

Mate Trade-Offs: The Impact of Physical Disabilities on
Preferences in the Mating Market.

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*This thesis is presented as a partial fulfilment to the requirements for the Doctorate of
Counselling Psychology within the Department of Psychology, Faculty of Human Sciences, at
Macquarie University*

April, 2013

I certify that the work in this thesis entitled “Mate Trade-offs: The Impact of Physical Disabilities on Preferences in the Mating Market” has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree to any other university or institution other than Macquarie University.

I also certify that the thesis is an original piece of research and it has been written by me. Any help and assistance that I have received in my research work and the preparation of the thesis itself has been appropriately acknowledged.

In addition, I certify that all information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by Macquarie University Ethics Review Committee, reference number: HE25NOV2005-M04404 on 21 April 2006.

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April, 2013

Acknowledgements

I would like to thank the many people who have helped me on this (very) long and challenging journey. Firstly, I would like to express my gratitude to my supervisor, Professor Julie Fitness, whose expertise, advice, and great patience, especially during the last few months, has been invaluable. I would also like to thank my associate supervisor, Dr. Trevor Case, for taking time out from his busy schedule to help with the ever-lasting editing.

I am grateful for and would like acknowledge many others who helped me along the way: My friends and colleagues, for your support and help, particularly in the search for research participants; my closest girlfriends, for your words of encouragement, much-needed laughs, and bottomless friendship; and my extended family, for your love, interest, and care.

I wish to thank my parents and two beautiful sisters; without you I would not be who I am today. Thank you for raising me, supporting me, teaching me, loving me, and mostly, for putting up with me.

I dedicate this thesis to my soul mate and husband, Patrick. It was through your persistence, understanding, love, and endless hugs, that this thesis was possible. Thank you for making me push myself harder and for holding my hand the entire way.

And lastly, to the beautiful baby we're soon going to meet, it was you who helped me through at the very end.

Abstract

Men and women have distinct preferences for certain traits in their romantic partners, which can be elegantly explained by evolutionary theories of sexual selection. Specifically, men and women highly value the mate characteristics of warmth, attractiveness, and resources in a relationship partner, which all enhance their reproductive fitness. By manipulating different combinations of these attributes, the current research aimed to examine thresholds of acceptance and desirability in different temporal relationship contexts. It also explored the effect of a previously unexplored cue to health, a physical disability, on mating preferences. In Study One, 568 participants were shown a photograph of a stimulus person, either with or without a physical disability, paired with manipulated descriptions of economic status and warmth. They were asked to indicate their willingness to engage in both a short-term and long-term relationship with the individual in the vignette, as well as complete questionnaires on sociosexuality and social desirability. The results showed the importance of warmth in the long-term for both men and women, the value of economic status for women in the long-term, the significance of health on short-term relationships, and predicted individual variations according to sociosexual orientation. However, when the effects of social desirability were taken into consideration, health was not found to have an effect on the reported desirability of short-term relationships. Study Two used a slightly different methodology to replicate the findings from Study One with a different sample of 566 participants, and explored the impact of heritability on both short-term and long-term relationship preferences. The results from Study Two generally replicated the results from Study One, with the exception of health. The impact of a physical disability, whether inherited or not, was not found to be significant in Study Two, nor did social desirability. By exploring the evolutionary logic behind disability-based prejudice in relationships, the current studies aimed to contribute to the existing knowledge on mate preferences and deepen our understanding about the contemporary negative attitudes towards relationships with individuals with disabilities.

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Chapter 1

General literature review

Introduction to evolutionary psychology

What makes one person more attractive as a partner over another? Do we all have a checklist of criteria when considering a potential partner? Why are some people more successful at initiating relationships than others? These complex and difficult questions have been discussed, queried and debated in social situations, relationship counselling, and more recently, in experimental research looking into the processes underlying human relationships and romantic choices. The importance of such choices is paramount, potentially influencing our physical and psychological environments, as well as reproductive consequences (Buss, 1989; Snyder & Ickes, 1985).

Evolutionary psychology provides a framework for understanding this social selectivity in humans (Ellis & Symons, 1990). According to evolutionary psychology, the way we feel and behave today can be understood by considering the kinds of preferences, feelings, and behaviours that increased the survival and reproduction of our ancestors (Buss, 1995). Evolutionary psychology asks questions about human courting, mate selection, and sexual behaviour, such as why people seek physically attractive mates, or the origins of the sex differences found in ideal mate standards. The answers for evolutionary psychologists lie in the adaptive advantages for our ancestors in developing such mate preferences (Tooby & Cosmides, 1990).

The overall purpose of this thesis was to use evolutionary theory as a base from which to explore the sex similarities and differences in human mate preferences and the impact of having a physical disability on such choices. The goal of this first introductory chapter is to provide a coherent explanatory account of the background to evolutionary psychology,

theories of sexual strategies employed when making partner choices, and the different within and between sex differences in mate preferences. In Chapter 2, the health of a potential partner, an important aspect of sexual selection and mating preferences, will be explored. The focus of this chapter is on health, fitness, good genes, and physical disabilities in relationships, and will provide the rationale for the studies described in Chapters 3 and 4 of the thesis. Finally, in Chapter 5, the limitations and implications of this research combining evolutionary theory and mate preferences with disability and sexuality will be discussed.

Darwin and sexual selection

Darwin (1871) argued that evolution is driven not just by natural selection for survival, but by an equally vital process that he called sexual selection through mate choice. According to theories of sexual selection, certain characteristics, such as cues to good fertility and health, became more prevalent over our evolutionary history as they helped our ancestors to address adaptive problems and enhance their reproductive (as opposed to survival) advantage (Andersson, 1994; Buss & Schmitt, 1993; Darwin, 1871; Symons, 1979). Reproductive success not only involves producing healthy offspring, but also ensuring that at least some, if not all, of these offspring survives to reproductive maturity so they can pass on genes to forthcoming generations. Selection for survival (natural selection) and selection for attracting sexual partners (sexual selection) are distinct processes that tend to produce quite different kinds of biological traits. For instance, there are many elaborate ornaments found in humans and animals that seem useless for survival. One well-known example is the male peacock's spectacular tail, which although potentially excessively costly, is a form of sexual communication, and increases a peacock's lifetime reproductive success. According to Darwin (1871), natural beauty and sexual ornamentation are biological traits that are inexplicable in terms of survival value but arose through competition to attract sexual partners during courtship to advertise heritable genetic quality (Miller, 2001).

The literature supporting Darwin's mate choice hypothesis is extensive, with a wealth of experimental and theoretical studies supporting sexual selection as a major influence in the evolution of our bodies, brains, signals, social interactions and species (e.g., Buss, 2003; Buss & Barnes, 1986; Cunningham, Roberts, Barbee, Druen, & Wu, 1995; Gangestad & Simpson, 2000; Kenrick, Groth, Trost, & Sadalla, 1993). According to Darwin (1871), sexual selection occurs via two component processes to increase reproductive success: (a) intrasexual competition, and (b) intersexual attraction. In intrasexual selection, individuals of one sex compete for mating opportunities with individuals of the opposite sex, whereas in intersexual selection, individuals of one sex exert choice and prefer mating partners who have certain desirable attributes or appealing signals (Andersson, 1994; Jensen-Campbell, Graziano, & West, 1995). Darwin described intersexual selection as "female choice" because he believed that females of many species, including humans, are more discriminating than males when choosing mating partners, and sexual access is a female-controlled resource (Baumeister & Vohs, 2004; Small, 1992). Thus, characteristics that lead either to successful competition or to success at being preferentially chosen by the opposite sex will evolve because of reproductive advantages (Buss & Schmitt, 1993). The interesting question is why this difference in mate choice exists between the sexes.

Trivers' parental investment theory

Although Darwin (1871) recognised that males usually engage in intrasexual competition and that females usually exercise mate choice, Trivers (1972) provided the explanation for this sex difference. Trivers' parental investment theory (1972) elaborated Darwin's theory of sexual selection by arguing that a central driving force behind intersexual selection derives from the different minimum investment made in offspring by males and females. Specifically, the sex with the greater obligatory parental investment is more selective about the quality of their mates as they have more to lose in a poor mating decision, whereas

the lower investing sex engages in same-sex competition for mating access with the opposite sex to increase their reproductive success (Burley, 1977). Parental investment refers to the investment each parent makes in an offspring that increases the offspring's viability (i.e., their likelihood of survival and reproduction), at the cost of the parent's capacity and ability to invest elsewhere.

In the vast majority of species, including humans, both males and females contribute to the care of their offspring; however, they often contribute different resources. A female generally has the greater obligatory parental investment as she directly invests her own physical resources in offspring through internal gestation and subsequent nursing commitment, a very costly expenditure and investment in time and energy. On the other hand, a male's investment can be very low, and the minimal parental investment can consist of a single act of sexual intercourse (Symons, 1979; Trivers, 1972). Males, in biological terms, have a low level of necessary parental investment in order to pass on their genes. A father can contribute to his offspring's survival with indirect tangible resources, such as food, protection, and shelter. Hence, females pay higher biological costs than males for making sexual 'mistakes' and consequently, have adopted a more selective and 'quality' based reproductive strategy in which they limit sexual contact to those males most likely to give an advantage to their offspring (Hirsch & Paul, 1996). In contrast, the 'quantity' based strategy of producing as many offspring as possible with little investment and time, is more appropriate to males as the lower investing sex (Trivers, 1972). As discussed in detail below, Trivers' ground-breaking work has served as the foundation for current theoretical and empirical research on sex differences in human mating.

Sex differences and mate preferences

After decades of research, evidence for women's and men's quality and quantity-based sexual strategies has been provided by extensive analyses of their ideal mate preferences. To successfully implement a quality-based strategy, it is important to secure resources and protection for offspring by finding partners who are both willing and able to provide material resources and relationship commitment. For instance, research shows that women universally tend to be more concerned with commitment, social status, earning capacity and good financial prospects, ambition, and industriousness in a potential partner than men; considering signs of willingness and ability to commit resources over the long-term to be highly important (e.g., Buss, 1989; Kenrick & Keefe, 1992; Li, Bailey, Kenrick, & Linsenmeier, 2002; Sprecher, Sullivan, & Hatfield, 1994; Townsend & Levy, 1990a,b). Further, evidence indicates that women have significantly higher mating standards than men, given their higher cost-to-benefit ratio in mating (e.g., Buss & Schmitt, 1993; Kenrick et al., 1993; Kenrick, Sadalla, Groth, & Trost, 1990; Li et al., 2002; Regan, 1998a).

On the other hand, for a successful quantity strategy, it is necessary to ensure the potential partner is healthy and fertile. The physical condition and reproductive health of an individual is typically indicated by the characteristics of facial and physical attractiveness, smooth and clear skin, full lips, lustrous hair, the absence of sores or lesions, and secondary sexual characteristics including breasts and buttocks, and body and facial feature symmetry (Cant, 1981; Perusse, 1994; Sugiyama, 2005; Symons, 1979; Thornhill & Grammer, 1999). Additionally, a low waist-to-hip ratio (WHR) and low body mass index (BMI), both of which have found to be correlated with fertility and reproductive health, are also greatly desired (Braun & Bryan, 2006; Singh, 1993, 2002). Across various ages and cultures, men consistently rate women's figures with a low WHR as the most feminine, healthy, attractive, and desirable (Furnham, Moutafi, & Baguma, 2002; Singh & Luis, 1995; Singh & Young,

1995). Studies also show that women with low WHRs are also more reproductively viable (Jasienska, Ziomkiewicz, Ellison, Lipson, & Thune, 2004; Zaadstra et al., 1993) and are healthier (Bjorntorp, 1988; Folsom et al., 1993; see Singh, 2006).

The robust sex differences in mate characteristic preferences have been found in numerous studies and across cultures. One of the best known studies of mate preferences was published by Buss (1989), who surveyed 10,047 participants from across 37 different cultures, and examined the extent to which men and women preferred each of 32 qualities in a potential long-term partner. Buss documented consistent sex differences in the importance of physical attractiveness and youth to men, and socioeconomic status and wealth to women. However, it should also be noted that men and women share some preferences for particular mate qualities, over and above these gender-specific characteristics. In particular, Buss and his colleagues (Buss & Angleitner, 1989; Buss & Barnes, 1986; Buss et al., 1990), along with other researchers (Fletcher, Simpson, Thomas, & Giles, 1999; Goodwin, 1990; Hatfield & Sprecher, 1995; Li et al., 2002) have consistently found universally, both men and women desire mates who are intelligent, kind, warm, considerate, understanding, emotionally stable, and dependable. Buss (1989) argued that these factors may be adaptive for human mating as they are important to the maintenance of long-term pair bonds. Specifically, when we entrust our psychological and physical welfare to a potential partner, it is important they do not pose any threat or danger to our safety and that they can be relied upon to act in a caring and consistent manner. It is also reasonable to believe that warm and considerate partners are more likely to remain faithful in a relationship and be committed to stay in a long-term monogamous partnership (Neff & Karney, 2009). Furthermore, compassionate and kind partners should be more likely to allocate resources to their offspring, to provide physical care to both partner and offspring, and to create cooperative and caring communities that are imperative to the survival of offspring (Goetz, Keltner, & Simon-Thomas, 2010).

These sex similarities and differences in mate preferences have amassed considerable support and have been evaluated in a number of empirical tests using different methods and various sample populations (e.g., Feingold, 1990; Regan, 1998a; Sprecher et al., 1994). Some studies have involved participants evaluating photographs and/or descriptions of potential partners, while others have analysed the content of personal advertisements (e.g., Harrison & Saeed, 1977; Koestner & Wheeler, 1988). Recent research investigating online dating found that for men, the physical attractiveness of a woman's picture generated more interest (than for women), whereas for women, a man's income predicted more interest in the form of emails received (than for men) (Hitsch, Hortacsu, & Ariely, 2006).

There is now evidence showing that preferences expressed in experimental and survey studies examining evolutionary predictions about gender differences are supported in studies of actual marriage patterns (Baize & Schroeder, 1995; Buss, 2003; Choo & Siow, 2006; Udry & Eckland, 1984). Therefore, it has been robustly demonstrated that men and women possess a complex range of different evolved, domain-specific psychological adaptations that guide their mate preferences and romantic-partner choices to help solve their adaptive problems and maximise their genetic fitness. Evolutionary psychologists have successfully applied the principles of sexual selection and parental investment theory to the domain of human mating, making significant contributions towards understanding this and related phenomenon by shedding light on the mating preferences of men and women. These mating preferences are influenced not only by internal factors, such as one's own mate value, but also by external factors, such as the local environment and temporal context.

The temporal context of short-term versus long-term mateships

As previously discussed, the between-sex differences in sexual psychology and mate preferences have been consistently validated using diverse research methods and across

different cultures. However, these mate choices are complicated by the fact that preferences depend on whether one is looking for a short-term sexual partner or a long-term romantic partner. Humans have a complex array of mating strategies, including long-term relationships, short-term mating, extra-marital affairs or extra-pair copulations, and serial mating (Buss, 2003; Buss & Schmitt, 1993; Gangestad & Simpson, 2000; Greiling & Buss, 2000).

Short-term mating refers to sexual activity or a brief romantic encounter when the probability of the relationship continuing indefinitely is relatively low, and often lacks the emotional depth and commitment associated with long-term relationships. In contrast, long-term mating refers to an increased probability that the relationship will be long-lasting and require a deeper commitment and investment, such as marriage (Li et al., 2002). Numerous studies have found greater within-sex variation than between-sex variation in short-term and long-term mating psychology as indicated by differences in mate preferences (Bleske & Buss, 2000; Gangestad & Buss, 1993; Gangestad & Simpson, 2000). Therefore, it is important to distinguish between short-term and long-term relationships when examining mate choices as these preferences are context sensitive.

Due to their differential biologies of reproduction and various obstacles to reproductive success, the weighing up of costs and benefits for men and women depends on the level of involvement and investment in the relationship, from the short-term and extremely casual, such as a single date, to the long-term and highly committed, such as marriage. For instance, when considering a non-committed transitory mating opportunity, men could potentially make little or no investment in any resulting offspring and hence enhance their genetic interests with no resource investment (Trivers, 1972). Therefore, men should be relatively less discriminating than women in the short-term. Conversely, when selecting a partner for a long-term relationship, a man potentially makes an investment approaching that of a woman's and would be expected to show a similarly high level of

selectivity in mate selection (Kenrick et al., 1993). On the other hand, given their higher levels of parental investment, women are expected to set higher minimum standards than men regardless of the length of relationship being considered. In other words, a casual sexual liaison should generally maximise any differences in mate preferences expressed by men and women, while a long-term monogamous relationship should show less sex differences in mate selectivity (Regan, 1998b).

Evolutionary psychologists argue that having multiple behavioural strategies that are adaptive in certain environments provides important advantages for both sexes. It is posited that people who utilised a particular strategy which led to the successful resolution of a problem and hence an increase in genetic fitness, out-reproduced those who did not. Consequently, the prevalence of that preference or strategy in the population increased. This contextual variation has led to the development of pluralistic theories such as Buss and Schmitt's sexual strategies theory (1993) and Gangestad and Simpson's theory of strategic pluralism (2000), both which have built upon Darwin's (1871) theory of sexual selection and Trivers' (1972) theory of parental investment.

Sexual strategies theory. Sexual strategies theory represents the integration of nine hypotheses about the evolved nature of both short-term and long-term mating psychology within each sex (Buss & Schmitt, 1993). According to this theory, both men and women possess an evolved temporal collection of mating strategies to solve the adaptive problems with which they are confronted and which are selectively activated by particular features of the personal, social, and ecological context, such as operational sex ratio, mate value, quality of available alternatives, parental and kin influences, and many others (Buss, 2003; Buss & Schmitt, 1993; Greiling & Buss, 2000). A core component of sexual strategies theory is that mating strategies are highly sensitive to the temporal context of short-term versus long-term mateships (Buss & Schmitt, 1993). Although both sexes possess short-term and long-term

mating strategies, their mating psychologies contain many sex-linked design features that accompany each strategy.

This theory derives largely from Trivers' parental investment theory (Trivers, 1972) and proposes that men, relative to women, are more driven to pursue short-term mating opportunities due to the adaptive benefits of increased reproductive success in short-term mating, whereas women, relative to men, are more motivated to pursue long-term mating opportunities. Indeed, Oliver and Hyde's (1993) meta-analysis of 177 empirical studies of sex differences in sexual psychology concluded that one of the most consistent and largest differences between men and women involved short-term mating orientation. Specifically, men are much more positive toward short-term, casual sex than women, and this sex difference appears to remain strong across socioeconomic levels, cultural systems, and historical periods (Barash & Lipton, 2001; Buss & Schmitt, 1993). In order to increase the number of potential short-term mates, men must have more flexible criteria and relax their standards with respect to their partner preferences (Buunk, Dijkstra, Fetchenhauer, & Kenrick, 2002; Regan, 1998a). On the other hand, women do not significantly lower their standards for short-term mates. However, this is not to say that women do not engage in short-term mating. Sexual strategies theory elaborates on Trivers' notion of mixed mating strategies by stating that women do sometimes pursue short-term mating strategies if the reproductive benefits of doing so outweigh the costs (Buss & Schmitt, 1993).

There are many benefits women may obtain through short-term liaisons, consideration of which has resulted in several hypotheses being suggested, including mate evaluation hypotheses (evaluating short-term mates as long-term partners) (Greiling & Buss, 2000; Schmitt & Buss, 2001), resource hypotheses (obtaining immediate resources) (Hrdy, 1981; Smuts, 1992), mate switching hypotheses (using short-term mating in order to leave an undesirable relationship and switching to a new partner or "trading up") (Schmitt & Buss,

2001; Schmitt & Shackelford, 2003; Smith, 1984), mate skill acquisition hypotheses (clarifying mate preferences), mate manipulation hypotheses (detering a partner's future infidelity), and genetic hypotheses (producing more genetically diverse and healthy offspring by mating with a partner of high genetic quality) (Fedorka & Mousseau, 2002; Smith, 1984). Thus, according to sexual strategies theory, women do engage in and benefit from short-term relationships by selectively mating with men who possess superior levels of status, resources, or genetic quality.

According to this theory, the mating psychologies of males and females are different in the pursuit of short-term relationships, but are largely similar in the context of long-term partnerships. That is, both men and women express preferences for warmth, kindness, and understanding in their long-term partners; however, after this initial common desire for warmth and kindness in a long-term partner, the sexes tend to differ in the next key quality desired for long-term matings. Specifically, men place a higher importance on indicators of fertility and health, as indexed by age and features of physical appearance, whereas women place a greater value on resources, such as economic status and earning potential.

According to Buss and Schmitt (1993), "because the important class of cues that are linked with fertility and reproductive value are physical... men will place great importance on physical attractiveness in both short-term and long-term contexts" (p. 213). On the other hand, for women, sexual strategies theory argues that physical appearance and attractiveness is less important in women's partner preferences because "the reproductive success of women... is not as closely linked with obtaining reproductively valuable mates. A man's reproductive capacity... is less steeply age graded" (Buss & Schmitt, 1993, p. 209). There is considerable data consistent with these hypotheses (e.g., Feingold, 1992; Landolt, Lalumiere, & Quinsey, 1995; Sprecher et al., 1994; Stroebe, Insko, Thompson & Layton, 1971). In a meta-analysis of the impact of physical attractiveness on romantic attraction, Feingold (1990) found that

attractiveness had a stronger effect on men's partner preferences than on women's, while earning potential had a large effect on women's preferences.

