments with young children in a village school and noticed that students who tended to obtain good grades in one class tended to receive good grades in other classes, and vice-versa. In other words, he realised that performances across different school subjects were positively related to one another.

After finding the same relationship over and over again, he hypothesisedthat all tests were measuring an underlying core reasoning process, which transcends particular content. He called this the general factor of intelligence or g factor.

At around the same time in France a very much more pragmatic approach was taken. Alfred Binet, an Educationalist, was tasked with the job of devising a fair and equitable way of streaming children for the French School system. He developed a number of tasks that should be acheivable at various stages of development. Children were given these tasks and, determined by their ability to master then, an estimate of their mental age was generated. The ratio of mental age to chronological age was determined as the Intelligence Quotient (IQ). Unlike Spearman, Binet maintained that*intelligence* consists in a multiplicity of different abilities and depends on a variety of higher psychological faculties like attention, memory, imagination, common sense, judgment, and abstraction(Binet and Simon, 1911).

Nevertheless, according to many subsequent researchers*g*, in an aggregate statistical sense, is a very real phenomenon (Kaufman, DeYoung, Gray, Brown, & Mackintosh, 2009; Sternberg & Kaufman, 2011; Van Der Maas et al., 2006).

However, the pragmatic notion of specific aspects of intelligence as described by Binet and Simon (1911) also fascinated researchers who felt that g was too general a construct to fully describe the concept of intelligence. This was picked up by Thurstone (1932) who identified multiple factors of intelligence and most of the devices developed to assess intelligence in common use derive from this work. Examples include the WAIS (Weschler, 1958) and the Stanford-Binet Scales (Roid, 2005). Carroll (1993) was instrumental in unifying the two schools within a hierarchical model of intelligence in which specific abilities may be measurable and practically useful constructs but they all receive a contribution from a more general capacity comonly thought of as g.

These models of intelligence are largely informed by the technique, originally devised by Spearman to test his general theory, named factor analysis. It is beyond our brief here to delve into this technique, although we will make use of it in later chapters. Nevertheless,

there are theories of intelligence in which factor analysis plays no part and where a more modular view is espoused.

Gardner (1983) proposed such a view which came to be known as the Theory of Multiple Intelligences. For Gardner abilities such as numerical ability and verbal ability were not emanations from a general intelligence but rather independent modules within an interconnected mind. As such, his views dovetail closely with the evolutionary psychologists modular view of human cognition. This theory also paved the way for others to propose additional intelligence domains such as Social Intelligence and Emotional Intelligence which also have a significantrole in the concept development of Mating Intelligence. Of course, the emergence of a potentially huge number ofdifferent kinds of intelligence increased the number of definitions of Intelligence and made it even more challenging to delineate its meaning.

A simple definition of intelligence is that it is the capacity to solve problems. But this leaves a large number of questions unanswered.

- Is intelligence the capacity to solve problems in different areas or only in a specific area?
- if I am a genius in one area and below average in another area, am I intelligentor not?
- Does the environment play some role in developing this capacity?
- Could this capacity be developed or is it static?
- On this basis could animals, plants or machines be considered intelligent?

Even though the concept of intelligence has been intriguing many scholars since Plato, and thousands of papers have been published about it there is still no standard definition (Goldstein, Princiotta, & Naglieri, 2015; Legg & Hutter, 2007) nor a unique answer to each of the questions above. As Sternberg said: “Viewed narrowly, there seem to be almost as many definitions of intelligence as there were experts asked to define it” (in Gregory, 2004, p. 472).Far too many definitions of intelligence make the understanding of it

very complex. So much so, that it may appear like a big jigsaw puzzle, without a picture of it on the back of the puzzle box.

2.2. A Thematic Analysis of Intelligence Definitions

As part of this review of Intelligence a small thematic analysis was attempted in an effort to make sense of the domain. A Thematic Analysis, the most common form of analysis in qualitative research (Guest, MacQueen, & Namey, 2011) could help *put the pieces together*, contributing to a clearer understanding of its definition as it facilitates pinpointing, examining, and recording patterns (or *themes*) within data (Braun & Clarke, 2006, 2012).Interestingly, some steps performed by Thematic Analysis through the process of creating and establishing meaningful patterns, are also used to put a puzzle together, such as: searching for themes; separating the pieces (themes) into the groups; putting the pieces of the same group together and finding the connections among them.

Using a deductive, theory-driven approach, it was possible to choose the themes found in more than 80 definitions of intelligence which have been presented over the years by many influential thinkers since its historical foundation up to the present day (See figure 2)

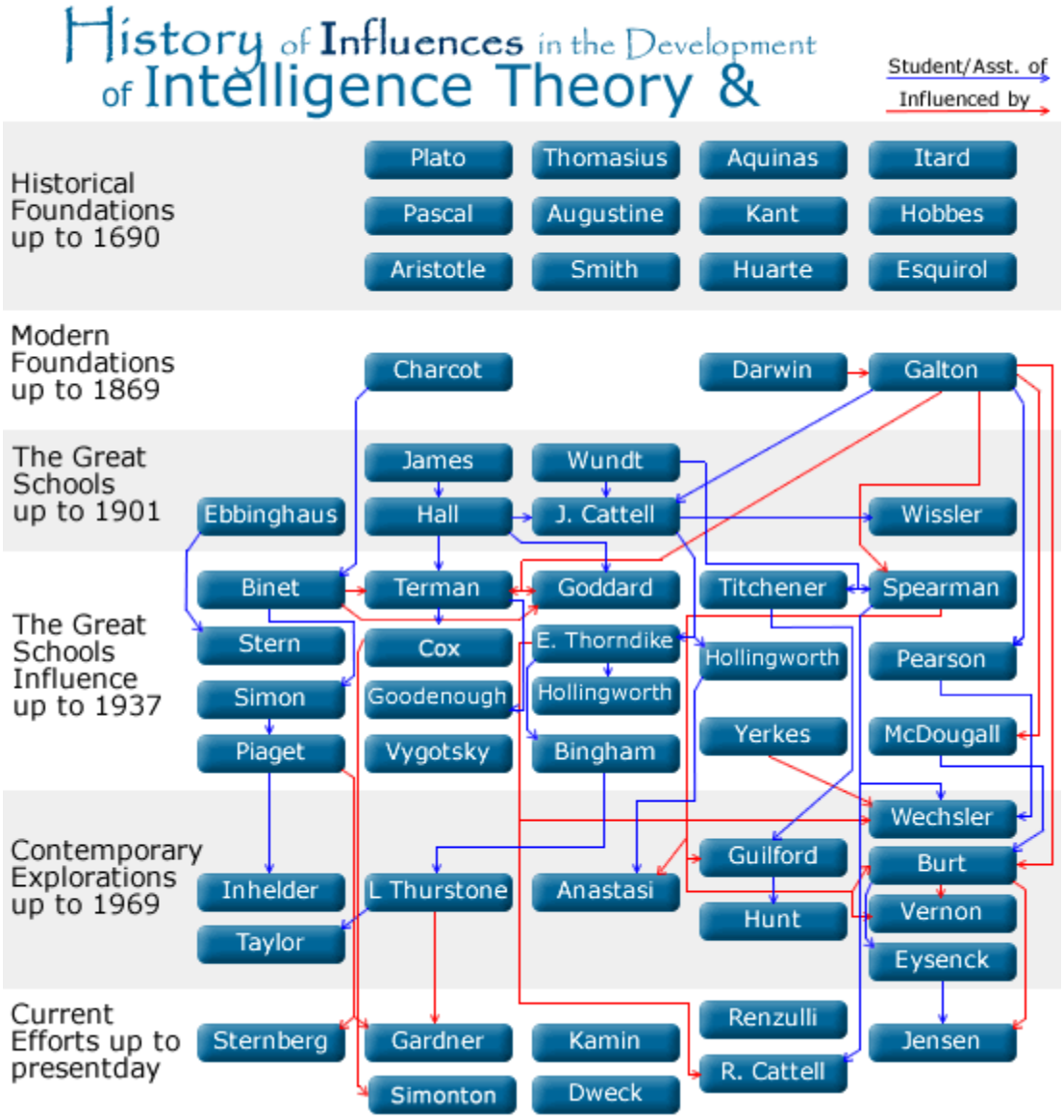


*Figure 2.*History of Influences in the Development of Intelligence Theory. The figure presents the historical period of each person's primary or seminal contribution/s to intelligence theory or testing. Reprinted from Human intelligence: Historical influences, current controversies, teaching resources, by Plucker, J. A., & Esping, A. (Eds.),2014. Retrieved [March 13, 2018], from http://www.intelltheory.com

These definitions of intelligence (See a complete list in Appendix A) were investigated through three main themes:

1. The belief that intelligence is innate/fixed or changeable over a lifetime (the nature of intelligence).
2. What intelligence is.
3. What intelligence involves.

The differing definitions among authors are probably related to the differences in their area of expertise, cultural background, experiences and so on. However, it is important to mention that sometimes the difference is more terminological than in their point of view. It is not uncommon to see authors express a similar definition of intelligence using different words. As can be seen in following definitions:

- "Intelligence measures an agent's ability to achieve goals in a wide range of environments" (Legg & Hutter, 2007, p.9).
- "Achieving complex goals in complex environments" (Goertzel, Pennachin, & Geisweiller, 2014, p. 157)

The Sociobiological Nature of Intelligence.

The nature of intelligence was the first theme investigated in the definitions as the discussion of the role of the genetics, and environmental factors is an important and controversial part of the studies of human intelligence. It is relevant because the authors' beliefs set the foundation of how intelligence will be measured and, in some cases, developed and it is also polemic because some authors see intelligence as overwhelmingly inherited whereas others claim that the environment can influence not only IQ measures but the actual achievement of both students and adults.

Some definitions clearly express their authors' beliefs in a more genetic nature. This is true in the case of Burt (1955) who defined intelligence as an innate general cognitive ability, and Jensen (1998) who declared that Intelligence is a general factor that runs through all types of performance. While others highlight the importance of the environment. For instance, Feuerstein (2002) defined intelligence as the unique propensity of human beings to change or modify the structure of their cognitive functioning to adapt to the changing demands of a life situation.

However, it is not possible to identify the authors'stance in most of the definitions. A better understanding of the author's beliefs of the nature of intelligence would be possible only with a wider investigation of their academic work.

According to Nicherson (2011)"There is a considerable agreement among many - I believe most - researches on intelligence that both nature and nurture playmajor roles in determining intelligence and cognitive performance, despite differences of opinion regarding the relative contribution of the two types of factors" (p. 21).

The significant variation in the relative contribution of each factor can be observed among authors and also in different periods of time. Nisbett (2010), a Psychologist professor at University of Michigan stated that "Many if not most experts in intelligence in the late twentieth century believed that intelligence and academic talent are substantially under genetic control" (p. 1). But, based on the results of more than 225 researches, he advocates the power of environment to influence intelligence potential and the specific role of schools and cultures in affecting the environment. According to him, the environmentalist camp estimates that heritability has an influence of 50 percent or less and not about 75 to 85 percent as some are still claiming.

Environmentalists, such as Nisbett, present some powerful arguments against the overestimated role of the genetic factors influencing characteristics like intelligence.According to him, firstly, the heritability is based on the correlation between the IQ of identical twins reared apart with the assumption that the twins were placed into environments at random. But, this was not the case. They were likely to be raised by people, frequently relatives, who lived in similar kind of environment. As most studies of twins reared apart don't show how dissimilar the environments are, it is not possible to know exactly the correlation size of the heritable factors.

Secondly, the experiences of identical twins are highly similar even when they have been reared apart in quite different environments. As they look alike and more often than not they have other characteristics in common they tend to get the same kind of treatment from people.

Thirdly, twins share the same intrauterine environment. According to Devlin, Daniels, & Roeder (1997) and his colleagues, this shared environment should subtract 20 percent from the heritability estimates. Also, Dickens and Flynn (2001); Scarr and McCartney (1983)proposed that slight genetic advances can be triggers of environmental influences in the experiences which are crucial for realising that advantage. For instance, a child with a relatively small genetic advantage is more likely to be encouraged to pursue intellectual goals, find intellectual activity rewarding, study more and engage in other mental activities. In this case, the child's slight genetic advantage will be enhanced by triggering environmental *multipliers*.

Another argument against the overestimated heritability factors is the importance of family environment in determining IQ. The hereditarians believe that the environment of the adopted child does little for the child's intelligence since adoptive environments do not make for differences in IQ. However, according to Nisbett (2010) this is a mistake. He reported a series of research which shows that all children can have their IQ dramatically affected by their family socioeconomic status. For instance, children who would be expected to have an average IQ if raised in an average environment can have their IQ dramatically increased if they are raised under high propitious circumstances. Whereas, upper-middle class children can have their IQs lowered by approximately 12 points if they are raised in poverty (Capron & Duyme, 1989).

Furthermore, environmentalists argue that heritability says nothing about mutability. For instance, the heritability of the height is about .85 to .90. However, gains in average

height of a standard deviation or more in many countries in the world from 1965 and 2005 do not support this huge increase. This time span is too short for the genetics to be the responsible factor. Environmental changes, like nutrition, obviously have played a role in the change. According to Chi (2016), even though a major part of a person's stature is attributable to genes, only relatively few genes are known to effec the height, and each has only a small effect.

The environmentalist area emphasises that IQ is only one component of Intelligence. Other components that should be addressed are Practical Intelligence; Creative Intelligence; Emotional Skills; Self-discipline and quite possiblely motivation and character. In their view, all these components increase the predictability of academic and occupational success.

It is interesting to note that the environmentalists mentioned two kinds of intelligence-practical and creative. Both concepts are as new as the Mating Intelligence concept. None of them had existed before Horward Gardner published the book *Frame of Minds: The theory of Multiples Intelligences* in 1983. He argued that there aremultipleintelligencesinstead of a unique intelligence factor the underlies all the other capacities and that these intelligences could be developed. This was a turning point in the studies of intelligence. After his publication, the world started to see an avalanche of various kinds of intelligence never seen before.

Gardner has recognised only eight kinds of Intelligence so far (musical–rhythmic, visual–spatial, verbal–linguistic, logical–mathematical, bodily–kinaesthetic, interpersonal, intrapersonal, and naturalistic (Gardner, 1983)). However, there are many other *candidates* vying to become another one of the Multiple Intelligences, such as*Moral Intelligence*(Lennick & Kiel, 2005), *Culinary Intelligence*(Kaminsky, 2012) and *Sexual Intelligence*(Klein, 2012). There are also several others that have been already presented by their authors as a kind of Intelligence, for instance: Plant Intelligence, Extra-Terrestrial Intelligence, Cultural Intelligence, Monetary

Intelligence, Artificial Intelligence, Biological Intelligence and Sexual Intelligence. Mating Intelligence, then is simply one possibility among many candidates.

This multiplicity of kinds of intelligenceleads to the question of what intelligence is. Is there a definition able to englobe all these diverse concepts?

What Does'Intelligence' Describe?

The multiplicity of keywords used to define intelligence is another significant theme. Intelligence is seen in multiple ways. The word ability is the most common in the definitions. It was presented in 42 definitions. This twice as much as the word Capacity that was mentioned by 21. But intelligence is also seen as: a skill, property of mind, a mental process, a composite of several functions, facet of mind, a fundamental faculty, a part of the internal environment, the resultant of the process, a quality that is intellectual and not emotional or moral, a system, a complexly interrelated assemblage of functions, an assimilation and accommodation to the environment, a mental trait and as 'a what is measured by intelligence tests'.

The choice of the word *ability* may demonstrate that the majority of authors see intelligence related to an action, a competence to perform some function whether physical, mental or a combination of the two. Whereas the selection of the word *capacity* shows that intelligence also could be seen as a latent ability, a potential to do something and not just as an action. However, some definitions mention intelligence as a combination of ability and capacity. For instance, Gottfredson (1997) defined intelligence as

> "A very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience, It is not merely book learning, a narrow academic skill, or testing taking smarts. Rather its reflects a broaden and deeper

capability for comprehending our surroundings - ‘catching on’, ‘making sense’ of things, or figuring out’ what to do” (p. 13).

It is also worth mentioning that sometimes it seems that the words capacity and ability were used as they had the same meaning. For instance, Cambridge Advance Learner’s Dictionary (2013)defined Intelligence as “The ability to learn, understand and make judgments or have opinions that are based on reason”whereas Wordsmyth Dictionary (2015)defined it as “The capacity to learn, reason, and understand”.

As could be expected, many definitions also refer to intelligence as something mental (property of mind, a mental process, facet of mind, a part of the internal environment, a quality that is intellectual and not emotional or moral, mental assimilation and accommodation to the environment, a mental trait).

Only a few definitions do not present intelligence explicitly as an ability, capacity or something mental, but rather as *a system*, *a complexly interrelated assemblage of functions*, *assimilation and accommodation to the environment*, *a complex set of phenomena* or *what is measured by intelligence tests*. They are usually the ones used by authors who focus on a specific kind of intelligence such as Artificial Intelligence

What is the Function of Intelligence?

What intelligence involves was the theme that presented the largest number of codes. Together they review what is often associated with the concept.

The ability or capacity to adapt was the most mentioned (17), followed by *solving problems*; *achieving goals/ success*; *reasoning and learning*. Each of them was presented at least once by 14 definitions.

Some authors also said that intelligence involves *acquiring knowledge* (12), *efficiency* (9), *cognition* (8), *observation* (7), *judgment* (5); *performance* (5); *memory* (5) and *attention* (2).

Figure 3 summarises the main findings that were investigated through the three themes. It is based on the several keywords presented in the 85 definitions of intelligence resented by influential thinkers, dictionaries, encyclopaedias and other authors divided into three categories.

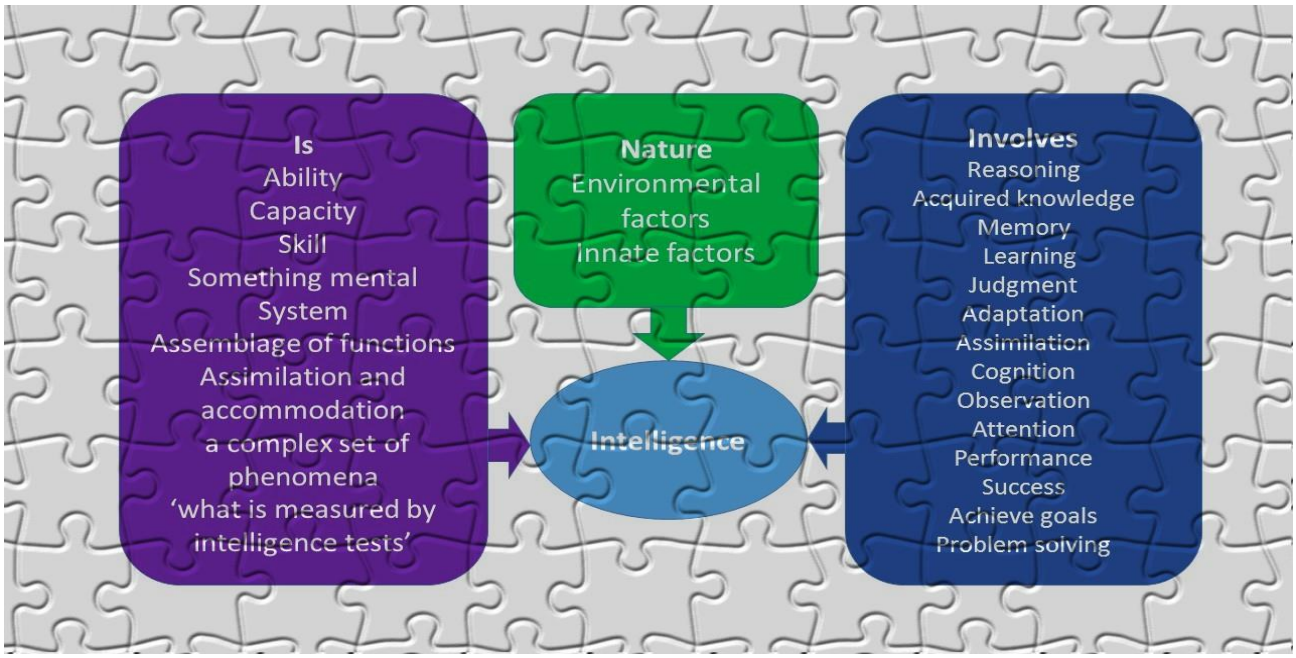


Figure 3
What Intelligence Is. The figure shows the main finding of the definition of intelligence divide into three main categories.

The Undefinable Definition

"…in its lowest terms, intelligence is present where the individual animal, or human being, is aware, however dimly, of the relevance of his behaviour to an objective. Many definitions of what is indefinable have been attempted by psychologists…" Drever in Legg & Hutter (2007, p.19).

Could a unique definition of intelligence be found? We are not sure. Certainly, it's not hard to find a more general definition that encompasses virtually the main ideas expressed in all definitions to try to please everyone. For instance, Legg and Hutter constructed their definition of intelligence, called *universal intelligence*, based in what they described as '*the largest and most well referenced collection'* of intelligence definitions at that time (Legg

&Hutter, 2007, p.1). They claimed that the apparent belief that intelligence cannot be fully defined was pessimistic because many definitions have strong similarities. Based on the similarities, they defined that "Intelligence measures an agent's ability to achieve goals in a wide range of environments" (Legg & Hutter, 2007, p. 2).

Before their attempt, in 1994, 52 researchers had already defined intelligence in an editorial statement in the *Wall Street Journal* as: "a very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience" (Gottfredson, 1994, p. 13). However, despite the consensus among these researchers, their attempt was not enough to stop the emergence of news definitions.

The diversity of definitions of Intelligence in the past, and inevitably in the future is possibly associated with two main reasons: the unknowns of the area and its changes.

The unknowns of the area. It is not a novelty that the concept of intelligence has significant grey areas. As Yerkes and Yerkes (1929) declared "intelligence designates a complexly interrelated assemblage of functions, no one of which is completely or accurately known in man…" (p. 529).

Unfortunately, science is still unsure about the exact nature of intelligence, its possibilities and its limitations. This was reported by the board of Scientific Affairs at *the American of Psychological Association* titled "Intelligence: Knows and unknowns" which declared: *Concepts of intelligence*are attempts to clarify and organize this complex set of phenomena. Although considerably clarity has been achieved in some areas, no such conceptualization has yet answered all the important questions and non-commands universal assent (Neisser et al., 1996)

The grey areas give room for speculation and often enable some authors to promote their subject. The use of the word Intelligence could be a marketing strategy to capture the

general public attention. For instance, a book entitled *Dog's Intelligence* could sound much more appealing to the general public than a book called the *Dog's Attitude* or the *Dog's capacity*. The word 'Intelligence' is commonly associated with a more scientific and reliable approach.

One of the grey areas is in the genetic field. The findings obtained from genome scans unequivocally supports the idea of the involvement of genetic factors in the development of intelligence and abilities, but it is far from able to generate a cohesive picture of the genetic machinery behind these factors (Bouregy, Grigorenko, Tan, & Latham, 2017).

Changes in the area. The concept of intelligence has been changing over the years, and the definitions have been changing at the same pace. In general, as we have seen, the importance of the environmental factors has been increasing, mainly from the late twentieth century. This change also introduced different definitions that started to emphasise the importance of environmental factors to the nature and development of intelligence.

The concept also became no longer homo-centric over the years. A good example can be observed in *The Cambridge Handbook of Intelligence*. Its first edition, in 1982, presented the word *human* in the title, but in its second edition, in 2000, this word was dropped due to the inclusion of a chapter about the Animal Intelligence. In its last version, in 2011, we can also find a chapter dedicated to the Artificial Intelligence.

The emergence of several kinds of intelligence made some definitions appear obsolete or at least, inadequate to show the specificities of the new area of research. For instance, all the definitions of intelligence that present the word *mental* are not suitable for the definition of the Animal Intelligence, Plant intelligence, and/or Artificial Intelligence. Consequently, many authors started to present their own definition of a kind of intelligence instead of a more general definition.

2.3. Conclusions

The immediate question at the end of this review is where does Mating Intelligence fit within Intelligence theory? One very obvious conclusion is that it is far more consistent with Gardner's Multiple Intelligences model than with the factor analytic model of the British Empiricist school. The fact that MI is seen as an evolved and discrete module, one of the functions on Cosmides and Tooby's (2000) Swiss army knife, rather than an emanation from 'g' places it outside the traditional intelligence literature.

It is apparent from the evolutionary and modular stance of Geher and his colleagues that mating intelligence is seen as something inherent in each individual. However, this is not necessarily inevitable. Karmiloff-Smith (1997) for example, is prepared to accept the modularity argument for certain capacities but produces evidence to suggest modularization is a product of development rather than evolutionary biology. This coincides with other work in the area of developmental cognition (Greenfield, 1991; Carey & Spelke, 1994). However, it is clear that within the evolutionary psychology setting in which Geher is working within the assumption is made that MI is strongly inherited.

Mating intelligence is decribed as: "the cognitive ability that bears on mating relevant outcomes – in short: the mind's reproductive system" (Geher & Miller, 2007). This states that MI is an ability but the target of that ability is left rather vague.

The question of what MI's function is answered directly by Geher and colleagues as mating success. As we saw in chapter 1, however, the definition of mating success is unclear. In teasing out the facets that make up mating intelligence it becomes clear that the construct is multi-faceted. The ability to utilise a number of sexual strategies as defined in Sexual Strategy Theory may be a better way to conceptualise the construct.

Another question that may accur is what is the most promising method to describe, explain and predict intelligence?

The answer will depend on the criteria adopted. Davidson and Kemp (2011) describe the criteria that the models of intelligence must attend. Among them we highlight three (1) the models must be based on relevant assumption build on previous knowledge and have appropriate empirical support; (2) all components and the mechanisms by which they interact should be well specified, internally consistent, and testable; (3) They must describe, explain and predict intelligence behaviour across time and place.

Based on these criteria, we can explore the contrast between Gardner's Multiple Intelligence model and the factor analytic work on intelligence.

We have seen that the most convenient model of intelligence for Mating Intelligence appears to be Gardner's notion of multiple independent intelligences. The most widely accepted model of intelligence, which emanates from Spearman's construct of a core mental energy, does not sit well with mating intelligence nor do the multifactorial models with strictly unidimensional latent structures. But, even though Gardner's Multiple Intelligence theory was built on observations of differential performance, it does not meet the majority of the criteria described by Davison and Kempt (2011) as fundamental in the intelligence models.

For instance, Allix (2000) reported that he did not find empirical validating studies of Gardner's theory. In the same year, Gardner and Connel (2000) conceded that there was little hard evidence for the Multiple Intelligence Theory (p.292). In 2004, Sternberg and Grigorenko stated that there were no validating studies for Multiples Intelligence. Gardner claimed that he would be delighted were such evidence to accrue' (p.204), and he admitted that 'Multiple Intelligence theory has few enthusiasts among psychometricians or others of a

traditional psychology background' because they require 'psychometrical or experimental evidence that allows one to prove the existence of the several intelligences' (p.214).

Waterhouse (2006) says that despite their wide currency in education the theory of multiple Intelligences lacks adequate empirical support and should not be the basis for educational practice. According to him, there is no publication from a cognitive psychologist to suggest that they have conducted research directed at defining or validating Gardner's intelligence. He also reported that research has explored the nature of perceptual processes such as vision, hearing, smell and taste, but these processes have not been determined to be a 'seeing' intelligence, 'smelling' intelligence, 'tactile' intelligence (to which, of course, we could add Mating Intelligence). Research has also explored language skills, reading skills, music skills, mathematical skills, reasoning skills, spacial skills, and social skills, but these skills have not been found to function as separate intelligence (Caccioppo & Berntson, 2004; Peretz & Zatorre, 2005).

Gardner (2004) admitted that 'it is important to identifying defining features' (p.204). But, he confessed that he has not proposed testable components ('facets') for the intelligences because his basic paradigm clashes with that of psychometrics' (p.214), without defined components intelligence cannot be tested for validity (Allix, 2000; Fuller, 2004). From Allix's (2000) perspectives, even if Gardner generated testable components, the validity of individual intelligence still could not be explored because the author has not specified the functional links he has theorized to exist between the intelligence since they are 'semi-independent' (Gardner 1999).

In contrast, according to many researchers g, in an aggregate statistical sense, is a very real phenomenon (Kaufman, DeYoung, Gray, Brown, & Mackintosh, 2009; Sternberg & Kaufman, 2011; Van Der Maas et al., 2006). It does a good job predicting academic achievement (Deary, Strand, Smith, & Fernandes, 2007; Hunt, 2010; Kaufman et al., 2010;

Mackintosh, 2011b) occupational success in professional fields such as physics, medicine, and law, and even health and longevity (Gottfredson, 1997).

As Waterhouse (2006) stated 'there are many lines of evidence supporting a general Intelligence function' (p.210). For instance, Watkins & Cavinez (2004) shows that Individual cognitive skills are significantly correlated with g; Johnson et al., (2004) show that g predicts intellectual performance across different sets of measures and Oberauer, Schulze, Wilhelm, and Suss (2005) report that a substantial portion of g variance is predicted by working memory skill.

In addition, according to Toga and Thompson (2005), there is considerable evidence for the heritability of general intelligence, for the heritability of MRI-measured brain volumes, and for the significant positive correlation of IQ measures and brain volumes. This is also shown by McDaniel (2005) who reported a meta-analysis of 37 studies including 1,530 men and women that revealed that brain volume is significantly positively correlated with full-scale IQ in both men and women.

Furthermore, Thatcher, North, and Biver (2005) reported that frontal lobe brain activity was positively correlated with IQ, and Geake and Hansen (2005) showed that the Frontal lobe activity level, as measured by fMRI was also positively associated with verbal IQ. Moreover, McRorie and Cooper (2004) discovered that motor reaction speed of removing the hand following electric shock correlated significantly with Wechsler full-scale IQ and verbal IQ and with a measure of visual search speed.

To conclude, it is very clear that empirical support for Gardner's Multiple Intelligence model is problematic. It is evident that the extensive factor analytic work on intelligence is so far the most promising method to describe, explain and predict intelligence.

We have argued above that the multiple Intelligence model is the only one that is remotely consistent with the construct of Mating Intelligence. Given the strategies of this model, it is clear that MI is a very shaky ground as an ‘intelligence’ construct.

In the next chapter we will consider the place of MI within the rather more trait oriented area of Personality and we will also explore the potential overlap with the construct of trait emotional intelligence.

Chapter 3

Placing Mating Intelligence within the Domain of Personality and Emotional Intelligence

So far the concept of MI as proposed by Geher and Kauffman, appears somewhat theoretically equivocal. One of the damning criticisms of the construct came not from evolutionary of intelligence arguments but rather from its implict theory. Bracanovic (2010) for example revisits the reservations expressed by Mayer and Cobb (2000) that it is not sufficiently differenciated from other personality descriptors.

If we define personality in purely operational terms as a predisposition to behave in a predictable fashion given a specific challenge, it is clear that the concept of mating intelligence falls as much into the personality domain as the intelligence one. In this chapter we examine the role of personality in mating intelligence drawing largely on the work of Daniel Nettle and his colleagues. We then proceed to focus on the evident conflation between the constructs of mating intelligence and emotional intelligence. This may seem to be slightly digressive as it will entail a brief detailing of the Emotional Intelligence construct but the correspondence between mating and emotional intelligence is very close and, as we will see in a later section, is tantamount to conflation.

3.1.Personality and Mating Intelligence

Mating intelligence and Personality are related in various ways. For example,Nettle and Clegg (2008)suggested that personality is useful for understanding differences in mating-related decisions. “It could be accurate to say swing gear underlying mating-related decisions is calibrated differently in different people, with the big-five framework useful to understanding these differences” (Nettle & Clegg, 2008, p. 131).In this perspective, the

relationship between Mating intelligence and Personality could be analysed via mating strategies and mating preferences.

Nettle and Clegg (2008), and other authors such as Schmitt and Buss (2000), highlight the five broad dimensions of personality - openness, conscientiousness, extroversion, agreeableness, and neuroticismand claim that these are reflected in heritable individual differences in mating strategies to some extent. Individual differences in these five factors can be seen as different mating strategies to mating success.

As mating may be seen as a fundamental component of fitness, it is possible that natural selection hasoptimised the mental mechanisms that promote strategies to selecting, understanding, and attracting mates. In other words, individual differences in these five factors can be seen as a result of millions of years of natural selection. For this reason, the big-five framework would be necessary to understanding the *swing gear* underlying mating-related decisions as Nettle and Clegg (2008) have suggested.

Table 5presents key trade-offs in mating strategies associated with each Personality dimensions. In it, Nettle and Clegg (2008) also highlight empirical finding related to their benefits, costs and preferences. According to Nettle (2006a),“each of the Big Five dimensions of human personality can be seen as the result of a trade-off between different fitness costs and benefits’(p.622)

The argument that each personality dimension has both advantages and costs that bring implication to mating is essential. If one dimension presented only benefits, it is reasonable to conclude that this dimension would no longer be variable across individuals.

The trade-offs involved in human mating seem to include: (a) mate acquisition versus mate retention, (b) low versus high energy for detecting mating-relevant threats,(c) low versus high patience to regarding future possible mating opportunities,(d) low versus high empathy regarding other’ interests, (e) low versus high investment in costly, risky courtship

signals. These trade-offs do not offer a stable universal optimum. For this reason, selection can maintain a spectrum of heritable variation (Nettle & Clegg, 2008).

Table 5

Key Trade-offs in Mating Strategies, the Associated Personality Dimensions, and Related Empirical Findings Concerning Their Benefits, Costs, and Mate Preferences

Trade-off	Associated Personality Dimensions	Related Findings-Fitness Benefits	Related Findings-Fitness Costs	Related Findings-Preferences
Mate attraction versus retention	Extraversion	Increases social status, social network size, sexual partner number	Increases accident risk, infidelity, abandonment, exposure to step-parents	High extraversion generally sought; more preferred by women and in short-term relationships
Threat detection	Neuroticism	Increases sensitivity to cues of infidelity or desertion	Reduces partner's satisfaction, increases stress, depression, and illness in self	Low neuroticism sought
Future discounting	Conscientious	Increases trust, fidelity, parental investment	Decreases opportunistic matings	High conscientiousness sought
Other's interests	Agreeableness	Increases in-pair cooperation, joint investment ability, sympathy, fidelity	Decreases opportunistic matings and status-seeking	High agreeableness sought
Creativity/Signalling	Openness	Increases creativity & attractiveness	Increases vulnerability to mental illness	Successful signallers attractive, especially for short-term mating

Note.Reprinted from: Personality, mating strategies, and mating intelligence. In Geher, G. Miller, Geher, & G. Miller (Eds.), *Mating intelligence: Sex, relationships, and the mind's reproductive system*. Nettle, D., & Clegg, H. New York, US (2008, p. 128). Psychology Press.

It is possible to note mating implications associated with each of the Big Fivepersonality dimensions. For instance, the link between mating and the extroversion dimension of personality have been reported many times. Extraverted people are likely to have more sexual partners (Eysenck & Eysenck, 1976; Heaven, Fitzpatrick, Craig, Kelly, & Sebar, 2000) tend to terminate relationships (Nettle, 2005) and are more likely to have affairs (Nettle, 2005; Schmitt, 2004a). Their high activity levels, positive mood and gregariousness facilitate their social interaction to many potential mates.

On the other hand, extraverts, through their risk taking behaviours, suffer more accidents and hospitalisations, are more often unfaithful and abandoned, and so are more likely to have their children raised with a step-father (Nettle, 2005). They are likely to exhibit much more neglect, abuse, and even kill their step children (Daly & Wilson, 1985). Continuum variability and heritability of the extraversion dimension suggests some kind of trade-off between the costs and benefits of mate acquisition versus mate retention.

Neuroticism is the second of the big five traits. It is the strongest negative predictor of spouse's marital satisfaction, and general relationship quality (Karney & Bradbury, 1997; Kelly & Conley, 1987). Highly neurotic people tend to experience unpleasant emotions, such as anger, anxiety, concern, guilt, wariness, depression and vulnerability (Toegel, 2012). In the context of mating, they weaken their own sexual relationship through constant worry, suspicious, jealousy, and neediness. However, their high sensibility to cues of infidelity or desertion may be beneficial to prevent potential cheating despite the many relationship problems caused by their over imagined flirtations (Schmitt & Buss, 2000).

Conscientiousness, the third of the big five traits, reflects a tendency to be organised, show self-discipline, act dutifully to themselves and others, aim for achievement, and prefer planned rather than spontaneous behaviour (Toegel, 2012). Highly conscientous people weight future costs and benefits relatively strongly against immediateones. They are more likely to be trustable, faithful and give a good parental investment. These characteristics could cost them some sexual opportunities, but they are likely to have fewer problems with their relationships, social reputations and immune systems (Nettle & Clegg, 2008).Conversely, individuals low on conscientiousness are more promiscuous, more likely to be unfaithful and have impulsive, unsafe sex under the influence of alcohol or drugs (Miller et al., 2004; Schmitt, 2004a; Schmitt & Buss, 2000).

Agreeableness, the fourth of the big five traits, is one of the most desirable personality traits in mating relationships. It concerns empathy, trust, perspective-taking, gentleness, and consensus-seeking. Like high conscientousness, agreeableness is closely related to less infidelity, less sexual partners and more loyalty to mates (Schmitt, 2004a; Schmitt & Buss, 2001). A study of male executives found that agreeableness negatively predicts career success (Boudreau, Boswell, &Judge, 2001). Taking into consideration that males have advantages from additional sexual partners and elevated status it could suggest that high agreeableness should cost more for men than for women (Nettle & Clegg, 2008). Interestingly, women systematically score around half a standard deviation higher than men on measures of agreeableness (Costa, Terraciano, & McCrae, 2001).

Openness to experience is the fifth personality trait discussed in the Big Five. It reflects an appreciation for culture, intellectual curiosity, art, and a variety of personal experiences over a strict routine. It is also associated with creativity (McCrae & Costa, 1997) being often found in successful artists and poets as well as individuals with psychotic disorders (Nettle, 2006a). Personality'scharacteristics like creativity bring the advantage of increasing attractiveness and so the number of sexual partners. Even though, creativity is also associated with a higher vulnerability to mental illness (Nettle, 2006b).

So a convincing argument can be made that personality influences human mating behaviour fundamentally. A further way that personality traits are related to mating intelligence is via mate preferences. It is widely known that individuals have strong preferences about traits that they desire in a partner (Buss et al., 1990; Buss & Barnes, 1986; Goodwin, 1990; Kenrick, Groth, Trost, & Sadalla, 1993; Sprecher & Regan, 2002).

Usually, people rate dispositional qualities (as intelligence and personality) in the desired mate as more important than situational variables (as social status and wealth) or

physical attractiveness (Buss &Barnes, 1986). However, the desired personality trait varies depending on the sexof partner and the type of relationship that people are looking for.

Nettle and Clegg (2008) suggested the reason for these characteristic variations. According to them “In the context of mating intelligence, personality variation has created sets of preferences for qualities in potential mates that will reduce uncertainty both about the likely genetic quality of their off-spring and about their likely parental investment after reproduction” (pp.131–132). To Buss (1991) the existence of stable variation among humans allowed the development of high selection on minds to detect cues of such variation and use such information to choose one’s mate.

Table 5 highlights some related finding-preferences associated with the five different personality traits. For instance, high extroversion is generally more preferred by women and in short-term relationships. To Nettle and Clegg (2008) women might prefer higher extroversion in a male than men would prefer in a female because the female’s fitness payoffs for social status would be higher and also because infidelity is costlier to men (who might support somebody else, child).

Highly neurotic people are insecurely attached, vigilant, potentially jealous, and will require a strong commitment from their partners. These characteristics make it difficult to please a person high in neuroticism and have a satisfying relationship with them (Karney & Bradbury, 1997; Kelly & Conley, 1987). So, there is a preference for low N partners (Botwin, Buss, & Shackelford, 1997; Buss &Barnes, 1986). Thus, mate choice may favour low neuroticism and conspicuous displays of emotional stability.

Male’s and female’s tend to prefer high conscientious, agreeable future partners. Qualities such askindness and sympathy (high agreeableness) are consistent find in mate-preferences research. As discussed previously, people tent to avoid infidelity or disertion, especially in long term relationship. So, cues of honesty, dependability, kindness and

understanding are very valued particularly for women who seek cues of post-reproductive investment and are more vulnerable to desertion (Buss &Barnes, 1986).

Nettle and Clegg (2008) preferences studies tend to report that high openness signals as creativity are attractive, especially for short-term mating. However, they highlight that openness is frequently conflated with intelligence in the descriptors used in these studies. So, it is unclear whether people value openness apart from intelligence.

In conclusion, it would seem to be as rational to think of Mating Intelligence as a function of personality than as an emanation of intelligence. However, the fact that this label has been chosen raises questions as to the kind of intelligence that is being described. A simillar set of questions surrounds the concept of emotional intelligence (Beldoch, 1964) which has a number of very simillar features in both theory and context. In the next section we turn to an examination of the relationship between emotional intelligence and mating intelligence.

3.2.MatingIntelligence and Emotional Intelligence

For over a century, researchers have been investigating what determines partner selection (Darwin, 1871) and satisfaction in sexual relationships. As emotions are an important part of human mate selection, interaction and relationships, it is no surprise that relationship researchers have begun to analyse the role of emotion-related skills that comprise emotional Intelligence in these areas (Mayer, & Salovey, 1997).

There is accumulating evidence that suggests emotional intelligence (EI) is important for both relationship satisfaction and partner selection because it allows navagation through the emotionally intense situations that characterise romantic relationtionships(Casey, Garrett, Brackett, & Rivers, 2008).

The term *emotional intelligence*(EI) first appeared in a scientific paper written by Michael Beldoch in 1964 (Beldoch, 1964). However, It became widely known only in 1995

with Goleman's best-selling book: 'Emotional Intelligence – Why it can Matter more than IQ' (Goleman, 1995). Goleman further popular publications reinforce its use (Goleman, 1998, 2001; Goleman, 2006; Goleman, 2011a, 2011b; Goleman, Boyatzis, & McKee, 2002; Lantieri & Goleman, 2008). The term Mating Intelligence (MI) started to gain attention more than 10 years later than Emotional Intelligence (EI) with Geher's publication of the popular book '*Mating Intelligence: Sex, relationships and the minds reproductive System'*in 2007.

EI's primary focus has to do with reasoning about emotions and use of emotions for enhancing thought (Mayer, Roberts, & Barsade, 2008). It has its roots in the concept of Social Intelligence, originally coined by Thorndike (1920) to whom Social Intelligence meant the ability to understand and manage one's own and other people's emotions and to act wisely in human relations. It was also influenced by the concept of Multiple Intelligence introduced by Gardner in 1983, in which he presented Personal Intelligence (consisting of both Interpersonal Intelligence and Intrapersonal Intelligence). Interpersonal intelligence is the capacity to understand the intentions, motivations, and desires of other people whereas Intrapersonal Intelligence is the capacity to understand oneself, to appreciate one's feelings, fears and motivations.

The studies about how an individual manages and regulates emotions have paved the way for the development of the term of EI as well as the studies presenting other kinds of intelligence (i.e Gardner, 1983; Sternberg, 1985; Thorndike, 1920) which also influenced the defence of MI as new intelligence.

The definitions of EI and MI show the use of intelligence applied to a specific area. Thus, EI is defined as the ability to reason about emotions as well as the capacity to use emotions and emotional information to assist reasoning (Mayer et al., 2008) while MI is the use of intelligence to navigate the unpredictable sea of mating (Geher & Kaufman, 2013).

However, there is not a scientific agreement regarding the terminology and operationalisation of the definition of both concepts: EI and MI.

So far, MI has only one scale for assessment of the construct although it has a specific male and a female version. On the other hand, many instruments claim to measure EI and this has led to a richness in the research literature that is lacking in MI studies. Generally EI measures are informed by 3 different approaches. The first views EI as a specificabilityand measures from this approach focus on individual mental capacities essential to EI. They investigate such questions as how well a person identifies emotions in faces or how well a person understands emotional meanings.A second, integrativeapproachemphasises the study of specific abilities together as a constellation of abilities. A third mixed-model approach (Matthews, Zeidner, & Roberts, 2004; Mayer, Salovey, & Caruso, 2000; McCrae, 2000; Neubauer & Freudenthaler, 2005) typically focus on critical emotion-specific abilities, but are considered less purely EI than the other approaches due to adding in motives, social styles, self-related qualities, and other traits that do not concern a primary focus on emotion or emotional reasoning (Mayer et al., 2008).

All models of EI utilise different instruments for the assessment of the construct. Even though some of their measures may overlap, most researchers agree that they tap different constructs. Despite the same label being attached to various types of scales, corresponding score are only weakly correlated (Mayer et al., 2008).

Emotional abilities in sexual relationships.

The ability-based model presents emotions as useful sources of information that help people to make sense of and navigate the social environment (Mayer, & Salovey, 1997; Salovey, 2005).It means that in the vast sea of possible social interactions EI allows easier

navigation thought the emotionally intense situations that characterise sexual relationships (Casey et al., 2008).

Peter Salovey, Mayer, and Caruso (2004) include four types of abilities to: (a) perceive emotion, (b) use emotion to facilitate cognitive processes and adaptive action, (c) understand emotions and emotional information, and (d) regulate or manage emotions in oneself and other.

Perceive emotion is the ability to differentiate emotions in oneself and others based on information like the tone of voice and facial expressions. This is a fundamental ability because without an accurate perception of emotion is not possible to use the other three EI abilities effectively(Salovey et al., 2004). For instance, without the ability to perceive facial and verbal cues of sexual interest in a potential mate it will not be possible to start a relationship (Casey et al., 2008). Thus, this ability is crucial for both EI and MI.

Some researchers suggest that accurate perception of emotions is related to relationship quality and satisfaction. Carton, Kessler, and Pape (1999) reported a study among college students which showed that their self-rated relationship quality was positively correlated with their ability to detect happiness, sadness, anger and fear in photographs of stranger's faces and audio recording of people speaking. Cordova, Gee, and Warren (2005) found similar results among marriage couples. Self-rated ability to identify and communicate one's own emotions was related to relationship satisfaction and security whereas difficulty in identifying and expressing their feelings was correlated with lower relationship satisfaction.

However, it is worth to remember that these results are based on self-rated emotion-identification abilities rather than objective measures. Generally, people whose skill in a certain domain below average overestimate their skill in that area, maybe because the knowledge necessary to be above average also is needed to accurately evaluate one's ability (Dunning, Johnson, Ehrlinger, & Kruger, 2003).

Use of emotion involves the ability to remember or generate task-relevant emotions in oneself and in others. It aims to focus attention, enhance cognitive processes, and improve memory. This ability is based on the knowledge that different emotions stimulate different cognitive styles that may be more appropriate to various tasks.

For instance, happiness enhances creativity and more positive thinking, whereas sadness encourages more pessimistic and detail-oriented thinking (Frederickson, 1998; Mayer, Gaschke, Braverman, & Evans, 1992). According to Gasper (2004), the intensity of emotions also affects cognition. He found that strong emotions reduced response time in specific emotion-specific tasks: the sadder participants responded quicker to small details in a pattern-matching exercise whereas happier participants responded faster to broader differences. So, each of these emotions may be useful depending on the circumstances. Masters on this ability are able to generate emotions that improve the effectiveness of thought or behaviour considering different contexts (Salovey et al., 2004).

In the context of mating, people who present high level of emotional Intelligence and mating Intelligence would show the ability to exhibit attractive emotions (happiness, confidence, kindness) and try to hide signal of unattractive emotions (irritability, shame, envy) during courtship (Casey et al., 2008).

Understanding emotion includes one's ability to recognise consciously and verbally articulate one's own emotions. It is the ability to understand the causes and consequences of emotions. For instance, comprehend that people usually feel sadness after undergoing some loss and feel happiness after experiencing some gain. This ability also involves the understanding of how emotions could be combined, change over time and the size of one's emotional vocabulary.

This understanding of emotions is fundamental in all sexual relationships stages. For instance, in courtship, this ability to assess people's sincerity would be necessary to

distinguish whether *I love you* means *I want to have a long lasting relationship with you* or *I just want to have sex with you tonight*(Casey et al., 2008).

*Management of emotion*s is the ability to adaptively adjust one's own emotions and those of others to achieve a behavioural goal. As some emotion-management techniques work better than others, this ability involves both identifying the most efficient emotion-management technic according to the situation and executing them appropriately.

According to Casey et al. (2008), there is substantial evidence that management of emotions is related to relationship quality. They highlight studies that show that couples who responded constructively to negative situations felt greater relationship satisfaction than couples that responded destructively to those situations.

***Criticisms of theoretical foundation*.**

EI and MI have been criticised since the beginning for similar reasons. The most severe one may be that they cannot be recognised as a form of intelligence. For instance, Eysenck pointed out that Goleman's description of EI contains unsupported assumptions about intelligence in general, and that it doesn't even meet what researches expect when studing types of intelligence:

> "[Goleman] exemplifies more clearly than most the fundamental absurdity of the tendency to class almost any type of behaviour as an 'intelligence'... If these five 'abilities' define 'emotional intelligence', we would expect some evidence that they are highly correlated; Goleman admits that they might be quite uncorrelated, and in any case, if we cannot measure them, how do we know they are related? So the whole theory is built on quicksand: there is no sound scientific basis" (Eysenck, 2000, p. 305).

Locke (2005) in the article "Why emotional intelligence is an invalid concept" claimed that the idea of EI is itself a misinterpretation of the intelligence construct. In his view, EI is a skill and not another form or type of intelligence. It is *the ability to grasp abstractions* applied a particular life domain: emotion. Analogously, and based on the same argument, one could say that Mating Intelligence isa simple skill used in a specific area of mating and should not be conceived as a new form of intelligence.

The fundamental basis of this criticism is that that scientific inquiry depends on valid, consistent construction utilisation. Some scholars argue that the term EI merges and conflates concepts and definitions such as skills, personalities traits and emotion states that were already established before the introduction of the term (Mattiuzzi, 2008).

Adam Grant has an altogether more dubious view of EI which he describes as a skill rather than an intelligence. He emphasised that there is a common but mistaken perception of EI as a desirable moral quality rather than a skill. He asserted that this misinterpretation has a dark side as it could be used for manipulating others (Grant, 2014).

Criticism of the measurement.

Most of the criticism of EI's measurement is that the scales are measuring another construct rather than EI. For instance, in regarding the ability models, Roberts, Zeidner, and Matthews (2001) suggested that MSCEIT measure of EI may only measure conformity. Whereas Brody (2004) points out that MSCEIT tests knowledge of emotions but not necessarily the ability to perform tasks that are related to the knowledge that is assessed. It means that it checks if someone knows how they should behave in an emotionally laden situation and it not necessarily attest that the person could actually carry out the reported behaviour.

There is also research suggesting that ability EI measures might be measuring personality and general intelligence. They have examined the multivariate effects of personality and intelligence on EI and also corrected estimates for measurement error (which is often not done in some validation studies). For example, Schulte, Ree, and Carretta (2004)showed that general intelligence, agreeableness, as well as gender could reliably be used to predict the measure of EI ability. They gave multiplecorrelations of .81 with the MSCEIT. This result has been replicated by Fiori and Antonakis (2011).

Antonakis and Dietz (2010)have asserted that EI has not yet demonstrated incremental validity over and above IQ (general intelligence) and personality tests in meta-analyses. This is the same argument in principle that Bracanovic (2010) aimed at mating intelligence.

Similarly, other researchers have raised concerns about the *extent* to which self-report EI measures correlate with established personality dimensions(Austin, 2008; Mikolajczak & Roy, 2007; Smith, Ciarrochi, & Heaven, 2008). Generally, self-report EI measures and personality measures have been said to converge because they are both measuring personality traits (Petrides, Pita, & Kokkinaki, 2007).

We have seen that MI and EI have some similarities that make them overlap in some ways. Not surpassingly, all four abilities of EI (perception, use, understanding, and management of emotion) are necessary to find and maintain a sexual partner. However, it is also important to highlight any difference between these concepts.

The primary difference is the comprehensiveness of the concepts. EI involves a wider area of human activity than MI. EI can be investigated in any kind of human relationship whereas MI focuses specifically on sexual relationships. But, this argument could be insufficient to distinguish both concepts as MI could be considered a sub-area of EI. Thus, it may be plausible to regard MI asa special facet of EI applied to the area of mating activity.

3.3. Conclusions

Mating Intelligence is not as clear a construct as it might seem at first. Mattiuzzi's (2008) criticism of EI that it merges and conflates concepts and definitions such as skills, personalities traits and emotional states could be equally said of MI. Clearly, the behavioural predictions that may be made of high vs low scorers indicate some form of underlying personality constellation. It remains to be seen whether the big-5 personality traits 'mop-up' all the explanatory variance of MI but theoretically this remains a major possibility.

The inabillity of MI researchers to demonstrate clearly how the construct sits within the intelligence domain is reminiscent of work carried out on EI. For both MI and EI the discontinuity of these constructs with personality cannot be demonstrated. In view of the fact that MI depends for its operational definition on one 24-item self report inventory, its claim to be a unique clearly delineated aspect of intelligence is hugely weakened. It is, in this researcher's view, better to allow that MI simply describes a set of values, preferences and behavioural propensities that may be better viewed as a kind of personality profile. Indeed, a better label may be a Psychological Mate Selection Profile.

The present review has shown great similarities between the constructs MI and EI not least in their theoretical and methodological limitations. Of course, MI is a relatively new concept and it was not possible to find research that has investigated the association between EI and MI empirically. Nevertheless, Casey et al. (2008) suggested that they probably differ in their relation to couple satisfaction and intra-couple concordance. Their suppositions were based on research about EI in satisfaction in long-term couples. It showed that most happy long-term coupleswere those in which both partners have high EI, whereas the least happy couples were those in which both partners have low EI; couples who had EI between the extremes were the ones that one partner had low and other partner had high EI. Somewhat the high-EI partner used their emotions abilities to compensate for other partner's EI deficit.

On the other hand, in term of MI, it seems better for partners to have very similar levels of MI, even if both have low levels. A relationship between mismatched pair may be quite unstable. For instance, in a relationship between a *mating-genius* and a *mating-moron* may result in the high-MI partner losing interest in the low-MI partner and attract other potential mates. Thus, MI-similarity makes intra-couple concordance seem more probably for MI than EI in a long-term relationship.

Casey et al. (2008)conclude that further research is necessary in the area of EI, MI and relationships. For instance, it is known that all four branches EI seems to influence relationship, but it is unknown if some are more important than others. It is also important to investigate the importance of each intelligence in different stages of a relationship. Maybe, MI could be more relevant in early stages (as courtship), and EI in long-term relationships or both could play meaningful and inter-related roles at every stage of human sexual relationships.

Conclusions of part 1:The theoretical status of Mating Intelligence

The review that has been summarised in the preceeding 3 chapters sought to address the following questions:

To what extent is MI Evolutionarily Informed?

How valid is the label Intelligence?

To what extent is MI a behavioural predisposition mediated by personality?

To what extent is MI Evolutionarily Informed?

One hugely attractive element of the mating intelligence construct for the current researcher, is that it is proposed as an evolutionary informed construct. This would link modern mating behaviours to a fundamental model of human givens. A great deal of work has been carried out to examine this link and most of the work coalesces in Sexual Strategy Theory.

One of the greatest disappointments of this review is to see how many of the arguments 'informing' MI are simplistic and assumptive. For example, the simple argument that mating success can be measured by the number of partners one secures for copulation is not inherently evolutionary at all. The distiction between human strategies and other species, such as Triver's Reindeer, is played down and the Darwinian, and subsequent genetic, view that mating success requires grandparenting appears completely ignored.

In focussing entirely on sexual strategy theory, and ironically, largely ignoring female strategies, MI proponents have fallen into the trap of a form of cultural recency, where observed contemporary attitudes and behaviours are used to generate assumptions about our ancestors. These assumptions are then used to justify the models applied under the rubric of evolution.

Much is said in the Evolutionary Psychology literature of our Pleistocene ancestors and the challenges they had to overcome. Almost nothing is said in the Mating Intelligence literature of the particular challenge of rearing a highly dependent and vulnerable infant to sexual maturity in a predatory environment, and yet this is the principle mating challenge that faced early humans.

The evolutionary aspects of the Mating Intelligence construct may be apparent than real and probably hinge around the definition of mating that one uses. If mating is simply a description of the sexual act then the MI literature makes some limited sense. If, on the other hand, the term mating involves the biological sense as an act of reproduction, the MI literature has little to contribute.

How valid is the label Intelligence?

The second chapter addressed the notion that Mating Intelligence implies the idea of special form of intelligence, an ability to solve problems and succeed in the area of mating. However,

the domain as currently constituted seems to be made up of elements tapping attitudes, sexual-sociality and self-esteem. The notion that it measures anything easily recognised as intelligence is somewhat tenuous.

The most convenient model of intelligence for MI appears to be Gardner's notion of multiple independent intelligences. This corresponds most closely with the Swiss Army Knife' metaphor of human cognition proposed by Tooby and Cosmides (1990) which is widely accepted in Evolutionary Psychology.

What this means is that MI is queuing up with a number of other poorly defined concepts such as Moral Intelligence (Lennick and Kiel, 2005) and Cullinary Intelligence (Kaminsky, 2012) for the honour of being defined as a form of 'intelligence'. Unfortunately this comes with a burden of proof. What does having an abundance of this intelligence enable you to do or achieve? This is not clearly defined and is certainly not well researched empirically in the mating domain.

Certainly to take any other model of intelligence to place MI seems futile. The widely accepted model of intelligence as that which emanates from a core mental energy, as Spearman saw it, does not sit well with mating intelligence nor do the multifactorial models with strictly unidimensional latent structures. The real weakness of MI in this context is that it is not clear what a high scorer is actually predicted to be good at.

To what extent is MI a behavioural predisposition mediated by personality?

TheMI concept as constructed by Geyer and his colleagues appears to be comprised of behavioural predispositions such as empathy and self-esteem, as well as sociosexual attitudes and an element of emotional intelligence. Certainly, in theory, there is nothing unique and clearly discriminating in the construct. Indeed, it would appear that most of the

characteristics describing MI are themselves explained by variations in the big-5 personality profile.

The MI construct is troubled by the fact that there is much telling us what MI is but next to nothing telling us what it is not. Thus, the common criticism that MI has no discrimatory coherence appears well founded. This criticism has also been targetted at the similar construct of emotional intelligence. As we have seen attempts were made to define EI more precisely following its popular inception by Goleman (1995). MI does not have the maturity to have gone far down this route and the lack of any clear theoretical basis makes a considered refinement appear remote.

We have seen that many of the questions that are raised around EI are relevant to MI. The exaccerbating factor for MI though is the fact that it is quite unclear what mating means. The evolutionary assumptions are more sketchy than one would like and the aspiration to be viewed as a form of intelligence flounder on the fact that mating success is so poorly conceptualised. In other words, the mating challenge that MI equips us to overcome is unclear and contentious.

I began this research with a, probably naive, expectation that MI would throw light on a number of the practical issues that I had encountered as a relationship counsellor. In reviewing the literature around the area, it is quite clear that rather than enlightening practice, MI may actually serve to mislead unless there is much greater clarity and debate around the construct.

These theoretical weaknesses of the MI construct are exaccerbated by the approach to measurements that has been adopted. Usually, it is the measures that flow from the theory that aid in providing a workable operational definition of the construct. This is a clear lesson from the work on emotional intelligence where it became necessary to define different forms of the construct according to the measurement device used. Thus, trait EI is largely the

resultant construct when using self-report measures and performance EI derives from use of objective tests of performance on specific tasks.

In the case of MI only one measure exists and this serves to provide the operational definition of the construct. The next section of this thesis is dedicated to the emprircal examination of the measurement adequacy of the construct.

PART 2

THE MEASUREMENT OF MATING INTELLIGENCE

Prelude: Scientific Foundation of The Mating Intelligence Scales (MIS)

The previous section raised questions about the theoretical basis of the construct of Mating Intelligence. This section is concerned to see whether the device developed to measure the construct may serve to answer some of these questions.

The first step is detailing the origin of this device known as the Mating Intelligence Scales (MIS) and how it gained scientific attention.

The Origin of the Mating Intelligence Scales

Human behaviour is so complex that there are no limits to the number of constructs that can be operationalised as scales (Clark & Watson, 1995). However, it is axiomatic that assessment instruments have to be reliable and valid before they can be justifiably be named measurements. Indeed, it is expected in the scientific literature, that every article utilising psychological measurement has undergone an appraisal of the psychometric qualities of those measures.