Research conducted by Townsend and his colleagues (Townsend & Levy, 1990a,b; Townsend & Roberts, 1993) found that for women, economic status was the primary determinant of a man's acceptability as a potential partner, and that high status compensated for low attractiveness. Townsend and Levy (1990a) manipulated status cues by asking participants to rate models who were dressed in costumes representing three levels of socioeconomic status. They found that costume variation alone significantly raised females' ratings of male models' attractiveness and acceptability for dating, sex, and marriage. These conclusions are consistent with evolutionary theories of mating, which, as described above, argue that women focus on a man's resource potential and status when considering a long-term relationship. They are also in line with sexual strategies theory, which argues that women use short-term matings to assess or attain potential long-term relationships.

If women utilise a short-term mating strategy to assess a potential long-term relationship, then it is expected that women would value the same traits in a short-term partner that they value in a long-term partner, including warmth, kindness, status, and resources. However, several studies have shown that this is not the case, but rather that women actually place a particular importance on attractiveness when considering a short-term partner (e.g., Greiling & Buss, 2000; Regan, 1998a,b; Regan, Levin, Sprecher, Christopher, & Cate, 2000). For example, Kenrick and colleagues (Kenrick et al., 1990) found that both men and women require similar and high levels of attractiveness in someone they would date or have sex with. Therefore, sexual strategies theory does not provide a complete understanding of women's preferences for attractiveness in a short-term partner.

In short, sexual strategies theory describes the long-term preferences for men and women, and the differences between and within their mating psychologies. It focuses on the

temporal context of mating relationships and emphasises the importance of this in understanding the sexual psychology of humans. However, it lacks a complete explanation for women's short-term preferences for physical attractiveness. A more thorough account of this may be provided in a more recent theory, strategic pluralism theory, which highlights the importance of physical cues as good genes indicators in short-term sexual decisions.

Strategic pluralism theory. Similar to sexual strategies theory, strategic pluralism theory builds upon parental investment theory and is an evolutionary model developed by Gangestad and Simpson to account for the within-sex variation in mating behaviour of both males and females in different environmental contexts and situations (Gangestad & Simpson, 2000). According to this theory, during their evolutionary history, both men and women utilised long-term mating strategies and invested in their offspring; however, both sexes also used ecologically contingent, conditional short-term and extra-pair mating tactics (Gangestad & Simpson, 2000). Strategic pluralism theory argues there are two broad classes of benefits we look for in a potential mate: (a) being a “good provider”, which reflects the degree to which a mate is willing and able to invest time and resources into a relationship and subsequent offspring, and (b) having “good genes”, which involves a mate showing evidence of genetic viability and fitness-enhancing characteristics that might be passed onto offspring (Cronin, 1991; Gangestad & Thornhill, 1997).

Although these basic mate-choice dimensions are focused on different qualities of a mate, they both aim to enhance reproductive success through increased offspring viability and mating ability. Specifically, the good provider model of sexual selection emphasises genetically non-heritable qualities, while on the other hand, the good genes model focuses on the heritable and genetic qualities that may increase reproductive success. Past research suggests that in males, these fitness-indicators include height, upper-body musculature, morphological symmetry, beard growth, jaw size, brow ridge size, and facial attractiveness;

while in females, they include breasts, buttocks, waist, skin condition, and facial attractiveness (Barber, 1995; Fink, Grammer, & Thornhill, 2001; Scheib, Gangestad, & Thornhill, 1999; Shackelford & Larsen, 1999; Thornhill & Grammer, 1998).

Research shows that men and women find these indicators of good genes attractive and desirable. For example, several studies have shown that men whom women consider physically attractive tend to exhibit bilateral symmetry (e.g., Møller & Thornhill, 1998; Scheib et al., 1999). These symmetrical men are also considered more desirable as affair partners, and report having more sexual partners than men who are asymmetrical (Gangestad & Thornhill, 1997; Thornhill & Gangestad, 1994). It is believed that symmetry signals underlying pathogen-resistant genes and is indicative of general health (Møller & Thornhill, 1998; Thornhill & Gangestad, 1993). There are also other markers that serve as cues to good genes, such as muscularity and masculinity, which are both testosterone-dependent and correlated with symmetry (to be further explored in the next chapter). Therefore, a woman's preference for symmetry and physical attractiveness in a partner reflects preferences for good genes and heritable fitness, and by mating with these physically attractive men, a woman is able to pass on such genes to her offspring (Waynforth, 1998).

In contrast, for men, bodily symmetry is not essential in their judgements of a woman's attractiveness (Shackelford & Larsen, 1997), and in fact, symmetrical women do not have greater short-term mating success (e.g., Gangestad & Thornhill, 1997, Thornhill & Gangestad, 1994). Instead, men show preferences for breast symmetry in judgements of health and attractiveness, and breast symmetry is correlated with fertility (Manning, Scutt, Whitehouse, & Leinster, 1997; Møller, Soler, & Thornhill, 1995). Men also have preferences for other secondary sexual characteristics, such as the buttocks, which are also linked to reproductive health and fertility (Cant, 1981; Manning et al., 1997; Singh & Young, 1995). This suggests that good genes selection may be less of a concern for men, but rather they

value female physical attractiveness as a marker of fertility and reproductive health (Gangestad & Thornhill, 1997; Symons, 1979). This was recently supported in a study by Jokela (2009), which found a positive relationship between female attractiveness and lifetime reproductive success.

For a woman to achieve reproductive success, particularly given the demands of biparental care, it would be ideal to attract a partner who rates highly on both dimensions of mate-choice, possessing both genetic benefits and long-term investment benefits. Unfortunately, men who have such desirable characteristics are quite rare, highly sought after, and difficult for most women to attract and retain. Therefore, strategic pluralism theory predicts that since not all women are able to “get it all”, women have evolved a mixed mating strategy and are forced to make trade-offs between the two mate-choice dimensions when selecting a potential mate. Recent research indicates that short-term mating can be beneficial for women, and women do in fact show short-term strategy adaptations, relating specifically to acquiring good genes for reproductive success (Møller & Thornhill, 1998; Scheib et al, 1999; Waynforth, 1998).

Women who are more successful in reproduction are those who are willing to engage in flexible and mixed mating strategies, selectively seeking casual sexual involvement with mates showing evidence of good genes and heritable fitness, while being attuned to long-term mates revealing cues of high parental investment ability and willingness (Gangestad & Simpson, 2000; Gangestad, Thornhill, & Garver-Apgar, 2005). Therefore, strategic pluralism theory is similar to parental investment theory and sexual strategies theory in explaining women’s long-term mate preferences; however, it differs in a particularly useful way when describing women’s preferences for short-term partners. Likewise, for male preferences, strategic pluralism theory builds on both parental investment theory and sexual strategies theory by recognising that men have a powerful desire for short-term mating; however, rather

than this desire being universal and overarching, strategic pluralism theory argues that, like women, this mating strategy is conditional. That is, based on the attributes he possesses to attract a partner, if a man is able to engage in short-term opportunistic matings, he will pursue this strategy; however, if he does not have the necessary constellation of attributes required in a mate, he may change his mating strategy by allocating more time, energy, and resources to long-term mating and parental investment (Gangestad & Simpson, 2000).

There is now a considerable body of evidence supporting strategic pluralism theory, highlighting the mixed mating strategies of men and women. Several studies by Regan and her colleagues (Regan, 1998a,b; Regan & Berscheid, 1997; Regan et al., 2000; Sprecher & Regan, 2002) have shown that relationship type influences evaluations of mate preferences. For instance, Regan and Berscheid (1997) found that both men and women ranked physical attractiveness as the most desirable characteristic in a casual sexual partner, but not in a long-term partner. They demonstrated that when considering a potential casual partner, internal qualities, such as character traits and personality features, were downgraded in favour of extrinsic characteristics, such as health, physical attractiveness, and being sexy looking.

Similarly, Greiling and Buss (2000) showed that women require a short-term mate to be significantly more attractive than a long-term partner. Hence, researchers have established that when considering a short-term partner, women place more emphasis on physical attractiveness, sex appeal, physical fitness, symmetry, and muscularity than when looking for a long-term partner, and overall value physical attractiveness more than resource acquisition (Frederick & Haselton, 2007; Haselton & Miller, 2006; Pawlowski & Jasienska, 2005). Physical attractiveness is clearly an important characteristic in mate selection, and is particularly prioritised by both sexes in short-term mates (Buunk et al., 2002; Li et al., 2002).

Just as health is represented by attractiveness and is valued in the short-term by both men and women, we would expect traits that were ancestrally important for parenting and

providing, such as warmth, faithfulness, resources, and status, would be more important in the long-term. As discussed earlier, there are many studies which demonstrate this and provide evidence for the good provider model (Botwin, Buss, & Shackelford, 1997; Buss, 1989; Jensen-Campbell et al., 1995; Li et al., 2002; Shackelford, Schmitt, & Buss, 2005). For instance, a study by Li and Kenrick (2006) found that in the long-term, women valued warmth and trustworthiness even more than they previously valued kindness. It has been suggested that this is because warmth and trustworthiness cover a broader range of qualities than kindness does. Similarly, men have also been shown to highly value warmth and kindness in a long-term partner. Despite having a preference for short-term matings, men do engage in long-term mating as there are important benefits, such as increased paternal certainty and improved parenting of offspring (Cunningham & Russell, 2004).

However, these results should not be misunderstood to indicate that attractiveness is unimportant to women in a long-term relationship, or that social status is not important to men. For instance, men tend to favour partners who are at least equal to their own social status (Regan, 1998b). What differs between the sexes is their selectivity and thresholds of acceptance. Men's standards for a short-term mate are generally much lower than for a long-term mate, whereas in comparison, women's standards in both temporal contexts are higher than men's and quite similar across relationship contexts, except when considering physical attractiveness in a short-term relationship (Kenrick et al., 1993). However, when levels of parental and relationship investment increase (i.e., in the longer-term), the selectivity and criteria of men and women appear to somewhat converge (Kenrick & Keefe, 1989).

Trade-offs and preference dimensions

A large body of cross-cultural research has shown that not all ideal mate characteristics are created equal; there are certain standards and thresholds of preferences, and

trade-offs are often made in mate choices (Gangestad & Simpson, 2000; Townsend & Wasserman, 1998). According to Townsend's threshold concept, sex differences in mating strategies are based on thresholds of initial acceptance, which differ for men and women due to differences between their evolved mating strategies (Townsend, 1993). One method that has been used to explore this involves forcing participants to make trade-offs between partner attributes, which is comparable to real-life partner choices. The question then arises: When trade-offs are made, which combinations of mate choices are preferred?

It has been argued there are a few key mate preferences for men and women, and several studies have sought to identify these. For instance, Kenrick et al. (1990) found five main mate preference factors of status, physical attractiveness, friendliness, health, and family orientation, which were replicated across men and women. Simpson and Gangestad (1992) asked participants to rate the extent to which 15 common mate attributes (e.g., physical attractiveness, kindness, loyalty, and social status) affected their choice of a romantic partner. Factor analyses revealed two factors within both sexes: The first factor was composed of characteristics important for developing relationship closeness and intimacy, while the second factor contained attributes relating to attractiveness and social visibility.

Recent developments of this work have, in fact, shown that the second factor of attractiveness and social visibility contains two theoretically distinct components. Gangestad and Simpson (1996) found that markers of an individual's health (such as physical attractiveness, physical fitness, and health history) do not correlate highly with cues of social prominence and resources (such as social status, social visibility, and financial resources). Therefore, these mate factors have now been refined into three major dimensions that define the standards used to evaluate ideal partners: Capacity for intimacy and commitment, attractiveness and general health, and social status and resources. These three dimensions make theoretical sense in light of recent models of human mating strategies, such as the

aforementioned strategic pluralism theory. Each dimension represents a different route to obtaining a mate and promoting one's own reproductive fitness (Buss & Schmitt, 1993; Gangestad & Simpson, 2000).

The results of a series of factor-analytic studies by Fletcher and his colleagues (Fletcher et al., 1999; Fletcher & Simpson, 2000; Simpson, Fletcher, & Campbell, 2001) have added to this research and demonstrated that the highly sought-after ideal mate characteristics fall neatly into a tripartite structure: Warmth/loyalty (including understanding, supportiveness, consideration, and kindness); vitality/attractiveness (including having a nice body, sexiness, and attractiveness); and status/resources (including having a good job, being financially secure, having a nice house or apartment, and successfulness). These results have been replicated across cultures and do not change even if participants are involved in sexual relationships (Fletcher & Stenswick, 2003). Similarly, and on the basis of a theoretical review, Penke, Todd, Lenton, and Fasolo (2007) concluded there are three relatively stable, semi-independent major preference dimensions that have been established in the mate choice literature, underlying all conceptions of ideal partners: Preferences for attachment (warmth), resources (status), and condition (attractiveness).

Therefore, individuals bring and search for a combination of attributes in their partners, and every relationship involves an exchange of resources, either in kind (when partners exchange love), or in value (when one partner's beauty is exchanged for the other's wealth) (Foa & Foa, 1980). It is worth mentioning here that humans do not typically or often consciously coldly calculate the rewards and costs of mating opportunities according to their reproductive interests, or tick off the three ideal mate dimensions when considering a prospective partner (Feingold, 1990). Rather, humans typically experience powerful desires and emotions that, according to evolutionary psychology and sexual selection, have evolved over time and are important cornerstones to human reproductive success (Fitness, Fletcher, &

Overall, 2003). Individuals have access to more than one mating strategy that they often unconsciously use, and will vary in the extent to which they pursue one mating strategy over another, depending on a variety of contextual factors, sociocultural norms, and regulations about mating (Hanko, Master, & Sabini, 2004). In preferred mating strategies, this within-sex variation is often greater than between-sex variation.

The impact of sociosexuality on mate preferences

Part of this within-sex variation is captured by individual differences in sociosexuality (Simpson & Gangestad, 1991; Wilbur & Campbell, 2010). The term *sociosexuality* was introduced by Kinsey and his colleagues to describe individual differences in people's willingness to engage in uncommitted sexual relationships and their attitude toward casual sex (Kinsey, Pomeroy, Martin, & Gebhard, 1953; Kinsey, Pomeroy, & Martin, 1948). Kinsey's studies on normative sexuality were the first to provide scientific evidence that promiscuity is a fairly frequent phenomenon. Following from this, research by Gangestad and Simpson showed that individuals vary in a construct they called *sociosexual orientation*, which concerns the willingness (or lack thereof) to have sex in a relationship prior to mutual investment and commitment to the relationship (Gangestad & Simpson, 1990; Snyder, Simpson, & Gangestad, 1986). In other words, it refers to the degree to which individuals prefer brief sexual encounters versus long-lasting mateships.

The Sociosexual Orientation Inventory (SOI), a short self-report measure of human sexuality, was developed to investigate these individual differences and assess the degree to which individuals require emotional closeness and commitment before having sex with a romantic partner (Gangestad & Simpson, 1990). The SOI measures sociosexuality along a single dimension. At the high end of this dimension, individuals with a more *unrestricted* sociosexual orientation require less closeness and time before having sex, whereas individuals

at the other end of the dimension, those with a more *restricted* orientation require more time and commitment in relationships before having sex with partners. Hence, relative to restricted individuals, unrestricted people are generally more promiscuous and are more likely to engage in “one-night stands”. They are also more likely to have sex earlier in their relationships, and have relationships characterised by less investment, less commitment, less love, and less dependency (Simpson & Gangestad, 1991). At the other end of the spectrum, restricted individuals tend to have fewer partners and generally prefer monogamy, prolonged courtships, and heavy emotional investment in long-term relationships.

It is important to note that an unrestricted sociosexual orientation does not necessarily equate to a general avoidance of long-term relationships. Instead, unrestricted individuals generally enjoy having casual, uncommitted sex, and while in a committed relationship may be more likely to consider having a sexual affair (Simpson & Gangestad, 1992; Seal, Agostinelli, & Hannett, 1994). Therefore, it is not the involvement in short-term or long-term relationships that marks different sociosexual orientations, but rather the quality of these relationships (Ellis, 1998; Simpson & Gangestad, 1991). The SOI has proven to be a valuable instrument and has enjoyed widespread popularity, being successfully utilised across several mate choice preference studies (Fletcher et al., 1999; Gangestad, Simpson, Cousins, & Christensen, 1999; Simpson & Gangestad, 1992; Townsend & Wasserman, 1998).

Sex differences in sociosexuality. From an evolutionary perspective, sex differences in sociosexuality are universal because of fundamental differences in the evolved reproductive strategies of men and women. Trivers (1972) noted that sexual asymmetries in obligatory parental investment burdens are systematically linked to the processes of sexual selection and should predict sex-differentiated mating preferences and influence reproductive strategies or sociosexual orientations. That is, the lesser-investing sex usually has a more unrestricted sociosexual orientation than the heavier-investing sex. Within the sociosexuality literature, the

most replicated finding is that men have a more unrestricted sociosexual orientation than women (e.g., Baumeister, Catanese, & Vohs, 2001; Buss & Schmitt, 1993; Schmitt, 2005; Simpson & Gangestad, 1992).

An impressive study conducted by Schmitt and his colleagues (Schmitt et al., 2003) showed a consistency and universality of sex differences on the SOI across the 48 nations studied. These results support evolutionary theories that suggest men and women fundamentally differ in sociosexuality, and that ecologically sensitive mating adaptations cause sex-specific and culture-level shifts to occur along the sociosexuality dimension (Gangestad & Simpson, 2000; Schmitt et al., 2003). However, although men are generally more unrestricted in sociosexuality than women, this sex difference in sociosexual mating psychology does not necessarily mean that women are exclusively designed for long-term monogamous relationships. Gangestad and colleagues found that women with an unrestricted sociosexual orientation show more interest in short-term mating, whereas in contrast, women with a restricted sociosexual orientation are more interested in long-term mating and are less willing to have sex without commitment and emotional closeness (Gangestad et al., 1999; Simpson & Gangestad, 1991, 1992). Therefore, although there are sex differences in certain characteristics that are consensually valued and their levels of sociosexuality, the substantial variability in their within-sex responses are typically larger than the difference that exists between the sexes (Buss & Barnes, 1986).

Within-sex variation and mate preferences. In addition to quantifying levels of sociosexuality and confirming the between-sex differences in sociosexual orientation, the SOI was developed to examine the partner preferences of restricted and unrestricted individuals (Simpson & Gangestad, 1991). Levels of sociosexuality have been shown to be linked with sexual strategies. For instance, a study by Simpson and Gangestad (1992) found that when describing their current romantic partners, unrestricted participants were more likely to

describe their partner in terms of physical attractiveness, whereas restricted participants described them in terms of more internal traits, such as loyalty and affection. Further, they found that unrestricted participants sought partners who are more physically attractive, have greater sex appeal and considered qualities such as kindness, faithfulness, and understanding, less pivotal in a potential partner than did their restricted counterparts. This difference has been replicated in other studies, such as by Fletcher et al. (1999), who found that unrestricted individuals have a higher preference for physical attractiveness and other indicators of good genetic fitness.

Accordingly then, these patterns of mate preferences should covary with female and male sociosexuality. Consistent with this, several studies have demonstrated both men's and women's choice patterns correlate with their levels of sociosexuality (Gangestad, 1993; Gangestad et al., 1999). Gangestad and Simpson (1990) proposed that these within-sex differences in sociosexual orientation are the outcome of the evolution of different adaptations, suggesting that alternative mating strategies are a response to intersexual competition for mates, which vary as a function of one's individual attributes and environment. For instance, men with a lower mate value may consider pursuing a quality strategy (unlike their higher mate value counterparts adopting a quantity strategy), because evidence of warmth and commitment may make them more appealing to women. Therefore, both men and women conditionally apply alternative sexual strategies, trading-off desirable characteristics as a response to less-than-ideal mating chances (Simpson & Gangestad, 1992).

This concept of conditional trade-offs predicted by sociosexuality has been further developed in the previously mentioned trade-off threshold model by Townsend (Townsend, 1993). This trade-off threshold model attempts to account for both the between-sex differences (which determine the threshold of initial acceptance), as well as the overlap between male and female sexual strategies, as the within-sex variation has a secondary

influence on mate preferences. Townsend and Wasserman (1998) suggested that levels of sociosexuality affect the choosing of partners who have passed the initial threshold and tested their trade-off threshold model by asking participants who had completed the SOI to rate the importance of several mate characteristics. As expected, they found that both men and women with an unrestricted sociosexual orientation rated physical attractiveness as more important, and willingness to commit as less important in a potential partner, compared to the restricted participants. However, there were also significant sex differences. All men in the study, regardless of their sociosexual orientation, expressed a willingness to engage in a sexual relationship with almost all of the target partners, regardless of the characteristics being offered. On the other hand, women were generally less willing, and unrestricted women were only interested in engaging in a relationship if the target partner indicated a willingness to commit, despite being rated as physically attractive.