Testing the reliability and validity of a measurement device is one of the first steps before deciding to publish it. For this, researchers usually perform several tests on their scales in an attempt to get the best possible measurement. This increases the chances of publication and scientific attention. Mating Intelligence Scales (MIS), however, did not follow this usual process as it attracted great attention before having a considered scientific appraisal.

"The issue of Psychology Today that first published the scale, we were told, ended up being one of the best-selling issues in the magazine's history. The article was picked up by several other media outlets- Arts and Letter Daily, The New Scientist, The Washington Times, and more. Not mention the hundreds of blogs and Ok Cupid" (Geher & Kaufman, 2013, p. 219).

As the authors (Geher & Kaufman, 2013) acknowledge, MIS were developed to accompany a popularist article in *Psychology Today* magazine as a way for its readers to evaluate themselves and have a better understanding of the Mating Intelligence concept. According to them:

> The Mating Intelligence scale was initially designed as a fun scale made for a popular magazine – not created with an academic agenda. However, as two psychometrically trained research psychologists, we created the scale with the same kind of reasoning that would go into any scalecreated for research purposes. (Geher and Kaufman (2013, p. 219)

Based on this information, it is possible to highlight three critical facts: (a) the MIS were developed by psychometric professionals using the same kind of reasoning they would use to create it for research purposes; (b) It was not firstly published by the scientific journal; and (c) It was not presented to readers as a reliable and valid way to measure their level of MI. These facts are essential for a better understanding of the contributions and fragilities of MIS that will be discussed later on.

The model of Mating Intelligence that informs the scale is built upon six facets as follows (Geher & Kaufman, 2013):

1. Accurate cross-sex mind reading; this facet addresses how well an individual can read the mating-relevant thoughts of the opposite sex.
2. Adaptive self-deception in the Mating Domain; this facet discusses the tendency to inflate self-value as a mate in their own understanding of themselves.
3. Adaptive mate-deception; this facet addresses how well an individual can deceive mates in a way that may be evolutionarily adaptive.

4. Effective behavioural courtship display; this facet addresses individuals abilities related to creative intelligence, which are attractive to potential mates.
5. Adaptive perceptual bias; this facet is sexually differentiated; for males, items that tap this facet address the tendency towards oversexualizing females; for females, items that touch this facet reflect commitment scepticism.
6. Self-reported mating success; this facet is related to a hypothetic outcome that follows from mating intelligence. It measures how successful individuals perceive themselves in the mating domain.

In the resulting MIS, each facet is represented as a subscale within a short 24-item self-report questionnaire that has female and male versions.

First Indications of the Scientific Value of the MIS

Even though MIS was not created with an academic agenda, it was nevertheless motivated by an evolutionary informed model of mate selection, and it attracted the attention of several researchers affiliated with Binghamton University's evolutionary studies program.One of them, Dan O'Brien, then a PhD student in Biology with a concentration in evolutionary studies, who decided to include MIS along with other evolutionarily relevant scales (Geher & Kaufman, 2013).The aim "was to assess the relationship between a self-reported scale of MI and sexual behaviour among male and female college students"(O'Brien, Geher, Galluo, Garcia, & Kaufman, 2010, p. 353).

Surprisingly, given its ad-hoc inception, O'Brien et al. (2010) found out that MIS predicted several sexual outcomes and outperformed other scales in this regard. They carried out an initial psychometric evaluation of the MIS to support its scientific use. They used two formats

of the scale, in the first the items were presented with a dichotomous response (True False) format, and for the second a 5-point ordinal rating scale was used.

They carried out an analysis to examine the internal consistency of the different subscale scores for both the Male and Female versions of the MIS. At this stage, they discovered that the subscales of both versions generally presented low internal consistency as measured by Cronbach's Alpha. Nevertheless, they found that wholescale score was reliable in both versions. These results are reprinted in Table 6.

Table 6

Cronbach's Alphas Coefficients of Mating Intelligence Scale Distributed According to the Coefficients Presented by Male and Female in Two Studies

	Rating Scale		**Dichotomous**	
	Male	Female	Male	Female
Total Score	.774	.570	.898	.690
Mind Reading	.807	.639	.758	.617
Self-deception	.145	.216	.572	.368
Other-deception*	.127	.309	.553	.353
Courtship Display	.051	.344	.587	.357
Adaptive Bias	.629	.173	.683	.643

Note. Reprinted from: Self-perceived mating Intelligence Predicts sexual behavior in college students: empirical validation of a theoretical construct. O'Brien, D. T., Geher, G., Galluo, A. C., Garcia, J. R., & Kaufman, S. B. (2010, p.346). *Imagination, Cognition and Personality, 29(4).*

This finding raises questions about the underlying model proposed by Geher of the structure of mating intelligence but indicates that there may be a common factor which may be labelled Mating Intelligence.The subscale *mating success* was not included in the O'Brien's studies.

Curiously, given the weakness of the measurement properties of the MIS, these findings appear to have inspired a flurry of studies and publications. This may be a function of interest in the general concept of Mating Intelligence rather than a clear belief in the quality of the measurement. Geher and Kaufman (2013, p. 220) declared "we could make the case that we are

measuring overall mating intelligence (while not necessarily measuring each facet of MI)" (p. 220).

The starting point of the present investigation into Mating Intelligence it to explore its measurement properties and the extent to which the underlying model is reflected in the construct being measured. The first study undertaken for the present thesis was a Reliability Generalisation examination of the Male and Female versions of the measure that is presented in the next chapter.

Chapter 4

Psychometric Meta-Analysis of MIS

Study 1: Reliability Generalization Analysis of MIS

O'Brien's study was largely cited as proof of the reliability of the MIS (Geher & Kaufman, 2013). However, the results are actually quite disappointing. The Female version of the scale fails to provide an Alpha coefficient greater than 0.70 which is generally held to be a minimum required for a research tool. Also, it is important to note that using Alpha as an index of the reliability of a device is sub-optimal. This is because the coefficient is a function, not of the device in question, but of the interaction between the scores and the sample of respondents generating the scores. As such, Alpha is a population parameter and cannot be easily generalised.

One possibility for estimating the true reliability of a device is to embark upon a meta-analytic procedure known as a Reliability Generalization (RG) study.

So far, seventeen studies distributed in fourteen articles have reported the MIS (October 2017). But, not all of them mention the psychometric properties of the measure. Those that do utilise Cronbach's alpha as an estimate of reliability, indicating a somewhat mixed view of the measure's psychometric quality.

According to Warne (2008),assuming that tests are reliable is a common misconception presented by researchers. He stated that "reliability coefficients have their origin in the data they collect and not in tests or instruments" (p. 3). As already stated, it has to be born in mind that alpha itself is not a function only of the test but of an interaction between the test and the sample. In this way, it is not realistic to assume that the reliabilities reported by any one study will generalise to another sample.

It is the scores that are reliable (or not), and not the test. A test that produces reliable scores for one population may not do so with another. This is observed in the different reliability coefficient values that can be obtained with different samples, test forms, test versions, test administration conditions etc. (Thompson & Vacha-Haase, 2000). Also, Internal consistency reliability, for example, is profoundly influenced by test length (Kaplan & Saccuzzo, 2005).

Reliability Generalization (RG) is a strategy that has been developed "to characterise the mean measurement error variance across studies [using a particular instrument] and also the sources of variability of these variances across studies"(Vacha-Haase, 1998, p. 6). The term covers a wide variety of techniques and procedures. Like all meta-analyses, RG uses studies, rather than individuals, as the units of analysis.

Warne (2008) emphasised that RG may help researchers and practitioners have a better understanding of the instrument they use and make a better decision. According to him, RG studies make it easier for test developers, and researchers to identify which instrument is most appropriate for a given set of circumstances as well as identify which populations a test is best for or which subscale(s) have unacceptably low reliability. He also mentions that RG studies help researchers obtain scores that will produce the most significant effect sizes and most power.

Even though RG has a sound logical basis there is very little guidance on the appropriate methods to apply (Henson & Thompson, 2002). Indeed, (Vacha-Haase, 1998) takes a very laisse-faire approach, arguing that there are no obvious right or wrong methods to apply. However, the thinking behind this flexibility appears to reflect the new approach 'settling in' and the need to explore various alternatives until some measure of consensus emerges. More recently, attempts have been made to propose a considered and consensual set of strategies to RG studies (Rodriguez & Maeda, 2006; Sanchez-Meca, Lopez-Lopez, & Lopez-Pina, 2013).

Method

Data Collection

The first step to investigate the MIS's Reliability Generalization was to scour the literature that reported reliability analyses of the MIS. Authors who had published work relating to Mating Intelligence were contacted to elicit reliability information. This resulted in a limited number of unique studies. However, it should be noted that Geyer was himself helpful in supplying contacts for PhD students who had used his measure. In all, 17 independent studies were identified that contained the relevant reliability information. Table 7 presents a list of all seventeen studies collected alongside their sample's sex and size; number of items, type of measure and Alpha Coefficient.

Data Analysis

The RG study reported here involved a moderator analysis controling for Sex (male or female), Sample (student or general population) and Response Format (dichotomous or polytomous). The analysis was performed using customised computer software (Hammond, 2016).

Results

Table 7
Effect Sizes using Fisher z Estimates

Study	Sex	Sample Size	No of Items	Type of Measure	Alpha	Effect Size	Sampling variances
O'Brien et al. (2010)	M	58	20	Likert-scale	0.774	1.030	0.018
O'Brien et al. (2010)	F	44	20	Likert-scale	0.570	0.648	0.024
O'Brien et al. (2010)	M	60	20	True or false	0.898	1.462	0.018
O'Brien et al. (2010)	F	72	20	True or false	0.690	0.848	0.014
Peterson, Geher, and Kaufman (2011)	M	144	24	True or false	0.770	0.950	0.007
Peterson et al. (2011)	F	463	24	True or false	0.610	0.662	0.002
Peterson (2011)	M	168	24	True or false	0.740	0.950	0.006
Peterson (2011)	F	470	24	True or false	0.580	0.662	0.002
Glass (2012)	M	322	24	Likert-scale	0.612	0.712	0.003
Glass (2012)	F	214	24	Likert-scale	0.527	0.586	0.005
Dillon (2011)	M	435	24	True or false	0 .700	1.020	0.002
Dillon (2011)	F	114	24	True or false	0.770	1.020	0.009
Peterson, Carmen, and Geher (2013)	F	153	24	True or false	0.660	0.793	0.007
Geher et al. (2016)	M	278	24	True or false	0.756	0.987	0.004
Geher et al. (2016)	F	922	24	True or false	0.549	0.617	0.001

It is possible to observe that the majority of studies had a sample compounded by male and female students. Only one study (Peterson et al., 2013) hada sample formed only by females.

In general, MI studies that included MIS had less than 300 participants in total, but some of them presented a larger sample size. This is the case of four studies (Dillon, 2011; Glass,

2012; Peterson, 2011; Peterson et al., 2011). Each one had around 600 participants. Two studies developed by Geher et al. (2016) also had a larger sample size of 1200 people in total.

It is important to highlight that almost all studies reported higher alpha coefficients of reliability for male (often between .7 and .8) than for female (usually within .5 and .6).

The alpha coefficients across both sexes were also higher in the dichotomous measures (true or false) compared to the ones that used Likert-scale. Only one study used solelya Likert-scale (Glass, 2012). It was also the single one presenting the majority sample not formed by American Students.

Because the alpha coefficient does not have a true linear structure, comparisons are improved by some form of standardisation to aid comparability. Thus, the first step to investigate MIS's Reliability Generalization was to carry out transformations of the alpha coefficients to represent effect sizes. A number of options exist (Bonett, 2002; Hakstian & Whalen, 1976; Romano, Kromrey, & Hibbard, 2010). Following Romano et al. (2010) the Fisher z estimation was used which also enabled the generation of an index of sampling error.

$$z = 0.5\left(\log\left(\frac{1+\propto}{1-\propto}\right)\right)$$

The resulting effect size and its sampling error can be seen in the two rightmost columns of table 7.

As in the typical meta-analysis, the inverse of the error term was used as a weighting value in the subsequent analysis. The initial analysis involved an assessment of the homogeneity of the effect sizes. The results are summarised in table 8. Three tests of homogeneity were carried out, the Q test is a straight-forward chi-squared analysis, and the Log-Ratio (LR) tests involve maximum likelihood estimates. These tests unequivocally suggest that the alpha coefficients lack homogeneity. This further suggests that a Random effects model is

indicated,and so a Random Mixed Meta-Regression (RLP)was performed to examine those moderator effects that may account for the heterogeneity.

Table 8
Tests of Homogeneity

Test	Statistic	
Q test	260.318	**
LR test	204.324	**
RLR test	209.275	**

*** p < 0.001*

The moderator analysis is summarised in table 9. The intercept effect demonstrates that most of the heterogeneity of the alpha estimates is unexplained. The nature of the sample and the format (dichotomous/polytomous) have no appreciable impact on the alpha estimates. However, it is clear that the sex of the sample has a significant effect on the reported alpha. This was observed visually by an inspection of table 7 where it is apparent that the female alpha is lower than that for male samples (weighted means for males 0.72 and for females 0.60).

Table 9
Random Effects Moderator Analyses

Predictor	Beta	S.E.	t
Intercept	0.985	0.223	4.417 **
Student	-0.112	0.090	-1.244 ns
Sex	-0.143	0.040	-3.575 **
Format	0.024	0.074	0.321 ns

*** p < 0.01*

The primary point of an RG analysis is to arrive at an expected value for the reliability estimate of a given test that generalises to a wide range of samples. In this case, using the standard Random Effects Model, the MIS has an alpha estimate of 0,686. It is always possible that the choice of the model could influence the findings. For completeness, a variety of models

were applied to this data to see whether the assumptions made have an effect upon the final result (Sanchez-Meca et al., 2013). These analyses are summarised in table 10.

It is clear that the generalised Alpha estimate is reasonably consistent at around 0.68. The higher estimate for the fixed effects model is to be expected because we can assume that homogeneity will inflate our estimate when the data are, in fact, heterogenous, as in this case.

Three Random effects procedures were applied, and they show very close agreement. It is always interesting to compare different estimation procedures because each one utilises different strategies that might bias the results. Confidence interval estimation indicates a reasonably wide range of alpha values within the 95% range. This is worth noting because all procedures agree that an upper limit is 0.74. Given that received wisdom (Allen & Yen, 1978; Nunnally, 1967) allows that an alpha greater than 0.70 is sufficient to justify the use of the instrument in a research context, this suggests that the MIS may be viewed as a borderline instrument for general application.

Table 10
Confidence Interval Estimation

Estimate	Alpha Mean	S.E.	Variance	Weighted S.E	Confidence		
					Low	High	Width
Fixed Effect Estimate	0.697	0.007	0.000	0.000	0.683	0.711	0.028
DerSimion & Laird Estimate	0.685	0.029	0.013	0.026	0.631	0.740	0.109
Maximum Likelihood Estimate	0.686	0.025	0.010	0.026	0.631	0.740	0.109
Restricted ML Estimate	0.686	0.026	0.010	0.026	0.631	0.740	0.109

It has to be born in mind that these analyses were based upon a small sample of studies and there is clearly a risk of publication bias. This is a constant concern for meta-analysts since

the validity of their findings is predicated on the assumption that they have been able to sample all extant studies of the area. There are many reasons why studies may not reach the public domain where they can be sampled. The most serious is the tendency for journal editors not to publish papers that have not made statistically significant findings. This is a serious concern. Consider the case where 5 studies report a finding in support of a particular hypothesis but 30 further studies have been carried out to replicate these findings and no significant result was found. These 30 studies far outnumber the 5 published studies but, because of editorial decisions or the fact that the researcher does not feel able to submit such findings, they are not considered by the meta-analyst. Clearly, the meta-analysis is biased towards a positive finding.

A final analysis required in RG analysis is to provide some estimation of this bias. A number of strategies have been suggested, but all are highly approximate (Gleser & Olkin, 1996; Orwin, 1983; Rosenthal, 1979). The Begg and Mazumdar (1994) failsafe test indicates significant bias ($\tau = 0.36, p < 0.05$) and applying the Orwin test suggests that a further 42 studies would need to be added with alpha's exceeding 0.70 before the estimate would rise to this acceptable level. Given that very few of the studies of the MIS produce alphasin this region we have to conclude that publication bias cannot be ruled out in acheiving even the low estimate of 0.686 obtained here.

Discussion

These findings suggest that the MIS is unlikely to provide unequivocally reliable scores. This may be a function of poor construct validity and suggests that more exploration of the construct is required. It is clear that the sample of studies used for this RG analysis is fairly homogenous, mostly involving USA students. Nevertheless, a significant amount of heterogeneity in the resulting alpha coefficients is observed. Some of this heterogeneity is

explained by the fact that male and female respondents differ significantly in the consistency of their ratings. It is quite likely that the construct applies only to males and not females. This is quite consistent with the idea that mating intelligence is conceptualised from an entirely male perspective of mate selection.

Of course, the psychometric weakness of the measure might suggest that the findings simply reflect poor measurement. These analysessuggest the need to carry out a more detailed psychometric appraisal of the MIS and to assess the viability of improving the measurement by the addition of additional items. This is the topic of the following chapter.

The results of this study are equivocal and largely disappointing. The expected alpha coefficient of 0.686 is weak and does not provide much confidence in the use of the measure on independent samples. There are a number of reasons that might explain why the generalised alpha coefficient is suboptimal.

The first is that the construct itself is not well defined. The MIS was originally developed from a putative evolutionary model that suggested a multi-faceted construct. In study 1 only the total score is considered. To address the construct validity of the device, the relationship between underlying facets is indicated. It is always possible that the individual facets may provide reliable subscores but that they may have an orthogonal relationship to each other which would serve to invalidate the typical aggregation of all the items to arrive at a total score. If the facet scores appear reliable but also lack colinearity, then the construct may be valid, but the aggregated score is ill-advised. In such a situation, the predictive validity of the measure will depend upon multiple regression models rather than a summative rating scale model.

A second explanation for the weak generalised alpha is simplya paucity of information available in the sampled items, The MIS consists of 24 items which would usually be considered

sufficient for an aggregated score. However, it always has to be remembered that the alpha coefficient is dependent on the number of items in the scale. The greater the number of items the greater the expected alpha. Some constructs may be more diffuse than others so it may be necessary to produce a larger item pool to adequately tap into the domain in question. The MIS was first developed as a popular tool and so was limited in size.

In the next chapter, these issues are addressed in a more detailed psychometric analysis of the MIS applied to an Irish sample.

Chapter 5

Psychometric Appraisal of the MIS

Study 2: An Empirical Psychometric Exploration of the MIS

Introduction

In study 1 a Reliability Generalisation analysis was carried out that raised doubts over the applicability of the Mating Intelligence Scales (MIS) presented by Geher and Kaufman (2013). The primary limitation of this analysis was the paucity of studies available for collation and the fact that they are largely drawn from work done in collaboration with the test developers. While this might have biased the results in favour of an acceptable generalised alpha, this was not found to be the case.

As mentioned already, an axiom of measurement is that a tool must manifestly demonstrate both reliability and validity before it can be said to be a measurement device. In this chapter, we report a study carried out on a large Irish sample which attempts to establish the basic measurement viability of the MIS.

Our Reliability Generalisation Analysis was predicated upon the notion that the reliability of a test score may be realistically represented by Cronbach's alpha coefficient. In fact, alpha taps into only one conception of reliability. Essentially reliability can be estimated by the consistency of a test, andclearly, consistency may be interpreted in a number of ways (Hammond, 2006). For example, the consistency of a test score over time is an indicator of stability or temporal reliability. Alpha, on the other hand, focuses on the consistency between component parts of a test and derives from the early work of Charles Spearman in which a test was dived into two halves, the correlation between these two halves indicate the consistency

between the parts which inform the judgement of the internal reliability of a test. Kuder and Richardson (1937) identified an efficient formula for a generalised split-half reliability estimate for dichotomous data, andCronbach (1951) demonstrated a further generalisation to polytomous data which we now know as Cronbach's alpha. In fact, this coefficient was suggested before this, notably by Guttman (1945).

It was Guttman who demonstrated that the coefficient we now call 'Alpha' is a lower bound estimate of reliability. This means that the truereliability of a test will always be slightly higher than the reliability estimate. The fact that alpha is a lower bound offers leeway to test developers for justifying low estimates of around 0.7. Nevertheless, it is worth remembering that an estimate of 0.70 does imply at least an error term of 30%. The issue of lower bound estimation has been revisited by Sijtsma (2009) who argues that alpha is not sufficiently accurate to justify its use as a measure of test score reliability. In fact, there are other estimates of reliability that are better lowerbound estimates. Increasingly a coefficient named omega McDonald (1999), deriving from a factor analytic model, is being recommended for practical use (Revelle & Zinbarg, 2009; Zinbarg, Revelle, Yovel, & Li, 2005).

All of this simply reminds us that Cronbach's alpha is not a panacea for psychologists in the examination of the psychometric quality of their measures. Indeed, Cronbach himself raises concerns over an overdependence on alpha that has emerged in the psychological literature since it was first introduced (Cronbach, 1988; Cronbach & Shavelson, 2004). Those few studies that report the psychometric quality of the MIS all report the alpha coefficients and nothing else.

As with reliability, the issue of validity is complex and multifaceted. To be valid, a test has to have demonstrated evidence that it actually measures what it purports to measure. This may be demonstrated in a number of ways. Firstly, the underlying model that defines the

construct needs to be demonstrated,and this involves a process of construct validation. In the case of the MIS, the construct is assumed to emerge from a number of facets derived from evolutionary theory relating to mate selection (Geher et al., 2016). An aggregation of these facets implies the construct of Mating Intelligence. The 6 underlying facets of the MIS were introduced in the prelude to this part of the thesis and theye are recalled here in table 11.

Table 11
Facets of the MIS

Factor	Description
Mind Reading	How well does an individual read the mating-relevant thoughts of the opposite sex. Sample item: *I can tell when a man is being genuine and sincere in his affections toward me.*
Self-Deception	The tendency of an individual to inflate their sense of self-value as a mate. Sample item: *I look younger than most women my age.*
Mate-Deception	How well can an individual deceive mates in a way that may be evolutionarily adaptive. Sample item: *I can tell when a man is being genuine and sincere in his affections toward me.*
Courtship Display	The ability to behave creatively in ways which are attractive to potential mates. Sample item: *I'm definitely more creative than most people.*
Perceptual Bias	Males: The tendency towards oversexualizing females; Females: The tendency towards commitment scepticism. Sample male item: *Women tend to flirt with me pretty regularly..* Sample female item: *Most guys who are nice to me are just trying to get into my pants.*

Mating Success	How successful do individuals perceive themselves to be in the mating domain. Sample item: *I attract many wealthy, successful men.*

The aims of study 2 is to evaluate the psychometric propertised of the Mating Intelligence scales on a sample of Irish respondents.

Method

Sample

The Sample used for this study consisted of 957 (294 male and 663 female) Irish respondents. Age ranged between 18 and 46 with a median age of 23. Students made up the majority of the sample (88%). This is consistent with a focus towards young adults.

Measures

The 24-item Mating Intelligence Scales (O'Brien et al., 2010) were presented along with a range of other measures that will be described in later studies.

Data Analysis

The resulting data was screened using SPSS v23. Casewise deletion of missing data resulted in the useable sample of 1680. Data analysis was carried out using the Psychometric Assessment Package (Hammond, 2010).

Procedure.

Participants completed an electronic survey presented on the SurveyMonkey server. Invitations were sent out via the University College Cork email system and also the social media Facebook site.

Ethical Approval

The study was designed in keeping with the Psychological Society of Ireland ethical guidelines and was approved by the School of Applied Psychology Ethics Committee.

Results

Classical Psychometric Analysis

Results of the empirical psychometric exploration using a classical test theory approach revealed that reliability estimates derived from this Irish sample convey no confidence in the scale scores as they stand. The moderate to weak estimates of reliability for the total male score (0.76) and the lack of reliability for the female score (0.65) was found which confirmed findings from the meta-analysis reported in study 1.

Table 12

Psychometric Summary of MIS Scales

Factor	Mean	S.D.	Alpha	Omega
a.Males				
Mind Reading	2.62	1.38	0.69	0.72
Self Deception	1.98	1.07	0.26	0.31
Other Deception	2.39	1.02	0.22	0.35
Courtship Display	2.37	1.00	0.19	0.22
Adaptive Bias	1.76	1.34	0.62	0.63
Mating Success*`	2.01	1.33	0.60	0.63
Total	13.11	4.49	0.76	0.77
b-Females				
Mind Reading	2.57	1.26	0.61	0.62
Self Deception	1.88	1.08	0.21	0.25
Other Deception	1.50	1.03	0.25	0.30
Courtship Display	1.94	1.01	0.29	0.46
Adaptive Bias	2.32	1.24	0.56	0.57
Mating Success*`	2.70	0.84	0.30	0.42
Total	12.93	3.69	0.65	0.66

The weakness of the reliability estimates of the subscale scores raises doubts about the basic evolutionary model underpinning the MIS. In these analyses, we used the omega estimate of reliability to complement the alpha coefficient. As expected the omega coefficient was higher than alpha in every case. This is because the omega coefficient is a stronger lower-bound estimate of reliability than alpha(Revelle & Zinbarg, 2009). Nevertheless, even utilising this coefficient, it is quite apparent that the sub- scales are all suboptimal as measures, with the possible exception of the Male Mind-Reading scale.

These results raise questions about the construct validity of MIS measures. However, reliability analyses alone cannot be used to test for validity as the coefficients themselves are dependent on factors such as the numbers of items per scale. Thus, a poor reliability estimate may indicate a poor underlying model or, just as plausibly, an under-sampling of the domain of possible items.

Exploratory Factor Analysis

The 24-items of the MIQ are purported to be sampled from 6 underlying factors. Typically, to evaluate this assumption a confirmatory factor analysis would be carried out. However, prior to this analysis it was deemed appropriate to perform exploratory analysis in order to evaluate the viability of factor analysis. Two exploratory factor analyses were carried out on the male and female versions of the MIQ.

Initially, a parallel analysis was carried out on both male and female data sets. This is a Monte-Carlo method for identifying the deviation of the observed eigen values from a series of random solutions. In this case 500 random sets were formed for each analysis. The software used to carry out these analyses can be found in the PAP software package (Hammond, 2010). The results do not support the 6-factor expectation. For the male sample 10 factors is suggested while for the female sample 13 factors are indicated. This suggests that the variance of the inter-item correlations is diffusely spread and does not indicate a coherent discrete structure. The Scree Plot for each version of the MIQ are presented in figure 4. The long flat-bottomed scree demonstrates this lack of factor discrimination.

For each MIQ version, 11 factor solutions were generated, extracting from 2 to 13 factors by General Least Squares and rotating to oblique simple structure using the PROMAX

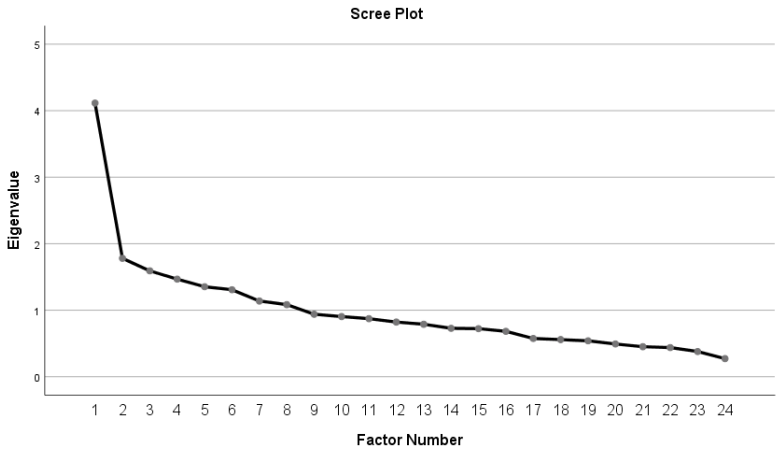
procedure raised to the power 4. None of the solutions offered a compelling and clear interpretation. The 6-factor solutions are presented in Tables 13 and 14. These solutions offered the most interpretable patterns. However, it is clear that the putative structure is not very clear. This is particularly true for the female version where none of the expected scales emerge with any credibility.

These analyses, raise clear questions about the construct validity of the MIQ. In order to attempt to cut through the extraneous variance that may be distorting the underlying structure a restricted factor analysis is now indicated. This is the focus of the following section.

Figure X

Scree Plots for the Exploratory Factor Solution of MIQ Items

a. Male Sample



b. Female Sample

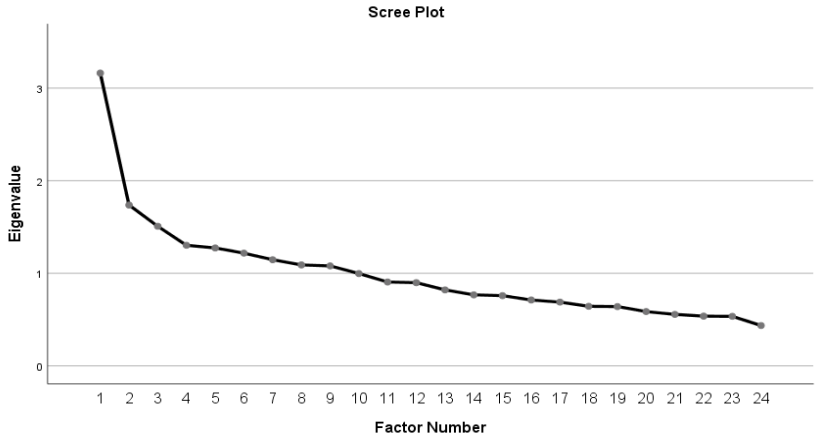


Table 13

Pattern Matrix for Exploratory Factor Solution for the Male Sample (N=294)

	I	II	III	IV	V	VI
I think most potential partners just like me as a friend.	-.585	-.011	.010	.077	.112	.129
I have slept with many beautiful people.	.424	.042	.114	-.019	.381	-.079
I'm pretty good at knowing if a potential partner is attracted to me.	-.074	.937	.077	.039	.040	.065
I'm definitely not the best at taking care of kids.	.116	-.068	.399	.068	-.135	.101
I'm good at saying the right things to people I flirt with.	.230	.202	-.059	.020	-.002	.102
I haven't had as many sexual partners compared with other guys I know.	-.519	.093	-.060	-.033	-.221	-.091
I have a difficult time expressing complex ideas to others.	.066	.091	.524	.149	-.119	-.007
I am good at picking up signals of interest from potential partners.	.067	.760	-.005	.067	.009	-.042
I'm definitely near the top of the status totem pole in my social circles.	.103	.273	.031	-.005	.091	.175
I doubt that I'll ever be a huge financial success.	-.126	.077	.619	-.226	.044	.001
I could convince a potential partner that I'm really royalty.	.279	-.052	-.018	.091	-.019	.025
Honestly, I don't understand the minds of potential partners at all!	-.046	-.203	.497	.010	-.103	.005
People tend to flirt with me pretty regularly.	.491	-.048	-.060	.004	.106	.157
If a person IS NOT interested in me, s/he doesn't know what s/he's missing!	.279	-.010	.019	.177	.052	.040
Potential partners definitely find me attractive.	.478	.018	-.119	-.116	-.159	.057
I've dated many intelligent people.	-.044	-.015	-.242	-.050	.747	-.001
People tell me that I have a great sense of humour.	-.030	.055	.025	-.008	-.069	.894
When I lie to potential partners, I always get caught!	-.110	.087	.242	.036	.356	-.137
I am usually wrong about who is interested in me romantically.	.078	-.428	.184	.192	.124	.007
It's hard for me to get potential partners to see my virtues.	-.018	.038	-.042	1.014	-.006	-.010
At parties, I tell stories that catch the attention of potential partners.	.165	.101	.065	.009	.010	.196
I'm not very talented in the arts.	.039	.003	.143	-.092	-.174	-.010
I attract potential partners, but they don’t end up interested in me sexually.	-.520	-.065	-.092	.123	.017	.013
When a potential partner smiles at me, I assume s/he's just being friendly.	-.478	-.114	.070	-.070	.105	.229

Table 14

Pattern Matrix for Exploratory Factor Solution for the Female Sample (N=663)

	I	II	III	IV	V
I can tell when a partner is being sincere in his/her affections toward me.	-.429	.064	-.179	-.031	.086	.049
I doubt I could ever pull off cheating on my partner.	.203	-.013	-.235	-.101	-.023	.056
I look younger than most women my age.	.099	.114	.023	.035	-.026	-.025
When a partner is not interested in me, something is wrong with me.	-.028	.015	.014	.011	-.004	.931
Good looking people never seem into me.	.035	.012	.296	-.433	.092	.111
I have a sense of style and wear clothes that make me look sexy.	.002	.020	-.074	.419	-.028	.153
I attract many wealthy, successful partners.	-.047	.031	.043	.275	.077	-.073
Honestly, I don't understand the minds of potential partners at all!	.533	-.027	.148	-.005	.125	.055
With me, a partner gets what s/he sees — no pretence here.	-.094	-.043	.035	-.062	-.031	.032
If I wanted to make my current partner jealous, I could	-.126	.015	.141	.508	.107	.058
Potential partners don't tend to be interested in my mind.	.011	.056	.427	-.016	-.065	.046
I'm definitely more creative than most people.	.057	.945	.082	.028	-.010	-.048
I hardly ever know when a potential partner likes me romantically.	.624	.062	-.003	-.072	.076	-.030
I laugh a lot at potential partners' jokes.	.132	.023	-.033	.120	.145	.202
If a partner doesn't want me, s/he doesn't know what s/he's missing!	-.107	-.021	.099	.153	.142	-.123
I am not very artistic.	.063	-.550	.013	-.037	.050	-.091
My current partner spends a lot of money on material items for me.	.069	-.046	.073	-.036	.054	-.083
I am usually right about a potential partner's intentions toward me .	-.528	.000	.169	.027	.104	-.024
I really don't have a great body compared with other women I know.	-.107	-.061	.193	-.432	-.035	.033
Intelligent people never seem interested in dating me.	-.056	.044	.603	-.143	.050	-.063
Most potential partners are more interested in long-term relationships.	-.080	.035	-.193	-.130	.441	.027
Most partners who are nice to me are just trying to get into my pants.	.037	-.061	.386	.117	-.348	-.012
I think most potential partners want to get married and have children.	.075	-.085	.077	.169	.713	.017
If I have sex with a partner too soon, I know s/he will leave me.	.135	.001	.277	.066	-.030	.092

Confirmatory Factor Analysis

To examine the construct validity of the MIS, a confirmatory factor analysis was performed for males and females separately. There are a number of methods available for carrying out such an analysis(Mulaik, 2010; Nunnally & Bernstein, 1994). For present purposes, a Maximum Likelihood Analysis of Covariance Structure (ACS) was undertaken. The software was written by my thesis supervisor(Hammond; 2010) and utilised a quasi-Newton procedure for extimating the parameters (Mulaik, 2010).

One advantage of the ACS approach is that it provides estimates of model fit that are designed to test the plausibility of the model in question directly. Results are presented in table 15and 16 for males andfemales respectively. The indices of model fit include a basic Chi-squared statistic that is very highly significant for both sexes. This indicates that a large amount of the inter-item variance remains unaccounted for by the model. This may also be seen by examining the uniqueness of each item in the rightmost column of the table. This tells us the proportion of variance for each item that has not been explained by the model.

These findings give no support to the underlying model. It is generally argued that more than one fit index is required before deciding on the plausibility of the model (Cangur & Ercan, 2015) and we also present Bentler's CFI index. This should be in the region of 0.9 before any confidence in the model can be justified. Here, the values conform with the chi-squared analysis suggesting very poor fit. For completeness, we also calculated the parsimony ratio that provides information regarding the viability of fitting this model. When multipled by the CFI an index of parsimonious fit emerges (Mulaik, 2010). Again the result is clear. There is no basis upon which we can argue that the proposed evolutionary model is plausible for these data.

Table 15

Confirmatory Factor Analysis of MIS Items for Males

	I	II	III	IV	V	VI	Unique
m3	0.81						0.33
m8	0.80						0.34
m12	0.37						0.85
m19	0.43						0.80
m4		0.25					0.93
m9		0.46					0.78
m10		0.23					0.94
m14		0.20					0.95
m5			0.48				0.77
m11			0.23				0.94
m18			0.11				0.98
m20			0.37				0.85
m7				0.32			0.90
m17				0.26			0.93
m21				0.43			0.81
m22				0.12			0.98
m1					0.56		0.68
m13					0.54		0.71
m15					0.58		0.65
m24					0.50		0.74
m2						0.67	0.54
m6						0.56	0.68
m16						0.39	0.84
m23						0.52	0.72
SS	1.65	0.37	0.43	0.36	1.20	1.20	

Factor correlations

F1	1.00					
F2	-0.62	1.00				
F3	0.53	-0.70	1.00			
F4	0.35	-0.69	0.78	1.00		
F5	-0.49	0.66	-0.74	-0.33	1.00	
F6	0.41	-0.53	0.59	0.40	-0.63	1.00

χ^2_{216} = 10837.692 p<0.0001

PR = 0.782

CFI = 0.233 CFI*PR = 0.182

Table 16

Confirmatory Factor Analysis of MIS Items for Females

	I	II	III	IV	V	VI	Item Fit
m1	0.38						0.33
m8	0.40						0.34
m13	0.39						0.85
m18	0.42						0.80
m3		0.48					0.93
m4		0.50					0.78
m15		0.38					0.94
m19		0.48					0.95
m2			0.45				0.77
m6			0.52				0.94
m9			0.53				0.98
m10			0.48				0.85
m11				0.52			0.90
m12				0.31			0.93
m14				0.51			0.81
m16				0.29			0.98
m21					0.41		0.68
m22					0.35		0.71
m23					0.54		0.65
m24					0.54		0.74
m5						0.50	0.54
m7						0.44	0.68
m17						0.58	0.84
m20						0.58	0.72
Factor Fit	0.61	0.99	0.91	0.98	0.87	1.81	

Factor correlations

F1	1.00					
F2	0.08	1.00				
F3	-0.06	-0.07	1.00			
F4	0.09	0.11	0..03	1.00		
F5	0.10	0.05	0.01	0.08	1.00	
F6	0..08	0.10	-0.06	0.08	0.10	1.00

χ^2_{216} = 26589.822 p<0.0001

PR = 0.782

CFI = 0.198 CFI*PR = 0.155

Discussion

Results of the psychometric underpinning of the MIS reveal a problematic measure that manifests weak measurement potential. The reliability assessments are consistent with the findings of the Reliability Generalisation analysis in study 1, and indicate that little confidence can be had in the use of the scores. One exception is that the total score for the male scale, with an omega of 0.77, which does appear to have some credibility, but the composite subscales are severely suboptimal. In the social psychological literature, a reliability coefficient of 0.77 would be considered acceptable. The difficulty that we encounter here is that, even if we were to accept the credibility of the total Male MIS score, the underlying evolutionary model proposed by the test developers is unsupported which raises questions of construct validity.

The confirmatory factor analyses confirmed doubts about the underlying model, as the proposed models do not fit the data. In fact, we carried out a number ofanalysis including multiple groups and exploratory factor analyses to explore variations of the model. In no case could we identify a meaningful structure and so for brevity these are not presented here.

One very clear finding that emerges from these results is that the presented construct of Mating Intelligence is less useful with females. While we might still argue that the total score may work for males, no such claim can be made for females. With an omega coefficient of 0.66, we have to acknowledge that this is likely to be, at best, a weak measure of mating intelligence. This raises the question of whether the underlying model is essentially male-centred and has little application for female mate selection processes. However, this argument is less convincing when we consider that the performance of the male measure is only marginally better.

An obvious conclusion from these results is that the subscale scores of the MIS are not likely to be helpful. If using the MIS it would be necessary to use only the total score and, even then, a degree of caution is indicated in interpreting results.

Study 3: Expanding MIS Item Domain

The findings of study 2 are disappointing. The MIS does not inspire psychometric confidence. Nevertheless, the concept of an evolution-informed construct for mate selection is still an attractive one. One explanation for the failures in the MIS is that it is based upon an inadequate sampling of items. In the following study, the item pool was enlarged by a further 22 items for the Male and Female versions each.

This study sought to determine whether the proposed model might emerge from analysis on a larger, broader ranging item pool.

Method

The same sample as for study 2 was used for the current study. This consists of 1680 (294 male and 663 female) Irish respondents. Age ranged between 18 and 46 with a median age of 23. Students made up the majority of the sample (88%).

Measures

The 24-item Mating Intelligence Scales (Geher & Kaufman, 2007) were presented along with an additional 22 items. The additionalitems were generated by the experimenter based upon a close reading of the construct espoused in Geher and Kaufman (2013) presentation of the underlying model. Items were sampled by the domain in question which was defined by the following 6 processes:-

1. Accurate cross-sex mind reading
2. Adaptive self-deception in the mating domain
3. Adaptive mate-deception
4. Effective behavioural courtship display
5. Adaptive perceptual bias
6. Self-reported mating success

An additional 30+ items for each sex were generated by the researcher, and these were then assessed by a third party (the student's supervisor) to assess the accuracy of the domain sampling. The final 22 items were deemed fitting after full discussion. The full set of items for Males and Females is presented in tables 17 and 18.

Data Analysis

The resulting data were screened using SPSS v23. Casewise deletion of missing data resulted in the useable sample of 1680. Data analysis was carried out using the Psychometric Assessment Package (Hammond, 2010).

Procedure.

Participants were completed an electronic survey presented on the SurveyMonkey server. Invitations were sent out via the University College Cork email system and also the social media Facebook site.

Ethical Approval

The study was designed in keeping with the Psychological Society of Ireland ethical guidelines and was approved by the School of Applied Psychology Ethics Committee.

Table 17

Full Extended Item Pool for Male Respondents

1. My friends say that I don’t perrceive who is interested in me.
2. I am good at picking up signals of interest from potential partners.
3. I'm pretty good at knowing if a potential partner is attracted to me.
4. If a person is interested in me, I know how to identify this by the way that they look and behave
5. I am usually wrong about who is interested in me romantically.
6. Sometimes I do not notice that someone likes me.
7. I know how to get the attention of a potential partner.
8. I don’t know how to court using different approaches. I am not very creative in this kind of thing.
9. When a potential partner smiles at me, I assume s/he's just being friendly.
10. Honestly, I don't understand the minds of potential partners at all!
11. I find it very difficult to identify if someone is interested in a long term relationship or only wants to have some fun.
12. I think most potential partners just like me as a friend.
13. I'm good at saying the right things to people I flirt with.
14. I find creative ways to get potential partners to pay attention to me.
15. I'm definitely near the top of the status totem pole in my social circles.
16. Showing my best characteristics is one of my strategies when I want to date with someone.
17. I know how to highlight my strongest characteristics and hide the weakest ones when I am interested in someone.
18. Even when a woman isn’t showing interest in me I assume that she is interested but she doesn’t want to demonstrate it to me.
19. Until I am confident in a relationship I try to highlight my qualities and hide my weaknesses.
20. Women like men. I am a man, so I have a good chance of success.
21. If a person doesn't seem interested in me, I figure s/he doesn't know what s/he's missing!
22. My clothes and my style make me look richer them I am.
23. I like to observe the person who I am interested in and try to find out an effective way to approach them.
24. If I wanted to, I could convince a potential partner that I'm really royalty from some little-known country.
25. At parties, I tend to tell stories that catch the attention of potential partners.
26. I have slept with many beautiful people.
27. I've dated many intelligent people.

28. I attract the best options of partners that are available where I am.
29 I haven't had as many sexual partners compared with other guys I know (who are my age).
30. People tend to flirt with me pretty regularly.
31. I have dated partners that made others people jealous of me.
32. I can attract potential partners, but they rarely end up interested in me sexually.
33. Potential partners definitely find me attractive.
34. When I lie to potential partners, I always get caught!
35. I am proud of my mating life.
36. I have a difficult time expressing complex ideas to others.
37. It's hard for me to get potential partners to see my virtues.
38. I doubt that I'll ever be a huge financial success.
39. Most women only want to have fun; they have no interest in a long term relationship.
40. As soon I know someone I show the real me with my qualities and weaknesses'.
41. When I am dating with someone wonderful sometimes I ask to myself what they see in me.
42. When a partner break up with me, initially I think that I won't find someone like them anymore.
43. Comparing to a film, my mating story is full of drama.
44. I'm definitely not the best at taking care of kids.
45. I'm not very talented in the arts.
46. People tell me that I have a great sense of humour.

Table 18
Full Extended Item Pool for female Respondents

1. Most potential partners who are nice to me are just trying to get into my pants.
2.Most men only want to have fun, they have no interest in a long term relationship
3. I believe that most potential partners are actually more interested in long- term relationships than they're given credit for.
4. I am proud of my mating life.
5. I can tell when a partner is being genuine and sincere in his/her affections toward me
6. I hardly ever know when a potential partner likes me romantically.
7. I find it very difficult to identify if someone is interested in a long term relationship or only wants to have some fun.

8. Honestly, I don't understand the minds of potential partners at all
9. Compared to a film, my mating story is full of drama.
10. Intelligent people never seem interested in dating me.
11. Good looking people never seem into me
12. Potential partners don't tend to be interested in my mind.
13. If I have sex with a partner too soon, I know s/he will leave me.
14. When it comes down to it, I think most potential partners want to get married and have children.
15. Women need to be very careful with their choices; they have more to lose them men.
16. When a potential partner doesn't seem interested in me, I take it personally and assume something is wrong with me.
17. My friends say that I don’t perceive who is interested in me.
18. I look younger than most women my age.
19. I know how to get the attention of a potential partner.
20. I find creative ways to do potential partners pay attention to me.
21. If I wanted to make my current partner jealous, I could easily get the attention of other people.
22. I'm definitely more creative than most people.
23. I don’t know how to court using different approaches. I am not very creative in this kind of thing.
24. If a person is interested in me It is not necessary she/he to say even a word I know how to identify her/his by the way that they look and behaviour.
25. I have a sense of style and wear clothes that make me look sexy.
26. I have dated partners that made others people jealous of me.
27. I am usually right on the money about a potential partner’s intentions toward me.
28. I attract many wealthy, successful partners.
29. I am not very artistic
30. I attract the best options of partners that are available where I am.
31. When I am dating someone wonderful I sometimes ask myself what they see in me.
32. I really don't have a great body compared with other women I know.
33. I like to observe the person who I am interested in and try to find out an effective way to approach them.
34. Sometimes I do not notice that someone likes me.
35. . If a potential partner doesn't want to date me, I figure s/he doesn't know what s/he's missing.
36. I doubt I could ever pull off cheating on my partner.
37. Until I am confident in a relationship I try to highlight my qualities and hide my weaknesses.

38. Showing my best characteristics is one of my strategies when I want to date someone.
39. I know how to highlight my strongest characteristics and hide the weakest ones when I am interested in someone.
40. My clothes and my style make me look more attractive them I am.
41. As soon I know someone I show the real me with my qualities and weaknesses.
42. When a partner break up with me, initially I think that I won't find someone like them anymore.
43. With me, a partner gets what s/he sees — no pretense here.
44. I think that an element of mystery is good in a relationship, for this reason I do not have sex with a man until he is committed to a long term relationship
45. My current partner spends a lot of money on material items for me (such as jewellery).
46. I laugh a lot at potential partners' jokes.

Results

The analyses proceeded using an exploratory approach. The aim for these analyses was to examine the domain and to guage whether the interrelationships between the items provide any indication of the underlying facets assumed by Geher and Kaufman (2013). The results are presented for the males and females separately.

Male Results

An initial Factor Analysis was performed on the 46 x 46 inter-item correlation matrix using a Generalised Least Squares (GLS) extraction procedure. GLS is rather more forgiving of deviations from multivariate normality than the more commonly used Maximum Likelihood procedure but still provides a statistically robust solution.

A scree plot was generated, and this was followed by a parallel analysis to obtain some insights into the optimal number of factors to extract. The Scree Plot is presented in Figure 5.

The paralell analysis sugests 4 factors should be retained, and this is supported by the scree plot. The first 4 factors account for 28.67% of the variance in the correlation matrix.

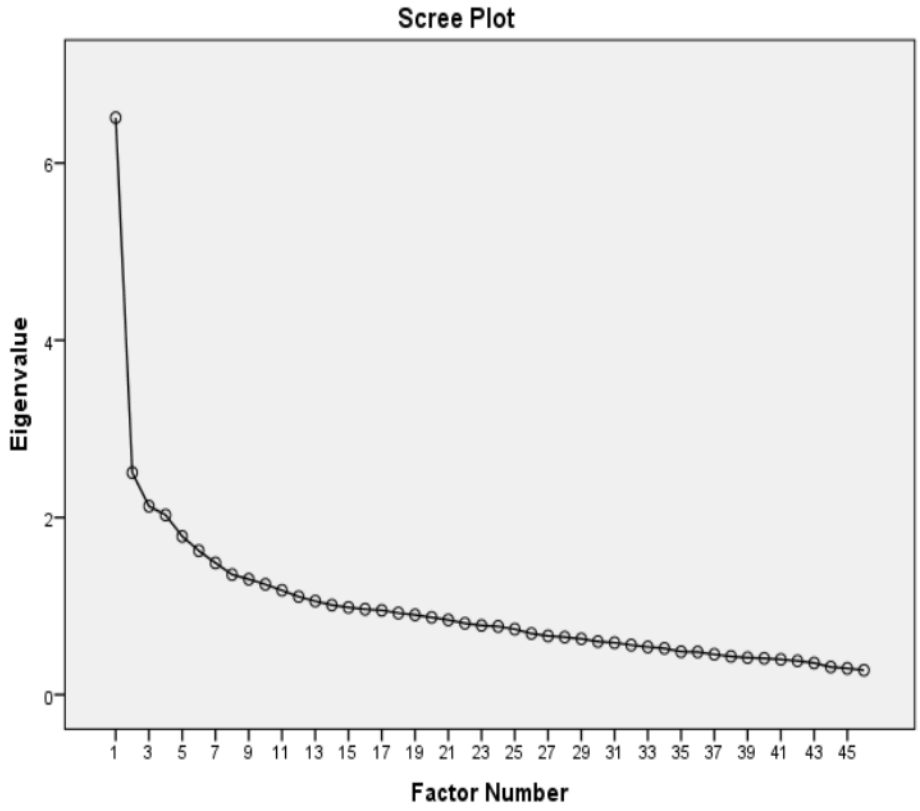


*Figura 5*Scree Plot of Male Items. Eigenvalues Extracted by GLS

In fact, a number of solutions were examined from 3 to 7 factors. Particular interest was in the 6-factor solution because this is expected according to Geher's model. However, this solution was uninterpretable. Using interpretability as a criterion for model selection is a fairly subjective approach, and in this case the 4-factor solution was the most interpretable of all the solutions considered. This is the solution described here.

The PROMAX rotation procedure was applied to the first 4 factors. This is a robust method for tranforming the factor matrix to aid interpretation, and it is an oblique method which allows the factors to correlate freely. The resulting pattern matrix is presented in table 19.

Table 19
Male Four Factor Solution

	I	II	III	IV
Q1	-0.70	0.07	0.06	-0.00
Q2	0.70	0.14	-0.01	0.12
Q3	0.68	0.19	-0.00	0.23
Q4	0.55	0.11	0.10	0.24
Q5	0.55	0.13	0.04	0.08
Q6	-0.54	0.02	0.07	-0.05
Q7	0.51	0.22	0.13	-0.00
Q8	0.47	-0.11	-0.03	0.20
Q9	0.41	-0.05	-0.17	-0.08
Q10	-0.38	0.18	-0.15	0.30
Q11	-0.34	0.08	0.04	0.13
Q12	-0.34	-0.00	-0.17	0.14
Q13	0.30	0.29	0.14	-0.08
Q14	0.28	0.28	0.04	0.00
Q15	0.22	0.11	0.20	-0.01
Q16	-0.06	0.63	0.03	-0.20
Q17	0.05	0.49	0.04	-0.29
Q18	0.03	0.46	0.03	0.32
Q19	-0.10	0.46	0.10	-0.04
Q20	-0.02	0.33	0.13	-0.04
Q21	0.02	0.29	0.09	0.01
Q22	0.00	0.29	-0.00	0.06
Q23	0.05	0.24	-0.15	0.05
Q24	0.07	0.23	0.06	-0.00
Q25	0.06	0.22	0.15	-0.01
Q26	-0.04	-0.02	0.74	0.20
Q27	-0.01	-0.15	0.55	-0.05
Q28	0.05	0.21	0.48	-0.03
Q29	-0.05	-0.05	-0.47	-0.12
Q30	0.02	0.12	0.45	-0.04
Q31	0.01	0.12	0.42	-0.11
Q32	-0.22	0.13	-0.35	-0.00
Q33	0.23	0.10	0.29	-0.11
Q34	-0.13	-0.00	0.22	0.21
Q35	0.12	0.07	0.21	-0.07
Q36	-0.00	0.14	-0.20	0.59
Q37	-0.26	0.13	-0.18	0.39
Q38	-0.08	-0.08	-0.09	0.31
Q39	0.06	0.12	0.02	0.29
Q40	0.12	-0.11	0.08	0.26
Q41	-0.21	0.03	-0.01	0.26
Q42	-0.04	-0.01	0.05	0.23
Q43	0.04	-0.02	0.11	0.22

Q44	0.00	-0.06	0.17	0.19
Q45	0.00	-0.02	-0.06	0.18
Q46	0.07	0.03	0.03	-0.08

Even though the 4-factor solution was the most interpretable of the solutions considered it is still a rather messy pattern. A rough interpretation of the factors suggests that the first factor corresponds weakly with Geher's notion of 'Mind Reading', although it might also be interpreted as a self-reported emotional intelligence factor. The second factor appears dominated by items concerning self-presentation. The third factor appears to tap self grandising and would seem to be a self-esteem factor. The final factor contains a heterogenous group of items with the common theme of self-doubt.

The solution presented is an oblique one, and the correlations between the factors are shown in table 20. There is a strong correlation between the 'Emotional Intelligence' factor with the 'Self Esteem' factor. Also, the 'Self Doubt' factor correlates negatively, though minimally, with all other factors. The suggestion here is that for the males an underlying aspect of the responding to these items may be a positive self-presenting.

Table 20
Correlations Between the 4 Factors of the Male Solution

	I	**II**	**II**	**IV**
I	1.00			
II	0.18	1.00		
III	0.34	0.16	1.00	
IV	-0.17	-0.00	-0.07	1.00

Female Analyses

A similar approach was taken with the female item pool. Again, a Generalised Least Squares (GLS) factor extraction procedure was carried out, and a scree plot was generated, followed by a parallel analysis to obtain some insights into the optimal number of factors to

extract. The Scree Plot is presented in Figure 6. The paralell analysis suggests 3 factors should be retained. The scree plot is a little less clear as it is a little 'jumpy' around the elbow point, but 3 factorscertainly carry a bulk of the variance. These first 3 factors account for 22.72% of the variance in the correlation matrix.

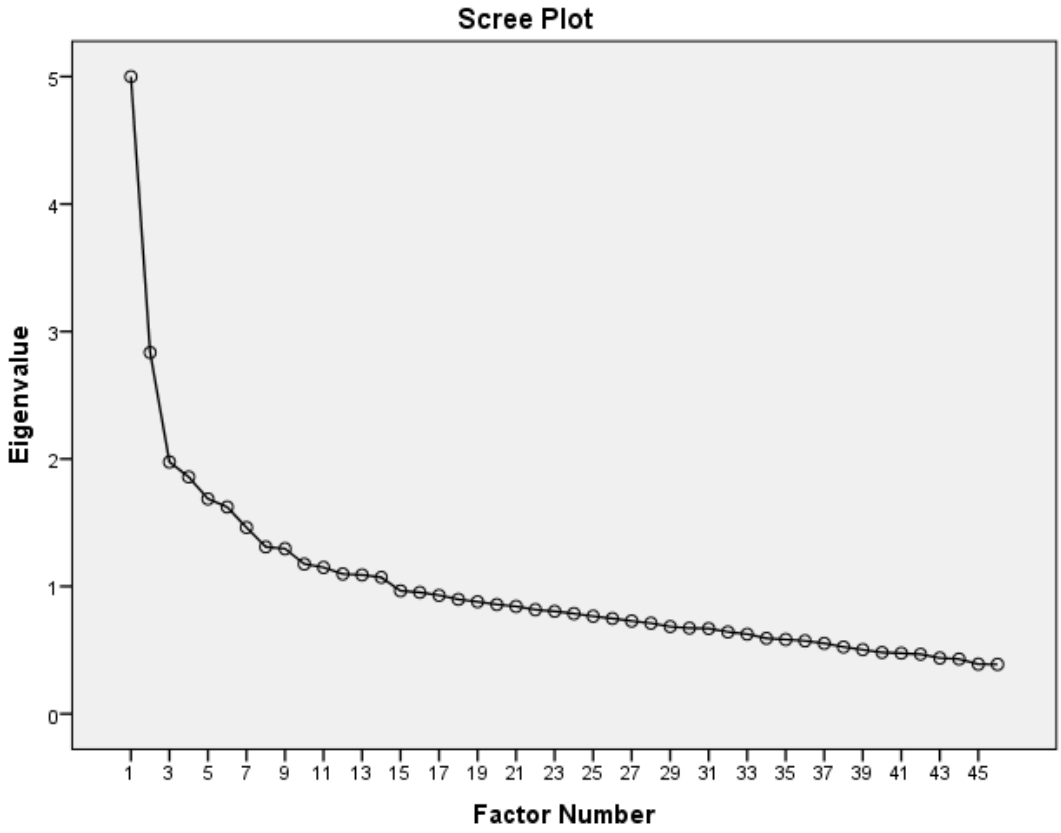


Figure 6. Scree Plot of Female Items. Eigenvalues Extracted by GLS

As with the male analysesa number of solutions were rotated for interpretation (from 2 to 6 factors). Again, the rotated patterns that emerged were messy but, as with the male solution the one indicated by the slightly mor objective criteria of scree plot and parallel analysis emerged with the most credible interpretation. The resulting PROMAX rotation of the 3-factor solution is presented in Table 21.

Table 21
Female Three Factor Solution

	I	II	III
Q1	0.57	0.10	0.02
Q2	0.57	0.10	0.03
Q3	-0.50	-0.06	0.10
Q4	-0.47	0.09	-0.00
Q5	-0.44	0.11	0.03
Q6	0.44	-0.26	-0.04
Q7	0.42	-0.17	0.04
Q8	0.41	-0.21	0.04
Q9	0.40	0.16	-0.00
Q10	0.39	-0.00	-0.00
Q11	0.36	-0.23	0.13
Q12	0.35	-0.03	0.08
Q13	0.34	-0.01	0.19
Q14	-0.33	-0.03	0.15
Q15	0.29	0.02	0.26
Q16	0.26	-0.15	0.21
Q17	0.23	-0.23	-0.08
Q18	0.05	0.03	-0.01
Q19	-0.12	0.65	0.02
Q20	0.13	0.56	-0.04
Q21	0.00	0.48	-0.02
Q22	0.17	0.40	-0.25
Q23	0.07	-0.40	0.12
Q24	-0.15	0.34	0.10
Q25	0.04	0.34	0.11
Q26	0.01	0.30	0.04
Q27	-0.28	0.30	0.00
Q28	-0.05	0.27	0.06
Q29	-0.05	-0.27	0.21
Q30	-0.22	0.25	0.02
Q31	0.19	-0.21	0.15
Q32	0.14	-0.21	0.10
Q33	-0.00	0.21	0.17
Q34	0.16	-0.20	-0.11
Q35	-0.06	0.19	-0.01
Q36	-0.03	-0.15	-0.02
Q37	0.02	0.04	0.61
Q38	0.04	0.27	0.50
Q39	-0.03	0.42	0.43
Q40	0.14	0.19	0.30
Q41	-0.00	-0.00	-0.28
Q42	0.17	-0.10	0.19
Q43	0.02	0.02	-0.18
Q44	0.01	-0.00	0.14
Q45	-.000	0.05	0.13
Q46	-.003	-0.03	0.08

Even though the 3-factor solution was the most interpretable of the solutions, like the male solution, it is still rather messy. A rough interpretation of the factors suggests that the first factor corresponds with a form of cynical appraisal of the mating game although it also corresponds with a level of self-doubt. We tentatively labelled this factor 'Cynicism'. The second factor appears to correspond closely with self esteem, while the third appears to relate to self-presentation.

Again, the solution presented is an oblique one, and the correlations between the factors are shown in table 22. It is clear that Self-Presentation is unrelated to the other two factors and there is a small but logically consistent negative correlation between Cynicism and Self-Esteem.