The results of Townsend and Wasserman's (1998) study which show women's preference for a willingness to commit across all short-term and long-term relationships is at odds with strategic pluralism theory. It has been suggested that this disparity is due to the ambiguity of how the temporal context was specified to participants. A study by Wilbur and Campbell (2010) sought to address this limitation, and found that in the short-term, unrestricted women responded more favourably to attractive sexual partners, whereas restricted women were less influenced by attractiveness. However, contrary to short-term preferences, they found that levels of sociosexuality did in fact not moderate women's preferences in the long-term.

Although women do engage in short-term mating, both restricted and unrestricted women ultimately do desire long-term monogamous relationships (Simpson & Gangestad, 1991). Wilbur and Campbell (2010) suggested that the moderating influence of sociosexuality on women's short-term preferences, combined with the lack of moderation on women's long-

term preferences, shows that the manner in which sociosexuality affects women's mate preferences is more nuanced than simply directing women to either short-term or long-term mating strategies (Wilbur & Campbell, 2010). Therefore, sociosexuality is related to mate choice in a highly specific manner, particularly for women, and has been especially useful in supporting the good genes theory of sexual selection, that unrestricted individuals have a higher preference for physical attractiveness (Simpson & Gangestad, 1992).

In conclusion, both men and women have evolved different short-term and long-term mating strategies to enhance their reproductive fitness, varying not only between the sexes but also within each sex, depending on the temporal context, mate value and availability of mates, as well as individual differences in sociosexuality. Over the course of evolutionary history, the men and women who selected mates who helped solve their adaptive problems were more reproductively successful than those who did not (Buss, 1989). This reproductive success can be achieved through two different avenues, either by selecting a partner who shows evidence of being a good provider, or choosing a partner who displays good genes (Gangestad & Simpson, 2000). The relative importance of such mate traits appear to vary by relationship context. That is, warmth and resource potential, both evidence of being a good provider, are highly valued by men and women in the long-term; however, in the short-term, men and women place a greater emphasis on indicators of high-quality fitness. According to the good genes theory, attractiveness is in the adaptations of the beholder and organisms evolved to regard any reliable markers of fitness attractive (Andersson, 1994; Rhodes, 2006; Symons, 1995). This argument, and its relevance to the research described in this thesis, will be explored in further detail in the next chapter.

Chapter 2

The impact of health and disease cues on mating preferences

Attractiveness and health

Physical appearance is the most accessible and prominent feature by which we judge others, and plays an important role in sexual and romantic attraction across all cultures (Fitness et al., 2003). It is erroneously yet commonly believed that physical attractiveness is unusually valued in our own or similar cultures. Recent evidence indicates there is in fact a high degree of cross-cultural consensus about what constitutes physical attractiveness, including facial attractiveness (Bernstein, Lin, & McClellan, 1982; Cunningham, Barbee, & Pike, 1990; Langlois, Kalakanis, Rubenstein, Larson, Hallam, & Smoot, 2000; Penton-Voak et al., 2001). That is, individuals who are rated attractive by members of their own culture also tend to be rated as attractive by members of other cultures. There is also research which shows that how people rate faces is independent of their culture or ethnic group, gender, age and sexual orientation (e.g., Cunningham et al., 1995; McArthur & Berry, 1987; Thornhill & Gangestad, 1999; Zebrowitz, Montepare, & Lee, 1993).

A meta-analysis by Langlois et al. (2000) found large effect sizes for both cross-ethnic and cross-cultural judgements of attractiveness and concluded there is indeed a universal standard by which attractiveness is judged. For example, several studies using digitally blended composite faces have found that these are more attractive than the individual faces from which they were created (e.g., Langlois & Roggman, 1990; Rhodes, Sumich, & Byatt, 1999). Further, research shows that average facial configurations are considered more attractive, while deviations from averageness reduce attractiveness (Halberstadt & Rhodes, 2000; Rhodes & Tremewan, 1996; Thornhill & Gangestad, 1993).

So why is facial attractiveness so important in sexual and romantic attraction?

Research has revealed that facial attractiveness or its component features of averageness, symmetry, and sexual dimorphism actually provide valid indicators for intelligence, health, vitality, and fertility (Kalick et al., 1998; Rhodes, Zebrowitz, Clark, Kalick, Hightower, & McKay, 2001). People generally demonstrate strong preferences for faces they perceive to be healthy (Grammer & Thornhill, 1994; Henderson & Anglin, 2003), which suggests that facial attractiveness has a functional role and may provide a heuristic cue for disease threat (Park, Faulkner, & Schaller, 2003). Not only has research shown that average and symmetrical facial traits are perceived as healthy, but there is also moderately strong evidence that averageness and facial attractiveness signal real health (Jones et al., 2001; Rhodes et al., 2001; Shackelford & Larsen, 1997). For example, Shackelford and Larsen (1999) found that facially asymmetrical individuals had poorer physiological health than facially symmetrical individuals. Meta-analyses have shown a positive relationship between facial attractiveness and mental health, as well as physical health (Feingold, 1992; Langlois et al., 2000).

Another study by Gangestad and Thornhill (2003) found that facial attractiveness ratings positively correlated with the measured bilateral symmetry of the faces. The results of these studies are consistent with the idea that female and male facial attractiveness is related to, and thus may be used as a cue to, reproductive potential and fertility (Soler et al., 2003). Recently, a study by Law-Smith et al. (2006) found that men's ratings of facial attractiveness in women predicted oestrogen levels and female reproductive health. Hence, there is good consensus as to which faces are attractive because faces contain embedded features that are honest and valid biological cues to reproductive and genetic fitness (Gallup & Frederick, 2010). Therefore, facial attractiveness and averageness have been identified as putative markers of good genes (Gangestad et al., 1994), and hence facial and physical attractiveness are not arbitrary social phenomena, but rather, provide information about underlying health, fitness and quality (Shackelford & Larsen, 1999).

Symons (1979) was the first to propose there is an evolutionary adaptation for adult preferences for opposite-sex individuals with an average face, arguing that individuals that are average are often the fittest and healthiest. He reasoned that, during human evolutionary history, selection favoured individuals with preferences for morphological features near the mean or population average, because extreme facial or bodily features would be less functional and healthy mates would enhance reproductive success (Berry, 2000; Symons, 1979). An extension of Symons' (1979) reasoning has more recently been proposed. Specifically, it is assumed that these preferences evolved partly because of parasite-driven good genes sexual selection; that is, physical attractiveness partly reflects an evolved favourable response to features that function as indicators of health quality (Sugiyama, 2005), and these components of attractiveness, symmetry, and averageness, are associated with the ability to maintain normal development despite environmental and genetic stress (Møller & Swaddle, 1997; Thornhill & Møller, 1997). Thornhill and Gangestad (1993) suggest that averageness in certain facial features may represent phenotypic and genetic quality because averageness in traits under stabilising selection often positively covaries with heterozygosity.

Heterozygosity is related to increased developmental stability and is associated with enhanced parasite resistance (Livshits & Kobylansky, 1991). Anomalies or severe deviations from the average often signal the presence of genetic mutations and congenital abnormalities, and hence aversions to such deviations, or preferences for the average, may function as a way of detecting this developmental instability (Langlois & Roggman, 1990). Phenotypic quality, which can be inherited, refers to the ability to perform in biological fitness domains such as disease resistance, growth rate, reproduction, survival, and mating (Thornhill & Gangestad, 1993). Conversely, phenodeviance refers to any deviation from the adaptive phenotypic target of development, including morphological, behavioural, physiological or immunological traits (Møller, 1997), such as human birth defects or minor physical anomalies (Waldrop, Pedersen, & Bell, 1968). Thus, facial beauty and physical attractiveness function as honest indicators of

phenotypic and genetic quality – fitness, health, quality, and reproductive value (Barber, 1995).

Mate selection based on traits signalling heritable phenotypic quality is called good genes sexual selection (Andersson, 1994; Møller & Thornhill, 1998). According to this theory, and as discussed above, preferences for attractive individuals evolved because average and attractive faces signal mate quality and enhance reproductive success (see Berry, 2000). Potential mates who are less healthy and less genetically fit do not have the phenotypic features that would allow them to be successful in direct intrasexual competition and have much less to offer in intersexual attraction (Grafen, 1990). In sexual selection, health is important in a mate not only for the genetic benefits, but also for the tangible and material benefits a healthy mate can provide (Hamilton & Zuk, 1982; Penton-Voak & Perrett, 2000; Thornhill & Gangestad, 1993). Thus, human attractiveness, including facial attractiveness, relates to health through phenotypic quality in general, and specifically immunocompetence and developmental stability (Thornhill & Møller, 1997). Other relations of attractiveness, such as markers of developmental quality, including fluctuating asymmetry, are also consistent with this hypothesis and will be discussed later.

These good genes indicators, often also referred to as fitness indicators (Miller, 2000), provide a window into an individual's phenotypic and genetic quality. Mate choice based on fitness indicators potentially maximises offspring viability and health, as well as eliminating lineages of harmful mutations (Haselton & Miller, 2006; Ridley, 2001). There are many sexually-selected traits that act as reliable indicators of reproductively important traits, including health, fertility, age, and genetic quality (Andersson, 1994; Cronin, 1991; Zahavi & Zahavi, 1997). One such marker of genetic fitness is fluctuating asymmetry (FA), which reflects the degree to which individuals deviate from the developmental target of absolute perfect symmetry on bilateral features (Møller & Swaddle, 1997; Van Valen, 1962).

Fitness and good genes

Asymmetry is a result of developmental instability, primarily affected by environmental factors (such as food deficiencies, pesticides, and parasitism) or genetic abnormalities (such as inbreeding) (Livshits & Koblyliansky, 1991; Møller, 1997; Parsons, 1990). Several studies have found a positive relationship between morphological asymmetry and the prevalence of parasitism (Møller, 1996b). Hence, pronounced asymmetry, which reflects maladaptation, is associated with a high susceptibility to parasitism and a low level of immune defence (Møller, 1996a; Møller & Swaddle, 1997; Polak, 1996). Further, genetic deviations, such as chromosomal defects and mutations, are also linked with disease and illness, which lowers reproductive fitness (Thornhill & Møller, 1997). Meta-analyses show that higher FA and developmental instability are correlated with lower fertility and reduced physiological health, slower growth, and generally poorer survival across several species (Clarke, 1998; Møller, 1997, 1999).

FA is considered a good indicator of both genetic and non-genetic fitness (Møller, 1992). Susceptibility to FA is partly heritable, which suggests that morphological symmetry is connected with the genetic determinants of phenotypic condition (Møller & Thornhill, 1997). Good phenotypic quality in a mate not only influences the likelihood of having healthy offspring, but may also affect the mate's ability to invest in offspring (Gangestad, 1993; Gangestad & Thornhill, 1997). Therefore, since health and fertility are important in a potential partner, and developmental instability reliably reflects the health condition of an individual, a low FA is valued as a marker of phenotypic quality in a mate. This association between phenotypic symmetry and mating success has been studied in many species. In humans, low levels of FA have been found to be correlated with physical attractiveness ratings (Mealey, Bridgstock, & Townsend, 1999; Singh, 1995), mating and reproductive success (Møller, 1993; Møller & Thornhill, 1998; Thornhill & Gangestad, 1993; Watson &

Thornhill, 1994), and resistance to disease and ill-health (Waynforth, 1998). For example, a study by Gangestad, Haselton, and Buss (2006) found a positive correlation between parasite prevalence in the environment and increased preferences for physically attractive partners. This supports the evolutionary hypothesis which predicts that ancestral cues of health, heredity, and phenotypic quality are particularly preferred when parasites are prevalent.

Although FA is only one potential indicator of good genes, it is correlated with a range of other more visible cues that women in particular use when making strategic mating decisions, such as muscularity and masculinity (Gangestad & Thornhill, 2003; Little, Jones, DeBruine, & Feinberg, 2008). Greater symmetry in men appears to be advertised by these cues, which in turn many women show preferences for and find attractive in short-term partners. Developmentally stable men report having more sexual partners in a lifetime, begin sexual intercourse at an earlier age, and have more extra-pair copulations (Thornhill & Gangestad, 1994; Thornhill, Gangestad, & Comer, 1995; Thornhill & Møller, 1997). As discussed earlier, there is evidence that women with symmetrical breasts are more likely to marry than women with asymmetrical breasts (Manning et al., 1997). It is suggested that this is due to their lower phenotypic quality and subsequently affected fertility. That is, women with asymmetric breasts are less likely to receive investment from men, including the large investment of marriage.

As discussed in the previous chapter, women seek traits associated with phenotypic quality, such as body symmetry and resistance to infectious diseases, and show preferences for attractive men as a marker of good genes when seeking short-term partners to enhance their chances of reproductive success. Among other traits, such as height (Pawlowski, Dunbar, & Lipowicz, 2000) and masculine or testosterone-rich facial features (Cunningham et al., 1990), muscularity has been shown to be a cue of fitness in males. A study by Frederick and Haselton (2007) found that women reported stronger preferences for muscularity in a

short-term sex partner than in a long-term partner. They also found that, consistent with past research on fitness cues, muscular men rated their bodies as sexier to women, reported having more partners as well as more short-term sex partners, and also reported having more affairs with women already in a relationship. Therefore, from a sexual selection perspective, these male traits represent cues to phenotypic quality and genetic fitness, and women who expressed preferences for such traits would have had greater reproductive success than women who did not.

According to the good genes theory, humans have been shaped by sexual selection to prefer physical qualities which serve as markers of genes that confer fitness benefits to offspring via increased viability and reproductive success, to pathogen resistance and high fertility, viewing these pathogen-resistant and healthy individuals as more attractive (Gangestad, 1993; Hamilton & Zuk, 1982; Møller, 1997). An interesting extension of this theory is the “bad genes” hypothesis, which proposes that the components of attractiveness, averageness, and symmetry that are at the other end of the scale, that is, low attractiveness, non-averageness, and asymmetry, provide signals of poor genetic fitness. Our ancestors who avoided mates with extremely unattractive faces or high levels of FA would have increased their reproductive success by preventing bad genes being passed onto their descendants. This theory argues that there is little need to choose the most highly attractive or symmetrical mate to ensure reproductive success, as mates that are average in attractiveness and symmetry are not necessarily any less fit than those above average, and are capable of producing viable and healthy offspring (Zebrowitz & Rhodes, 2004). For example, Zebrowitz and Rhodes (2004) found that highly attractive individuals were no more healthy or intelligent than averagely attractive individuals. That is, high attractiveness, averageness, symmetry, and masculinity did not signal higher levels of intelligence and health when compared to average levels of these attributes. However, they did find that lower levels of attractiveness, averageness, symmetry, and masculinity correlated with lower levels of intelligence and health, indicating

lower genetic fitness. In the instance of a congenital or genetic anomaly, such as Down's syndrome, it is clear that a non-average face signals low health, which is perceived as unattractive. Even slight deviations from average attractiveness can be indicators of low pathogen resistance and poor health. Therefore, both men and women are sensitive to valid indicators of bad genes, and in order to fulfil their biological imperative of producing and supporting healthy offspring, they prefer to avoid mating with individuals who may show such indicators of poor heritable fitness or viability.

Physical disabilities in the mating market

Disease and disabilities. As discussed in the previous section, attractiveness, averageness, and symmetry convey information about an individual's health, pathogen resistance, and genetic fitness. Genetic variation in fitness-related health stems from: a) mildly deleterious mutations, which all individuals have but some individuals have more of; and b) variable resistance to pathogens. This genetic variation affects the health of individuals, which then affects how individuals develop (Gangestad & Cousins, 2001). Pathogens and parasites pose a threat to the health of any long-lived organism, sometimes lethally, particularly in the early stages of life (Gangestad et al., 2006; Park & Schaller, 2009). This was almost certainly true in the lives of our ancestors, when there was limited medical and scientific knowledge. For instance, in extant hunter-gatherer groups, about 30% to 50% of the population dies mostly from disease before reaching reproductive age (see Hill & Hurtado, 1996).

Parasites are essentially small predators, taking the form of viruses, bacteria, insects, or worms, moving from one organism to another. They exploit the host's resources to reproduce and eventually colonise other hosts (Kurzban & Leary, 2001). Parasites can have a number of different effects on the host organism, including abnormalities from a normal and

healthy phenotype, as well as death (Hamilton & Zuk, 1982; Møller, 1990). Parasites can cause damage that interferes with an individual's symmetry, by creating lesions, marks, or discoloration of body parts; and can also cause behavioural irregularities as a consequence of damage to muscle or muscle control systems (Møller, 1990; Thornhill & Gangestad, 1993). Often these deviations from normal appearance and movement act as perceptual cues to parasitic infection. Several species of animals have, in fact, evolved elaborate parasite detection systems which are capable of detecting when other members of the species are parasitised, and allow them to avoid contact with those who are diseased and mate with those who are not (Hamilton & Zuk, 1982; Møller, 1990). This also seems to hold true in human mating (Grammer & Thornhill, 1994; Shackelford & Larsen, 1997). Humans have been shown to possess such information-processing systems that detect correlates of parasite infestation and often regard these deviations to be ugly or unattractive (Symons, 1979; Thornhill & Gangestad, 1993).

Having an anti-parasite defence system, sometimes referred to as the behavioural immune system (Schaller, 2006), designed to identify parasitic infection and activate avoidant behaviours is obviously a significant fitness advantage (Oaten, Stevenson, & Case, 2009). That is, if an individual is able to detect likely sources of infection and avoid contact, they would be able to live long enough to choose a healthy mate, and reproduce and rear healthy offspring. Our innate capacity to detect symmetry and the corresponding aesthetic preference for it may be important components of this system (Grammer & Thornhill, 1994; Kurzban & Leary, 2001). In this way, human aesthetic preferences for features such as symmetry, unblemished skin, and other reliable correlates of health may be part of our evolutionary systems designed to protect us from harm.

When this parasite detection system detects cues to the presence of infectious parasites, it triggers aversive emotional and cognitive responses that motivate behavioural

avoidance (Park & Schaller, 2009; Schaller & Duncan, 2007). As a consequence, one would avoid any tasks that require close physical contact or the possibility of exchanging bodily fluids, such as sexual activity. An important part of this defence system is disgust, as it motivates behavioural avoidance and is triggered by obvious symptoms of parasitic infection (Curtis, Aunger, & Rabie, 2004). People report being disgusted at the idea of engaging in sexual relations with an individual displaying any symptoms of disease (Fessler & Navarrete, 2003). Sexual disgust is particularly important in avoiding reproductively costly or dangerous sexual behaviours, and assists in finding a potential mate who is able to contribute to the reproduction of healthy and viable offspring (Tybur, Lieberman, & Griskevicius, 2009). Interestingly, Fessler and Navarrete (2003) found that women experience elevated sexual disgust sensitivity near ovulation (when conception is probable) to avoid suboptimal sexual behaviours. Disgust researchers have found that even objectively non-infectious objects, such as amputated limbs and congenital deformities, prompt a disease-avoidance response (Haselton & Nettle, 2006; Kurzban & Leary, 2001; Schaller & Duncan, 2007), despite the fact that many of these physically disfiguring and behaviourally disabling conditions result from external causes and are not potentially contagious, hereditary, or dangerous.

Why is it that such conditions still activate the psychological disease-avoidance processes? Is this potential signal-detection problem a flaw in the system? It appears to be the result of the costly and potentially lethal consequences of mistakenly judging a parasitised or diseased individual to be healthy (i.e., a “false negative”). It is likely that this disease-avoidance mechanism evolved to be predisposed toward triggering a “false positive” (erroneously judging a healthy individual to be diseased) (Haselton & Buss, 2000; Kurzban & Leary, 2001). Further, it is unlikely that this system would have advanced to be able to make fine distinctions between the actual symptoms of contagious or hereditary disease and the much larger range of morphological and behavioural anomalies unrelated to contagious disease (Park & Schaller, 2009). Thus, this evolved behavioural immune system is likely to be

hypersensitive to a wide range of physical or behavioural features that are perceived to be irregular or atypical, and be over-inclusive in classifying individuals as diseased (Kurzban & Leary, 2001; Haselton & Buss, 2000; Park & Schaller, 2009). This has far-reaching implications for social behaviour and interpersonal relationships. As with most evolved mechanisms, these disease-avoidance responses are likely to occur quickly with little conscious or rational deliberation. An aversive response, such as expressing disgust or displaying social rejection, may automatically be activated by a false negative based on a superficial form of non-normality. It might also take the form of strongly reacting to relatively scant evidence that someone is diseased but requiring much stronger evidence that someone is free from infection (Schaller & Duncan, 2007).

There is a long history of the avoidance of individuals who displayed physical or behavioural deviations, such as physical disabilities, facial disfigurements, and other unusual morphological characteristics (Kurzban & Leary, 2001). Historically, people with disabilities, like those suffering from disease, were often perceived as being unclean and tainted, and frequently experienced quarantine and social exclusion, often regardless of whether it was contagious, dangerous, or hereditary (Covey, 1998). Many historical anecdotes illustrate that society systematically excluded, isolated, or reacted strongly to visible signs of disease, such as deformities, skin diseases, and missing limbs (Covey, 1998). These visible signs of disease tended to produce stronger anti-social responses, more so than diseases that were more easily concealed. Researchers in the field of stigma and discrimination describe “visibility-concealability” as one of the psychologically most important dimensions of stigma (Jones, Farina, Hastorf, Marcus, Miller, & Scott, 1984). That is, the more visible a stigmatising condition, the greater the negative impact (Frable, 1993).