Table 22
Correlations Between the 3 Factors of the Female Solution

	I	**II**	**III**
I	1.00		
II	-0.19	1.00	
III	0.06	0.01	1.00

Discussion

We have to conclude that when additional items were added to the item pool, there was no further clarification of the structure of the construct. Of course, it might always be argued that the extra items selected were not sufficiently well targetted for the purpose. Nevertheless, the items were chosen to tap the putative facets of the domain, and it is reasonable to expect that, if the facet structure was theoretically robust, it should emerge at some level. In fact, our confirmatory analysis had already raised doubts about the construct validity of the construct and this attempt to rectify the situation has not been successful in mitigating those doubts.

The different patterns exhibited for the male and female versions of the scales is of some interest. The responses of both sexes do appear to be greatly influenced by self esteem. However, care must be taken not to conflate self-esteem with response bias (Paulhus, 1991). This may be inescapable using the strategy advocated by the MIS. Self-report measures are prone to response bias due to the desire to present oneself positively, and it is reasonable to suppose that young adults, particulary but not exclusively males, when asked essentially about their sexual prowess will respond defensively. Whatever, the reason for the emergence of the factor, that we have tentatively labelled Self Esteem in both sexes, it is clear that this is a confounding facet.

In the male solution the 'Mind Reading' facet proposed by Geher did emerge in a rather watered down form, but the salient items read more like a self-report version of emotional intelligence (Austin, 2008; Austin & O'Donnell, 2013; Saklofske, Austin, Mastoras, Beaton, & Osborne, 2012). As mentioned in part 1 of the thesis the conflation of the constructs of EI amd MI is not unexpected.

In the next study, we intend to examine the degree to which the construct of mating intelligence may be viewed as an independent domain. The emerging picture based upon analyses so far is that the construct validity of the MIS is not robust and that, further, it may be confounded by other more established constructs that serve to mop up any specific variance it may offer. This is essentially an issue of concurrent validity and is addressed in the following chapter.

Chapter 6

Concurrent Validation of the MSI

Study 4:A Variance Decomposition Analysis of the MI Domain

The degree to which the variance in the MIS is attributable to a specific construct or to other extraneous constructs now needs to be considered. The previous study implicates self-esteem and emotional intelligence as potential confounders of the mating intelligence construct. This chapter will detail a study examining the role of these and other theoretically relevant constructs.

The following analyses were based upon two samples.

The measures used include the Mating Intelligence Scales as the central device and a number of other devices described below.

Method

The Measures

The Mating Intelligence Scales (Geher& Kaufman 2007).

The MIS comes in two versions, one for each sex. Each version had 24 true/false questions and taps explicitly the six facets that its authors' considered core processes in mating selection. These processes are accurate cross-sex mind reading; adaptive self-deception in the mating domain; adaptive mate-deception; effective behavioural courtship display; adaptive perceptual bias; self-reported mating success.

Self-perceived Mating Success Scale(Landolt, Lalumière, & Quinsey, 1995)

The SPMSS is an 8-item Likert-type questionnaire that uses rating from 1 (strongly disagree) to 7 (strongly agree) in items like *"I receive sexual invitations from potential partners".* It assesses participants' perceived success with potential sexual partners.

Rosenberg Self-Esteem Scale (Rosenberg, 1965)

Rosenberg's measure of general self esteem is one of the most widely used measures for this construct (Hatfield, Rapson, & Aumer-Ryan, 2008). It was originally developed as a scalogram but is now usually used as a summative rating scale with 10 items using 4-point ordinalcategories of endorsement. Half the items are reverse ordered. Rosenberg (1965) found test-retest reliabilities to range between 0.80 to 0.85 and Demo (1985) was able to demonstrate appreciable convergent validity.

The Sociosexual Orientation Inventory Revised (Penke &Asendorpf, 2008)

The SOI-R is a 9-item self-report questionnaire designed to measure individual differences in the tendency to have casual, uncommitted sexual relationships. The SOI-R is divided into three facets corresponding to:

1. Behaviour (a predisposition to have casual sexual partners),
2. Attitude (approval of uncommitted sex)
3. Desire (the desire for casual sexual encounters).

Items are coded on a nine-point scale from 1 (strongly disagree) to 9 (strongly agree). The SOI-R provides a score for each facet as well as a total Sexual Orientation Score. Penke and Asendorpf claim that the measure has good overall reliability in the low 0.80's.

The Schutte Self-Report Emotional Intelligence Test(Schutte et al., 1998).

The SSEITis a 33-item self-report measure of Trait Emotional Intelligence (EI). A number of psychometric appraisals of the device (Austin, Saklofske, Huang, & McKenney, 2004; Petrides et al., 2007; Saklofske, Austin, & Minski, 2003) have been carried out that give some mixed results. As the SSEIT stands it provides four sub-scales: Emotion perception, Utilizing Emotions, Managing Self- relevant Emotions, and Managing Others' Emotions. Austin et al. (2004) were able to identify a subscale labelled Optimism/Positivity. It is used here as a well researched self-report device for measuring trait emotional intelligence.

Curtin Emotional Response scale (Curtin, 2009)

The CERSis a 30 item self-report questionnaire designed to measure individual differences in emotional response. The measure results in two scores, one tapping reactivity or the tendency to react emotionally to people and situations, and empathy or the tendency to place oneself in the emotional place of others. The measure has been largely used in the assessment of health care practitioners in training (Curtin & Hammond, 2012).

Procedure

Participants completed an electronic survey presented on the SurveyMonkey server. Invitations were sent out via the University College Cork email system and also the social media Facebook site. The full battery of tests to be used was long,and it was felt that compliance would be a problem if such a large survey was presented to volunteer respondents. For that reason, it was split into two surveys and administered to two independent samples.

In all, 1032 questionnaires were answered and returned. However, using casewise deletion for missing data only 627 were retained for this analysis. This is a consevative approach to treating missing data that involves greater loss of sample than other methods but as we were using multivariate correlational analysis it was necessary to minimise distortions due to sample fluctuation.

Sample 1 responded to a survey containing the following scales: Mating Intelligence Scales (MIS),The Self-perceived mating success scale, Rosenberg's Self-esteem Scale and The revised Socio sexual Orientation Inventory (SOI-R). The fully completed surveys numbered 336(109 male, 227 female).

Sample 2 responded to a survey containing the following scales: Mating Intelligence Scales (MIS), Curtin Emotional Response and The Schutte Self-Report Emotional Intelligence Test (SSEIT). The fully completed surveys numbered 291 (75 male, 216 female).

Data Analysis

The resulting data was screened using SPSS v23. Data analysis was carried out using the Psychometric Assessment Package (Hammond, 2010).

Ethical Approval

The study was designed in keeping with the Psychological Society of Ireland ethical guidelines and was approved by the School of Applied Psychology Ethics Committee.

Results

Because the analyses in this study are correlational, it is necessary to derive estimates of the reliability of the various concurrent test scores. This is because correlations between weakly reliable scores will be attenuated and may under estimate the true covariation. We have already noted that the MIS scores appear suboptimal in this regard and should this be the case for our concurrent measures an appreciable bias may confound the analyses. Indeed, due to the poor reliability estimates for the MIS subscales, the analyses in this study are only concerned with the total scores.

The descriptive psychometric properties of each of the measures are summarised in Table 23 in which the correlation of each measure with the total MIS score is also presented in the two rightmost columns.

The estimates of reliability for the concurrent measures are all within an acceptable range between 0.71 (EI: Self Awareness) and 0.89 (Self Esteem). As expected from our earlier analyses, the MIS scores do not appear so reliable. Indeed, the female estimate is quite suboptimal at 0.45. For this reason, conclusions based on the female MIS scores must be interpreted with caution.

Table 23

Psychometric Properties of Each Measure and Concurrent Correlations with the Total MIS Scores

Scale	Mean	SD	Alpha	N of items	Male MIS r N=109	Female MIS r N=227
Mating Intelligence						
Male	13.11	3.39	0.76	24	1.000	-
Female	12.07	2.95	0.45	24	-	1.000
Mating Success	34.61	9.02	0.86	8	0.652**	0.515**
Self Esteem	51.09	11.67	0.89	10	0.410**	0.384**
Reactivity	5.45	3.04	0.79	11	-0.027	0.205**
Empathy	12.22	2.97	0.73	16	0.238	0.142
Sexual Orientation						
Behaviour	8.67	5.31	0.82	3	0.195	0.092
Attitude	16.44	6.38	0.73	3	0.147	0.241**
Desire	10.99	6.28	0.87	3	0.192	0.064
Total	36.04	14.04	0.84	9	0.204	0.168*
Emotional Intelligence						
Others	23.41	4,77	0.80	7	0.264	0.274**
Flexible	22.47	4.29	0.83	6	0.265	0.184*
Self	13.33	3.20	0.71	4	0.084	0.201*
Optimism	31.62	6.54	0.85	9	0.395*	0.361**
Altuism	18.90	3.74	0.81	5	0.172	0.210*

A perusal of the simple correlations between the concurrent measures and the MIS reveal a very large statistically significant covariation between mating intelligence and perceived mating success. This is not really surprising because this is one of the facets identified by Geher and Kaufman (2007) to be integral to their own measure. Another highly significant correlation is observed between Mating Intelligence and Self-Esteem. This is consistent with the exploratory factor analysis of the previous study, and serves to support the notion that MI is confounded by Self-Esteem.

A more interesting observation is that despite the poor reliability for the female MI scale a number of relatively large correlations are observed, notably in emotional intelligence. This is counter intuitive given that the female correlations wwere expected to be attenuated. Therefore these elevations are noteworthy.

Another telling result is that the female MI score correlates with Sexual Orientation Attitude. This suggests that females with elevated mating intelligence will tend to adopt a set of attitudes towards committed relationships more commonly associated with young males. One clear explanation for this is that the construct is based upon a male informed mate selection criteria since according to the received evolutionary psychology theory, female mating patterns require the development of committment and long-term relationship formation (Buss,*inter alia*).

For completeness, the full inter-variable correlation matrices are presented in table 28 and table 29 at the end of this section. The purpose of this study was to investigate the degree of unique variance provided by the mating intelligence score rather than to examine the structural pattern of bivariate correlations. For this aim, we must utilise multivariate analyses. The most straight-forward way of examining the explained and unique variance of an independent variable by partitioning out the covariance of a set of dependent variables is to carry out an Analysis of Variance which, when the dependent variables are continuous, is best performed using a Multiple Regression Analysis.

Emotional Intelligence, Empathy and Mating Intelligence

Looking at Emotional Intelligence and Empathy, Multiple Regression Analyses were performed for the male and female samples independently to ascertain the amount of MI variance has been acounted for by these related measures. The results are summarised in table

24a and table 24b. A fixed linear regression model was performed in which all the dependent variables were entered at once. This runs the risk of overlooking the effects of multicolinearity, but since we are primarily only interested in the explained variance, the relative weights are of limited interest.

Table 24
Accounting for the MIS Score with Emotional Intelligence and Empathy Measures

a. Male Scale Score

	B	**S.E.**	β	**t**
Reactivity	0.421	0.187	0.236	2.251*
Empathy	0.092	0.160	0.058	0.575
EI-Others	0.297	0.113	0.299	2.635**
EI-Utilization	0.040	0.164	0.036	0.245
EI-Self	-0.442	0.226	-0.267	-1.953
EI-Optimism	0.303	0.113	0.397	2.675**
EI-Perception	-0.210	0.173	-0.172	-1.213
Intercept	1.063	3.217		

$R2 = 0.199$ (19.9%) $F_{7,91} = 3.23$ $p<0.05$

b. Female Scale Score

	B	**S.E.**	β	**t**
Reactivity	0.421	0.187	0.236	2.251*
Empathy	0.092	0.160	0.058	0.575
EI-Others	0.297	0.113	0.299	2.635**
EI-Utilization	0.040	0.164	0.036	0.245
EI-Self	-0.442	0.226	-0.267	-1.953
EI-Optimism	0.303	0.113	0.397	2.675**
EI-Perception	-0.210	0.173	-0.172	-1.213
Intercept	1.063	3.217		

$R2 = 0.183$ (18.3%) $F_{7,255} = 9.155$ $p<0.001$

The independent variables account for 19.9% of the male MIS score variance and 18.3% of the female MIS score variance. This may seem quite small,but we have to recall that the best factor solutions we could obtain for the MIS construct only accounted for 28.6 and 22.7% of the

inter-item variance respectively. So we must assume that a large amount of the common MIS variance is accounted for. This is shown by the Analysis of Variance results revealing highly statistically significant F values. In fact, despite only accounting for 18.3% of the variance for the total female MIS score, this is a very highstatistically significant result.

Breaking this down, it is apparent that for both sexes it is Emotional Reactivity, Emotional Intelligence relating to others, and Emotional Intelligence relating to Optimism that account for the major partitioning of MIS variance. It is likely that the questions of the MIS are essentially tapping self-reported empathy, hence the relation with Ei-Other and Reactivity. The fact that high MIS scorers may have a high opinion of their ability in this regard would inflate the EI-Optimism relationship. Thus, it is quite possible to explain these results as an artefact of item selection rather than a close correspondence of constructs.

To explore this further, the subcomponents of the MIS are utilised. We have already observed that the subscale scores are suboptimal and cannot be relied on as measurement tools, however, given that the original item selection was informed by an evolutionary model composed of 6 underlying processes, it is appropriate to see whether there is any theoretically meaningful discrimination between the 6 facets of the MIS. To this end a Canonical Variate Analysis (CVA) was performed with the 6-subscores occupying set A and the EI and Empathy scales occupying set B. Simply put, CVA is a form of Regression Analysis where a group of independent variables (predictors) are used to account for the variance of multiple dependent variables. Mathematically it is a form of component analysis and, while not commonly used, it has a number of uses in differential psychology (Fox & Hammond, 2017).

The results of the CVA for the female MIS scores are summarised in table 25. The standardised coefficients are presented, and these are essentially correlations between the

variables and the latent canonical variate much as factor loadings on an orthogonal component solution. The maximum number of possible latent variates is 5 (1 less than the number of variables in the smaller set). In this case, only the statistically significant variables are presented. It should be born in mind that this can lead to an over-estimate of the number of psychologically meaningful variates, but it is a useful criteria for an upper bound (Gittings, 1980).

Table 25
Canonical Variate Analysis Relating the Female MIS Subscale Scores with Measures of Empathy and Emotional Intelligence

	Variable	
Variable	**I**	**II**
Mind Reading	0.507	-0.815
Self Deception	0.531	0.415
Mate Deception	-0.071	-0.270
Courtship Display	0.157	0.165
Perceptual Bias	-0.149	0.160
Mating Success	0.219	0.698
Reactivity	0.496	-0.180
Empathy	0.179	0.067
EI-Others	0.349	-0.664
EI-Utilization	-0.337	0.040
EI-Self	0.198	-0.642
EI-Optimism	0.446	0.956
EI-Perception	0.017	0.355
Canonical r	0.524	0.115
F Ratio	4.221**	2.060**
Variance	72.375	15.883

** $p<0.01$

A useful way of interpreting these loadings is to view each column as representing a profile. Thus, the first variate describes high scores on Mind Reading and Self-Deception coupled with high reactivity to others emotional state, high EI as related to others but with low utilisation and high optimism. This suggests a variate describing a sensitivity to other's feelings is concerned but little ability to utilise that information. The second variate shows low Mind

Reading scores, high Self-Deception and high Mating Success coupled with high Optimism and low EI-Self and EI-Others.

Below the standardisedcoefficients, the diagnostic parameters include the canonical correlation (analogous to a reliability index), the F-Ratio and the amont of MIS variance accounted for by the variate. It is clear from these results that there is little of any psychometric value in generating these two latent variates. However, it is very instructive to see the amount of shared variance between Emotional Intelligence constructs and the female MIS domain. The variance accounted for is highly statistically significant.

The same analysis carried out for the Male MIS Scores was not helpful. No statistically significant variate could be identitified. The first variate had a canonical correlation of 0.549, but this was not statistically significant ($F_{42,402}$= 1.398, ns).

Self Esteem, Sociosexual Orientation and Mating Intelligence

Turning to Self Esteem and Sociosexual Orientation, Multiple Regression Analyses were performed for the male and female samples independently. The results are summarised in table 26a and table 26b respectively. Again, a fixed linear regression model was performed in which all the dependent variables were entered at once.

The independent variables account for 33.4% of the male MIS score variance and 15.1% of the female MIS score variance. This is considerably larger for the male MIS score than the female. It is also worthy of note that self-esteem and sociosexual orientation account for more of the male MIS variance that the Empathy and Emotional Intelligence scaores. The female MIS, on the other hand, is not as confounded with Self-esteem and sociosexual orientation. The

statistical significance of the solutions are both high and indicate that this combination of independent (predictor) variables mops up much of the MIS variance.

When examining the individual weights, it is quite apparent that the largest source of confounding variance is Self-Esteem for both sexes.

Table 26
Accounting for the MIS Score with Self-Esteem and Sexual Orientation

a. Male MIS Score

	B	**S.E.**	Beta	**t**	
Self Esteem		0.184	0.024	0.473	7.561**
SOI-Behaviour	1.183	0.584	0.549	1.626	
SOI-Attitude		0.572	0.639	0.261	0.895
SOI-Desire	0.821	0.616	0.369	1.332	
SOI-Total	-1.986	1.793	-0.681	-1.108	
Intercept	1.315	1.526			

R^2 = 0.334 (33.4%) $F_{5,182}$ = 18.236 p<0.0001

b. Female MIS Score

	B	**S.E.**	Beta	**t**	
Self Esteem		.089	.011	.357	8.191**
SOI-Behaviour	.987	.553	.527	1.784	
SOI-Attitude		1.045	.573	.763	1.824
SOI-Desire	.946	.563	.572	1.679	0.245
SOI-Total	-2.727	1.677	-1.316	-1.626	
Intercept	6.596	.642			

R^2 = 0.151 (15.1%) $F_{5,456}$ =16.229 p<0.0001

The results of the CVA for the Male and Female MIS scores are summarised in table 27. The maximum number of possible latent variates in this case is 4 (1 less than the number of variables in the smaller set). In this case, both sexes manifested two statistically significant variates. These are presented for the Males (a) and Females (b). The results demonstrate that the variance of MIS subscale scores arelargely mopped up by Self-Esteem and Sociosexual

Orientation (95.02% for Males, 89.25% for females). As with the multiple regression analysis, it is also clear that the salient independent variable in mopping up MI variance is Self-Esteem.

Table 27
Canonical Variate Analysis Relating MIS Subscale Scores with Self Esteem and Socio-Sexual Orientation

a. Male Solution		
	Variable	
Variable	**I**	**II**
Mind Reading	0.377`	0.132
Self Deception	0.203	0.629
Mate Deception	-0.139	0.542
Courtship Display	-0.002	0.106
Perceptual Bias	0.327	-0.039
Mating Success	0.555	-0.657
Self Esteem	0.652	0.779
SOI-Behaviour	0.662	-0.831
SOI-Attitude	-0.045	-0.058
SOI-Desire	0.043	0.337
Canonical r	0.625	0.392
F Ratio	5.804***	2.598***
Variance	74.104	20.924
a. Female Solution		
	Variable	
Variable	**I**	**II**
Mind Reading	0.396	0.106
Self Deception	0.556	-0.082
Mate Deception	-0.103	-0.096
Courtship Display	-0.124	-0.423
Perceptual Bias	-0.239	-0.014
Mating Success	0.367	0.282
Self Esteem	0.911	-0.262
SOI-Behaviour	0.085	0.059
SOI-Attitude	0.129	-0.348
SOI-Desire	-0.343	-0.808
Canonical r	0.564	0.310
F Ratio	10.630***	4.317***

Variance	72.741	16.511

** p<0.01

Table 28

Correlations Between the Concurrent Measures and the MIS for the Two Male Samples

Male Sample 1

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1 MIS	1.000							
2 SPMS	0.652	1.000						
3 ESTEEM		0.410	0.414	1				
4 SOIB	0.195	0.179	0.095	1.000				
5 SOIA	0.147	0.121	0.206	0.448	1.000			
6 SOID	0.192	0.033	-0.080	0.422	0.499	1.000		
7 SOITot	0.204	0.113	0.094	0.718	0.862	0.799	1.000	

Male Sample 2

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
1 MIS	1.000								
2 REACTIVE		-0.27	1.000						
3 EMPATHY		0.238	0.027	1.000					
4 ELOthers	0.264	0.136	0.093	1.000					
5 ElFlexible		0.265	0.064	0.020	0.493	1.000			
6 ElSelf	0.084	0.272	-0.063	0.544	0.502	1.000			
7 ElOptimism		0.395	0.220	0.168	0.463	0.799	0.529	1.000	
8 ElAtruism		0.172	0.136	0.125	0.505	0.799	0.395	0.595	1.000

Table 29

Correlations Between the Concurrent Measures and the MIS for the Two Female Samples

Female Sample 1

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1 MIS	1.000							
2 SPMS	0.515	1.000						
3 ESTEEM	0.384	0.414	1.000					
4 SOIB	0.092	0.179	0.095	1.000				
5 SOIA	0.241	0.121	0.206	0.448	1.000			
6 SOID	0.064	0.033	-0.080	0.422	0.499	1.000		
7 SOITot	0.168	0.113	0.094	0.718	0.862	0.799	1.000	

Male Sample 2

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
1 MIS	1.000								
2 REACTIVE		0.205	1.000						
3 EMPATHY		0.142	0.027	1.000					
4 ELOthers	0.274	0.136	0.093	1.000					
5 ElFlexible		0.184	0.064	0.020	0.493	1.000			
6 ElSelf	0.201	0.272	-0.063	0.544	0.502	1.000			
7 ElOptimism		0.361	0.220	0.168	0.463	0.650	0.529	1.000	
8 ElAtruism		0.210	0.136	0.125	0.505	0.615	0.395	0.595	1.000

Discussion

These analysesclearly support the suspicion that the MIS score is less about a distinct Mating Intelligence construct than a poorly differentiated measure tapping a constellation of facets within the broader social psychological domain.

MI cannot be viewed as a unique and independent construct. Interestingly, it appears that whatever meaningful variance exists in MI, it is nearly all mopped up by socially mediated constructs such as Self-Esteem and Empathy. If this is the case, Geyer's conception of MI as an evolutionarily informed construct with an implied biologically determined element is doubtful. The results reiterate findings from part 1, arguing that MIS' focus upon short term mate selection strategies which are heavily mediated by cultural constraints, may have militated against its validity as a psychological construct. This does not suggest that mating strategies are not evolutionarily informed but merely that the simplistic conception of mating intelligence given may be ill-informed.

One very damming part of these findings regards doubts about the modularity of Mating Intelligence. One of the basic tenets of Toby and Cosmides presentation of evolutionary psychology is that the human cognition is made up of evolutionarilly informed modules. Geher and Kaufman conceptualised Mating Intelligence as one such module, based upon the emininently sensible notion that mate selection functions are likely to be shaped by evolution. The results gathered here suggest a more general modularity in which mating intelligence sits within the broader construct of emotional intelligence. Presumably the gregarious, group-based lifestyle of our early hominid ancestors led to the honing of socialisation skills which include mate seeking behaviours.

Of course, all of this is predicated on the assumption that the measurement properties of the various constructs is accurate and precise. We have seen that a very large amount of the MI variance is explained by self esteem. One way of interpreting this is to argue that self esteem must be an integral part of MI. Certainly self confidence may be seen as an attractive trait that leads to greater success in attracting a mate. However, another view is that this finding arises from a measurement artefact. Self-report devices are always prone to response bias which greatly reduces the validity of the resulting scores. This is why psychometricians go to such lengths to attend to the concurrent validation of their tools. This had not been done with the MIS, probably due to the populist origin of the device, until now.

Given the potential in the questions for self-agrandising, and the massive overlap with self esteem especially with males, we cannot rule out a major psychometric artefact in the use of MIS scores. This leads to a potential avenue for further research which is to explore MI using behavioural or implicit measurement procedures.

Another potential concern remains and that is that the MIS, developed in the USA, may be very well suited to Americans, but be culturally unacceptable with young Irish adults. Such a consideration does fly in the face of the evolutionary argument as human behaviour overides national boundaries but makes sense on a psychometric level, especially with self-report intstruments.

The next chapter concludes our analysis of the MIS by taking a cross-national, cross-language look at the measure.

Chapter 7

A Cross-National Comparison of the Maiting Intelligence Scales

Study 5: Cross-National Bias in the MIS

It had always been of interest to carry out a cross national appraisal of the MIS. The severe psychometric limitations with the Irish sample was disappointing, but there is always the possibility that there is something specific to the Irish culture that may mitigate the MIS measurement potential. So the question arises as to whether these restrictions are a feature of the cultural specificity of the sample. If this is the case, it may be argued that the construct owes more to cultural conventions than evolutionary forces.

As discussed earlier, the concept of mating intelligence and its measurement is relatively new. The majority of studies published so far have samples composed of Americans, and none of them presented cross-national comparisons.

It is widely known in the area of Social Science that variations, both within and across countries, are prevalent (Crompton, 2006). The study reported in this chapter focuses on a comparison between the MIS scores from the Irish and a Brazilian sample. This is the first study to present a cross-national comparison of the MIS.

Method

Development of a Brazilian Version of the Measures

As the researcher is originally from Brazil and Portuguese is her first language, it was felt appropriate to broaden the sample to include a large sample of young Brazilian adults.

Firstly, it was necessary to translate the MIS and related measures into Portuguese. Because one aspect of the psychometric comparison of a measure across cultures involves comparing the regressions of the target measure with a variety of secondary measures it was felt necessary to translate not only the MIS but also the other measures used in the concurrent validation described in chapter 6. The purpose of this section is to give a detailed account of the translation process. The initial translation from English was performed by the researcher.

To ascertain the accuracy of the translation, it was back-translated by an independent reviewer into English, without reference to the original text. This translator was a British English teacher who has lived in Brazil for more than 10 years of being fluent in both languages. Finding a competent translator who is not only bilingual but bicultural was essential to the quality of back-translation. As linguist Pei (1949) highlights, a language is not merely a collection of words and of rules of grammar and syntax for generating sentences, but also a vast interconnecting system of connotations and cultural references.

During the translation, it was clear how the system of connotations and cultural references could interfere with the translation results. As Psychologist Marcus Gary (2017) notes "virtually every sentence [that people generate] is ambiguous, often in multiple ways. Our brain is so good at comprehending language that we do not usually notice" (p. 63).

Similarly, Kasparek (1983) stated words are often ambiguous and entail making choices that imply interpretation. It is necessary a finely tuned sense of when to do a literal translation and when to paraphraseto assure trueequivalents between language texts.

For instance, the literal translation into Portuguese of MIS female item *I am usually right on the money about a potential partner's intentions toward me* would not make any sense for Brazilians. A similar problem would occur with the item.*Most potential partners who are niceto*

me are just trying to get into my pants[2]. A literal translation from English into Portuguese could lead them to the interpretation that most partners who are nice to them are just seeing things from their perspective[3]. This kind of mistake would, unfortunately, harm the results.

The last stage required the involvement of a 3rd party for whom English was the 1st language to ascertain that the back-translation and the original versions of the measures corresponded regarding meaning. This was done by the student's supervisor. This process took about 2 months to complete, and the result was a back-translation that closely resembled the original.

The Appendixes C, D, E and F present the English and Portuguese versions of the first Survey. Their Codebooks are in The Appendixes G, H, I and J.

Appendix K shows a Table containing all the questions presented by the English and Portuguese versions 1 and 2 of the Portfolio administrated in Survey one. It makes easier to visualise and compare the content of both versions of the Portfolio.

The Measures

The measures used for this study were the same as those described in chapter 6. All were translated and backtranslated as described above. The Portugese and English versions of the test are presented in appendices C through J. They are:-

- *The Mating Intelligence Scales (Geher& Kaufman 2007).*
- *Self-perceived Mating Success Scale*(Landolt et al., 1995)
- *Rosenberg Self-Esteem Scale (Rosenberg, 1965)*
- *The Sociosexual Orientation Inventory Revised (Penke &Asendorpf, 2008)*
- *The Schutte Self-Report Emotional Intelligence Test(Schutte et al., 1998).*
- *Curtin Emotional Response scale (Curtin, 2009)*

The Sample

In Brazil, recruiting a sample was more complex than in Ireland. It was necessary to invite about five times more Brazilians to have a third of the number of Irish. For this reason, it was necessary to have various kinds of support from staff and students from six universities in three States (University Estacio de Sa; University Ahambi-Morumbi; University Federal Rural do Norte Fluminesce; University Federal Fluminesce; University UniRadial and Brasilia University). The non-student sample in this country was obtained by social media. The entire Brazilian sample consisted of 508 fully complete returned questionare in 2 subsamples.

Sample 1 responded to a survey containing the following scales: Mating Intelligence Scales (MIS),The Self-perceived mating success scale, Rosenberg's Self-esteem Scale and The revised Socio sexual Orientation Inventory (SOI-R). The fully completed surveys numbered 293 (95 male, 198 female).

Sample 2 responded to a survey containing the following scales: Mating Intelligence Scales (MIS), Curtin Emotional Response and The Schutte Self-Report Emotional Intelligence Test (SSEIT). The fully completed surveys numbered 215 (55 male, 160 female).

The Irish comparison sample was that described in chapter 6. Sample consisted of 336(109 male, 227 female) while sample 2 consisted of 291 (75 male, 216 female).

Procedure

Data Analysis

The resulting data was screened using SPSS v23. Data analysis was carried out using the Psychometric Assessment Package (Hammond, 2010).

Ethical Approval

The study was designed in keeping with the Psychological Society of Ireland ethical guidelines and was approved by the School of Applied Psychology Ethics Committee.

Analyses largely followed that of the study reported in Chapter 4. Table 30and Table 31show the Mean, Standard deviations and Coefficient Alpha of the male and female versions of MIS in Ireland and Brazil. They highlight the coefficient of the full scale as well as the coefficient of each one of the six MI subscales.