In contemporary society, despite advances in understanding and destigmatising physical disabilities, researchers have demonstrated that a visible physical disability or

disfigurement often elicits distinctly negative and anti-social reactions. These reactions are evident in aversive emotions such as anxiety and disgust, in prejudicial attitudes and judgements, as well as in a range of nonverbal forms of behaviour, such as avoiding physical contact with disabled individuals (Oaten et al., 2009; Park et al., 2003; Snyder, Kleck, Strenta, & Mentzer, 1979). There is now a substantial body of research documenting aversive responses to people displaying non-normative morphological cues, including superficial facial anomalies and physically disabling conditions (e.g., Duncan, 2005; Park et al., 2003). A study by Park and colleagues (Park et al., 2003) found that physically disabled people were implicitly associated with disease and that people who perceived they were more vulnerable to disease were less likely to report having a friend with physical disabilities.

A consideration of this research suggests that concerns about disease and the activation of the disease-avoidance mechanism may play a role in the prejudice and stigmatisation against individuals with physical disabilities. A number of other theoretical explanations have been offered for these anti-social reactions to disabilities, such as interactional uncertainty, attitudinal ambivalence, attachment theory, belief in a just world, and magical thinking (Park et al., 2003). These theories will not be explored here (for a review, see Heatherton, Kleck, Hebl, and Hull, 2000). However, the fact that some of these attitudes, behaviours and stereotypes – particularly ones about mental illness, obesity, and physical disabilities – are so consistent throughout history and cultures suggests there is an innate component to the phenomenon (Brown, 1991; Kurzban & Leary, 2001). The specific emotional, cognitive and behavioural reactions to physical disabilities match the responses typically given to individuals who are carriers of contagious diseases. Rationally, one may know that a superficial disfigurement is the result of an accident and is not contagious or dangerous; however, our innate and unconscious response to that individual may be influenced by our evolved behavioural immune system that responds heuristically and often fallibly to the perception of a physical disability.

Physical disabilities and relationships. Individuals with disabilities can be defined broadly as those with limitations in human actions or activities due to physical or mental impairments. According to the Australian Institute of Health and Welfare, a disability is defined as “one or more of 17 limitations, restrictions or impairments which have lasted or are likely to last, for a period of six months or more, and which restrict a person’s everyday activities” (“Definition of Disability”, 2012). Disabilities vary greatly, with differences in causes and in disabled individuals’ needs, capabilities, and limitations. There are at least four broad categories of disabilities – congenital, chronic illness, traumatic injury, and psychiatric – that can cause a varied range of cognitive, affective, behavioural, motor and/or sensory impairments (Kirshbaum & Olkin, 2002; Milligan & Neufeldt, 2001). Given the greatly varied and wide range of disabilities, only physical disabilities were explored in this thesis.

The restrictive impacts of negative attitudes towards individuals with disabilities are well documented in the rehabilitation literature, and research studies on prejudicial attitudes toward disabilities are abundant (e.g., Carver, Glass, & Katz, 1978; Chance, 2002; Goffman, 1963; Stone, 1995). However, there is surprisingly little research in the areas of sexuality, dating, and marriage in the lives of those with disabilities, despite sexuality and relationships being a vital part of the lives of most people (Milligan & Neufeldt, 1998; Tepper, 2000; Yoshida, 1994). Although physical disabilities may impair functioning and movement, the basic human desires for affection, love, and intimacy are not impaired (Milligan & Neufeldt, 2001). There has been gradual interest in the areas of sexuality and disability since the early 1980s, exploring the psychosocial implications of sexuality for individuals with disabilities (e.g., Howland & Rintala, 2001; Man, Rojahn, Chrosniak, & Sanford, 2006; Neistadt & Freda, 1987; Yoshida, Li, & Odette, 1999). Many researchers have suggested that having a physical disability limits the opportunities for the formation and maintenance of intimate, sexual relationships due to the challenging social barrier disability represents (Hanks & Poplin, 1981; McCabe, Cummins, & Deeks, 2000; Rintala, Nosek, Young, & Rossi, 1997).

Consistent with this, research indicates that individuals with physical disabilities are less likely to be married than individuals without physical disabilities, are less satisfied with how often they date, and are older when they begin dating and experience their first voluntary sexual contact (DeVivo & Fine, 1985; Fine & Asch, 1988; Gill, 1996; Nosek, 2000; Rintala et al., 1997). For instance, MacDougall and Morin's (1979) survey of congenitally disabled adults showed that nearly all of their participants were unmarried, and nearly half of the participants had never had an intimate sexual experience with another person.

Other disability research focuses on the perceptions of those with disabilities. For example, Robillard and Fichten (1983) found that students with a physical disability were seen as less masculine or feminine than those without a physical disability. They suggested that these results are consistent with previous findings, anecdotal reports, and social evidence, that individuals with disabilities are often globally viewed or portrayed as ugly, asexual, "damaged goods", abnormal, unattractive, child-like, lacking the capacity for satisfying sexual relationships, and hence, at a great disadvantage in the search for a partner (Chance, 2002; Fichten & Amstel, 1986; Parker & Yau, 2012; Sakellariou, 2006; Yoshida et al., 1999). A qualitative study by Taleporos and McCabe (2001) described a range of shared concerns among individuals with a physical disability in establishing sexual relationships. Participants reported that negative attitudes associated with a physical disability often limited, and in some cases prevented the establishment of sexual relationships. Similarly, a study by Nosek and colleagues found that women with disabilities have limited opportunities to establish romantic relationships, and reported that the most troublesome problem in relationships was attracting dating partners (Nosek, Howland, Rintala, Young, & Chanpong, 2001).

Research indicates that individuals continue to admit hesitancy or refrain from engaging in intimate personal relationships, such as marriage and dating, with individuals with disabilities (Goreczny, Bender, Caruso, & Feinstein, 2011; Vilchinsky, Werner, &

Findler, 2010). Several studies have investigated the effect of the social context on attitudes toward people with disabilities, including socialising, marriage, dating, interpersonal and work relationships, and found that societal attitudes towards disabilities have become more positive in the vocational and educational arenas, but not within the personal and social domains (Chen, Brodwin, Cardoso, & Chan, 2002; Grand, Bernier, & Strohmer, 1982). For instance, a study by Rusch, Wilson, Hughes, and Heal (1995) found that while co-workers accepted individuals with disabilities within the work setting, they tended not to befriend or socialise with them outside of the workplace. Similarly, Grand et al. (1982) found that attitudes towards disabilities significantly varied depending on the social context; there were more positive attitudes in work situations, compared to dating and marriage situations, with the lowest rate of acceptance in marriage situations.

However, a study by Gordon, Minnes, and Holden (1990) found the lowest rate of acceptance of a person with a disability was in dating situations. Similarly, Hergenrather and Rhodes (2007) published a large rating scale study with college students and also reported a significant context effect. They found that attitudes toward people with physical disabilities were most positive in the context of work, followed by marriage, and then dating. They also found that female participants had more favourable attitudes toward disabilities than males. These findings are consistent with previous research indicating that, generally, males view individuals with disabilities more negatively than females (Chen et al., 2002). Ferguson, McDonnell, and Drew (1993) found that males had more negative attitudes towards people with disabilities compared to females.

It has been suggested that these discrepancies in attitudes towards acceptability of disabilities in social contexts may be explained either by the shifting values in society toward more conservative attitudes with respect to sexual relationships, or that disabilities may be perceived as less important in a long-term relationship. However, these gender and social

context differences in attitudes can also be interpreted from an evolutionary point of view. Specifically, in a dating or short-term relationship context, health is of paramount importance in a potential mate, particularly for males (Buunk et al., 2002; Regan & Berscheid, 1997). Thus, the presentation of a disability may trigger our evolved behavioural immune system and an aversive response is activated in a short-term context, in order to avoid any reproductively costly or dangerous sexual behaviours. On the other hand, in a marriage or long-term relationship context, although good health is important in a partner, it is not the most highly valued mate characteristic, and hence, a disability (as the evolutionary antithesis to good health), may not rate as negatively in the long-term. Furthermore, in this context, there is more time to evaluate the automatic activation of the disease-avoidance response, and decide whether the potential mate with a disability is in fact free from infection or disease. Hence, there may be a less aversive reaction to considering marrying an individual with a disability. In contrast to intimate relationships, in a work context, close physical contact with a colleague is often not necessary (or appropriate) and hence there would be less of an activation of the disease-avoidance response.

Interestingly, Taleporos and McCabe (2003) found that among physically disabled participants, men were more likely than women to be single. They suggested that this was because men with physical disabilities faced more barriers in forming relationships. These results are supported by earlier research exploring the difficulties faced by physically disabled men in the formation of sexual relationships (Sakellariou, 2006; Shakespeare, 1999; Shuttleworth, 2000). For example, Tepper (1999) reported that often it is easy for men with disabilities to make female friends; however, the transition from a friendly to a sexual relationship is difficult to accomplish. Some researchers suggest that this disadvantage to males with disabilities is due to the social construct of masculinity and the dominant cultural norms of functioning and responsibility (Miner, 2000).

According to traditional convention, males are expected to be strong, and show independence and prowess; however, having a disability may undermine this and men with disabilities may be viewed as being emasculated (Esmail, Darry, Walter, & Knupp, 2010). Drench (1992) suggested that sexual adjustment may be easier for women with disabilities because there is traditionally more emphasis on the interpersonal aspects of sexuality for women, which are less likely to be affected by a physical disability. However, while research shows that men with physical disabilities are less likely than women to be in a relationship, surprisingly men are not less likely to be married (Bowe, 1984; Taleporos & McCabe, 2003). In the context of interpersonal relationships, it appears that women with disabilities marry or form families significantly less often than men with disabilities (Fine & Asch, 1988; Longmore, 2003). In disability research, this discrepancy has often been explained by attitude research which indicates that women in general are more accepting of disability in others – including perhaps, prospective mates – than are men (Forlin, Fogarty, & Carroll, 1999; Hergenrather & Rhodes, 2007; Laws & Kelly, 2005; Werner & Davidson, 2004). However, what has not been previously considered is the evolutionary aspect of women's general acceptance. That is, men may be less accepting of disabilities in prospective mates due to the highly valued importance of the physical signs of health in a partner for men.

Other studies have reported that women with disabilities are typically viewed more negatively than men with disabilities (Fine & Asch, 1988; Gartner, Lipsky, & Turnbull, 1991; Goreczny et al., 2011). Speculative explanations have been offered for these negative attitudes and limited relationship opportunities for women with disabilities that correlate with anecdotal data (Gill, 1996). One explanation is based on aesthetics, which argues that due to the traditional gender stereotypes of physical attractiveness, if a woman is not able to conform to such prescriptions, women with visible disabilities may be judged as flawed, inferior, or defective as sexual partners (Esmail et al., 2010; Hanna & Rogovsky, 1991; Meekosha, 1998). A study by Kleck and DeJong (1983) found that judgments of attractiveness were found to be

strongly associated with the presence or absence of a physically handicapping condition, especially for females. Another explanation for the negative attitude towards women with disabilities focuses on function. A woman's identity in society is often strongly defined around such themes as reproduction and home-making; however, having a disability can disrupt this role and identity (Schlesinger, 1996). Women with disabilities are often perceived as being unable to care for their partners, children and household (Anderson & Kitchin, 2000; Fine & Asch, 1988; Hwang, 1997).

This explanation suggests that women who do not fit in this traditional role or who are unable to perform these duties are viewed as unsuitable and incapable partners. The fact that women with cognitive and learning disabilities have higher rates of marriage than other disability groups lends some support to the first aesthetic explanation (Safilios-Rothschild, 1977); however, this is in contrast with the function theory, as individuals with cognitive and learning disabilities are often seen to have more functional limitations than those with a physical disability (Esmail et al., 2010). Given the importance of attractiveness to men in considering a potential partner, the first aesthetic explanation appears to be more in line with evolutionary theories of sexual selection.

Overall, social and empirical evidence continues to attest to discriminatory attitudes and significant disadvantages in forging and maintaining sexual relationships for people with physical disabilities. Psychological evidence of negative attitudes towards individuals with disabilities is further complicated by self-conscious attempts to avoid displaying obviously prejudicial responses (Park et al., 2003). There are often discrepancies found between verbally expressed attitudes and nonverbal responses towards individuals with disabilities (Kleck, 1968). It is these automatic, nonverbal responses, such as physical evidence of anxiety or avoidance of physical contact, which suggests it is a more innate reaction, rather than a societal attitude. That is, according to evolutionary accounts of stigmatisation, humans

possess cognitive adaptations designed to avoid poor social exchange partners and avoid contact with those who may be likely to carry communicable pathogens; i.e., the evolved disease-avoidance mechanism (Kurzban & Leary, 2001; Neuberg, Smith, & Asher, 2000).

In this thesis, the hypothesis that the difficulties individuals with disabilities experience in developing sexual relationships can be explained, at least in part, by evolutionary psychology, is explored. That is, individuals with physical disabilities may not be considered attractive as sexual partners because physical disabilities indicate less than optimal genes and reproductive viability. In essence, an individual with a visible physical disability may activate a potential mate's innate behavioural immune system and 'turn off' feelings of sexual attraction. However, irrespective of whether one is considering an individual with a disability to be a partner, friend, or colleague, there is still a strong norm in contemporary society to be seen as showing a positive or favourable attitude toward people with disabilities. This is an important and potentially confounding factor when exploring self-reported mate preferences, and will be discussed in more detail below.

Attitudes towards disabilities and social desirability. Despite the societal prevalence of positive evaluations of individuals with disabilities, it is evident that people without a disability may be relatively less comfortable interacting with people with a disability. Social psychology research is abundant with evidence that people do not always share their true attitudes and that some people may not even be aware of their true attitudes (Rojahn, Komelasky, & Man, 2008; Zsombok, Hammer, & Rojahn, 1999). Direct measures of attitude can be particularly misleading when the attitude being explored is socially sensitive and self-report ratings can often be tainted by a social desirability bias (Crowne & Marlow, 1960; Petty, Fazio, & Brinol, 2008; Zsombok et al., 1999). Self-report measures have often been criticised not only because they are susceptible to social conformity, but also because humans often have limited self-insight into the motives underlying their evaluative

judgements (Gawronski, LeBel, & Peters, 2007; Wilson & Dunn, 2004). Hence, in an attempt to measure such biases, a number of social desirability scales have been developed. Among these, the Marlowe-Crowne Social Desirability Scale (MCSDS) is one of the most popular scales, both in psychological and sociological studies (see Barger, 2002; Crowne & Marlowe, 1964; King & Bruner, 2000; Nederhof, 1985).

In order to control for the possibility that attitudes toward individuals with disabilities may be subject to social desirability bias, several studies have included social desirability scales to examine whether there is a discrepancy between openly stated publically sensitive attitudes towards disabilities as opposed to latent ratings. For example, a study by Rojahn et al. (2008) found that a strong social desirability bias actually magnified the attractiveness ratings towards individuals with disabilities. They also found that the social desirability bias accounted for the discrepancies between participant's explicit attractiveness ratings and implicit attitudes toward physical disabilities. Hence, in the current study, the MCSDS was included to account for the "kindness norm" and social desirability bias towards evaluations of people with disabilities.

In summary, individuals with physical disabilities experience many societal barriers to initiating and engaging in sexual and intimate relationships. There have been many different theories and reasons proposed for the existence of these obstacles; however, an evolutionary perspective on disabilities and prejudice in intimate relationships has yet to be explored. In this thesis, theories of evolutionary psychology and sexual strategies were drawn upon to explore the impact of a physical disability on mate preferences in short-term and long-term relationships. Two studies were conducted, each of which is described in the following chapters. The concluding chapter will discuss the findings from both studies and point the way to future research.

Chapter 3

Study One

Introduction

As discussed in Chapter 1, due to the different cost-to-benefit ratio in reproduction and parental investment, there are clear differences in the mating preferences of men and women (Trivers, 1972). Men and women not only differ in their levels of willingness to engage in a relationship, with men being significantly more willing due to their lower levels of parental investment and the potential biological costs of reproduction, but also in the sexual strategies they implement. Specifically, for men to successfully utilise quantity-based sexual strategies, they seek mates who are in good physical and reproductive health. This is evidenced by men's preferences for women who are attractive, healthy, and show signs of good fertility (Buss, 1989; Townsend & Wasserman, 1998). On the other hand, women show heightened preferences for mates who show evidence of the ability to obtain resources and a willingness to commit these resources, such as earning capacity, ambition, and social status (Li et al., 2002). However, these behavioural propensities are often sensitive to the temporal context being considered. That is, both men and women adjust their mate preferences depending on the level of involvement and investment in the relationship being considered, ranging from a transitory casual relationship to a long-term committed relationship (Buss & Schmitt, 1993; Gangestad & Simpson, 2000).

When levels of investment in the potential relationship are low, such as in a dating situation, men are not only much more willing than women to engage in the relationship, but they are also less discriminating in their mate preferences (see Oliver & Hyde, 1993). However, when levels of involvement increase to a higher level, such as in a marriage situation, men will often need to invest more time and effort, similar to that of women, and hence are expected to be more discriminating in their mate choices (Kenrick et al., 1993). For

women, however, regardless of the type of relationship being considered, they are more selective in their mate choices as they have higher levels of potential investment. Despite these varying levels of selectivity and discrimination between the sexes, men and women also show similar preferences for certain mate characteristics. Specifically, in a long-term relationship, both men and women consistently and universally rate warmth, kindness, and understanding to be the most important qualities in a potential partner (Buss, 1989; Fletcher et al., 1999; Li et al., 2002). On the other hand, when considering a short-term relationship, according to strategic pluralism theory, men and women value physical attractiveness and health in a potential mate (Gangestad & Simpson, 2000; Regan, 1998a,b).

The mate choice literature has shown that not all mate characteristics are created equal, and when considering a potential partner, men and women will often necessarily make trade-offs among mate characteristics (Gangestad & Simpson, 2000; Townsend, 1993). Through this research, it has emerged there are in fact three ideal preference dimensions that define the standards used to evaluate ideal partners: Intimacy and commitment (warmth), attractiveness and condition (health), and social status and resources (economic status) (Fletcher et al., 1999; Gangestad & Simpson, 1996; Penke et al., 2007). Each dimension represents a strategy for enhancing one's own reproductive success; i.e., through obtaining a mate who is: a) willing and committed to stay and invest in a long-term relationship; b) in good physical condition to ensure the health and viability of offspring; and c) able to provide resources to future offspring.

Therefore, according to evolutionary psychology, individuals from the past and present, engage in a variety of mating strategies, all with the ultimate aim of promoting their own reproductive success. These strategies will vary not only between the sexes, but also within the sexes. That is, there exist individual differences which may influence the behavioural strategies employed when considering a potential partner, including differences

in sociosexuality (Simpson & Gangestad, 1991). Within the sociosexuality literature, the Sociosexual Orientation Inventory (SOI), which measures the degree in which individuals require mutual investment and commitment before having sex in a relationship, has been frequently used in the mate preference studies. In line with Trivers' (1972) parental investment theory, men, being the lesser-investing sex, have a more unrestricted sociosexual orientation than women, the higher-investing sex.

Within the sexes, it makes theoretical sense that those with a more unrestricted orientation (requiring less closeness and time before engaging in sex), are more interested in short-term relationships, whereas those at the other end of the continuum (with a more restricted orientation), are more interested in engaging in long-term relationships (Gangestad et al., 1999). Furthermore, within the sexes, sociosexuality appears to vary in the moderating influence it has on mate preferences. That is, according to Wilbur and Campbell (2010), sociosexuality is related to mate choice in a highly specific manner for women, only moderating women's short-term (but not long-term) preferences.

In the current study, the three most relevant classes of partner characteristics (health, warmth, and economic status) were explored in the context of between and within-sex differences in mate preferences. Choices were constrained across characteristics; that is, the prospective partner was either represented as high or low in health, high or low in warmth, and high or low in economic status. In previous studies of partner preferences, the underlying health and fitness of a prospective partner have been often represented through physical attractiveness, FA, or WHR (e.g., Mealey et al., 1999; Møller, 1993; Møller & Thornhill, 1998; Singh, 1995; Thornhill & Gangestad, 1993; Watson & Thornhill, 1994). According to good genes sexual selection, preferences for attractiveness and symmetry evolved because these traits signal heritable phenotypic quality in a mate and increase reproductive fitness (Andersson, 1994; see Berry, 2000). In the current study, a previously unexplored cue to poor

physical fitness and health, a physical disability, was used to examine mate preferences, and to explore an evolutionary basis for the negative attitudes towards physical disabilities.

As discussed in Chapter 2, individuals with physical disabilities have long been stigmatised and face many societal barriers, particularly related to initiating and maintaining intimate relationships (McCabe et al., 2000; Rintala et al., 1997). Historically, those with physical disabilities were treated like those suffering from disease, and were often shunned and avoided. Unfortunately, these prejudices are still evident today, despite the prevalence in contemporary society to be positive towards those with disabilities. There have been many reasons suggested for these negative attitudes and prejudices towards disabilities, including attitudinal theories (Hwang, 1997; Miner, 2000; Shuttlesworth, 2000) and evolutionary accounts of stigma (Kurzban & Leary, 2001; Schaller & Duncan, 2007). According to this evolutionary perspective, our evolved behavioural immune system, or disease-avoidance mechanism, is automatically activated by the perception of a physical disability. Recent research has shown that physically disabled people are still in fact today implicitly associated with disease (Park et al., 2003). It is therefore hypothesised that an individual with a physical disability is not considered as a healthy and hence attractive potential partner because of what the disability (often fallibly) represents, i.e., a disease or bad genes.

In the current study, men and women were asked to rate their willingness to engage in short-term or long-term relationships with an individual depicted in a photograph that was accompanied by a written description in a vignette. Having actual persons or photographs of actual persons in mate selection studies is important, particularly due to the evolutionary importance of visual assessment of fertility and health cues. Therefore, the current investigation used photographs of stimulus persons (pre-rated for attractiveness and manipulated for disability) paired with manipulated vignette descriptions of economic status and warmth, in order to explore the effects of restricted choices and disability cues on sex

differences in desire for different levels of investment. In its use of both visual information and summary descriptions, this multiple-cue stimulus was considered to be more similar to the mate assessment circumstances encountered in everyday life than presentations of a list of mate attributes to rate. Additionally, to investigate priorities in a set of mate characteristics, it is important for participants to consider the characteristics simultaneously, as opposed to one at a time (Li et al., 2002). The images and descriptions used in the current study allowed cues indicative of health quality, as well as parental investment capacity and resources, to be evaluated simultaneously.

Research questions and hypotheses

As discussed previously, there are several consistent findings in the mate preference literature, and these were expected to be replicated in Study One. Specifically:

Hypothesis One: Compared to women, men will be overall more willing to engage in a relationship, irrespective of the temporal context or the mate traits being offered.

Hypothesis Two: When considering a partner for a long-term relationship, both men and women will value warmth.

Hypothesis Three: In line with sexual strategies theory and strategic pluralism theory, women will be more likely than men to prefer a high than a low economic status partner for a long-term relationship.

Hypothesis Four: The difference between men and women in willingness to engage in a relationship will be greatest when considering a short-term partner, with men more willing than women to consider a short-term relationship; however, this difference in willingness will converge when considering a long-term partner.

In addition to these hypotheses based on previous research, the current study also explored the impact of having a physical disability on mate preferences. According to the mate preference literature, physical attractiveness is a cue to physical health (and hence, good genes and fertility). Accordingly, the following original hypothesis was tested:

Hypothesis Five: In line with the “good genes” hypothesis, when considering a partner for a short-term relationship, both men and women will value health, as represented by having or not having a physical disability.

As noted previously, along with gender, there are two potentially important factors that should be considered in the context of a mate preference study: Sociosexuality and social desirability. Specifically:

Hypothesis Six: Overall, men will have a more unrestricted sociosexual orientation than women.

Hypothesis Seven: For both sexes, those with an unrestricted sociosexual orientation will show more willingness to engage in a short-term relationship, while those with a more restricted sociosexual orientation will show more willingness to engage in a long-term relationship.

Hypothesis Eight: Levels of sociosexual orientation will moderate men’s, but not women’s, mate preferences in considering a long-term partner.

As discussed previously, several studies have found that a social desirability bias can affect reported attitudes towards individuals with disabilities. The social desirability bias reflects the tendency to deny socially undesirable traits and to endorse socially appropriate or favourable responses (Antonak & Livneh, 2000; Nederhof, 1985). Therefore, the potentially moderating effect of social desirability was explored in the current study by including social desirability in the analyses.

Method

A 2 x 2 x 2 x 2 x (2) mixed model design was used. The within-subject variable was the type of relationship (short-term, long-term). The four two-level between-subjects factors were health (no disability, disability), warmth (high warmth, low warmth), economic status (high economic status, low economic status), and gender (male, female).

Photographs. As discussed in Chapter 2, disabilities are extremely heterogeneous, and hence in Study One, only one type of disability, a visible physical disability, was chosen. This disability was represented as an image of an individual sitting in a wheelchair, rather than using categorical or specific labels of disabilities. Although a physical disability does not necessarily entail the use of a wheelchair, a wheelchair is often seen as synonymous to having a physical disability or impairment. In 1981, the United Nations adopted the logo of a stick figure sitting in a wheelchair to promote the International Year of Disabled People. Since then, the logo has become internationally recognised as a shorthand symbol for disability.

Each photograph used in Study One was the product of a digital combination process using a photoshop program (Adobe Photoshop CS2). Each photo showed the body of a model posing in either a chair or wheelchair. These photographs were taken using a Canon digital camera under uniform conditions and photographed from a fixed distance. The facial image used was of a morphed face obtained from a picture database from the Centre for the Integrative Study of Animal Behaviour, Macquarie University. Briefly, using software program MorphX, standard morphing procedures were applied to 8 random Caucasian faces of the appropriate sex, aged between 20 and 30 years with neutral expressions. This created average composite images of male and female faces. In pilot data, these averages were rated as highly attractive. The morph face chosen was pre-rated for attractiveness. Although no cross-cultural data are available for the particular faces used in the current study, other

research has consistently documented consensual attractiveness judgements across raters from diverse cultures (Bernstein et al., 1982; Cunningham et al., 1995; Langlois et al., 2000; Penton-Voak et al., 2001; Zebrowitz et al., 1993). The photoshop program was used to digitally lift the morphed face onto the model's body, using the program's tools to move and blend the new layer to the correct location while maintaining a fixed ratio and keep the right pitch. The image was greyscaled and colour balance flattened to help combine the images.



Figure 1. Photoshopped female individual sitting in a chair, representing the no disability condition.



Figure 2. Photoshopped female individual sitting in a wheelchair, representing the disability condition.

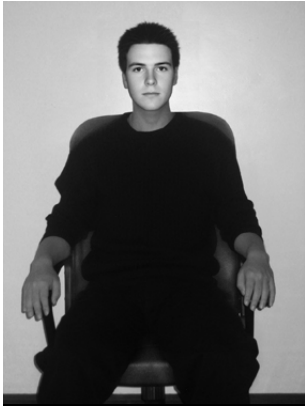


Figure 3. Photoshopped male individual sitting in a chair, representing the no disability condition.



Figure 4. Photoshopped male individual sitting in a wheelchair, representing the disability condition.

Sample. Participants were recruited for an online study on dating preferences and attitudes towards sexuality through advertisements posted at several universities and libraries, as well as by circulation via email. Participants were offered a prize draw as an incentive. The study was limited to adult participants aged 18 to 35 years and only data from participants indicating a heterosexual orientation was analysed. Previous studies in this area of research have primarily used university students as their sample; however, the current study sought to expand this and include older individuals who were within “marriage-consideration” age and

to whom mating preferences would be most reproductively relevant. A total of 568 individuals participated in this study, including 332 females (mean age 27.5 years) and 236 males (mean age 27.4 years). The mean age of this sample is older than that of other studies, which report respondents' mean age to be approximately 20 years. Two-thirds of the sample (63%) was of Anglo/Caucasian background, 13.2% of Asian background, and the remainder of Aboriginal/Torres Strait Islander, African, Indian, Middle Eastern or Southern European backgrounds.

A total of 387 participants (68.1%) were currently single and not previously married, 13% were in a relationship (defacto or married), 17.8% were separated or divorced, and 1.2% were widowed. Some 13.6% of participants indicated they would never like to have children, 7.9% wanted children in the next year, 57.8% in the next 5 to 10 years, and 20.8% indicated they had not thought about it or didn't know. Some 26.4% of the sample already had one or more children. Three-quarters of the sample (72.9%) had a Certificate, Bachelor Degree or higher, whereas the others had 13 years of formal education or less. Almost half of the sample (46%) was in full-time employment, whereas 21.5% were students. Over two-thirds of the sample (69.4%) rated their own physical health as good to extremely good, whereas 30.7% rated it as ranging from extremely poor to neither good nor poor. All participants were identified by unique participant codes only, to preserve anonymity.

Measures. Following a list of demographic questions, including items regarding age, sex, ethnic background, relationship status, children, education, and employment status (see Appendix 1), participants answered questions about the individual in the vignette, as well as completing the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991) and Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960).

Photographs and vignettes. Three factors (economic status, warmth, and health) were being manipulated, making eight possible vignettes for each gender. The vignette included a brief description, accompanied with a photograph of an individual of the opposite sex (pre-rated for attractiveness). The two conditions of economic status (high economic status, low economic status) and warmth (high warmth, low warmth) were manipulated in the description, whereas the health condition (no disability, disability) was manipulated visually. The vignettes in Study One were constructed so that the disability was not explicitly referred to, and the economic status of the individual in the vignette was described as a function of ambition and potential, rather than luck. Each participant only saw one vignette description and one accompanying photograph.

One example of a descriptive vignette accompanied with a photograph of a female sitting in a wheelchair (manipulating high warmth, low economic status, and disability) for a male participant was as follows:

1. Sarah is in her 20s. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

The other vignettes accompanied by a photograph of a female sitting in a wheelchair (manipulating disability) read as follows:

2. Sarah is in her 20s. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.
3. Sarah is in her 20s. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.
4. Sarah is in her 20s. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

The other vignettes accompanied by a photograph of a female sitting in a chair (manipulating no disability) were the same:

5. Sarah is in her 20s. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.
6. Sarah is in her 20s. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.
7. Sarah is in her 20s. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.
8. Sarah is in her 20s. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

The same process was followed for female participants. An example of a vignette accompanied with a photograph of a male sitting in a chair (manipulating low warmth, high economic status, and no disability) for a female participant was as follows:

1. Matt is in his 20s. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

The other vignettes accompanied by a photograph of a male sitting in a chair (manipulating no disability) read as follows:

2. Matt is in his 20s. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.
3. Matt is in his 20s. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.
4. Matt is in his 20s. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

The other vignettes accompanied by a photograph of a male sitting in a wheelchair (manipulating disability) were the same:

5. Matt is in his 20s. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.
6. Matt is in his 20s. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.
7. Matt is in his 20s. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.
8. Matt is in his 20s. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

After reading the vignette, participants were asked to rate the following:

1. Rate on a scale from 1 to 5, your willingness to have a short-term sexual relationship with Sarah/Matt.
2. Rate on a scale from 1 to 5, your willingness to have a long-term romantic relationship with Sarah/Matt.

For a manipulation check, participants were asked to rate the individual in the vignette on a 5-point rating scale regarding their perceived health, warmth, economic status, and attractiveness:

1. How would you rate Sarah/Matt's physical health?
2. How would you rate Sarah/Matt's earning capacity?
3. How warm would you rate Sarah/Matt to be?
4. How attractive would you rate Sarah/Matt to be?

Sociosexual Orientation Inventory. The SOI is a seven-item self-report survey used to measure sociosexuality, consisting of questions regarding thoughts and attitudes towards sex and willingness to engage in uncommitted sex. Three questions are designed to measure sociosexual attitudes: “Sex without love is OK”; “I can imagine myself being comfortable and enjoying ‘casual’ sex with different partners”; and “I would have to be closely attached to someone (both emotionally and psychologically) before I could feel comfortable and fully enjoy having sex with him or her”. Responses to these three items were made on a scale that ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). There are also three items designed to capture overt behavioural expressions of sociosexual variation: “With how many different partners have you had sex on one and only one occasion?”; “How many different partners do you foresee having sex with during the next five years?”; and “With how many different partners have you had sex this past year?” These three items were open-ended. Finally, one item refers to sexual fantasy and was designed to measure covert sociosexual behaviour: “How often do you fantasise about having sex with someone other than your current dating partner?” Responses to this item were made on a scale that ranged from 1 (*never*) to 9 (*everyday*) (see Appendix 1).

Scale scores were constructed using the method described by Simpson and Gangestad (1991). Using this method produces an SOI composite measure such that higher scores are associated with unrestricted sociosexuality. The items were weighted and scored according to Simpson and Gangestad’s (1991) instructions.

Marlowe-Crowne Social Desirability Scale. In the development of the MCSDS, social desirability was defined more broadly to refer to the need of individuals to obtain approval by responding in a culturally appropriate and acceptable manner (Rojahn et al., 2008). The MCSDS has been translated into several languages and various shortened versions are now available (Ballard, 1992; Barger, 2002; Greenwald & Satow, 1970). The MCSDS has

exhibited behavioural correlates more clearly than other social desirability scales (Crowne & Marlowe, 1964; Strickland, 1977), and is best suited for measuring the motivation to avoid negative evaluation or other-deception (Nederhof, 1985). People who score highly on the MCSDS have a high need for social approval and are more likely to portray themselves positively, whereas the converse is true of low scorers (King & Bruner, 2000).

The MCSDS questionnaire consists of 33 true or false statements about personal attitudes and traits about socially desirable responding. The reliability of the MCSDS has shown to be fairly good, with a test-retest correlation of 0.89 and an internal consistency coefficient of 0.88 (Crowne & Marlowe, 1964) (see Appendix 1). The scale consists of items drawn from a domain of behaviours which are ‘culturally sanctioned and approved, but which are improbable of occurrence’, such as “Before voting I thoroughly investigate the qualifications of all candidates” or “If I could get into a movie without paying and be sure I was not seen I would probably do it” (Crowne & Marlowe, 1964). Participants are asked to decide whether the statement is true or false as it pertains to them personally. According to Edens, Buffington, Tominic, and Riley (2001), there is not a categorical standard for differentiating between socially desirable and non-socially desirable responding; however, they designated someone as a high scorer if they scored 1.5 deviations or more above the mean for the sample (which in their data was a score above 24). Andrews and Meyer (2003) suggest that the mean score on the MCSDS for someone ‘faking good’ was 24, whereas it was 15 when participants were being honest. Although there is not a specific guideline or recommendation by the authors as to what constitutes a low, medium, or high score on the MCSDS, the current study used the general guideline used in several past studies of: Low scorers (0-8), average scorers (9-19), and high scorers (20-33), with high scorers being highly concerned about social approval.

Procedure. Participants were directed to a website address which invited them to participate in a study about the dating preferences and attitudes towards sex of today's young adults. Participants were required to read the information statement and tick their consent before proceeding to the questionnaires. Following completion of the demographic questions, participants were directed to the next Internet page. Each participant was randomly allocated to only one of sixteen scenario pages, depending on their gender. After reading the vignette, participants answered questions on their preferences and completed the two aforementioned measures. Upon completion of the questionnaires, participants were thanked for their participation, presented with contact details to ask any questions regarding the study, and offered the opportunity to be involved in a prize draw to win a \$50 Myer gift card.

Results

A mixed model ($2 \times 2 \times 2 \times 2 \times 2$) analysis of variance with one within-subject factor (short-term versus long-term) and four two-level between-subject factors (no disability or disability, high or low warmth, high or low economic status, male or female) was used for the analysis. A full factorial model was analysed. This form of analysis allowed the test of the hypotheses and also tests of whether the effects of the variables of interest interacted with other variables. The significant effects found in this analysis were followed up with tests of simple effects when appropriate. These tests were Bonferonni adjusted to take into account the number of contrasts. In further analyses, one or more numeric variables (e.g., SOI and SDS) were added as covariates. This enabled tests of whether the effects of the categorical variables (e.g., health) differed according to different values of the covariates and enabled tests of further hypotheses.

Estimated marginal means were obtained in order to show differences between conditions. These means were adjusted for all of the terms in the model as some analyses

involved covariates. These will be referred to in the results as *Emms*. There were 67 to 74 cases/subjects in each gender combination of the three conditions (no disability or disability, high or low warmth, high or low economic status).

Manipulation check. To test whether the manipulation conditions had the desired effects, a multivariate analysis of variance with four dependent variables (health, warmth, economic status and attractiveness) and the three conditions (no disability vs. disability, high vs. low warmth, high vs. low economic status) were tested using a main effects model (between-subjects design). The difference between the mean ratings for health, warmth, economic status and attractiveness were compared for each vignette condition.

Table 1 shows the mean ratings for each condition. As expected, the univariate results for each condition show that the largest effect of each condition manipulation was seen on ratings corresponding to that condition (e.g., the health condition had its largest effect on ratings of health). However, each manipulation also affected ratings on at least one other variable; i.e., the health condition (hcond), warmth condition (wcond) and economic status condition (econd) each had a significant multivariate effect on ratings of health, and hcond also affected ratings on warmth.

Table 1

Mean Ratings, Standard Deviations, Significance Levels and Effect Sizes for Each Manipulated Condition in Study One

		Ratings on health				Ratings on warmth			
	Condition	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2
Health (hcond)	Disability	3.00	.83	< .001	.19	3.25	1.08	.005	.01
	No disability	3.75	.75			3.00	1.11		
Warmth (wcond)	Low warmth	3.27	.84	.001	.02	2.77	1.15	< .001	.11
	High warmth	3.48	.89			3.48	.93		
Econ. status (econd)	Low econ. sta.	3.27	.82	.002	.02	3.08	1.11	.279	.002
	High econ. sta.	3.48	.91			3.16	1.10		
		Ratings on economic status				Ratings on attractiveness			
	Condition	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2
Health (hcond)	Disability	3.04	1.07	.548	.001	3.68	.88	.856	.00
	No disability	3.11	1.10			3.70	.89		
Warmth (wcond)	Low warmth	3.05	1.12	.341	.002	3.66	.89	.371	.001
	High warmth	3.10	1.05			3.72	.87		
Econ. status (econd)	Low econ. sta.	2.44	.98	< .001	.34	3.64	.88	.155	.004
	High econ. sta.	3.70	.78			3.74	.88		

As shown in Table 1, there was a significant difference in health ratings (i.e., individuals in the disability condition were rated as less healthy by participants than individuals in the no disability condition) and also a significant difference in warmth (i.e., participants rated no disability condition individuals as less warm than disability condition individuals), but not for attractiveness and economic status. There was also a significant difference in ratings of warmth for the warmth conditions (i.e., individuals described as warm

were rated higher on warmth) and health (i.e., high warmth individuals were rated as more healthy), but not for attractiveness and economic status. The results also showed that for the economic status conditions, although it had no effect on attractiveness and warmth, high economic status individuals were rated as healthier and as having a higher earning capacity. Overall, these results confirm that the manipulation conditions had the intended effects (along with some weaker side-effects).

Tests of Hypotheses.

Hypothesis One. Compared to women, men will be overall more willing to engage in a relationship, irrespective of the temporal context or the mate traits being offered.

As expected, there was a significant main effect of gender on ratings of willingness to engage in a relationship averaged across the short-term and long-term, $F(1,552) = 165.22, p < .001, \eta_p^2 = .23$. Overall, averaged across the other factors (health, warmth, and economic status), males were more willing to engage in a relationship ($Emms = 3.14, SE = .07$) than females ($Emms = 1.98, SE = .06$).

Hypothesis Two. When considering a partner for a long-term relationship, both men and women will value warmth.

There was a significant main effect of warmth on ratings of willingness to engage in a relationship averaged across the short-term and long-term, $F(1,552) = 24.51, p < .001, \eta_p^2 = .04$. Overall, averaged across the other factors (gender, health, and economic status), participants were more willing to engage in a relationship in the high warmth condition ($Emms = 2.78, SE = .06$) than in the low warmth condition ($Emms = 2.34, SE = .06$).

There was also a significant interaction between warmth and relationship type, $WL = .98, F(1,552) = 10.39, p = .001, \eta_p^2 = .02$. Specifically, participants in the high warmth

condition were more willing to engage in a long-term ($Emms = 2.94$, $SE = .07$) than a short-term ($Emms = 2.63$, $SE = .08$) relationship, $t(552) = 3.91$, $p < .001$. Additionally, as can be seen in Figure 5, participants in the high warmth condition were more willing to engage in a long-term relationship ($Emms = 2.94$, $SE = .07$) than participants in the low warmth condition ($Emms = 2.31$, $SE = .07$), $t(552) = 6.04$, $p < .001$.