Table 30

Cronbach Alpha Coefficient, Standard Deviation and Mean of the Full Mating Intelligence Scale and its Subscales between Irish and Brazilian Male

	Irish			Brazil		
	Mean	**Sd**	**α**	**Mean**	**Sd**	**α**
Total	13.117	4.499	0.764	12.430	4.478	0.756
Mind Reading	2.580	1.394	0.710	2.390	1.400	0.701
Self-deception	1.947	1.077	0.294	2.049	1.127	0.350
Mate deception	2.375	1.025	0.249	2.277	1.040	0.313
Courtship Display	2.351	1.006	0.219	2.213	1.054	0.343
Mating Success	1.992	1.322	0.601	1.699	1.247	0.565
Adaptive Bias	1.745	1.337	0.624	1.680	1.221	0.484

Note. Own elaboration.

Table 31

Cronbach Alpha Coefficient, Standard Deviation and Mean of the Full Mating Intelligence Scale and its Subscales between Irish and Brazilian Female

	Irish			Brazil		
	Mean	**Sd**	**α**	**Mean**	**Sd**	**α**
Total	12.075	2.955	0.451	12.081	2.919	0.416
Mind Reading	2.546	1.274	0.622	2.420	1.317	0.616
Self-deception	1.924	1.104	0.263	2.215	1.098	0.278
Mate deception	1.505	1.039	0.284	1.512	1.004	0.260
Courtship Display	2.495	1.064	0.356	2.178	1.075	0.275
Mating Success	1.680	1.241	0.556	2.018	1.222	0.476
Adaptive Bias	1.911	0.831	0.268	1.726	0.904	0.415

Note. Own elaboration.

The male version of the total scale scorepresented a Mean of 13.12 for Irish and 12.43 for the Brazilian sample which is statistically equivalent. The female version offers a similar scenario with very close means of 12.07 and 12.08. .

According to O'Brien et al. (2010), the Mating Intelligence Scale has good internal consistency when using a dichotomous (true/false) measures. He reported an alpha coefficient for the total score of 0.898 for male and 0.690 for female. Our Reliability generalisation study suggested that these were over-optimistic estimates. In the current study, the Cronbach alpha coefficient was 0.76 for Irish males and 0.75 for Brazilian males. These are moderate but by no means as impressive as those reported by O'Brien and his colleagues. On the other hand, the Cronbach alpha coefficients for both Irish and Brazilian females were consecutively 0.45 and 0.41, which are coefficients considered far from acceptable.

The subscale alphas in the present study were also very low and indicate a major limitation in subscale consistency. Even the subscale *mind-reading* that exceptionally presented an acceptable coefficient for the males in O'Brien's study had coefficients lower them 0.7 in the current study.

A notable finding from these analyses is that the parameters derived from the Irish sample are very closely matched by the Brazilian data. The order of the coefficients for the Irish and Brazilian samples are essentially identical and suggest that there is no obvious qualitative distinction between the two samples.

On the face of it, these results suggest that the Brazilian sample is almost entirely equivalent to the Irish sample as far as the psychometric parameters of the MIS is concerned. There is no indication that nationality influences performance of the test.

Comparison of Construct Validity

In order to assess the construct validity of the MIS with our Irish sample, a confirmatory factor analysis was performed. In this section we carry out a Multiple Group Factor Analysis to demonstrate equivalence in factor structure between the two nationalities. As before the target model is defined by the scoring key of the MIS using 6 putative factors.

The results are unequivocal. The two samples do not support the evolutionarilly informed model proposed by Geher and Kauffman. An examination of the uniquenesses of each item indicate that this is a much poorer fit for the Brazilian sample than for the Irish sample. Thus, it is implausible to argue that the failure to support the model is due to the use of an Irish sample, since neither Brazilian nor Irish data fits the model specified by Geher and Kauffman.

In table 32 the Confirmatory Analysis for Brazilian Males is summarised and may be compared to the Irish Male results presented in table 13. The uniquenesses in both tables demonstrate that there is very much more unique variance than common variance being accounted for. The Chi-squared analysis reveals that the failure of the model to account for the variance is equivalent between samples.

This analysis tells us that the Irish and Brazilian samples are equally unable to fit the MIS model, but it does not tell us whether the Brazilian structure is similar to the Irish Structure. Because the confirmatory factor patterns impose zero loadings on the non-salient items it is not possible to compare factor patterns directly. However, with a little matrix manipulation it is possible to generate the factor-structure maix (McDonald, 1985). This consists of the correlations between each item and the factor scores generated from the confirmatory model. Using these matrices it is possible to examine the factorial invariance of the two samples.

The method proposed by Ahmavaara (1954) is used as this corrects for any rotational indeterminacy that may distort the comparison. The program FACFIT (Hammond, 1984) was used to carry out these analyses. The index of invariance emerges as 0.97. This indicates that both the Brazilan and the Irish males produce factor structures that are almost entirely equivalent.

Table 32

Brazilian Male Confirmatory Factor Analysis of MIS Items

	I	II	III	IV	V	VI	Unique
m3	0.50						0.75
m8	0.52						0.72
m12	0.42						0.82
m19	0.27						0.92
m4	0.57					0.66	
m9	0.39					0.84	
m10	0.35					0.87	
m14	0.43					0.81	
m5			0.42				0.82
m11			0.50				0.74
m18			0.51				0.73
m20			0.26				0.93
m7			0.47			0.78	
m17				0.41			0.83
m21				0.47			0.78
m22			0.53			0.71	
m1				0.44		0.80	
m13			0.46		0.78		
m15				0.38		0.85	
m24			0.52		0.72		
m2					0.38	0.85	
m6				0.33	0.89		
m16				0.54	0.70		
m23				0.45	0.79		
SS	0.78	0.80	0.78	0.90	0.84	0.77	
Factor Correlations							
1	1.00						
2	-0.08	1.00					
3	0.11	0.13	1.00				
4	0.18	0.09	0.12	1.00			
5	-0.09	0.25	0.15	0.10	1.00		
6	-0.12	0.03	0.15	0.04	0.11	1.00	

χ^2_{216}= 16667.692 p<0.0001

PR = 0.701

CFI = 0.201 CFI*PR = 0.141

The same analyses performed on the Brazilian female sample are summarised in Table 33. Again it is quite clear that the data do not fit the model in any meaningful way. The Chi-squared analyses demonstrate very poor fit and these are entirely commensurate with the Irish female results presented in table 16. When the factor structures are compared the Ahmavaara index emerges as 0.91, indicating very close agreement between the Irish and Brazilian samples.

Table 33
Brazilian Female Confirmatory Factor Analysis of MIS Items

	I	II	III	IV	V	VI	Unique
m1	0.46						0.78
m8	0.52						0.73
m13	0.41						0.83
m18	0.35						0.88
m3		0.48					0.77
m4		0.45					0.80
m15		0.45					0.80
m19		0.46					0.78
m2			0.44				0.80
m6			0.53				0.72
m9			0.55				0.73
m10			0.56				0.70
m11			0.51			0.74	
m12				0.35			0.88
m14				0.54			0.71
m16			0.36			0.87	
m21				0.51		0.70	
m22				0.31		0.90	
m23				0.62		0.61	
m24			0.46		0.78		
m5					0.51	0.70	
m7				0.45	0.80		
m17				0.52	0.73		
m20				0.55	0.70		
SS	0.77	0.85	1.09	0.80	0.95	1.03	
Factor Correlations							
1	1.000						
2	-0.038	1.000					
3	-0.016	-0.058	1.000				
4	0.004	0.094	0.023	1.000			
5	0.106	0.200	-0.075	0.081	1.000		
6	0.013	0.211	-0.081	0.119	0.021	1.000	

χ^2_{216}=	19233.878	p<0.0001		
PR =	0.683			
CFI =	0.211	CFI*PR =	0.144	

Thus, a replication of the analyses with the Irish sample shows an almost precisely similar pattern of results with the Brazilian sample. This enhances the idea that the psychometric limitations of the MIS identified in Chapters 4 and 5 cannot be explained away by cultural bias, as exactly the same caveats must apply to the data generated by a Brazilian cohort.

Equivalent Regression Analysis

One strategy that is often used to assess test bias is to examine the equivalence of the regression slopes when the test score is regressed onto concurrent measurements. This method serves to demonstrate that the test scores in one group are consistent with those in another. One advantage of this analysis is that it indicates whether there is a qualitative distinction between the meaning of the test score in different samples.

In chapter 6 a number of regression analyses were carried out to explore the degree to which a number of concurrent measures accounted for MIS variance. In this chapter we will carry out exactly the same analyses using the Brazilian sample. A comparison of the results will indicate the equivalence in meaning of the MI total score between the two nationalities.

In table 34 the analyses are summarised when using the Empathy and Emotional Intelligence measures as predictors. Here the Beta values and their standard errors are reported with the Irish results from chapter 6 juxtaposed against those based upon the Brazilian sample. The beta values are the unstandardised slope parameters derived from the multiple regressions. The first thing to note is that these values are quite similar between the Irish and Brazilian samples. In order to test the equivalence of the slope parameters a simple formula is used:-

$$t = \frac{B_I - B_B}{\sqrt{s_I * s_B}}$$

Where B_I is the Irish Beta and B_B is the Brazilian Beta

s_I is the Irish se and s_B is the Brazilian se

Table 34

Accounting for the MIS Score with Empathy and Emotional Intelligence Measures

Comparison of Beta Weights for Irish and Brazilian Samples

	Irish Males		**Brazilian Males**		
	Beta	**S.E.**	**Beta**	**S.E.**	**t-value**
Reactivity	0.421	0.187	0.524	0.169	**-0.57**
Empathy	0.092	0.160	0.103	0.141	-0.07
EI-Others	0.297	0.113	0.412	0.157	-0.86
EI-Utilization	0.040	0.164	0.028	0.129	0.08
EI-Self	-0.442	0.226	-0.155	0.195	1.37
EI-Optimism	0.303	0.113	0.236	0.121	0.57
EI-Perception	-0.210	0.173	-0.422	0.133	-1.39
R^2	0.199		0.201		
F	3.234		4.455		
P	<0.05		<0.05		
	Irish Females		**Brazilian Females**		
	Beta	**S.E.**	**Beta**	**S.E.**	**t-value**
Reactivity	0.421	0.187	0.289	0.164	0.75
Empathy	0.092	0.160	0.132	0.137	-0.27
EI-Others	0.297	0.113	0.198	0.127	0.82
EI-Utilization	0.040	0.164	0.111	0.181	0.17
EI-Self	-0.442	0.226	-0.323	0.188	0.58
EI-Optimism	0.303	0.113	0.417	0.142	-0.90
EI-Perception	-0.210	0.173	-0.188	0.158	0.13
R^2	0.183		0.166		
F	9.155		5.644		
p	<0.001		<0.01		

There is a remarkable degree of equivalence for both sexes. In every case the regression slopes are similar and exhibit no statistical separation. The amount of variance accounted for is

very simillar, 20.1% for Brazilian males and 16.6% for Brazilian females, which matches closely to the results from the Irish analyses.

A similar analysis was carried out using the self Esteem and Socio-Sexual Orientation measures and the results are summarised in table 35.

Table 35
Accounting for the MIS Score with Self-Esteem and Sexual Orientation Measures

Comparison of Beta Weights for Irish and Brazilian Samples

	Irish Males		**Brazilian Males**		
	Beta	**S.E.**	**Beta**	**S.E.**	**t-value**
Self Esteem	0.184	0.024	**0.268**	0.131	1.49
SOI-Behaviour	1.183	0.584	0.923	0.305	0.62
SOI-Attitude	0.572	0.639	0.872	0.246	-0.75
SOI-Desire	0.821	0.616	0.901	0.671	-0.12
SOI-Total	-1.986	1.793	-0.826	0.548	1.17
R^2	0.334		0.362		
F	18.236		19.433		
p	<0.001		<0.001		
	Irish Females		**Brazilian Females**		
	Beta	**S.E.**	**Beta**	**S.E.**	
Self Esteem	.089	.011	0.148	0.101	-1.77
SOI-Behaviour	.987	.553	0.827	0.329	0.37
SOI-Attitude	1.045	.573	0.997	0.345	0.11
SOI-Desire	.946	.563	0.548	0,423	1.00
SOI-Total	-2.727	1.677	-1.293	0.897	1.17
R^2	0.151		0.122		
F	16.229		15.383		
p	<0.001		<0.001		

Again, the equivalernce between the Brazilian and Irish samples is extraordinarilly close. No significant deviation in the regression slopes is observed and the amount of variance accounted for is very simillar, 36.2% for Brazilian males and 12.2% for Brazilian females which, again, matches closely to the results from the Irish analyses.

Discussion

The results summarised in this chpater serve to demonstrate the fact that deficiencies in the MIS cannot be easilly passed off as cultural or language artefacts. It was surprising to observe how closely the Brazilian and the Irish samples agreed on the specific psychometric parameters obtained. The reliability estimates (here measured by Cronbach's alpha because McDonald's Omega may have been distorted by factorial invariance between the comparative samples) were very close and provide the same disappointing profile as was found in both the reliability generalisation and initial psychometric analyses.

The factor equivalence of the two national samples was first explored using a Multiple Group Confirmatory Factor Analysis by utilising the sample target matrix for both samples derived from the MIS scoring key. It was clear from this analysis that the data did not fit Geher and Kauffman's putative model. A review of the uniquenesses of the items made it clear that no tweaking of the model parameters would be likely to improve matters within the constraints of the 6-facet model. However, using the target matrix as an anchor point it was possible to compare directly the factor structures of the Brazillian sample to that of the Irish. A very close equivalence was observed demonstrating that the response patterns to the MIS are essentially similar across nationalities.

Final Test Bias analyses was carried out to demonstrate the equivalent meaning, of the MIS across national samples. Again this analysis showed a remarkable similarity in regression slopes between the two groups.

To summarise, we must accept that the Irish and Brazilian samples are in very close agreement with each other. The fact that for both samples the MIS is a suboptimal measure is disappointing and clearly demonstrates a failure in measurement.

Failures in Measurement

The MIS is a 24-item device purporting to measure a construct labelled 'Mating Intelligence'. It was initially conceived as a populist instrument but was picked up and used subsequently by the test developers and his students in scientific studies of evolution and mate selection. While acknowledgeing its populist origins the authors were at pains to state that they used appropriate psychometric skills and knowledge in its development. The results of the analyses carried out in this thesis raise questions as to the psychometric quality of this development.

The fundamental psychometric quality of scale score reliability is in question. This is born out in a Reliability Generalisation study which accessed work done predominantly by the test author and his students followed by a large scale analysis of an Irish sample which was then confirmed with an independent Brazilian sample.

The validity of the measure had not been properly examined apart from an attempt to ratify the construct validity via an exploratory factor analysis (O'Brien et al. 2010). There, the underlying 6-facet model could not be fitted in either an Irish or a Brazilian sample for either male or female respondents.

The final nail in the psychometric coffin of the MIS was the fact that the device generates very little common variance that can be explained by the Mating Intelligence construct. Indeed, a large element of the test score variance is explained by Self-Esteem and Emotional Intelligence. As noted in an earlier chapter a number of critics (Bracanovic (2010)also said that MIS is insufficiently discriminating, and appears to have very poor explanatory power.

The findings here reveal the grave weaknesses of the measurement device but of course this does not necessarily mean that the underlying theory is flawed, even though its

operational definintion in the MIS is not supportive. That said, there are weaknesses in the very model that this failure in operational definition have thrown into sharp contrast.

Failures in Model Development

A number of questions arise concerning the underlying model informing the MI construct. This is claimed to have been evolutionarily informed, but in fact the theory behind the concept is narrowly bounded within the evolutionary psychology model of Tooby and Cosmides (1995), and even more tightly by the sociobiological and social psychological work of David Buss (2015).

As we have already seen, intelligence implies the ability to achieve a goal. When that goal is mating, it could be argued that coupling is the goal. However, an evolutionarilly informed argument would focus on the product of that union and the successful rearing of offspring to reproductive age. A true Darwinian model for mating intelligence would need to focus upon the ability to pass one's genes on into the next generation (Maynard Smith, 1993). In other words, mating success depends upon becoming a grandparent. In the MIS, Geher and Kauffman have elected to concentrate on the simple notion of maximising the number of one's sexual couplings. This runs the risk of neglecting the fact that humans are high committment reproducers and that longer term quality in the relationships are more likely to bring an embryo through infancy to reproductive adulthood. As Maynard Smith says:-

> 'Darwin….pointed out that in a species with equal number of males and females, and one which, at least for a single breeding season, is monogamous, all individuals have the opportunity to mate. Therefore

> although a male which possesses particularly stringing sexual charactersmay thereby be one of the first to find a mate , this will not increase his fitness unless it also ensures that he will mate with a female who is particularly fit as a parent. Similarly, a female who selects as a mate a male with striking sexual characters will not therefore leave more offspring unless the male is also particularly fit as a parent.' (Maynard Smith, 1993, pp 211)

This nuanced relationship between fitness and reproductive success is not part of Mating Intelligence theory. Indeed, in a nod to Buss' recognition that males and females have different foci in mate selection, Geher and Kauffman have produced two distinct scales for the two sexes. This does not account for the fact that there is always a clear overlap between the male and female behavioural repertoires.

A fact that traditional evolutionary psychology is slow to recognise, is that behavioural flexibility is the primary evolutionary inheritance we have obtained from our hominid ancestors. It is important to recognise that social factors change behaviour, a fact that even the most biological determinist cannot deny although the extent of the effect is always debateable. Human sexuality has seen a remarkable change since technological control of fertility has become widespread. It is a moot question as to whether human behaviour is being irretreivably shaped by these social changes, but it is reasonable to assume that our fundamental behavioural flexibility alters the balance for successful mating strategies.

The end point of these considerations is the suggestion that the MIS are not so much evolutionarily informed as based upon an understanding of simple social psychological research into self-reported sex differences that masquerades as a form of evolutionary exploration. It is my contention, that evolution is a vital and ongoing force in shaping human behaviour but the

modular restrictions imposed by the Toby and Cosmides approach to the area have led to a rather simplistic additive collation of research findings providing a at-hoc module of Mating Intelligence.

Of course this was never the intention, as the modular notion of cognition may be seen as a complex and informative model sufficient to explain the flexible nature of the human behavioral repertoire(Sperber & Hirschfield, 1999). However, it is not well-served by operationally poor definitions and bad measurement.

Conclusions of part 2: The Viability of Mating Intelligence as a Measurable Construct

In summary, this section of the thesis concludes that **t**he MIS is a suboptimal measure, andeven when the domain is broadened by the extension of the item pool, little benefit can be observed. This suggests quite strongly that, as a construct, MI is of limited value and has very little explanatory power. Indeed, it would appear that the construct is mostly tapping into aspects of self-esteem and socio-sexual orientation for males, and self-esteem and empathy for females. The cross-national study simply serves to demonstrate that these weaknesses are common across countries. Ironically, the MIS shows strong cross-national validity but no other psychometric value.

PART 3

MOVING BEYOND MATING INTELLIGENCE AS AN EXPLANATORY CONSTRUCT

Prelude: Moving Towards a Relationship Competency Model

So far, this research has presented an evolutionary perspective of the human mating choices. As discussed, scientific evolutionary theory proposes that human behaviour is influenced by genes and thousands of years of adaptations. However, both theoretical and empirical examinations of the evolutionary perspective have so far demonstrated that it explains only part of human's vast sexual *repertoire.*

There no doubt that biological aspects affect people's drive to mate. However, there is also a significant agreement that many social and psychological elements influence it as well. The multitude of behaviours that humans present to select, court and maintain a sexual relationship demonstrates that human's mate selection is a complex and nuanced affair. Clearly, different perspectives have to be explored in an attempt of a more comprehensive understanding of the human mating scenario.

"Humans are born before being ready. Currently, it is known that:Total cerebral volume reaches 95% of its maximum size by age 6 years, increases slightly during childhood, reaching a peak at age 10.5 years in girls and 14.5 years in boys, and then subsequently slightly declines through the second and third decades." (Giedd et al. 2015)

Dr Lara Boyd, from the University of Britsh Columbia, adds that brain's neuroplasticity is not limited by age: "Every time you find a new fact or skill you change your brain; The primary driver of change in your brain is your behaviour. Nothing is more effective to learn than practice at helping you learn. The brain has tremendous plasticity, and it is has been shaped by everything we do and also everything you do not do"(Boyd, 2015, November).

The human's brain is influenced both structurally and functionally by the quantity and quality of experience (Boyd, 2015). These discoveries, once more, show how difficult it is to

draw a line between what is biological, social or psychological determined. All these aspects are somehow mixed, even though they could be studied as almost independent. So, the next part of this research moves towards a relationship success model to try to address the broader Darwinian argument of reproductive success.

I started this research, perhaps naivly, expecting to utilise evolutionary principles in my long-term interest in relationship couselling and therapy. The journey so far has been both disappointing but also hugely illuminating. There is little obvious and simple clarity in this area, but, in fact, this should not be surprising. The notion of an 'evolutionarilly informed' construct tells us very little without a clear grasp of the evolutionary principles and ideas that are most salient. It is also clear that 'measurement' of a psychological construct is not the simple exercise that popular psychological texts pretend.

A construct called Romantic Competence that emphasises the importance of learning to change (Davila et al. 2017). This highlights the fact that human behaviour can be altered by acquiring skills such as insight, mutuality, and emotion regulation. According to it, a high level of competency in such skills will increase the chances of successful relationships. A fundamental motivator for the theory of Romantic Competence is the importance of programs for training teenagers and young adults to have rewarding relationships(Davila et al., 2017). Such a focus is in aligment with one of the initial goals of this thesis that is establishingthe scientific foundation of training programmes for young people embarking on sexual relationships.

The concept of Romantic Competence emphasises the importance of respect, intimacy, sense of security, etc. (Davila et al., 2017), all aspects that facilitate the maintenance of the relationship. This focus on a couple's pair bonding offers many advantages, among them, to successfully raise a child until its own sexual maturity.

The first chapter of this part (chapter 8) gives an overview of the concept of "Relationship Competence", its importance and contributions to the investigation.

Chapter 9describes a Grounded Theory of the satisfaction of 30 older adults in long-term relationships. It attempts to pinpoint the fundamental competencies for having satisfying relationships based on the open-ended experiences of 15 long-term married couples.

Finally, chapter 10 presents a qualitative examination of preferential traits in the mating area.

At the end,we hope to highlight some valuable *take home lessons* to a better understanding of the human mating relationships that may be translated into counselling and training of young adults.

Chapter 8

Review of Romantic Competence Research

What defines a successful relationship varies widely among different theories. As discussed in previous chapters, an evolutionary perspective is an essential explanatory position for describing procreating behaviour. Under this model, the inability to pass on one's genes is the ultimate failure. However, more recently other approaches have been gaining more scientific attention. In part, this is motivated by a realisation that not all sexual relationships need to be procreative. These focus on psychological characteristics as inseparable parts of a successful relationship.

Constructs like intimacy, respect, good communication and a sense of security (e.g., Simpson & Campbell, 2012) as characteristics of a healthy relationship. Aspects of an unhealthy relationship often include poor conflict resolution, lack of support, and aggression. This is the theoretical position of emerging area of research named Romantic Competence (RC).

The construct of RC was first introduced by Davila et al. (2009) when they were investigating adolescent romantic functioning. However, the skills that compose RC are not limited to teenagers, being beneficial for romantic health functioning at any age.

Romantic competence is a skills-based model of healthy relationship functioning. It measures competence as the interplay of three skill domains Insight/learning, Mutuality, and Emotional Regulation(Davila, Capaldi, & La Greca, 2015; Davila et al., 2009):

1. Insight/learning - the ability to understand both self and partner (or potential partner), understand the causes and consequences of behaviour and learn from mistakes. In practice, this means knowing who both are, what they need and why they act in a certain way. For instance, just to choose a partner who demonstrates faithfullness and wants a

monogamous relationship because they know that they will suffer if a partner had an external sexual or romantic relationship.

2. Mutuality - The ability to recognise that theself and the partner (or potential partner) have needs that matter and desire to maximise the likelihood that both sets of needs will berealised. This need to take into account both sets of requirements into a decision that has an impact on the relationship, and know how to negotiate and communicate. For instance, planning a holiday with activities that both will enjoy.
3. Emotional Regulation - The ability to regulate emotions in response to relationship-relevant experiences, and to make successful choices, and decisions. This includes being able to tolerate uncomfortable feelings rather than acting impulsively on them, not overreacting, and being able to keep your emotions calm when you're upset about things.

The authors emphasise the breadth of the Romantic Competence concept and they point out that a narrow idea could be inappropriate, reflecting only a portion of the whole range of competence.The notion of competence was based primarily, but not strictly, in social-cognitive models of interpersonal problem solving; Attachment theory; and models of Emotion Regulation, as each of them has been identified as relevant to social competence (Rose-Krasnor, 1997). Davila et al (1917) noted that the common themes presented by these models regarding effectiveness in interpersonal functioning could be a useful avenue for the investigation of romantic competence.

Social-cognitive models of interpersonal problem solving emphasise the capacity for awareness of the importance of mutuality in social interaction (e.g.Schultz, Yeates, & Selman,

1989; Yeates, Schultz, & Selman, 1990). They highlight the ability to think in a coherent, solution-oriented manner that recognises and respects the needs of both people involved.

Attachment theory (Bowlby, 1969; 1973; 1980), greatly influenced the development of RC theory with its many many implications for relationship maintenance. For instance, the importance of insight, the ability to reflect on the self and others, and capacity to learn from prior experience; the capacity to balance intimacy and autonomy; and the capacity to regulate distress and maintain self-worth and trust in others, in the face of threats to security are all features of Bowlby's approach..

Theories of Emotion Regulation also emphasise the adaptive nature of the ability to regulate distress and maintain a coherent and positive sense of self. They highlight the ability to flexibly experience and express a range of emotions in contextually appropriate ways (Salovey, Hsee, & Mayer, 1993).

The theory of Romantic Competence may be seen as a gathering of a range of socio-cognitive models and focussing them into the single orientation of relationship success. This is clear inDavila's seminal definition od Romantic Competence:

> "The ability to think about relationships with a consideration of mutuality, in a thoughtful, insightful way, that shows learning from experience, and ability for consequential thinking; the ability to make decisions and engage in behaviours that maintain care and respect for self and others and that can be successfully dealt with emotionally; and the ability to regulate emotions and the self in response to relationship experiences (e.g., to tolerate non-desired outcomes, to inhibit rumination, to maintain self-esteem, to balance individuality and closeness."(Davila et al., 2009, p. 58)

Scientific publications frequently report significant mental and healthy problems associated with romantic relationship dysfunction (Davila, Starr, Stroud, & Li, (in preparation); Davila, Stroud, & Starr, 2014; Loving & Slatcher, 2013). However, Snyder and Halford (2012) observe that at least 25% of the treatment for relationship dysfunction fail to meet their outcomes, and relationship distress programs also have an only moderate success rate.

Davila et al. (2017) argues that this limited success may be because the approaches to promoting healthy relationship functioning start too late when a pair bonding has already occurred. According to them, healthy relationship programs should start earlier, more specifically before participants have chosen a partner for a committed relationship. However, they are not unaware of the challenge this presents:

> "Unfortunately, even if we, as a field, wanted to begin earlier, there is not a clear, theory-driven model for conceptualizing the skills necessary for healthy relationship functioning – skills that could potentially be taught to young people (or people of any age) regardless of whether they are in a relationship or not."(Davila et al., 2017, p. 4).

In fact, currently, few programs teach relationship skills to young people (Braithwaite & Fincham, 2007, 2009; Braithwaite, Lambert, Fincham, & Pasley, 2010). Romantic relationship programs for emergent adults are important because at this age they are, usully, trying to figure out what kind of relationship and partner are right for them (Scott, Schelar, Manlove, & Cui, 2009). They have more relationship involvement, sexual activity, cohabitation (Arnett & Schwab, 2012, December; Chandra, Mosher, Copen, & Sionean, 2011; C. E. Copen, Daniels, & Mosher, 2013) and sometimes marriage (Copen, Daniels, Vespa, & Mosher, 2012). Also, they are making a delicate decisions that could have an long term impacts.

Having in mind that people need to increase their relational success early on and into the future,Davila and her team developed The Romantic Competence Interview for Emerging Adults (RCI-EA) (Davila & Lashman, 2016), which is aimed at giving a better understanding of the young adult's romantic competence.

The RCI-EA measures competence as the interplay of the three skills domains: insight, mutuality, and emotion regulation. It was adapted from the Romantic Competence Interview (RCI) created for adolescents (Davila et al., 2009). Like the RCI, the RCI-EA is a semi-structured interview that explores thoughts, feelings, and behaviours in actual and hypothetical circumstances, as well as concerning about approaches to romantic relationships and experiences. Also, it investigates experiences in real relationships and reactions to hypothetical scenarios. Moreover, RCI-EA includes codes for insight, mutuality, and emotions regulations and a global codeof competence.

The association between Romantic Competence with relationship and individual well-being was examined in three studies of emerging adults using RCI-EA. Across studies involving three different samples (women, women and men, romantic couples), Romantic Competence was associated with higher security, healthier decision making, greater satisfaction, and fewer internalising symptoms (Davila & Lashman, 2016). In Davila and Lashman's own words:

> "The RC construct has the potential to provide a theory-driven, over-arching way to understand the skills people need to function well in their romantic lives. Essentially, it may provide a unified way to conceptualise the skills needed for healthy relationship functioning"(Davila & Lashman, 2016, p. 29).

Discussion

This brief review aims to highlight some of the features of RC which contrast with the MI construct. First, RC is based on a more eclectic social-cognition based premise than MI, which has its feet firmly based in Sexual Selection Theory. This might at first seem problematic as the suggestion of over-inclusiveness may be aimed at RC. However, the focus on relationship satisfaction is made very clear by Davila and her colleagues and the applied nature of their work is very apparent. MI on the other hand is a more academic construct with little explicit application.

Ironically, despite the fact that RC theory has no evolutionary pretentions, it addresses the core issues for Darwinian success, that of maintaining a relationship long term. As we have seen, MI addressed the very early short-term strategies that, in the human species, may have minimal impact transmission of genes into the gene pool.

A potential weakness of the RC approach is the fact that the underlying competencies are not yet tightly defined. It is easy to see that the form of measurement may ultimately prove to be problematic for the theory. A semi-structured interview may be appropriate at the early stages of theory development but it cannot provide a clear operational definition of the underlying constructs. Davila & Lashman (1916) appear to be aware of this in that they talk of the potential of RC and its ongoing development.

The fact is, RC is a work in progress and it aims to generate a unified collection of the skills and competencies needed for successful relationships. The emphasis is upon trainable elements unlike the more static MI conceptualisation and as such it takes a more applied approach to human mating behaviour than the theoretically based MI.

In the next chapter we will utilise the RC strategy for investigating long-term relationships. This is a departure from Davila's work on emerging adults but aims to tap into a group of people who have demonstrated the resilience in their relationships sufficient to rear children to sexual maturity.

Chapter 9

Analysis of Long-Term Relationships

Study 6: A Constructivist Grounded Theory Qualitative Study of Satisfaction in Long-term Relationships

Long-term relationships are common in all societies. David Buss (1985) mentioned that 90% of the world population get married at some stage of their life. Long term relationships also feature in the aspirations of the young generation. According to the National Marriage Resource Center (2009) “eighty-two percent of young adults aged 18-30 plan to get married and stay married for life. However, approximately 40% of first marriages end in divorce” (Petty, 2010, p. 1080). Of those who stay married, it would appear that one-third areunhappy with their relationship (Burleson & Denton, 1997). Nevertheless, several studies reported that marriage is one of the most influential predictors of health and longevity (Robles, Slatcher, Trombello, & McGinn, 2014). It is also a critical indicator of life satisfaction and personal well-being (Settersten, 2015), lower depression (Whitton & Whisman, 2010), happiness (Ryff, 2013) and other positives outcomes.

The present investigation, mainly based on *Relationship Competence Theory*, explores the experiences of long-term married couples with a particualr focus upon satisfaction and those elements that have kept the relationship working. Marital satisfaction can be defined as the attitude an individual has toward his or her marital relationship (King, 2016). Clearly, understanding satisfaction within relationships has significant implications for researchers

studying relations and may have practical benefits for married couples and the professionals who work with them.

A number of theories suggest that the cause of relationship problems lies within the interdependent interactions between partners (Thibaut & Kelley, 1959), or are based on their problematic personality traits (Story & Bradbury, 2004), or lack of communication skills (Burleson & Denton, 1997).

This study presents a Constructivist Grounded Theory that explores the impact of these and others factors on the satisfaction in long-term relationships.Qualitative research was the primary form of analysis in this study. Jupp (2006) described qualitative analysis as "research that investigates aspects of social life which are not amenable to quantitative measurement" (p. 248). Qualitative researchers have a choice of many methods to construct the categorical lived experiences of people. In this study, a Grounded Theory (GT) was chosen to further data analysis through qualitative measures. Simply put, Grounded Theory emphasises "examining processes, making the study of action central, and creating abstract interpretive understandings of the data" (Charmaz, 2006, p. 9). The grounded theory approach was taken because it is particularly useful for exploratory research. As mentioned earlier Romantic Competence Theory is a work in progress and exploring older people in long-term relationships is new territory even for RC. GT's emphasis on developing a theoretical position rather than working from a set of a-priori assumptions is particularly pertinent in this case.

Method

Data Collection Device

Interviews were the primary method of data gathering. The interview process may be considered one of the most effective forms of gathering data which genuinely reflects the lived

experiences of participant surrounding a particular research area. By interviewing participants, one may identify unspoken cues which may be missed in alternative forms of data collection such as surveys or questionnaires. For this particular research topic, semi-structured interviews were adopted. According to Payne and Payne (2004), semi-structured interviews following a detailed interview plan with the option to deviate from the schedule to explore previously unidentified leads. Semi-structured interviews stimulate the use of closed questions to introduce the research topic and for clarification, as well as open-ended questions permitting the interviewer to impose further questions to encourage participants to elaborate specifictopics. Open-ended questions are beneficial to the data gathering process as they promote new developments in the research area and encourage the depiction of real-life experiences.

The Semi-structured interviews were also appropriated for being typically informal allowing the participant to feel comfortable, therefore leading to more genuine and well-founded answers. Such rich data is essential to carry out qualitative research as the theories are constructed surrounding the data.

Most of the interview's questions were inspired by the *Relationship Competence interview Schedule* which was kindly sent by Davila after a personal contact.

Participants

A snowball sampling technique was used to recruit and select fifteen couples to participate in interviews. In non-probability sampling techniques, initial participants are obtained who then suggest future participants among their acquaintances (Goodman, 1961). Thus, as the sample builds up as a rolling snowball, enough data are gathered for research use.

The majority of the couples were from the Brazilian State of Rio de Janeiro, but also from Sao Paulo and Bahia. The criteria for participation were being married for at least twenty years and being able to dedicate about one hour alone in a secluded place for a telephone interview.

The criteria of being formally or informally married for at least twenty years aimed to select a sample of couples who were together for enough time to have and raise a child until sexual maturity.

The participants were identified by a pseudonym to protect their anonymity. They represented various ages and were at different stages of married life. The couple's length of dating ranged from 8 days to 4 years. Their marriage time varied from 20 to 62 years. All of them were married in their twenties or earlier. Only one couple did not have children, the others had between 1 to 5 children. Appendix M presents specific details about the profile of each participant.

Procedure

Each participant had to be available for one hour because the interview lasted on average fifty minutes. Being alone in a silent place was required because the interviews presented extremely private questions such as 'What would you say is the worst situation you've ever found yourself in with regards to dealing with a partner? How did you handle it?' (See the complete interview schedule in Appendix L).So, the participants should be in a place with a perfect condition to speak freely. In the phase of sampling selection, the researcher explained the research purposes and the criteria to make sure that participants were aware and would be able to be interviewed under the previously discussed conditions.

Before the interviews, each participant was reassured about the security of the data and their anonymity. They also gave a recorded verbal consent expressing full consent to the interview process and permitting the recording and use of their interview for research purposes. They were each given the opportunity to withdraw from the study at this point and none did.

The interviews were audio recorded to ease transcription and data analysis at a later date. All of the interviews were transcribed verbatim and then coded using GT methodology. This involved the researcher continually comparing the data from each interview. During this open coding process it was easier to identify the thematic nature of the data.

To analyse the data, firstly, all interviews were fully transcribed in a detailed procedure while deleting all information which may identify the research participants to ensure full anonymity. Appendix N shows how the interviews were transcribed from Portuguese into English whereas Appendix O presents the final result of one interview's Translation.

After this, analysis began by using the constant comparison approach (Strauss & Corbin, 1998). This facilitated identification of the similarities and differences between interviews' codes. An example of how the interviews were coded and categorized after being translated is presented in Appendix P.

These three appendixes (N, O and P) show three of the thirty interviews that were performed. They exemplify the stages since translation to categorisation using one interview each. As the thirty interviews had an average of thirty pages each, we decide to present each participant's table containing the Categories, Subcategories and Themes identified from their interview (Appendix Q).

Charmaz (2006) defined coding as analysing data to formulate links and connections between the same and varying data to establish the beginnings of structured theories and to

recognise when saturation occurred. This requires the researcher to identify the meanings, actions and incentives behind the participant's words.

Ethics Approval

This study, as well as all the others presented in this thesis, were approved by the Social Research Ethics committee (SREC).

Results

After conceptual ordering, 52 categories emerged as a result of an effort to organise and reassemble the data. To assist with the process of further reducing the data, the categories were grouped according to the ecology of the phenomenon, reducing the number of thematic categories to 13 and then 4. Appendices N, O, P, Q and R summarise the process of categorisation. The final 4 super-ordinate themes were labelled Strategies to Solve Conflicts, Perception of Partner Behaviour, Perceived Changes after Marriage and Advice for a Happy Marriage.

It became apparent that the couples varied in their reported levels of satisfaction and while this was not examined in a quantitative manner, it was notable that these categories provided a reasonable discrimination between the most satisfied and least satisfied couples.In order to explore this distinction, the couples were broadly classified as Satisfied Couples (SC) and Dissatisfied Couples (DS). According to some criteria such as personal rates of level marriage satisfaction, reasons for being satisfied or dissatisfied with the relationship and marriage regret, 12 couples were included in the Satisfied group and 3 in the Disatified. It was also very apparent that communication has a central impact on marriage satisfaction. We will now look at the 4 superordinate themes in some detail. To differentiate the themes in the text, they are presented in italic.

Strategies to solve conflicts

The communication strategies that couples use to solve their conflictsappear to have a fundamental role in their level of satisfaction. Initially, we analysed strategies reported and dividing them into Active and Passive. The hypothesis was that Satisfied Couples (SC) will manifest more active strategies while Dissatisfied Couples (DC) would adopt a more passive strategies.

This hypothesis was partially borne out. Even though DC tended to adopt a more passive strategy avoiding fights at all costs, both groups utilised active or passive strategies depending on the circumstances. For instance at the beginning of a conflict people in both groups mentioned the passive strategy of waiting for their partner to calm down before addressing the problem more directly. The fundamental difference between the SC and DC groups was that people in the DC group seemed less inclined to talk about the problem afterwards.

No matter how long a couple stayed quiet when SC individuals resumed talking, they tended to talk about the problem that generated the discussion whereas DC people were more likely to speak about another subject not related to their conflict, as nothing had happened. As respondent **Ze** said "*we solve the problem by starting talking about another topic as nothing happened'(...) 'we don't talk about problems until it happens again*".

In general, when SC people start talking they tended to *explain the reason* of the conflict, *finding a solution*, *asking forgiveness*, *forgiving*, *assuming mistakes and finding a solution*, *changing for the better*. These themesshow how SC people attempt to solve their conflicts. A complete list of categories, subcategories and themes is in the Appendix R.

In the beginning, it was also thought that SC people would start talking to each other sooner after a conflict that those of the DC group. However, there were no obvious

differencesin the time they avoid verbal communication. Occassionally people in the DS group declared that they started to talk almost immediately after a fight. However, they usually adopted a Passive Strategy of *avoiding talking about the problem*; *putting aside some personality traits*, *waiting the partner to notice,compromising, going over a lot*, *pretending they are not seeing* and so on. Their intention was to avoid making the situation even worse.

A ubiquitous finding was that DC individualstalked of *moving on* or *keep going* after a fight. The subcategory '*pretending that things are not seen'* might help to understand what they often do. Their attitude of *going over a lot* or giving a high rate of satisfaction for a mediocre relationship seems to be their way of not dealing with the problem or talking about it. For instance, respondent **No** said *"I preferred to give a better rating than give a bad note and explain why it is so bad"*

When DC people talked, it was almost always because the f*emale gave the first step.* Their conversation tended to focus on finding the culprit in the situation. They did not mention *talking about their feeling*, and they often reported*saying hurting words* that will not be quickly forgotten by their partner. Usually, the discussions were a mix of accusations and self-defence to prove that their partner was wrong and has to change. As none of them could recognise their own mistakes and what they should change, often, the discussion ended with them thinking that*it did not work to talk.*

All participants who reported saying explicitly to their partner that they *can't talk at that moment and will talk later* were in the SC group. This simple active act of communication seems to be much more efficient than the strategy *let the partner keep talking alone.* Apparently, this strategy could be interpreted as being ignored and unimportant, whereas being informed that *we will talk later* or that *I need some quiet time before talking* leads to a less negative perception.

For instance, participant **De**, a female from the SC group declared: "*I hate when he says that I am nervous, we will talk later. But I know that he is right. If we talk at that moment, we would have fought more"*. In contrast, participant **RuC** from the DC group, whose husband had acknowledged that he let her talk without his input, said: *"he doesn't listen to me. He doesn't care about what I feel"*

It also emerged that men tended to adopt the strategy of not talking about the problem more often than women. Some of them mentioned that they need quiet time to themselves to *digest* the situation. They often stated that discussion could make the situation worse.

The topic of the discussion didn't seem to play a prominent role in couple satisfaction or dissatisfaction. Couples mentioned many topics like partner's alcohol use, illness, loss of a child or parent, unemployment, betrayal, finances, jealousy, their children, different opinions, small things etc. However, none of them could be directed linked to couples satisfaction or dissatisfaction. In general, SC and DC couples have conflicts about the similar subjects. Again, the big difference is in how they communicate to solve their problems.

The impact of reduced communication is also revealed by their lack of knowledge about what their partner's like or dislike. In general neither men nor women in the dissatisfied group have much insight into their partner's preferences. Satisfied couples, in general, at least venture an opinion about what their partner's most liked and disliked.

A fact that may contribute to the knowledge of partner preferences and marital satisfaction is the expression of gratitude and praise. It was noticable that DC individuals did not often express gratitude or praise their partner. For instance, **Ma** complained *"Oh, he does notpraise me, Eliana. Sometimes I got all pretty, and all dressed up, and he did not talk like that, you look pretty today. (...)' But after all these years, you've gotten used to it"*

On the other hand, SC individuals appear to manifest gratitude and praise more readily. All participants of SC declared that their partner demonstrates appreciation and praises them. Only two men **(Jo, Jai)** in this group said that their partner does notsay so verbally, but they did mention that approval was often expressed by non-verbal means. As SC individuals receive more indications of what their partner likes or not, it was probably easier for them to pinpoint their partner's preferences.Table 32 sums up out some distinctions that were noticed regarding comunication between the SC and DCgroups.

In general SC and DCgroups appear to use different strategies to solve their conflicts. Even though both groups demonstrate some Emotion Regulation by adopting the passive strategy of waiting for their partner calm down before talking again, the subsequent behaviour we quite discriminating. People in the DC group tended to engage in avoidant behaviour by talking about another subject as if nothing had happened while people in the SC groups showed a greater tendency to address the aggravating issueafter a period of consideration in which they show willingness to explain the reason of the conflict, find a solution, ask forgiveness, forgive the partner, assume mistakes and find a solution.

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Table 36
Summary of the differences between SC and DC

Satisfied Couples	Dissatisfied Couples
Think "The problems are ours. We have to solve it together"	Think that the problem was caused by their partner. They have to change to the relationship works.
Believe that it is necessary to talk to solve the problem	Believe that it does not worth to talk. It could make things worse
Apologise	Not apologise because does see themselves as guilt
Try to find the reasons/causes of the problem	Try to find who id the cause of the problem
Say 'we cannot talk now we will talk later.'	Be quiet and let the partner alone
Try to find the solution	Blame partner
Change for avoiding future fights	Not change
Talk about their feeling	Not talk about their feeling
Talk about the problem	Avoid talking. When starting talking talk about another subject as nothing have happened
Express gratitude	Not express gratitude
Praise	No praise

This suggests that when DC and SC groups resolve conflicts, they seem to communicate in a completely different manner. The DC group seems more reluctant to talk about feelings or demonstrate knowledge about their partner's preferences. It would appear that there was often a sense of trying to identify the culprit rather than seeking an understanding of the causes and consequences of their behaviour. The overall sense is that their focus was more self-defense rather than relationship-defense. This is a clear aspect of the first component of Romantic

Competence,described by Davila as the ability to know who both are, what they need, and why they act in a certain way.

This RC component called Insight is very similar to the concept of Personal Intelligence, one of the Gardner's Multiple Intelligence's. It consists of both Interpersonal Intelligence - that is, the capacity to understand the intentions, motivations, and desires of other people, and Intrapersonal Intelligence (the capacity to understand oneself, to appreciate one's feelings, fears and motivations).

Couples' insights about themselves and their partner are essential to the mutuability which constitutes the second component of RC. Mutuability describes the ability to take into account both sets of requirements into a decision that has an impact on the relationship. In short, they need to know each one well enough to make decision according to their desires.

This capacity for awareness in social interaction is emphasised by the Social-cognitive models of interpersonal problem solving (e.g. Schultz et al., 1989; Yeates et al., 1990). It highlights the ability to think in a coherent, solution-oriented manner that recognises and respect the needs of both people involved

Perception of partner behaviour

The link between perception of partner behaviour and the level of satisfaction was also evident in the findings. Both SC and DC respondents highlighted the personality characteristics in their partner that were congruent with their level of marital satisfaction. In other words, SC mentioned more positive attributes of personality whereas DC highlighted the negative ones.

Being very quiet, introvert and closed were reported as negative aspects of their partners and a reason for dissatisfaction. Of course this might also be conflated with paucity of

communication.In this particular context, the influence is indirect. Intraverts will tend to be quiet and not talk about their problems because it is part of their personality. But, avoiding communication could lead to a negative perception from their partner. They might feel isolated and unloved that represent the opposite of *closeness*, opening to *communication* and *demonstration of love* described by the satisfied participants as reasons for satisfaction.

It is worth highlighting that, even though being an introvert seems to make the communication and marital satisfaction more challenging, it does not determine marriage dissatisfaction. For instance, **Ja and Ru**, both married with an introvert partner, declared that it irritates them when their husbands are quiet or isolated but they readily identify other positive qualities that make the relationship work. Their relationship offered plenty more reasons for being satisfied giving them a positive perception and a sense of marital satisfaction. Other characteristics judged as negative such as *nervous* (**Zlu, Gel**), *short tempered* (**Eli, De**), *stressed* (**Gel**) *jealous* (**Jai, Mx, Del, Ge, Gra**), *anxious* (**Gra**,), *insecure* (**Del, Ev**) were also used to describe partners within satisfied couples.It is apparent that it is not so much these static character traits so much as the way that partners communicate and manage these characteristics in their relationship, that leads to long term satisfaction.

An interesting case of such a conflict resolution was given by the satisfied couple **De** and **Gel**. **De** mentioned that **Gel** was *a little bit stressed, very nervous, rough when stressed*; *rude*; *quiet when he has a problem*; *not listening* and *acting without thinking*. He presented many characteristics that women in non-satisfied marriages complain of. However, his wife declared herself to be in a satisfactory long-term relationship. In her eyes, his positive characteristics exceed the negatives ones by far. According to **De**, **Gel** was able to demonstrate love, expressing gratitude and praise her (beauty, wisdom, food, little things) on a daily basis, being also

responsible, romantic etc. **De** chose to focus on his good qualities. Their ability to use passive and active communication strategies to make their relationship work was clear during their interviews. This conscious decision of focusing on the positive was also mentioned by **Ev, Ja** and **Edi** who said "when the quality is stronger than the error ... we go over' (…)'we made that decision to be together so we cannot keep looking at our mistakes constantly, right?"

Even though people in the DC group often reported positive aspects of their partners such as being hard working, a good parent and a good person, these qualities were not enough to *save* them from an overall negative perception that seems to have a direct impact in their marital satisfaction.

The way participants are treated by their partner is, of course, also a relevant aspect of relationship satisfaction, but this reveals a surprising element in our comparative findings.All participants, independently of their level of satisfaction, reported being well treated by their partner. This perception is particularly intriguing when coming from the unsatisfied participants. Apparently, they associated being well treated for not having any physical aggression and having their financial needs supplied. This finding is especially explicit in the unsatisfied female discourse. Among the few positive qualities of their husbands, providing their family financial needs and parental skills were often mentioned. Their lack of satisfaction seemed to be linked to their perception of how they are treated at a more intimatelevel.

Perceived Changes after Marriage

One of the foci of enquiry was to explore changes that acrue in longer term relationships. Participants were asked about an perceived changes in their partners after marriage. The results showed a meaningful distinction between the SC and DC groups. Those who built a satisfactory

relationship often reported no-changes, or changes for the better in their partners after marriage. In contrast, less satisfied people mentioned only negative or neutral changes.

Only one participant mentioned a big change. **RuC** said that her husband seemed to be very calm when dating, but *became extremely stressed over the years*. She added that *"In dating, it is difficult to appear a very stressful situation, right? To see how a person behaves ... in a more difficult situation, right? Because it's all calmer, it's more caring, love, family ..."*

Some participants mentioned that they were aware of the traits they considered negative before marriage but they did not realise how important they might be in shaping the relationship after marriage. **Ar** declared *"he has always been what he is"*, but, when she was single she believed that *love overcomes everything*.**No**, stated that she had *suffered from* her partner for more than 20 years, also said that she was aware of his alcohol problem before marriage. She said that even though her father and others had advised her not marry, she did because of the intensity of her feeling. **Ma** said: *"he wasn't very talkative, but he talked more when we were dating. After we got married I realised how quiet he was'…'I would like to have a talkative husband, someone who talks about his day…But I am always the last one to know what happened"*. It is notable, that most of these issues were raised by women and this may be related to the stereotype of women believing that they can change their chosen mate over time.

Unsurprisingly, couples in the DC group tended to believe that love is blind. Some of them mentioned that they had thought their partner would not change after marriage. For instance, **RuC** declared that her partner wasn't who she imagined and **Ze** stated that *"when you love, you never have any idea of what might happen. Later we will see that love is blind"*

People in the SC group leaned more towards the belief that Love is not Blind. In general, they think like **Gra** who declared *"passion can be blind, love cannot. I think when you're in love*

you do not see flaws, love is already another stage in my eyes. Love is you know that the person has qualities, has defects, but you love, you want to be close and you know how to live with these defects, understand?"

Advice for a Happy Marriage

At the end of the interview participants had the opportunity to give advice for a couple who want *to be happy ever after*. Their advice were divided into two big categories: *what to do*, and *what to know*.

A majority of respondents stated that to have a happy marriageit is necessary to respect and love yourself and your partner. Many suggested that talking a lot (including about the problems) is important, and some added that one should do this but be prepared to wait until the partner is ready. Other advice from many of the SC group is that young married couples should try to be understanding and forgiving; be an altruist, donate and share, do many things together, but always respecting partner's individuality.

Most of the people suggested solving their problems between themselves and avoid talking to a third person. However, some of them mentioned that it could be beneficial being open to seeking professional advice at times.

Satisfied people, as well as unsatisfied people, expressed the view that it is essential to know that married life is different from single life and carries a number of difficulties. The fact that married life involves two people with different thoughts and feelings which can then be exaccerbated by families and the complexities they bring.

Even though both SC and DC groups agreed that marriage is always challenging, the interview revealed that they often face problems differently. DC individuals appeared less

flexible even when demonstrating the desire to change. For instance, **Ma** complained *"He pretends to listen to me. But then he does the same he would do if I had not spoken. (…) I speak, and he pretends to be deaf"*.

The way that most people in the SC group managed their everyday challenges and solved their conflicts exemplified that they learned to adapt. For instance, **Edi** mentioned *"I say, oh, that's not cool ... and I do not like it, right ... then, he observes, he notices and then he turns away"*. **Eli** remembered a stage of adjustment at the beginning of married life when both discovered things their partner likes and dislikes. Their strategy was to adapt. *It did not mean stopping doing what they like, but doing less*. He declared *"we have to know how to ponder…If I was playing soccer three days a week, I slowed down; I decreased to one or two"*. **Max** mentioned that he started playing less after his wife's illness. In other words, for **Max** and **Eli***"marriage is nothing more than an adaptation to each other"***Max**.

Both groups were equally inclined to argue that a couple should marry with a strong determination to be together for life. However, they presented some difference when they were asked how they would react to challenging situations such as a partner's indiscretion. In general, people in the SC group tended to be more tolerant, forgiving and curious about the reasons that lead their partner to those behaviors than those in the DC group. For example, almost allpeople in the DC group, faced with a partner who ignores them would ignore back. However, in the SC group the overwhelming response would be to ask what is happening. Their opening attitude shows once again the role of communication in conflict resolution.

Other advice included *remember that people make mistakes*; *individualism disturbs*, *everything should belong to both*,and *it is necessary to adapt.*

In general, satisfied people gave more advice than the unsatisfied ones. This may reflect the fact that dissatisfied individuals lack the information to disseminate. This possibility is reinforced by the answers given by the partners of unsatisfied people. Their advice wasoften less realistic and negative than that given by the partners of satisfied people. This raises the question of whether dissatisfaction may, in part, arise from ignorance of how to have a satisfied marriage.

Discussions

The essence of a Gounded Theory analysis is to aid in the development of a theory from which a model may be built. The qualitative analysis is designed to provide the basis for an emergent explanatory framework in a given area. The results described above can only serve as a superficial account of the information received. For this reason the full interview transcripts are provided in the appendix. What we have attempted to do here is to identify some of the more salient themes that are of relevance to our central practical concern of informing the potential development of relationship intervention programs. We will return to this in the conclusion.

It is, perhaps, not surprising that communication looms large as a theme in the domain of relationship maintenance. Based on the data received from the interviews it was clear that communication has a central rolein long-term marital satisfaction and it is ubiquitous within the main themes emerging from the data.

The analysis was greatly aided by identifying *a-priori* a fairly crude grouping of the couples into the more satisfied (SC) and Dissatisfied (DC). By means of comparative exploration of differential responses a pattern emerged that appears to have an explanatory logic. This is actually in accordance with the Romantic Competence theoretical position. Couples from the SC group demonstrated more components like intimacy, respect, good communication and a sense of security whereas the DC couples reported many aspects of an unhealthy relationship

such as poor conflict resolution, lack of support, and aggression (in our sample only verbal aggression).

Of course it is not possible to clearly state that these elements of interrelating led to the levels of satisfaction or whether the satisfaction experienced led to these behavioural manifestations. However, the logic of the Romantic Competencies approach implies the former, and in practical terms a readjustment of negative patterns should at least mitigate problems in a relationship. Certainly, in the maindata collected from the interviews, it was possible to identify couples' distinction in term of the three Romantic Competency components:- Insight/learning, Mutability and Emotion regulation.

Thus although SC couples tend to talk more than DC couples the critical difference appears to be how they communicate after a conflict. It would appear that an aspect of marital satisfaction is having the ability to communicate in a way that allowsan insight into both partners' preferences, a profound knowledge of both partners' needs that allows mutuability, a capacity to decide what is best for both, and Emotional regulation to deal with the uncomfortable feeling that conflict causes.

It is worth mentioning that Romantic Competency Theory presents some similarities to Salovey et al. (2004)Emotional Intelligence Theory. For instance, the component of Emotion Regulation described as the ability to be "aware of one's emotions, express them adaptively, tolerate uncomfortable feelings, and keep things in perspective" is close to the Emotional Intelligence abilities: (a) perceive emotion, (b) use emotion to facilitate cognitive processes and adaptive action, (c) understand emotions and emotional information, (d) regulate or manage emotions in oneself and other.

Personality and treatment – in the interviews, participants had the opportunity to describe the characteristics that they appreciated and the ones they disliked in their partners. The findings demonstrated that their communication seems to interfere with their perceptionsof their partner. DC couples reported much more negative personality characteristics whereas SC couples mentioned many more positivesin their partners.These findings were unsurprising and are in agreement with the literature. Agreeableness, one of the most desirable personality traits in mating relationships, was predominant in SC couples' description of their partners. Attributes like kindness, caring, understanding, empathy, trust, gentleness were frequently reported. Other agreeableness traits such as fidelity and loyalty were also mentioned by SC (Schmitt, 2004b; Schmitt & Buss, 2001).

The importance of Extraversion traits was also reviewed not only by the appreciation of partners who presented high extroversion traits but also by the complaint of participants who were married to intraverts. Their tendency to be quiet and avoid social interaction seemed to lead to a negative perception. Sometimes, their partner declared they feel isolated and unloved this is the opposite of *closeness, opening tocommunication* and *demonstration of love* described by the SC as reasons for satisfaction.

As expected, some Neuroticism traits such as suspicion and jealousy were also mentioned by participants as a negative characteristic of their partner and a reason for dissatisfaction. According to the literature, this personality trait is the strongest negative predictor of spouse's marital satisfaction, and general relationship quality (Karney & Bradbury, 1997; Kelly & Conley, 1987). In the context of mating, neurotic harm their sexual relationships through constant worry, suspiciousness, jealousy, and neediness and many relationship problems are caused by their over imagined flirtations (Greiling & Buss, 2000). These characteristics make it

difficult to please a highneurotic and have a satisfying relationship with them (Karney & Bradbury, 1997; Kelly & Conley, 1987).

However, it is worth highlighting that the level of satisfaction with the relationship involves a dynamic interaction of many characteristics presented by both partners. For this reason, some participants who presented highly neurotic traits were in a satisfactory relationship. Even though their partners judged those traits as reasons for dissatisfaction, they argued that their partners presented far more positive qualities that made their relationship worth it.

Flexibility, a demonstration of gratitude and praise are characteristics that were almost exclusively presented by members of the SC group. They certainly contributed to their overall positive evaluation. Participants of the SC group who mentioned jealousy (**Jai, Del and Max**) also demonstrated the ability to change to make their relationship happier. Their partners also reported that they constantly expressed gratitude and praise them even for the little things

When finding a positive slant on one's partner, women in the DC group mentioned their partners parental skills and financial support, while men in this group tended to focus on being well treated by their wives. These findingsdovetail with Sexual Strategy Theory that emphasises these mate preferences in long-term partners.

Davila's Romantic Competency Model emphasises the importance of knowing the self and the partners well before getting married. They argued that at least 25% of marital therapy interventions fail because they are made too late,or after a person has made aninappropriatemate choice. For Davila and colleagues,the capacity for insight helps avoid negative surprises after marriage. Participant **RuC**, for instance, reported great unhappiness because her partner, **Ci**became stressed and nervours after getting married. She said that if she could go back in time, she would not have chosen the same partner.

We investigated how insightful the participants were before marriage by asking them about their partner's changes after marriage. In general people in the SC group reported that their partners did not change after marriage or change for the better whereas the DC group did not tend to mention positive changes in their partners, only the negative or neutral ones were remembered. Some participants made a point of stating that they were aware of their partner's weaknesses but did not appreciate the impact that these might have on their relationship.

Their ability to evaluate what they want and what their partner had to offer were also analysed in the respondents discourse about love. In agreement with their romantic experience, people in the SC group tended to say that love is not blind, whereas and the DC group were more likely to express the belief that love is blind.

These findings can be iterpreted from a RC perspective. Accordingly, satisfaction is a result of an interplay between the three components, Insight, Mutuability, and Emotion Regulation. The analyses of the interview data appear to support the contention that people in the SC groups show greater evidence of all three skill sets.