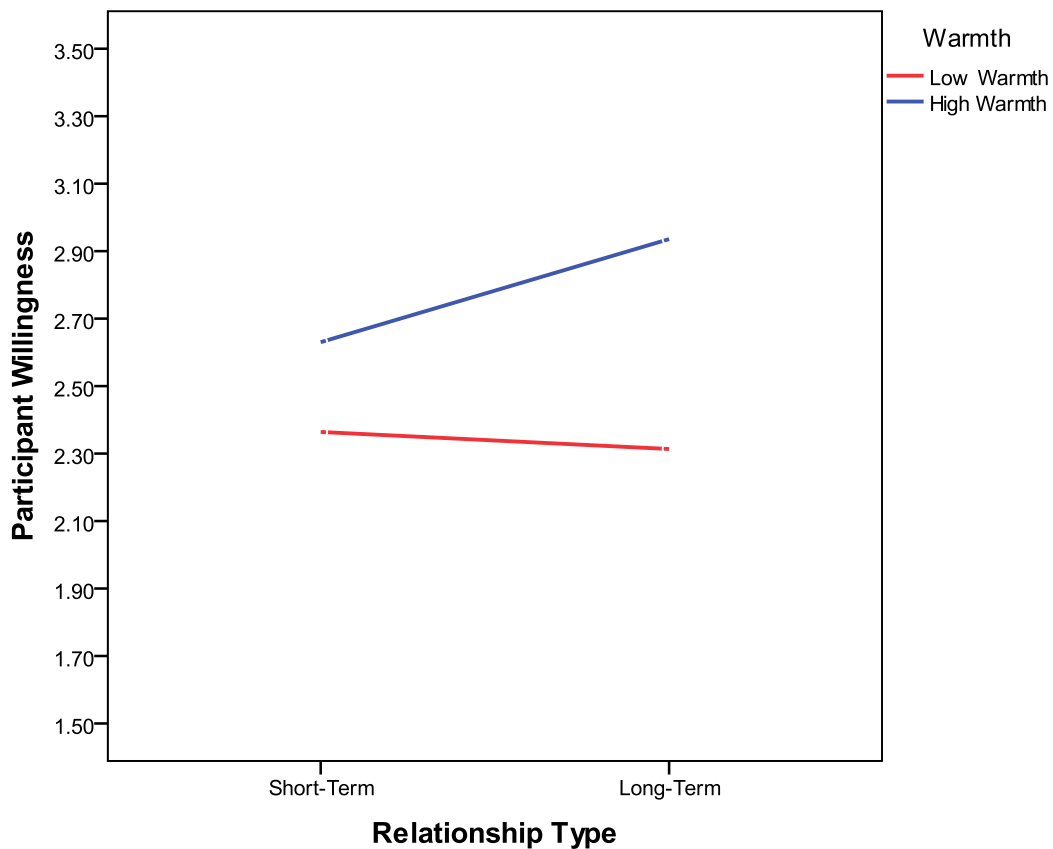


Figure 5. Ratings of participant willingness to engage in a short-term or long-term relationship with a high or low warmth individual in Study One.

Although the interaction between participant gender and warmth was non-significant, $F(1,552) = 1.16$, $p = .282$, $\eta_p^2 = .002$, it is interesting to note that warmth had significant positive effects for both males and females. That is, male participants were more willing to engage in a relationship averaged across the short-term and long-term in the high warmth condition ($Emms = 3.31$, $SE = .10$) than in the low warmth condition ($Emms = 2.96$, $SE = .10$).

Similarly, female participants were more willing to engage in a relationship averaged across the short-term and long-term in the high warmth condition ($Emms = 2.26, SE = .08$) than in the low warmth condition ($Emms = 1.71, SE = .08$).

Although the interaction between relationship type, warmth, and gender was non-significant, $WL = .99, F(1,552) = 1.00, p = .317, \eta_p^2 = .002$, the individual effects of gender need to be considered. Specifically, female participants in the high warmth condition were more willing to engage in a long-term ($Emms = 2.46, SE = .09$) than a short-term ($Emms = 2.05, SE = .09$) relationship, $t(552) = 4.08, p < .001$. Also, female participants in the high warmth condition were more willing to engage in a long-term relationship ($Emms = 2.46, SE = .09$) than female participants in the low warmth condition ($Emms = 1.69, SE = .09$), $t(552) = 5.86, p < .001$. Similarly, male participants in the high warmth condition were more willing to engage in a long-term relationship ($Emms = 3.41, SE = .11$) than male participants in the low warmth condition ($Emms = 2.94, SE = .11$), $t(552) = 2.99, p = .003$. Unlike females, however, there was no significant difference in males' ratings of willingness to engage in a short-term versus long-term relationship in the high warmth condition.

Hypothesis Three. In line with sexual strategies theory and strategic pluralism theory, women will be more likely than men to prefer a high than low economic status partner for a long-term relationship.

There was a significant main effect of economic status on ratings of willingness to engage in a relationship averaged across the short-term and long-term, $F(1,552) = 14.56, p < .001, \eta_p^2 = .03$. Overall, averaged across the other factors (gender, health, and warmth), participants were more willing to engage in a relationship in the high economic status condition ($Emms = 2.73, SE = .06$) than in the low economic status condition ($Emms = 2.39, SE = .06$). However, although there were no further significant interaction effects involving economic status, participants in the high economic status condition were more willing to

engage in a long-term ($Emms = 2.85, SE = .07$) than a short-term ($Emms = 2.62, SE = .08$) relationship, $t(552) = 2.99, p = .003$. Additionally, although the interaction between participant gender and economic status was non-significant, $F(1,552) = .873, p = .350, \eta_p^2 = .002$, it is interesting to note that economic status had a significant effect only on females. Specifically, female participants were more willing to engage in a relationship averaged across the short-term and long-term in the high economic status condition ($Emms = 2.20, SE = .08$) than in the low economic status condition ($Emms = 1.77, SE = .08$), $t(552) = 3.67, p < .001$.

Additionally, although the interaction between relationship type, economic status, and gender was non-significant, $WL = .99, F(1,552) = 2.87, p = .091, \eta_p^2 = .005$, the hypothesis that women would prefer a high than a low economic status partner for a long-term relationship was confirmed. Specifically, female participants in the high economic status condition were more willing to engage in a long-term ($Emms = 2.39, SE = .09$) than a short-term ($Emms = 2.01, SE = .10$) relationship, $t(552) = 3.74, p < .001$. Also, female participants in the high economic status condition were more willing to engage in a long-term relationship ($Emms = 2.39, SE = .09$) than female participants in the low economic status condition ($Emms = 1.76, SE = .09$), $t(552) = 4.73, p < .001$. For male participants there were no significant effects of economic status.

Hypothesis Four. The difference between men and women in willingness to engage in a relationship will be greatest when considering a short-term partner, with men more willing than women to consider a short-term relationship; however, this difference in willingness will converge when considering a long-term partner.

The interaction between participant gender and relationship type did not support this prediction, $F(1,552) = .87, p = .351$. However, although the difference in male participants' ratings of willingness to engage in a short-term versus long-term relationship was non-

significant, $t(552) = .90, p = .369$, female participants were more willing to engage in a long-term ($Emms = 2.07, SE = .07$) than a short-term ($Emms = 1.90, SE = .07$) relationship, $t(552) = 2.52, p = .012$.

Hypothesis Five. In line with the “good genes” hypothesis, when considering a partner for a short-term relationship, both men and women will value health, as represented by having or not having a physical disability.

The main effect of health on ratings of willingness to engage in a relationship averaged across the short-term and long-term was non-significant, $F(1,552) = 2.55, p = .111, \eta_p^2 = .005$. Overall, averaged across the other factors (warmth, gender, and economic status), the ratings of willingness to engage in a relationship were not affected by health. However, this effect must be considered in the context of a number of significant interactions.

As can be seen in Figure 6, and as predicted in Hypothesis 5, there was a significant interaction between health and relationship type, $WL = .98, F(1,552) = 10.92, p = .001, \eta_p^2 = .02$. Specifically, participants in the disability condition were more willing to engage in a long-term ($Emms = 2.64, SE = .07$) than a short-term ($Emms = 2.33, SE = .08$) relationship, $t(552) = 3.97, p < .001$. Also, participants in the no disability condition were more willing to engage in a short-term relationship ($Emms = 2.67, SE = .08$) than participants in the disability condition ($Emms = 2.33, SE = .08$), $t(552) = 3.02, p = .003$.

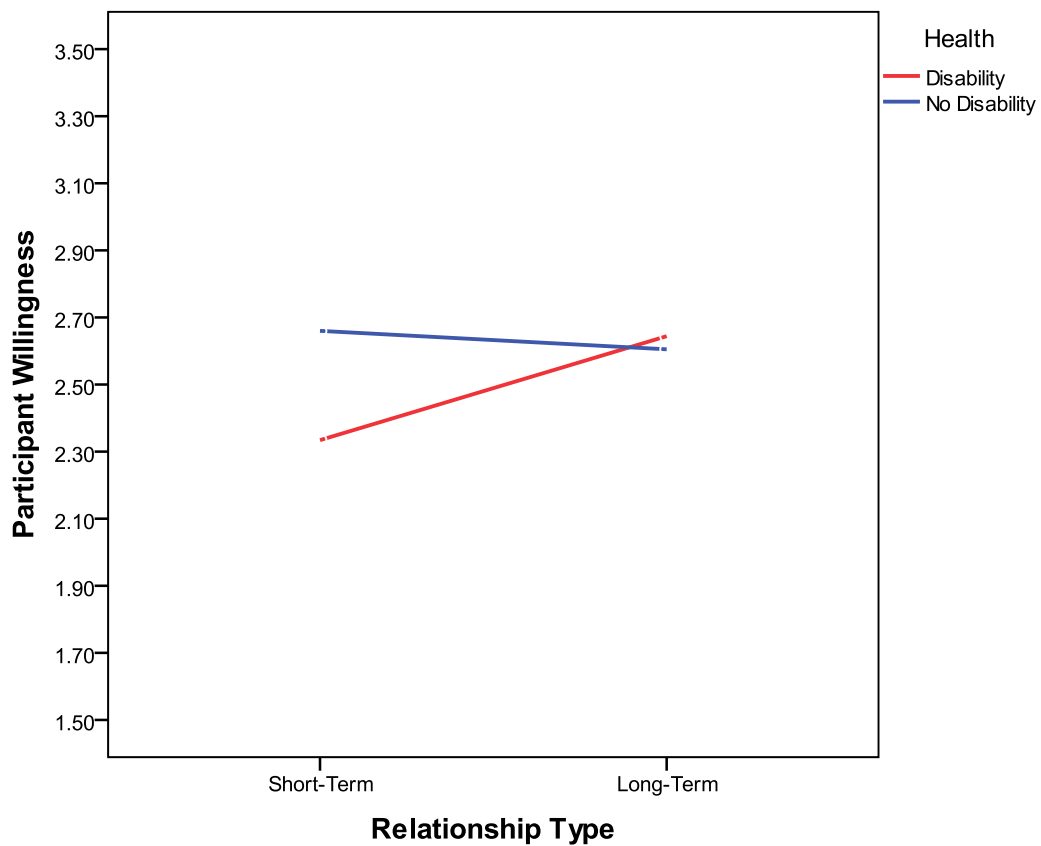


Figure 6. Ratings of participant willingness to engage in a short-term or long-term relationship with an individual with or without a disability in Study One.

There was also a significant interaction between participant gender and health, $F(1,552) = 5.75, p = .017, \eta_p^2 = .01$. As Figure 7 shows, for females, health had very little effect on ratings of willingness to engage in a relationship averaged across the short-term and long-term, as shown by the near-horizontal line. However, male participants were more willing to engage in a relationship averaged across the short-term and long-term when the individual in the vignette did not have a disability ($Emms = 3.32, SE = .09$) than when they did ($Emms = 2.96, SE = .09$), $t(552) = 2.61, p = .009$.

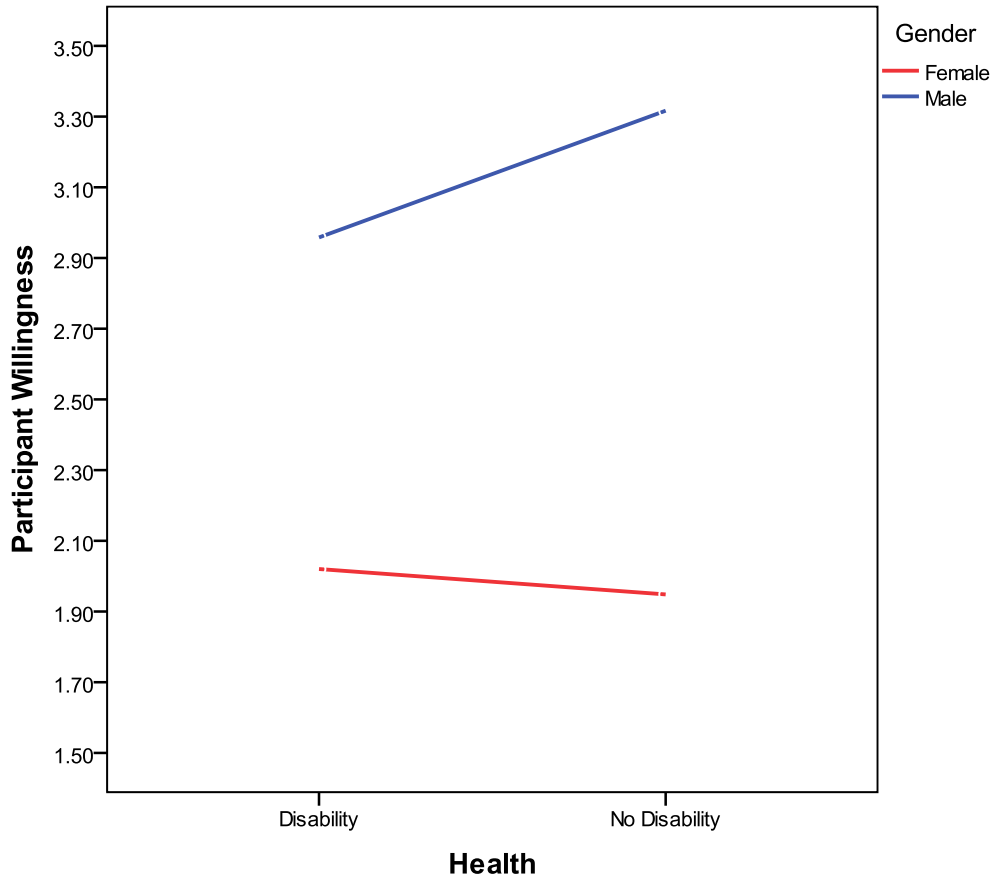


Figure 7. Willingness of male and female participants to engage in a relationship with an individual with or without a disability in Study One.

Further, although the interaction between relationship type, health, and gender was non-significant, $WL = .99$, $F(1,552) = 2.13$, $p = .145$, $\eta_p^2 = .004$, the individual effects of gender need to be further considered. Specifically, female participants in the disability condition were more willing to engage in a long-term ($Emms = 2.16$, $SE = .09$) than a short-term ($Emms = 1.88$, $SE = .09$) relationship, $t(552) = 2.81$, $p = .005$. Like females, male participants in the disability condition were more willing to engage in a long-term ($Emms = 3.13$, $SE = .11$) than a short-term ($Emms = 2.79$, $SE = .12$) relationship, $t(552) = 2.85$, $p = .005$. Additionally, male participants in the no disability condition were more willing to engage in a short-term relationship ($Emms = 3.41$, $SE = .12$) than male participants in the disability condition ($Emms = 2.79$, $SE = .12$), $t(552) = 3.77$, $p < .001$.

Hypothesis Six. Overall, men will have a more unrestricted sociosexual orientation than women.

Further analyses were conducted to test whether the effects of the categorical variables (e.g., health) differed according to different values of the covariates. All interactions of the covariate (sociosexuality) and the other factors up to the six-way interaction were tested. Using the method described by Simpson and Gangestad (1991), the behavioural item about future sex partners was capped at 30, and the attitudinal item about feeling closely attached to someone was reverse-scored. All seven items on the SOI were then z-standardised prior to the analysis. Similar to a Cronbach alpha of .73 in the original study by Simpson and Gangestad (1991), in the current sample $\alpha = .75$ (based on standardised items). Participants were split into those who scored above the mean score for the whole group and those who scored below. In this way, 266 participants with a restricted orientation and 284 participants with an unrestricted orientation were obtained.

The well-established sex difference for sociosexuality was replicated in this sample. Men ($M = .63$, $SD = .48$) scored significantly higher than women ($M = .44$, $SD = .49$) on sociosexuality, $F(1,548) = 10.44$, $p = .001$.

Hypothesis Seven. For both sexes, those with an unrestricted sociosexual orientation will show more willingness to engage in a short-term relationship, while those with a more restricted sociosexual orientation will show more willingness to engage in a long-term relationship.

The main effect of sociosexuality on ratings of willingness to engage in a relationship averaged across the short-term and long-term was significant, $F(1,518) = 6.25$, $p = .013$, $\eta_p^2 = .01$. Overall, averaged across the other factors (gender, health, warmth, and economic status), the SOI score of the participant positively affected ratings of willingness to engage in a relationship. As can be seen in Figure 8, there was a significant interaction between the

sociosexuality score of the participant and relationship type, $WL = .90$, $F(1,518) = 55.15$, $p < .001$, $\eta_p^2 = .09$. There was a significant difference in participants' ratings of willingness to engage in a short-term versus long-term relationship for both the restricted participants, $t(518) = 7.04$, $p < .001$, and unrestricted participants, $t(518) = 3.26$, $p = .001$. Also, unrestricted participants were more willing to engage in a short-term relationship ($Emms = 2.82$, $SE = .07$) than restricted participants ($Emms = 2.17$, $SE = .08$), $t(518) = 5.84$, $p < .001$.

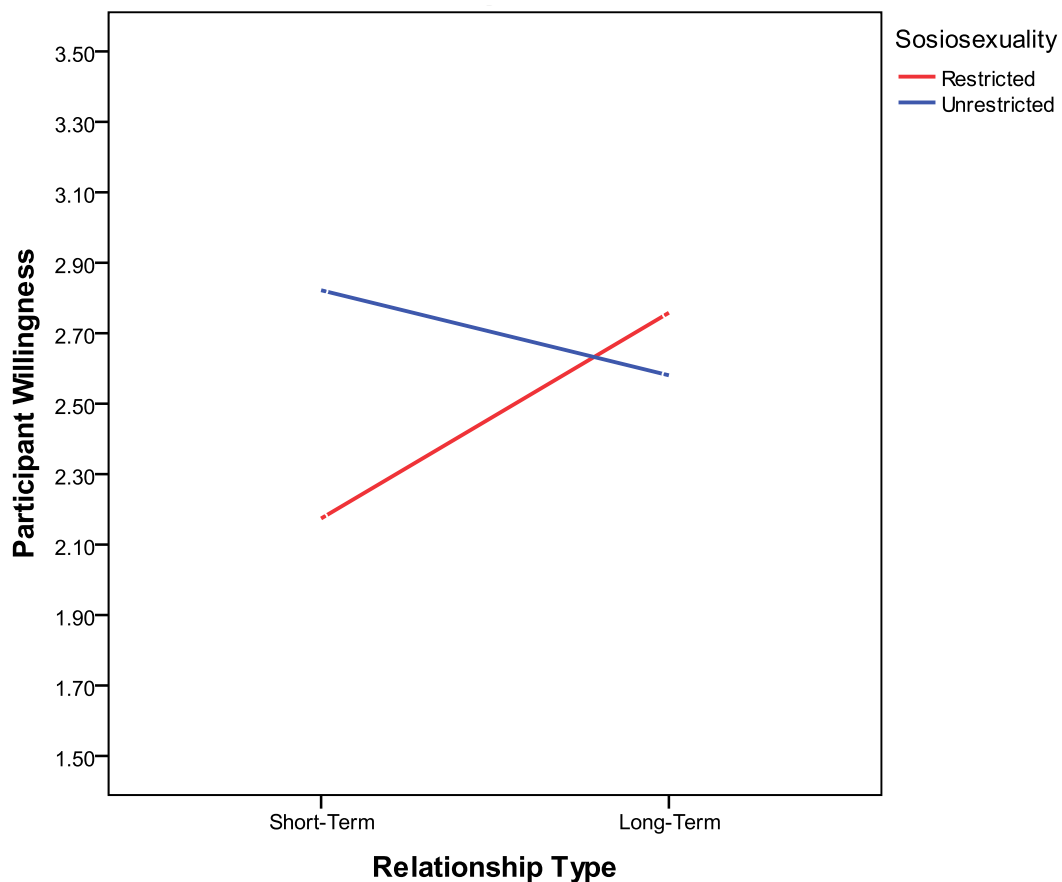


Figure 8. Willingness of restricted and unrestricted sociosexual orientation participants to engage in a short-term or long-term relationship in Study One.

Hypothesis Eight. Levels of sociosexual orientation will moderate men's, but not women's, mate preferences in considering a long-term partner.

Consistent with the hypothesis, there was a significant interaction between relationship type, participant gender, and sociosexuality, $WL = .99$, $F(1,518) = 6.65$, $p = .010$, $\eta_p^2 = .013$. As can be seen in Figure 9, sociosexuality affected male participants' ratings of willingness to engage in both a short-term, $t(518) = 4.23$, $p < .001$, and long-term relationship, $t(518) = 2.26$, $p = .024$. Specifically, male participants with an unrestricted sociosexual orientation were more willing to engage in a short-term relationship ($Emms = 3.42$, $SE = .10$) than male participants with a more restricted sociosexual orientation ($Emms = 2.69$, $SE = .14$). Similarly, male participants with an unrestricted sociosexual orientation were less willing to engage in a long-term relationship ($Emms = 3.06$, $SE = .10$) than male participants with a more restricted sociosexual orientation ($Emms = 3.44$, $SE = .13$).