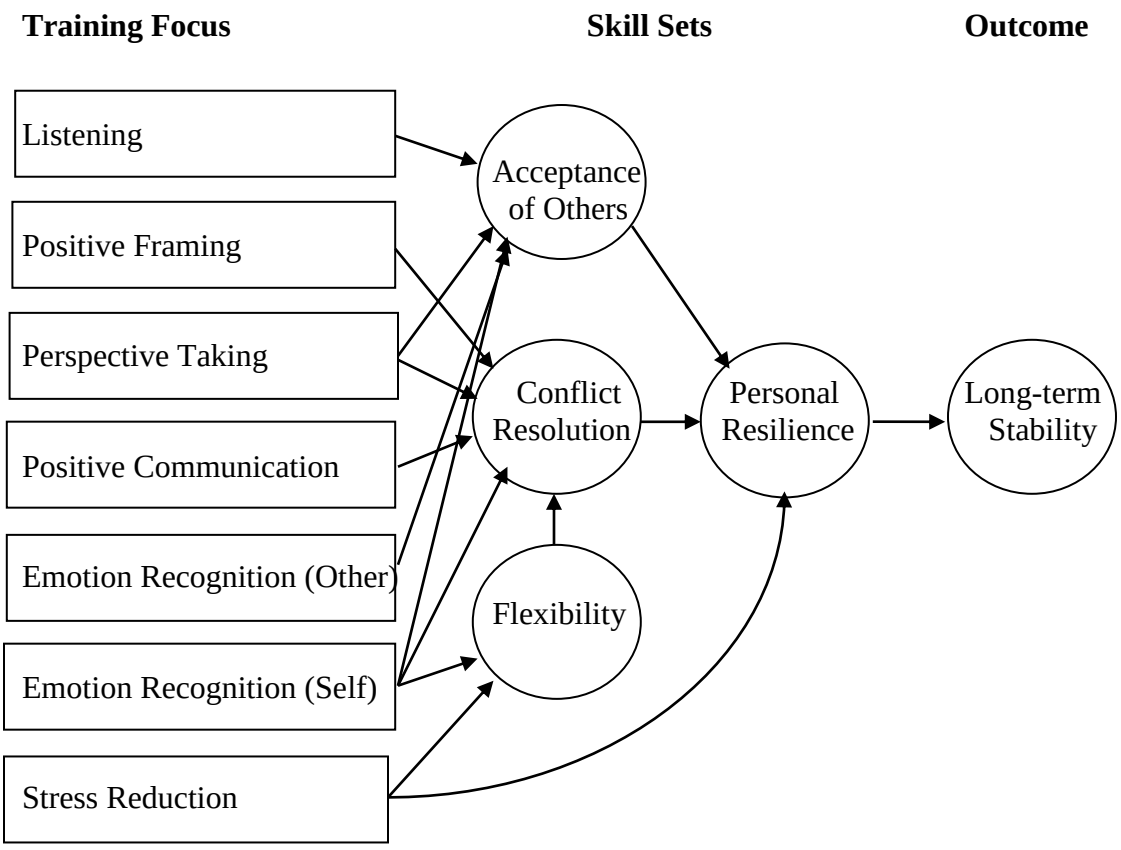
Conclusion

This Grounded Theory Analysis has probably not thrown up anything particularly surprising and this may be, in part because a Romantic Competency Model informed the strategy taken. In dividing the couples into two groups to help identify discriminating themes it is possible that commonalities were missed. After all, all of the couples sampled had stayed together for at least 20 years and it may be better to think of variations within a fairly homogenous group than to emphasise differences. Nevertheless, the exercise has proved fruitful in confirming issues expressed in RC theory. It has also served as the basis for an emerging, though still tentative model for long-term relationship stability that is summarised in figure 6.

This model emphasises a skills based approach since any practical basis for this work is focussed on intervention. This work has thrown up the imporance of three underlying skills sets that seem important in promoting satisfaction. The first is Acceptance of Others, and grows out of Davila's concepts of Insight and Mutability. To couch it in terms of a skills set it is neccessary to identify the trainable facets that feed into it. The model in figure 6 proposes that this skills set may be developed by training in Listening skills, Perspective taking, and Emotion recognition. A second vital skill set is conflict resolution which may be developed by training in Positive framing, Positive communication, Perspective taking, and Emotion recognition. Finally, Flexibility may be seen largely as a static characteristic but where in can be trained. It involves Emotion recognition and stress reduction. This last, is predicated on the fact that high stress leads to rigid thinking and defensiveness. The model suggests that these skill sets contribute to individual resilience which contributes to Long-term Relationship Stability.

It must be taken into account that this is a model in progress and figure 7 should be seen as suggestive at present. It is my intention to develop this model further in light of my professional work and experience. At the moment its serves as a platform for further work. Clearly there is a dynamic dynamic interplay between the skills sets envisaged in the model and one fundamental element of any intervention must be around communication. As Davila states: "we suggest people cannot engage in effective conflict resolution if they do not have insight into the self and partner, understand mutuality, and have the ability to regulate their feelings. These skills are at the foundation of good communication" (Davila et al. 2017; p. 10).

Figure 7: Emerging Model for Promoting Long Term Stability in Reproductive Relationship



Chapter 10

Qualitative Examination of Preferential Traits

Study 7: Qualitative Comparative Analysis of Mate Preferences

In this chapter we return to some elements of Sexual Strategy Theory. Here is presented a qualitative examination of the participants' answers to an open-ended question about what characteristics they think make someone successful in finding a mate. According to Buss (2005) and Sexual Strategy Theory we would expect to see clear sex differences in what characteristics are cited. In some ways this is an 'add on' study and may seem rather tangential to the direction the thesis has taken. However, it is included as the final study for completeness in light of the open-ended analysis of the previous chapter in which a Relationship Competency Model was used as an informing approach.

It is not anticipated that we will find themes that match closely to the skill sets we have identified nor the competency components of Davila et al. (2017). Rather, we expect to find characteristics commensurate with a view focused on sexual coupling rather than longer term mate selection. It was a contention arrived at at the end of part 2 of this thesis that the so-called 'evolutionary informed' basis of mating intelligence was essentially concerned with sexual coupling which failed to take into account the fact that passing on one's genes is a longer, more complex affair in human reproduction. As a result the full Darwinian aspect of mate selection was lost.

Buss and his colleagues have made much of Sexual Strategy Theory in human sexual behaviour and this work has thrown up many interesting findings. However, one constant caveat to the evolutionary interpretation of this work is the huge variation in human motives and

behaviours. The fact that social norms and conventions shape human behaviour is always a limiting factor for biological or evolutionary determinism.

For example, today there is a fashion in western society for females to remove body hair. The fashion has taken off to such an extent that body hair is widely seen as unattractive and disgusting; so much that a recent photograph of a film star with unshaved armpits created a flood of international news stories that were mostly hostile. This is despite the fact that female body hair, as a secondary sexual characteristic, should promote sexual interest. The issue may be trivial but the point remains that humans can elect to break their evolutionary programming at the dictate of social convention.

The present study examines the prevailing views of what characteristcs promote mating success. We would expect to find a fairly clear divide between males and females as indicated in the work of Buss (2005). However, as most of the Sexual Startegy Theory research is hypothetico-deductive a more exploratory approach using open-ended data may provide some unexpected themes. In addition, the study reported here is cross-cultural using an Irish and a Brazilian sample of young adults.

Method

The Sample

The Sample used for this study consisted of 1680 (294 male and 663 female) Irish and 508 (150 male and 358 female) Brazilian respondentsaged between 18 and 46 with a median age of 23. This sample is made up of the cases utilised in the studies in Part 2 of this thesis.

Procedure

All respondents who completed the survey's in Part 2 of this thesis were asked an open-ended question:-

In your opinion what characteristics make someone successful in finding a mate?

Methodology

Verbatim responses to the question were recorded and subjected to a thematic analysis. After a first trawl of the data it became apparent that most of the responses involved personality characteristics rather than physical or status characteristics.

As an initial starting point the Big-Five Personality factors and their subcomponents (Costa & McCrae, 1992) were used as an organising principle in a thematic analysis. These identify Agreeableness, Extraversion, Stability (also called Neuroticism), Conscientiouness and Openness as super-ordinate categories (Appendix S). During coding it was apparent that characteristics were mentioned that did not fit easily within this system and this resulted in further twelve categories (Appendix T). These are:- good looks, sexual attraction, health, charisma, humour, experience, complicity, commitment, charm, religion, intelligence and social and economic status.

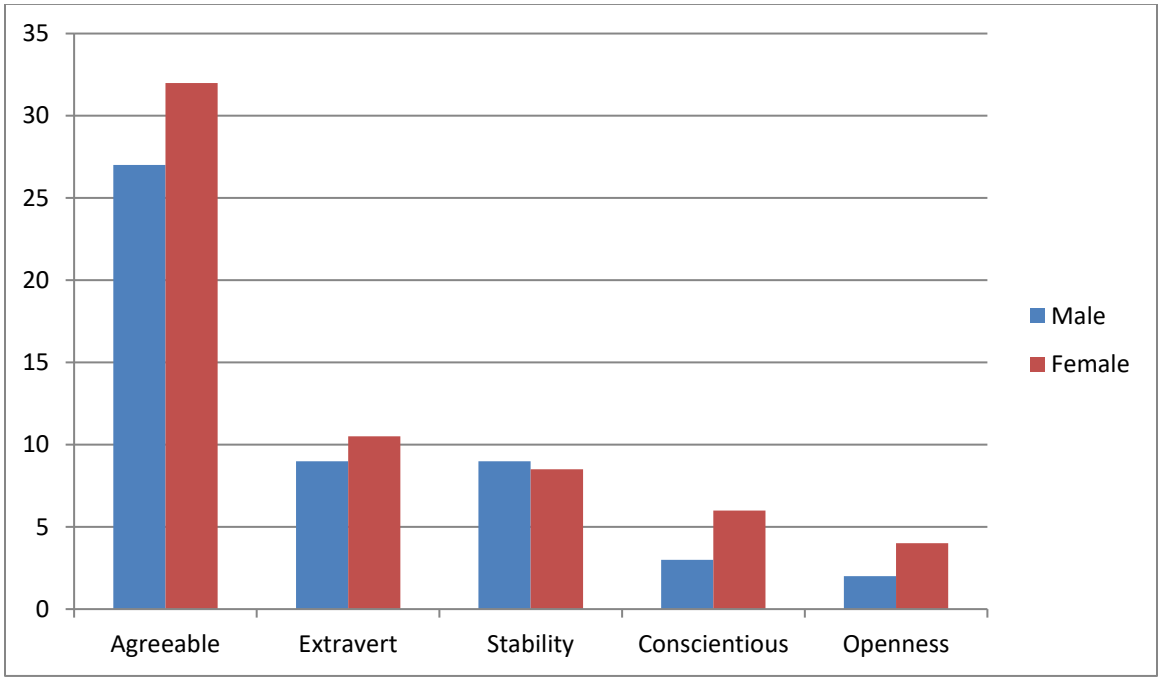
Ethics Approval

This study, as well as all the others presented in this thesis, were approved by the Social Research Ethics committee (SREC).

Results

The big five personality model categories. The total frequencies of endorsement for male and female in both nationalities made clear that agreeableness is the most important factor of the Big Five Personality Model. Male's totalendorsement in this category (27%) was three times higher than that of Stability (9%) or Extraversion (9%). For females the numbers were even higher. Female's totalendorsement (32.5%) was three times greater than that for Extraversion (10.5%) and Stability (8.5%). Conscientiousness and Openness results were the lowest in both sexes. The gender breakdown of personality trait endorsements is sumarised in figure 8.

Figure 8: Sex Differences in Personality Characteristic Citation

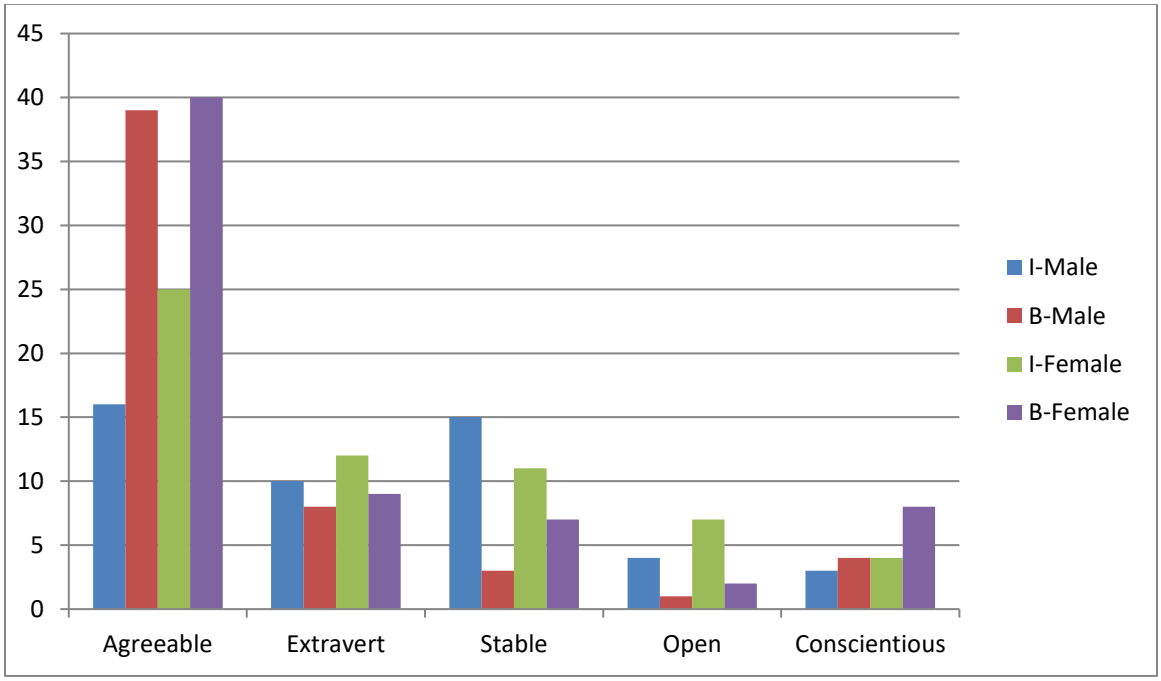


These results revealed that males and females attributed the same order of importance to the Big Five factors and there were no statistically significant differences between them. For both sexes Agreeableness was the most important factor, followed by Extraversion, Stability, Conscientiouness and Openness. It is interesting to note that females rated extraversion more

than males which is in keeping with Nettles and Gregg's (2008) assertion although this is not statistically significant.

However, these findings hide some striking cultural differences between the participants. For instance, Agreeableness was statistically more salient for Brazilian males (39%) than Irish males (16%) ($z = 6.88$, $p < 0.01$) and Brazilian females (40%) than for Irish females (25%) ($z = 4.16$, $p<0.01$). Conversely, Stability traits such as confidence were considered more important for Irish males (15%) than for Brazilians males (3%) ($z = 5.74$, $p< 0.01$). The difference for females of 11% for the Irish and 7% for the Brazilians was statistically insignificant ($z = 1.85$, ns). These data are summaised in figure 9.

Figure 9: Personality Characteristic Citation Broken Down by Sex and Nationality



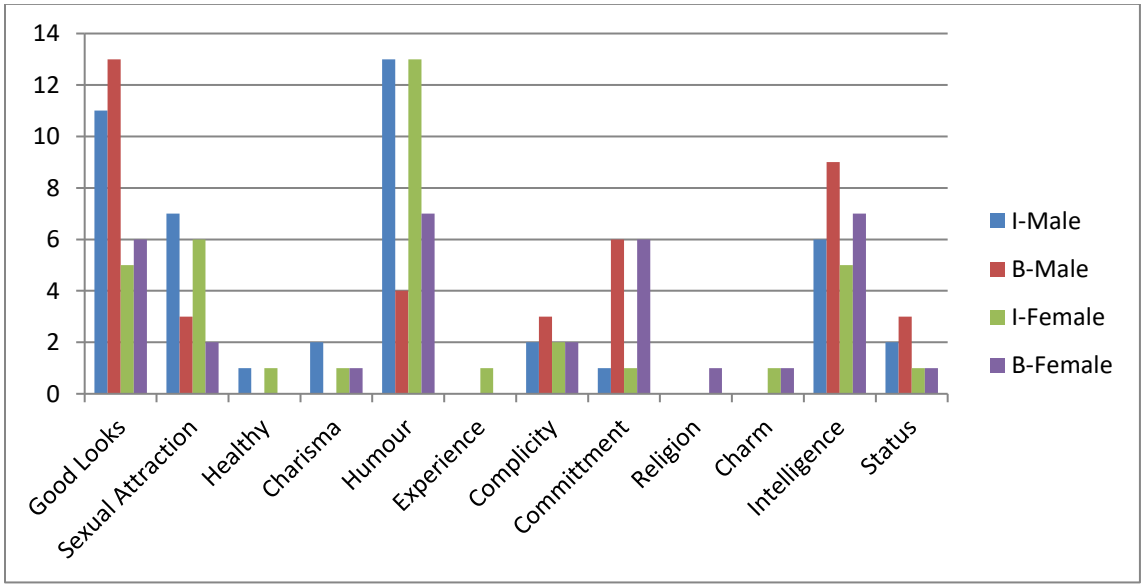
Extra-Personality Characteristics

Although most of the characteristics mentioned fitted quite well within the Big-5 framework, there were a large number that did not. Table 1 in Appendix T shows participants

answers that did not fit into the Big Five Model. They were grouped into 12 categories *Good looks*, *Sexual attraction*, *Health*, *Charisma*, *Humour*, *Experience*, *Complicity*, *Commitment*, *Charm*, *Religion*, *Intelligence* and *Status*.

The Sex and Nationality breakdown for these extra personality characteristics is summarised in figure 10. There is very little of statistical significance in these findings but some of the patterns revealed in the chart are worthy of note. For instance males are more inclined to cite good looks than females, irrespecrive of nationality while Irish respondents value Humour more than Brazilians irrespective of sex. It is also interesting to note that females are more likely to cite committment. These sex differences are largely supportive of the Sexual Strategies literature but it is interesting to note a slight tendency for males to cite intelligence and status more than females and this is counter intuitive. Nevertheless, these patterns are not supported by statistical significance and so cannot serve to confirm or disconfirm Sexual Strategy Theory expectations.

Figure 10: Extra-Personality Characteristic Citation Broken Down by Sex and Nationality



Discussion

It has long been established that individuals have strong preferences about traits that they desire in a partner (Buss et al., 1990; Buss & Barnes, 1986; Kenrick et al., 1993) and that these vary between individuals. In general, people rate dispositional qualities (as intelligence and personality) in the desired mate as more important than situational variables (as social status and wealth) or physical attractiveness (Buss & Barnes, 1986). The present study supported this tendency.

The results of the Big Five Personality categories indicated Agreeableness as a preferential trait for males and females in both nationalities. These findings were expected because the literature had already reported Agreeablenessas one of the most desirable personality traits in mating relationships implyimg fidelity, less sexual partners and greater loyalty (Schmitt, 2004a; Schmitt & Buss, 2001).

The Female's scores in Agreeableness was not a surprise neither. They were higher (32.5%) than male's (27%) but not by much. This is perhaps noteworthy because of Nettle and Clegg's (2008) suggestion that high agreeableness should cost more for men than for women.

Extroversion was the second Big Five Personality trait most mentioned by participants. This elevated position in the participants' mating preferences was also expected. Extroverts high activity levels, positive attitude and sociability facilitate their social interaction to many potential mates. Even though they are inclined to have more sexual partners (Heaven et al., 2000); tend to terminate relationships more readily(Nettle, 2005) and have more affairs (Nettle, 2005; Schmitt & Buss, 2001).

Females reported a higher preference (11%) for extraversion traits than males (9%). Nettle and Clegg (2008)argue that women might prefer higher extroversion in a male than men

would prefer in a female because the female's fitness payoffs for social status would be higher and also because infidelity is costlier to men due to the uncertainty of fatherhood.

Stability traits occupied the third position in the participants' mating preferences. This is consistent with research on neurosis and realtionships. Anxious people easily experience unpleasant emotions, such as anger, concern, guilt, wariness, depression and vulnerability (Toegel, 2012) and these are the strongest negative predictor of spouse's marital satisfaction, and general relationship quality (Karney & Bradbury, 1997; Kelly & Conley, 1987). Thus, mate choice should favour low neuroticism and conspicuous displays of emotional stability (Botwin et al., 1997; Buss andBarnes, 1986).

Traits of Conscientiousness and Openness were less often cited by respondents. Nettle and Clegg (2008)argue that even though conscientious people are more likely to be trustable, faithful and give a good parental investment, their characteristics could cost them some sexual opportunities. A piece of data from the Openness category also could help in understanding these results. Within this category, participants showed preference for open minded and flexibility traits. These traits review a predilection for partners with a different profile of the one presented for more conscientious people who tend to avoid spontaneous behaviour (Toegel, 2012).

Furthermore, the desired personality traits also vary depending on the type of relationship that people are looking for. The open-ended question asked about the characteristics that make someone successful in finding a mate. It did not specify if the mate would be for a short or long-term, a fact that might have influenced the scores.

It is worth highlighting that each personality dimension has both advantages and costs that bring mating implication. As Nettle and Clegg (2008) observe if one dimension presented

only benefits, it is reasonable to conclude that this dimension would no longer be variable across individuals.

The categories that did not fit into the Big Five Personality Model also revealed important mate preferences.

Good looks was the only category that stood up among the sex differences between male and female. Men (12%) mentioned this characteristic twice as much as women (6%). These finding were completely congruent to an evolutionary perspective. As *good looks*provides compelling evidence of women's reproductive capacity. To Buss and Schmitt (1993) "This evolutionary logic leads to a clear prediction: men more than women should value relative youth and physical attractiveness in potential mates because of their powerful links with fertility and reproductive value" (p. 209).

Buss (1989) goes further. For the author "The physical and behavioral cues that signal youth and health are regarded as attractive should be linked with reproductive capacity among human females in all cultures. These sex differences are predicted to be species-typical among Homo sapiens" (Buss, 1989; pp 3).

From a sexual strategies perspective it is also expected that females, more than males, should have valued attributes that signal the possession or likely acquisition of resources as these resources can provide some material and reproductive advantage for the female and her offspring.

However, participants of both countries did not mention the characteristics *ambition, industriousness,*and *earning capacity* reported by Buss as examples of this female preferences. The categories that presented the closest meaning were *Status* (money; financial stability; means of support; success; status; social standing, job etc.) and *Intelligence* (Intelligent; Smart;

Education and Qualification) (Appendix T). Traits of these categories were rarely mentioned and indicated the opposite of was anticipated by the evolutionary perspective as the male scores (2%, 1%) were slighter higher than the female ones (1%, 0%).

Conclusion

This study was something of a diversion from the main theme of the thesis, but it is included because it is our most direct examination of the Sexual Strategies Theory that dominated the development of the Mating Intelligence construct. In fact, no surprises emerged, and the findings were entirely consistent with the claims of David Buss and his colleagues.

It was perhaps a little surprising that the sex differences were not more marked but this may be due to the nature of the question which was posed in a very broad form. Also, the methodology has advantages and limitations.

The primary advantage of an open ended squestion is that the responses reflect a natural salience which is missing when characteristics are offered in a checkbox form. This latter method (adopted by Buss, 1989) may be criticised because it could shape responses to *a-priori* expectations. This may account for our failure to find ambition and earning capacity as relevant issues even though they are central to Buss's sexual strategies conception.

However, the main limitation of this approach was that the question asked was broad and lacked the kind of specific detail that would have enabled us to drill down further. For example the nature of the relationship was not difined and this did not emerge in the responses. In future research it may be advantageous to expand the use of open-ended qualitative research in the area of Sexual Strategy Theory, because the overreliance on large samples answering prespecified checklists is likely to under-emphasise the idiosyncraticc nature of mate choice. The general

theories that emerge from such studies convey the notion that human mate selection is a relatively simple linear process that can be explained by normative modelling. In fact, it is far more varied and idiosyncratic than such models imply.

Conclusions of Part 3

Part One and Two of this thesisconcluded that the Mating Intelligence concept was suboptimal as an explanatory construct both in terms of its theoretical foundations and its measurement criteria. This neccessitated an expansion of our investigation. Part 3 focussed on the concept of Romantic Competence (RC) and considers and highlight of the importance of Learning, Emotional Regulation and Mutuality to obtain Mating Success. In this theory, relationship satisfaction is the ultimate goal of pair bonding.

The research methods in part 3 were more exploratory and broader. They included a Constructivist Grounded Theory based on the interviews with 15 couples who were together long enough to raise a child up to sexual maturity.

The Theory of Romantic Competence turned out to be a useful concept that helped to structure the development of the interview with long-term couples. The resultant Grounded theory study was able to clearly show that communication has a huge impact on marital satisfaction and is positively related to couples' learning, emotional regulation and mutuality. A tentative model was identified for therapuetic intervention. Further research is now anticipated to test and refine this model in the context of relationship counselling.

This part of the thesis concluded with an examination of the Irish and Brazilian's preferential traits in mate choices. We raised some caveat's on Buss's apparent biological precedence in mate selection but, in fact, the results reported here are generally supportive of his views. For instance, males gave more importance to physical appearance than females. But, the findings also suggested that many cultural, social and psychological characteristics have a meaningful role in the mating choices and these may lead to a more idiosyncratic and heterogenous situation than a monolithic model implied by Sexual Strategy theory.

Chapter 11

FINAL CONCLUSION

I embarked upon this thesis from the perspective of an experienced relationship consellor with a particular interest in emerging adults. The concept of Mating Intelligence had a great appeal. There are thousands of publications on both mate selection and relationship formation, and the concepts of intelligence and competence. However, there are still many grey areas that left room for speculations and new constructs. The Mating Intelligence construct exemplified a possible explanatory model that could be used to understand, and possibly, ameliorate, pair bonding problems of young people. One appealing aspect of MI was the fact that its authors emphasised that it was an 'evolutionary informed' construct.

As research on the thesis progressed, however, it became apparent that the 'evolutionary' aspect of the construct was actually quite limited. If we take a Darwinian point of view, it should be clear that successful mating involves passing one's genes into the next generation. (Even though Darwin was not aware of Mendel's work and so did not know of genes, he was clear about the principle of passing characteristics down the generations). This means that success in mating depends on the ability to successfully rear offspring to reproductive age, which in most primate species, but even more for humans, involves a high degree of investment in time and resources.

It was therefore, rather disappointing to realise that the fundamental criteria for success that 'informed' MI development was obtaining multiple partners. Multiple partners may result in multiple offspring, but the essential fact is that these offspring must be reared to reproductive adulthood, otherwise the individual disappears from the gene pool. From a Darwinian perspective then, long-term relationships strategies increase the chances of mating success.

It is also important to highlight that any theory of human mating has to consider variables such as age, short or long term strategies and feeling such as love or lust at first sight when discussing success as an outcome. The same individual could change their perception of success depending on age, the kind of relationship they are looking for and the feelings involved. For instance, someone in his late teens could consider have many short-term relationships based on lust as an ideal and in his forties could judge success more associated to settling down and having a long-term relationship based on long-lasting love. It seems that MI theory does not take a range of possible individual changes that male and female could face during their lifetime into account . It appears rather, to be built on short-term strategies and lust, being more suitable for young male adopting a short-term strategy.

The mating Intelligence model is based on an proxy of reproductive success since their authors believe that reproductive success cannot be measured in modern society in a meaningful way due to the large-scale use of contraception (which actually invalidates the multiple partner metric). Of course, this makes no difference to the Darwinian argument in which genes must flow. The heterogeneity of the human behavioural repertoire makes us highly adaptable to situational change and culture provides a context for huge situational change. But the behaviours emanating from such changes must still allow for mate selection that enables the successful rearing of offspring. It is important to check that we are not projecting modern behavioural predispositions onto our Pleistecene ancestors and then assuming they are evolutionary givens. There is little evidence of such checking in the MI literature.

In addition, there was not strong evidence that the construct constitutesa special kind of intelligence. It seemed to be tapping into other constructs such as Emotional Intelligence and personality traits rather than a clearly defined intelligence domain. With this in mind it was no

great surprise to find that the MIS proved to be highlyproblematic measurements. A Reliability Generalization study and several Psychometricanalyses based on extensive data set from more than two thousand Irish and Brazilian males and female found that the female scale is incompatible with scientific measurement and cannot be recommended. Even the male version of the scale was mostly conflated with self-esteem and socio-sexual orientation. Attempts to improve the scales by adding extra items closely related to the theoretical base were also fruitless. Unfortunately, the MIS biggest psychometric value was found in a cross-national study that simply demonstrated that its weaknesses are common across countries.

It was clear as the research progressed that little constructive benefit would accrue by continuing with the Mating Intelligence construct as presented by Geher and collegues. Nevertheless, the primary objective of discovering something that might inform relationship therapy was still dominant and so I resighted my focus towards a competency model. To this end the Theory of Romantic Competence appeared to be a useful concept.

At this point, it was clear that RC was still in its infancy and very little had been written. However, it invited an exploratory qualitative investigation. At this stage I felt strongly that, in keeping with Darwinian principles, it would be important to investigate people who had sustained a relationship long enough to have reared offspring to sexual maturity with a view to building a model of relationship maintenance that might inform relationship counselling.

A Constructivist Grounded Theory approach appeared to satisfy these needs. The Romantic Competence Theory served as an excellent base from which to develop a semi-sturctured interview. Curiously, even though from a Romantic competence point of view satisfaction is the ultimate goal of relationship, rather than the maintenance of the species, this theory contributed to a better understanding of some competencies that are necessary to create a

long-term bonding that increases that chances of mating success. However, the fundamental contribution was to highlight that Learning, Emotional regulation and Mutuability, that are at the core of healthy and satisfying relationships, can be learned. An emergent model grew out of the grounded theory that will be applied and developed in my future professional activities.

Overall results indicate some possible avenues to be explored in future research on human mating relationships. Three of them I personally find more exciting. The first one the construction of a Mating Competency Scale building on the Grounded Theory model of figure 6. The qualitative study with long-term couples indicated that Romantic Competency presents the basic abilities (Learn/insight; Mutuability and Emotional Regulation) these could be investigated in the scale;

The second avenue is to investigate the ability to identify 'what they want from a relationship and have to offer' and 'what a possible partner wants from a relationship and has to offer' in different age groups and intelligence levels (IQ) and its relationship with relationship satisfaction and maintenance.

The third one, which motivated this work in the first place, is to develop evidence based Romantic competency counselling programs for different ages groups and needs. For example: teenagers; young adults; adults who want to have a long-term relationship, but do not know how; engaged couples; married couples who want to improve their satisfaction.

The overall conclusion of this thesis is that mate selection is inextricably linked to evolutionary forces but also that these forces dictate relationship maintenance equally in order to ascertain that offspring are successfully reared. Additional insights emphasise the role of communication in the resilience people exhibit when relationships experience hardships. One can imagine that the hardships experienced by our Pleistecene ancestors may have had more to

do with fear of predation and natural factors rather than alcohol addiction or financial difficulties but the flexible human behavioural repertoire draws on very much the same mental resources in both contexts, to manage to protect and rear our helpless offspring. This is the underlying fact of mating in the human species.

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APPENDICES

(On Enclosed CDROM)