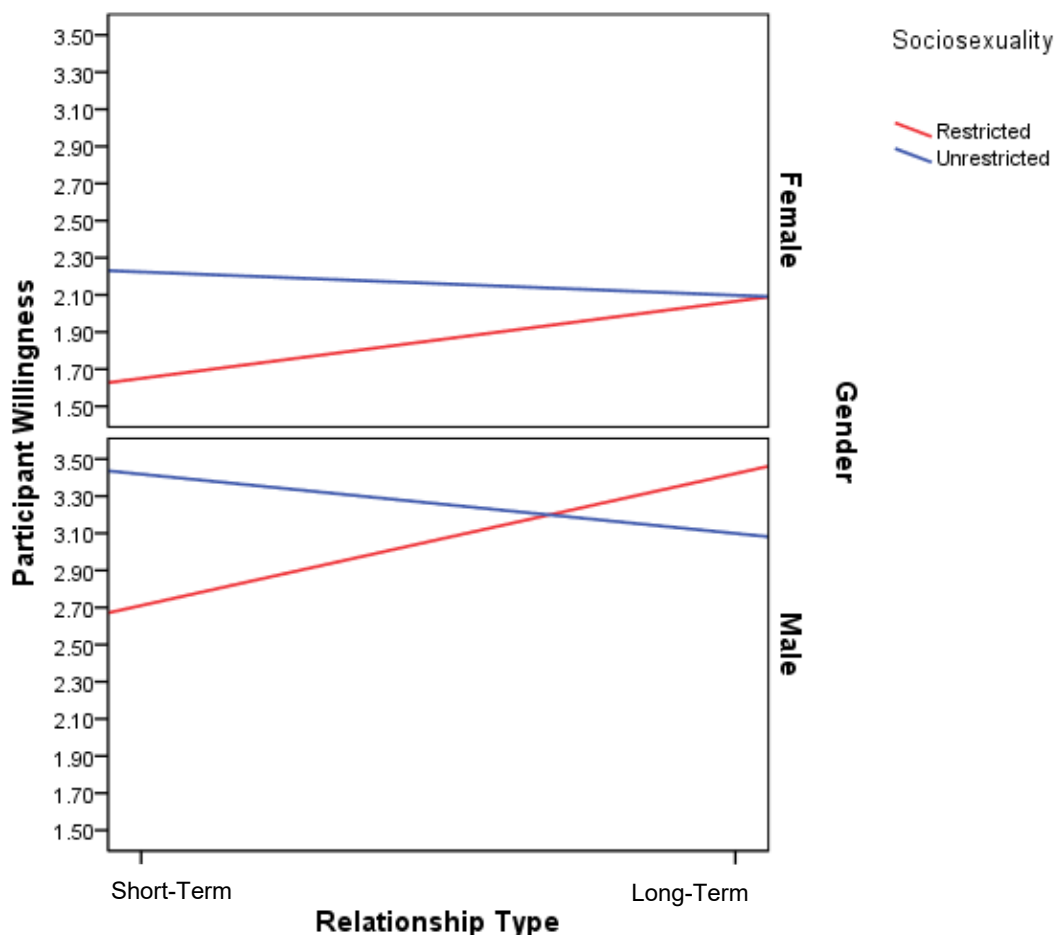


Figure 9. Willingness of restricted and unrestricted sociosexual orientation male and female participants to engage in a short-or long-term relationship in Study One.

Additionally, male participants with a restricted sociosexual orientation were more willing to engage in a long-term ($Emms = 3.44, SE = .13$) than a short-term ($Emms = 2.69, SE = .14$) relationship, $t(518) = 5.46, p < .001$. Similarly, female participants with a restricted sociosexual orientation were more willing to engage in a long-term ($Emms = 2.07, SE = .09$) than a short-term ($Emms = 1.66, SE = .09$) relationship, $t(518) = 4.52, p < .001$. However, for female participants considering a long-term relationship, sociosexuality had very little effect on ratings of willingness. On the other hand, female participants with an unrestricted sociosexual orientation were more willing to engage in a short-term relationship ($Emms = 2.22, SE = .10$) than female participants with a more restricted sociosexual orientation ($Emms = 1.66, SE = .09$), $t(518) = 4.09, p < .001$.

Effect of social desirability. The variable social desirability (SDS) was added as a covariate to test whether a person's tendency to distort self-presentation toward a socially desirable bias affected their responses. Out of the total 33 items, 15 of the negatively keyed items were reverse coded as directed by the author (Crowne & Marlowe, 1964). Similar to a Cronbach alpha of .88 in the original study by Crowne and Marlowe (1964), in the current sample $\alpha = .80$.

In this sample, there was a range of 2-32 and a median of 17 ($M = 16.51, SD = 5.58$). Participants were split into three categories of low scorers (0-8), average scorers (9-19) and high scorers (20-33). In this way, 49 participants in the low scoring group, 316 participants in the average scoring group, and 165 participants in the high scoring group were obtained.

The main effect of social desirability on ratings of willingness to engage in a relationship averaged across the short-term and long-term was non-significant, $F(2,482) = .13, p = .882, \eta_p^2 = .00$. Overall, averaged across the other factors (gender, health, warmth, and economic status), the social desirability score of the participant did not affect ratings of willingness to engage in a relationship. However, the main interaction effect of social

desirability and health on ratings of willingness to engage in a relationship averaged across the short-term and long-term was significant, $F(2,482) = 8.75, p = < .001, \eta^2 = .04$. That is, the effect of health on ratings of willingness to engage in a relationship averaged across the short-term and long-term was different depending on the social desirability score of the participant. As can be seen in Figure 10, participants in the average SDS group were reportedly more willing to engage in relationship averaged across the short-term and long-term with an individual without a disability ($Emms = 2.82, SE = .08$) than with a disability ($Emms = 2.37, SE = .09$), $t(482) = 3.76, p < .001$. Also, participants in the high SDS group were reportedly more willing to engage in a relationship averaged across the short-term and long-term with an individual with a disability ($Emms = 2.76, SE = .13$) than without a disability ($Emms = 2.33, SE = .12$), $t(482) = 2.49, p = .013$. Interestingly, participants in the low SDS group did not differ in their ratings of willingness to engage in a relationship averaged across the short-term and long-term when considering an individual in the vignette with or without a disability.

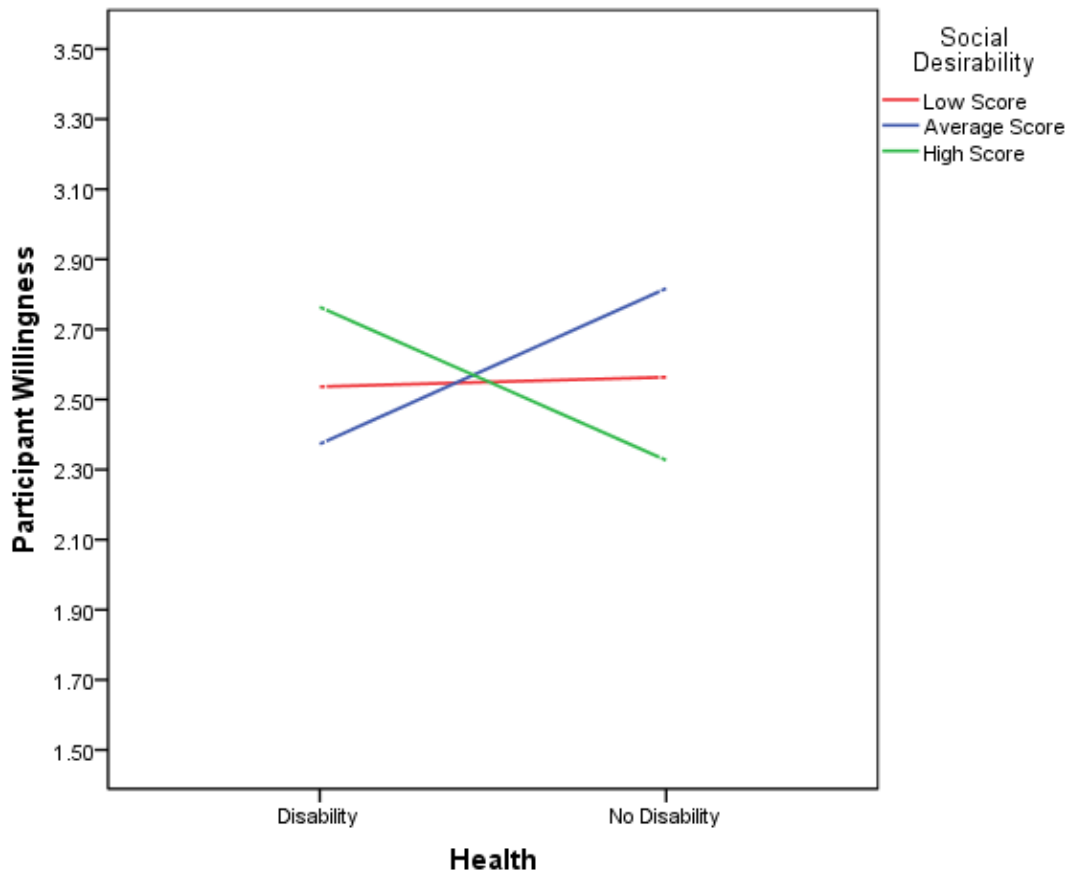


Figure 10. Reported willingness of low, average, and high SDS score participants to engage in a relationship with an individual with or without a disability in Study One.

Interestingly, there was also a significant interaction between relationship type, health, participant gender, and social desirability, $WL = .96$, $F(2,482) = 9.94$, $p < .001$, $\eta_p^2 = .04$. As can be seen in Figure 11, female participants in the high SDS group were reportedly more willing to engage in a short-term relationship with an individual with a disability ($Emms = 2.14$, $SE = .19$) than without a disability ($Emms = 1.48$, $SE = .21$), $t(482) = 2.36$, $p = .018$. Male participants in the average SDS group were reportedly more willing to engage in a short-term relationship with an individual without a disability ($Emms = 3.91$, $SE = .16$) than with a disability ($Emms = 2.81$, $SE = .16$), $t(482) = 4.89$, $p < .001$. Similarly, male participants in the average SDS group were reportedly more willing to engage in a long-term relationship with an individual without a disability ($Emms = 3.49$, $SE = .15$) than with a disability ($Emms$

$= 2.85, SE = .15), t(482) = 3.06, p = .002$. Additionally, male participants in the high SDS group were reportedly more willing to engage in a long-term relationship with an individual with a disability ($Emms = 3.81, SE = .22$) than without a disability ($Emms = 2.87, SE = .20$), $t(482) = 3.11, p = .002$.

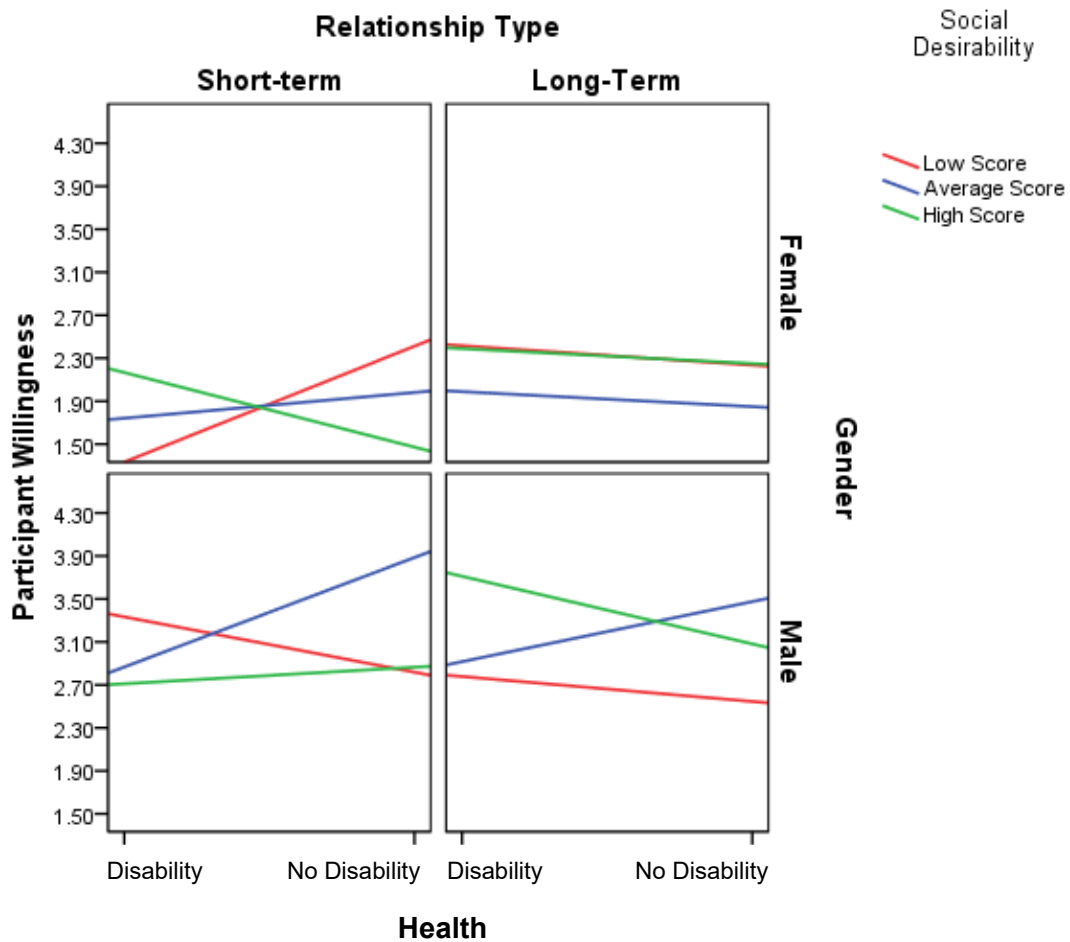


Figure 11. Reported willingness of low, average, and high SDS score males and females to engage in a relationship with an individual with or without a disability in Study One.

Finally, when social desirability was added to the previous analyses as a covariate, two previously discussed interaction effects changed. Firstly, the interaction between health and relationship type, changed from significant (see Figure 6) to non-significant when SDS was added as a covariate, $WL = .99, F(1,482) = 2.04, p = .154, \eta_p^2 = .004$. That is, when taking the effect of social desirability into consideration, the difference in participants'

willingness to engage in a short-term versus long-term relationship between the disability and no disability conditions was non-significant.

Secondly, the interaction between participant gender and health changed from significant (see Figure 7) to non-significant when SDS was added as a covariate, $F(1,482) = .074, p = .786, \eta_p^2 = .00$. When taking the effect of social desirability into consideration, health did not have a significant effect on gender. The previously significant difference in males' ratings of willingness averaged across the short-term and long-term (higher when considering a partner without a disability) was non-significant when taking social desirability into consideration. That is, for males, similar to females, health had very little effect on ratings of willingness to engage in a relationship averaged across the short-term and long-term.

Discussion

The results of the current study showed support for several of the predicted hypotheses. The most robust finding was that, due to men's lower parental investment and risks of copulation, men (compared to women) are more willing to engage in a relationship irrespective of the potential mate's qualities or the type of relationship being considered (Buss & Schmitt, 1993; Kenrick et al., 1990; Landolt et al., 1995). Consistent with this and in support of Hypothesis 1, men in the current study showed a much greater willingness than women to engage in both short-term and long-term relationships with a hypothetical partner. Overall, gender had the single greatest effect on average ratings of willingness.

However, unlike previous studies which have shown a convergence in men's and women's willingness to engage in long-term relationships (e.g., Kenrick & Keefe, 1989), the results of the current study did not reflect this. As expected, there was a maximal difference between men's and women's willingness to engage in short-term relationships; however, in

contrast to Hypothesis 4, the expected convergence when considering a long-term relationship did not emerge. Specifically, while there was the expected effect for women's increased willingness to engage in a long-term than short-term relationship, men's willingness to engage in either a short-term or long-term relationship did not change. When considering the effects of the individual mate characteristics, there were, in fact, no changes in men's willingness to engage in either short-term or long-term relationships, with the exception of an increased willingness to consider a partner with a disability than without.

It seems that men's general desire for sexual variety and pursuing numerous partners (Buss & Schmitt, 1993; Symons, 1979) may override the effect of temporal context; that is, men are generally more willing than women to engage in a relationship whether it is short-term or long-term. Further, it may be important to consider men's threshold of initial acceptance (Townsend, 1993). That is, for men, a potential partner's physical attributes largely determines the pool of partners with whom they desire sexual relations, and this sexual desirability sets the acceptance baseline for higher-investment relationships (Townsend & Roberts, 1993; Townsend & Wasserman, 1998). Therefore, in the current study, perhaps the potential partner's physical attributes (as represented in the photograph) met the threshold of initial acceptance for male participants, and hence the potential partner was rendered desirable for both short-term and long-term relationships, regardless of their other mate characteristics.

When exploring the most essential mate characteristics, the findings in the current study were consistent with evolutionary logic and the existing literature. Firstly, in support of Hypothesis 2, warmth had the greatest effect on willingness to engage in a long-term relationship. In the current study, as shown in a multitude of previous studies (e.g., Botwin et al., 1997; Buss & Barnes, 1986; Buss & Schmitt, 1993; Fletcher et al., 1999; Gangestad & Simpson, 2000; Hatfield & Sprecher, 1995; Jensen-Campbell et al., 1995; Li et al., 2002;

Scheib, 2001), warmth was shown to be the most important mate characteristic for both men and women considering a long-term partner. Additionally, warmth appeared to have a greater effect on women (compared to men) when considering a long-term partner. Economic status also appeared to have a significant impact on both men and women in the long-term; however, when considering the results for men and women separately, as expected, economic status did not affect men's willingness in either temporal context. On the other hand, in support of both sexual strategies and strategic pluralism theories (Hypothesis 3), economic status was shown to be more important to women in a long-term rather than short-term relationship (Buss, 1989, 2003; Ellis, 1992; Schmitt & Buss, 1996; Shackelford et al., 2005).

The third mate quality of health appeared to have the greatest impact on short-term preferences, averaged across men and women (Hypothesis 5). Specifically, the current study showed that a partner with a disability was viewed more negatively in the context of a short-term than in a long-term relationship. This lends support to the theories of good genes sexual selection and strategic pluralism; that is, when genes and high-fitness indicators are considered most important (i.e., in the short-term), poor health and disabilities have a greater negative impact on mate selection. However, upon further exploration, this effect in the short-term only appeared to occur because of men's strong preferences for health. That is, as expected, men were significantly more willing to engage in a short-term relationship with a partner without a disability (versus a partner with a disability).

When considering a disabled partner, men were more willing to engage in a long-term than short-term relationship. Similarly, women were more willing to engage in a long-term than short-term relationship with a disabled partner. This finding appears to be consistent with both strategic pluralism (good health is more important in the short-term) and the "bad genes" hypothesis, which proposes that rather than choosing the most highly attractive or symmetrical mate to ensure reproductive success, humans show preferences for avoiding

mating with individuals who show indicators of poor heritable fitness (Zebrowitz & Rhodes, 2004). In other words, these results are in support of strategic pluralism theory and the “bad genes” hypothesis; i.e., that while the most highly attractive or symmetrical individuals are not necessarily any more fit than those average in attractiveness or symmetry, those with lower levels of attractiveness, averageness, and symmetry signal lower levels of health and genetic fitness, and hence may be avoided as potential short-term mates.

However, on the other hand, health was not found to be the most important mate characteristic for women considering a short-term partner. The current results showed no differences between women’s preferences to engage in a short-term relationship with a partner with or without a disability. However, given the presence of a disability has often found to increase the occurrence of positive attitudes or behaviours due to social desirability, sympathy, or self-presentation biases (Fichten et al., 1989; Pruett & Chan, 2006; Thomas & Lee, 1990), the current study tested whether this social desirability bias affected participant’s responses. This presence of a “sympathy effect” or “political correctness” bias has been consistently reflected across several studies (Belgrave, 1985; Kleck, 1969; Feinberg, 1967; Kleck & DeJong, 1983; Snyder et al., 1979; Wong, Chan, Cardoso, Lam, & Miller, 2004). The term “kindness norm” (Kleck, 1968) was created in earlier disability literature to describe the tendency to treat people with a visible disability with overt lenient criteria and covert behavioural avoidance (Elliott & Frank, 1990; Strenta & Kleck, 1982). That is, individuals may be less willing to convey their true feelings of negativity towards disabilities because they know it is less acceptable to express prejudices and stereotypes. It was anticipated that in the current study, a heightened social desirability bias would be found particularly when considering physical disabilities.

When the effects of social desirability were taken into consideration, some of the results looked quite different. Firstly, the negative effect of having a disability on a short-term

relationship diminished, i.e., there appeared to be no difference in preferences between a partner with or without a disability when considering both a short-term and/or long-term relationship. Secondly, men's reported willingness to engage in a long-term (versus a short-term) relationship with a disabled partner decreased, i.e., men who scored highly on the social desirability scale reported a higher willingness to engage in a long-term relationship with a partner with a disability. Perhaps men more concerned with social approval reported this higher willingness in order to avoid being seen as 'shallow' when considering a long-term relationship and appearing biased towards those with disabilities.

However, the increased willingness of women to engage in a long-term than short-term relationship with a disabled partner did not appear to change when social desirability was taken into consideration, although women who scored highly on the social desirability scale reported a higher willingness to engage in a short-term relationship with a partner with a disability. Therefore, although these results were somewhat unexpected in terms of predictions based on strategic pluralism theory, they lend some support to the "bad genes" hypothesis, that women, perhaps more so than men, are sensitive to valid indicators of bad genes when considering a long-term relationship. These results also appear to support disability research that shows that women are more accepting of disabilities than men, including consideration of potential mates (Chen et al., 2002; Ferguson et al., 1993; Forlin et al., 1999; Hergenrather & Rhodes, 2007; Laws & Kelly, 2005; Werner & Davidson, 2004). In the current study, although men were generally more willing to engage in a relationship than women on the whole, women appeared to be more accepting of a partner with a disability when considering a long-term rather than a short-term relationship.

A potential limitation in the current study that may have affected the results regarding health was the use of a wheelchair as a heuristic marker to trigger the behavioural immune system. In theory, other morphological irregularities are likely to activate the avoidance

system as well, such as facial disfigurements (Park et al., 2003). Therefore, one should be cautious in generalising these results to other physical disabilities, or to disabilities as a group. Disabilities vary widely in impairments and include cognitive, affective, behavioural, motor and sensory impairments. Therefore, in future research it would be informative to examine the impact of different disability types. This includes comparing not only other physical impairments, but also a range of cognitive and internal disabilities. For example, it would be interesting to compare a person with an amputation or prosthetic limb to a person who is blind. The issues and impacts of physical, psychiatric, and intellectual disabilities are very different and there is a conspicuous need to expand research investigations across the wide spectrum of disabilities (Milligan & Neufeldt, 2001).

In addition to these findings, when sociosexual orientation was added as a covariate to test its effect on mate preferences, several other main predictions of the study were confirmed. In support of Hypothesis 6, the current study showed that men, as the lesser-investing sex, had a more unrestricted sociosexual orientation than women, the heavier-investing sex. These results support evolutionary theories that suggest men and women fundamentally differ in sociosexuality and the many studies which have shown this (Baumeister et al., 2001; Buss & Schmitt, 1993; Schmitt, 2005; Simpson & Gangestad, 1992). Additionally, and as predicted by Hypothesis 7, the current study showed that those with a more unrestricted sociosexual orientation were more interested in engaging in a short-term relationship than those with a more restricted sociosexual orientation, who were more willing to consider a long-term than a short-term relationship. This supports Simpson and Gangestad's definitions of unrestricted and restricted sociosexuality (Simpson & Gangestad, 1991).

However, when taking into consideration the effect of gender, the relationship between temporal context and sociosexuality was not as strong as suggested above. That is, in support of Hypothesis 8 and as expected, sociosexuality did appear to affect both men's and

women's ratings of willingness to engage in either a short-term or long-term relationship, with the exception of women's willingness to engage in a long-term relationship. Specifically, sociosexuality did not moderate women's long-term preferences. These results support Wilbur and Campbell's (2010) suggestion that women's sociosexuality does not dictate their mating strategies but rather only has a slight influence on their short-term mating preferences.

In summary, many of the main predictions of Study One were confirmed by the results of the current study. The next study (Study Two) aimed to build on Study One to see if similar results could be achieved using a different methodology, and also to explore the effects of an inherited versus an acquired disability on participants' willingness to engage in short-term versus long-term relationships.

Chapter 4

Study Two

Introduction and hypotheses

Study Two was conducted to establish the replicability of the findings from Study One, as well as to further explore the impact of health and good genes on mating preferences. The distinctions from Study One were twofold: (1) a slightly different methodology was used (manipulating the visual image versus manipulating the written description); and (2) a distinction was made between a heritable and non-heritable disability. According to the good genes model of sexual selection, mates who provide evidence of heritable and genetic viability are chosen to enhance reproductive success, which not only involves producing healthy offspring, but also ensuring that offspring survive to reproductive maturity (Cronin, 1991; Gangestad & Thornhill, 1997). The current health of an individual may or may not have an impact on their future health outcomes and/or reproductive value.

Disability studies will often make a distinction between congenital and acquired disabilities (Cole, 1975). Congenital disorders or disabilities are conditions that exist at birth or often before birth, or can develop during the first month of life. A congenital disorder is not necessarily genetic, although it can be the result of genetic abnormalities, the intrauterine environment, errors of morphogenesis, infection or parasites, or a chromosomal abnormality ("Congenital Disorder", 2012; Nosek & Hughes, 2003). For instance, approximately 10 to 15% of newborns with congenital heart disease will have an underlying genetic basis for the disease, and in some cases, as adults, the risk to their offspring will be no higher than that for the general population; however in other cases, it may be as high as 50% (Sable et al., 2011). For some individuals, the risk to future children may not only be the recurrence of a congenital heart defect but also for a range of birth defects or disabilities associated with an underlying genetic syndrome. Therefore, in disability and sexuality research it is important to

make the distinction between individuals who develop a disability earlier in life (early-onset) and those who acquire a disability later in life (late-onset) (Mona, Gardos, & Brown, 1994).

In Study Two, a distinction between a heritable and non-heritable disability was made because of the potentially serious reproductive implications. Although genetics and heritability do not involve infecting the partner, such as a contagious disease might do, they can affect offspring viability and health through the possible transmission of a genetic mutation. Therefore, when considering a potential partner's health, having a genetically inherited disease or disability may dramatically decrease the partner's heritable fitness. It can thus be conceptualised that having an inheritable physical disability is largely the opposite of good genes for reproductive success.

In Study One the health condition was manipulated visually; that is, in the vignette there was no specific mention about the individual's health, while the accompanying image was manipulated, with either an individual with or without a disability. In contrast, in Study Two, the image was not manipulated to show a disability and remained the same for all participants; however the accompanying vignette description was manipulated to describe an individual with or without a physical disability, which was either inherited or not inherited.

Therefore, in Study Two the same hypotheses from Study One were tested using a different methodology, along with the following additional hypothesis:

Hypothesis Nine: Compared to a non-heritable disability or no disability at all, having a heritable disability will be the least preferred when considering a partner for a relationship.

Method

A 3 x 2 x 2 x 2 x (2) mixed model design was used. The within-subject variable was the type of relationship (short-term, long-term). The three two-level between-subjects factors

were warmth (high warmth, low warmth), economic status (high economic status, low economic status), and gender (male, female), and the one three-level between-subjects factor was health (no disability, non-heritable disability, heritable disability). As in Study One, physical attractiveness was kept constant, using a model of a morphed face, which was pre-rated for attractiveness. The photograph of an individual sitting in a chair from Study One was used in Study Two.

Sample. As in Study One, participants were recruited for an online study on dating preferences and attitudes towards sexuality through advertisements posted at several universities and libraries, as well as by circulation via email. Participants were offered a prize draw as an incentive. The study was limited to adult participants aged 18 to 35 years and only data from participants indicating a heterosexual orientation was analysed. A total of 837 individuals participated in Study Two, including 491 females (mean age 27.4 years) and 346 males (mean age 27.5 years). Similar to Study One, the mean age of this sample is older than that of other studies, which report respondents' mean age to be approximately 20 years. Two-thirds of the sample (65.4%) was of Anglo/Caucasian background, 13% of Asian background, and the remainder of Aboriginal/Torres Strait Islander, African, Indian, Middle Eastern or Southern European backgrounds.

A total of 566 participants (67.6%) were currently single and not previously married, 13.7% were in a relationship (defacto or married), 17.5% were separated or divorced, and 1.2% were widowed. Some 16.2% of participants indicated they would never like to have children, 6.5% wanted children in the next year, 57.3% in the next 5 to 10 years, and 20% indicated they had not thought about it or didn't know. Some 25% of the sample already had one or more children. Three-quarters of the sample (74.5%) had a Certificate, Bachelor Degree or higher, whereas the others had 13 years of formal education or less. Almost half of the sample (45.6%) was in full-time employment, whereas 22.2% were students. Over two-

thirds of the sample (69.1%) rated their own physical health as good to extremely good, whereas 31% rated it as ranging from extremely poor to neither good nor poor. All participants were identified by unique participant codes only, to preserve anonymity.

Measures. As in Study One, following a list of demographic questions, including items regarding age, sex, ethnic background, relationship status, children, education, and employment (see Appendix 2), participants answered questions about the vignette, as well as completing the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991) and Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960).

There were twelve possible vignettes for each gender. The vignette included a brief description, accompanied with a photograph of an individual of the opposite sex sitting in a chair (pre-rated for attractiveness). The three conditions of economic status (high economic status, low economic status), warmth (high warmth, low warmth) and health (disability, non-heritable disability, heritable disability) were manipulated in the description. The photograph was of a model sitting in a chair. Like Study One, each participant only saw one vignette description and one accompanying photograph.

One example of a descriptive vignette accompanied with a photograph of a female sitting in a chair (manipulating low warmth, high economic status, and heritable disability) for a male participant was as follows:

1. Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

The other vignettes for the low health condition, all accompanied by a photograph of a female sitting in a chair read as follows:

2. Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.
3. Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.
4. Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

Another example of a descriptive vignette accompanied with a photograph of a female sitting in a chair (manipulating low warmth, high economic status, and non-heritable disability) for a male participant was as follows:

5. Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

The other vignettes for the non-heritable disability condition, all accompanied by a photograph of a female sitting in a chair read as follows:

6. Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.
7. Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.

8. Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

A third example of a descriptive vignette accompanied with a photograph of a female sitting in a chair (manipulating low warmth, high economic status, and no disability) for a male participant was as follows:

9. Sarah is in her 20s and does not have any physical disabilities. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

The other vignettes for the no disability condition, all accompanied by a photograph of a female sitting in a chair read as follows:

10. Sarah is in her 20s and does not have any physical disabilities. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.
11. Sarah is in her 20s and does not have any physical disabilities. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.
12. Sarah is in her 20s and does not have any physical disabilities. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

The same process was followed for female participants. One example of a descriptive vignette accompanied with a photograph of a male sitting in a chair (manipulating low warmth, high economic status, and heritable disability) for a male participant was as follows:

1. Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

The other vignettes for the heritable disability condition, all accompanied by a photograph of a male sitting in a chair read as follows:

2. Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.
3. Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.
4. Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

Another example of a descriptive vignette accompanied with a photograph of a male sitting in a chair (manipulating low warmth, high economic status, and non-heritable disability) for a female participant was as follows:

5. Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

The other vignettes for the non-heritable disability condition, all accompanied by a photograph of a male sitting in a chair read as follows:

6. Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.
7. Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.
8. Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

A third example of a descriptive vignette accompanied with a photograph of a male sitting in a chair (manipulating low warmth, high economic status, and no disability) for a female participant was as follows:

9. Matt is in his 20s and does not have any physical disabilities. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

The other vignettes for the no disability condition, all accompanied by a photograph of a male sitting in a chair read as follows:

10. Matt is in his 20s and does not have any physical disabilities. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.
11. Matt is in his 20s and does not have any physical disabilities. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.

12. Matt is in his 20s and does not have any physical disabilities. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

After reading the vignette, participants were asked to rate the following:

1. Rate on a scale from 1 to 5, your willingness to have a short-term sexual relationship with Sarah/Matt.
2. Rate on a scale from 1 to 5, your willingness to have a long-term romantic relationship with Sarah/Matt.

For a manipulation check, participants were asked to rate the individual in the vignette on a 5-point rating scale regarding their perceived health, warmth, and economic status:

1. How would you rate Sarah/Matt's physical health?
2. How would you rate Sarah/Matt's earning capacity?
3. How warm would you rate Sarah/Matt to be?
4. How attractive would you rate Sarah/Matt to be?

Participants were also asked a final question regarding the individual's disability:

1. What sort of disability do you imagine Sarah/Matt has? Please describe.

The same SOI and MCSDS questionnaires from Study One were given to participants in Study Two.

Procedure. Participants were directed to a website address which invited them to participate in a study about the dating preferences and attitudes towards sex of today's young adults. Participants were required to read the information statement and tick their consent

before proceeding to the questionnaires. Following completion of the demographic questions, participants were directed to the next Internet page. Each participant was randomly allocated to one of twenty-four scenario pages, depending on their gender. After reading the vignette, participants answered questions on their preferences and completed the two aforementioned measures. Upon completion of the questionnaires, participants were thanked for their participation, presented with contact details to ask any questions regarding the study, and offered the opportunity to be involved in a prize draw win a \$50 Myer gift card.

Results

A mixed model (3 x 2 x 2 x 2 x 2) analysis of variance with one within-subject factor (short-term versus long-term), three two-level between-subject factors (high or low warmth, high or low economic status, male or female) and one three-level between subject factor (no disability, non-heritable disability, heritable disability) was used for the analysis. The same tests as used in Study One were carried out to test the hypotheses.

There were 66 to 73 cases/subjects in each gender combination of the three conditions (no disability, non-heritable disability or heritable disability; high or low warmth; high or low economic status).

Manipulation Check. As in Study One, to test whether the manipulation conditions had the desired effects, a multivariate analysis of variance with four dependent variables (health, warmth, economic status and attractiveness) and the three conditions (no disability vs. non-heritable disability vs. heritable disability, high vs. low warmth, high vs. low economic status) were tested using a main effects model (between-subjects design). The difference between the mean ratings for health, warmth, economic status, and attractiveness were compared for each vignette condition.

Table 2 shows the mean ratings for each condition. As expected, the univariate results for each condition show that the largest effect of each condition manipulation was seen on ratings corresponding to that condition (e.g., the health condition had its largest effect on ratings of health). Additionally each manipulation, except for the health condition, also affected ratings on at least one other variable.

Table 2

Mean Ratings, Standard Deviations, Significance Levels and Effect Sizes for Each Manipulated Condition in Study Two

		Ratings on health				Ratings on warmth			
	Condition	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2
Health (hcond)	Herit. disab.	3.22	.90	< .001	.13	3.13	1.17	.168	.004
	Non-herit. disab.	3.17	.80			3.22	1.01		
	No disability	3.85	.75			3.08	1.01		
Warmth (wcond)	Low warmth	3.33	.84	.002	.01	2.64	1.04	< .001	.23
	High warmth	3.51	.90			3.65	.81		
Econ. status (econd)	Low econ. sta.	3.30	.88	< .001	.02	3.09	1.09	.044	.005
	High econ. sta.	3.54	.86			3.20	1.04		
		Ratings on economic status				Ratings on attractiveness			
	Condition	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2	<i>M</i>	<i>SD</i>	<i>p</i>	η_p^2
Health (hcond)	Herit. disab.	3.04	1.04	.067	.006	3.71	.95	.410	.002
	Non-herit. disab.	2.96	1.07			3.79	.92		
	No disability	3.13	1.11			3.69	.93		
Warmth (wcond)	Low warmth	2.98	1.11	.017	.007	3.61	.94	< .001	.02
	High warmth	3.11	1.04			3.85	.92		
Econ. status (econd)	Low econ. sta.	2.41	1.00	< .001	.34	3.67	.99	.055	.004
	High econ. sta.	3.66	.74			3.79	.87		

As shown in Table 2, there was a significant difference in health ratings (i.e., individuals in both non-heritable and heritable disability conditions were rated as less healthy by participants than in the no disability condition), but not for the other ratings of warmth, attractiveness and economic status. There was also a significant difference in ratings of warmth across all factors, including warmth (i.e., individuals described as warm were rated higher on warmth), health (i.e., high warmth individuals were rated as more healthy), attractiveness (i.e., high warmth individuals were rated as more attractive), and economic status (i.e., high warmth individuals were rated as having a greater earning capacity). The results also showed that although economic status had no effect on attractiveness, high economic status individuals were rated as healthier, warmer, and as having a greater earning capacity. Overall, these results confirm that the manipulation conditions had the intended effects (along with some weaker side-effects).

Tests of Hypotheses.

Hypothesis One. Compared to women, men will be overall more willing to engage in a relationship, irrespective of the temporal context or the mate traits being offered.

Consistent with Study One and as expected, the main effect of gender on ratings of willingness to engage in a relationship averaged across the short-term and long-term was significant, $F(1,813) = 319.29$, $p < .001$, $\eta_p^2 = .28$. Overall, averaged across the other factors (health, warmth, and economic status), males were more willing to engage in a relationship ($Emms = 3.31$, $se = .06$) than females ($Emms = 2.01$, $SE = .05$).

Hypothesis Two. When considering a partner for a long-term relationship, both men and women will value warmth.

Similar to Study One, there was a significant main effect of warmth on ratings of willingness to engage in a relationship averaged across the short-term and long-term, $F(1,813)$

$= 40.03, p < .001, \eta_p^2 = .05$. Overall, averaged across the other factors (gender, health, and economic status), participants were more willing to engage in a relationship in the high warmth condition ($Emms = 2.89, SE = .05$) than in the low warmth condition ($Emms = 2.43, SE = .05$).

As predicted, there was also a significant interaction between warmth and relationship type, $WL = .97, F(1,813) = 29.59, p < .001, \eta_p^2 = .04$. As can be seen in Figure 12, participants in the high warmth condition were more willing to engage in a long-term ($Emms = 3.04, SE = .06$) than a short-term ($Emms = 2.73, SE = .06$) relationship, $t(813) = 5.34, p < .001$. As in Study One, participants in the high warmth condition were more willing to engage in a long-term relationship ($Emms = 3.04, SE = .06$) than participants in the low warmth condition ($Emms = 2.37, SE = .06$), $t(813) = 8.38, p < .001$.

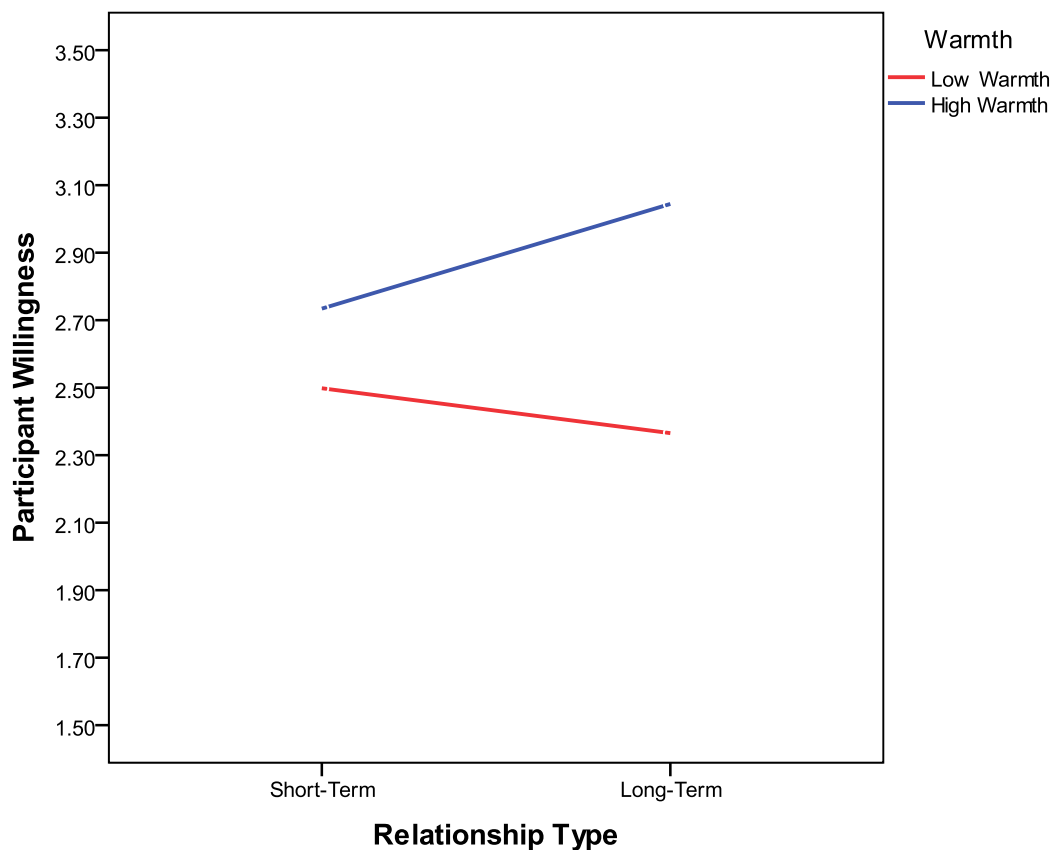


Figure 12. Ratings of participant willingness to engage in a short-term or long-term relationship with a high or low warmth individual in Study Two.

Although the interaction between participant gender and warmth was non-significant, $F(1,813) = 2.56, p = .110, \eta_p^2 = .003$, it is interesting to note that, as in Study One, warmth had significant positive effects for both males and females. That is, males' ratings of willingness to engage in a relationship averaged across the short-term and long-term were higher when the individual in the vignette was warm ($Emms = 3.48, SE = .08$) than not warm ($Emms = 3.14, SE = .08$). Similarly, females' ratings of willingness to engage in a relationship averaged across the short-term and long-term were higher when the individual in the vignette was warm ($Emms = 2.30, SE = .07$) than not warm ($Emms = 1.73, SE = .07$).

Although the interaction between relationship type, warmth, and gender was non-significant, $WL = .99, F(1,813) = .47, p = .509, \eta_p^2 = .001$, the individual effects of gender need to be considered. Almost identically to Study One, female participants in the high warmth condition were more willing to engage in a long-term ($Emms = 2.47, SE = .07$) than a short-term ($Emms = 2.14, SE = .08$) relationship, $t(813) = 4.46, p < .001$. Also, female participants in the high warmth condition were more willing to engage in a long-term relationship ($Emms = 2.47, SE = .07$) than female participants in the low warmth condition ($Emms = 1.70, SE = .07$), $t(813) = 7.38, p < .001$. Similarly, male participants in the high warmth condition were more willing to engage in a long-term relationship ($Emms = 3.62, SE = .09$) than male participants in the low warmth condition ($Emms = 3.03, SE = .09$), $t(813) = 4.76, p < .001$. Additionally, male participants in the low warmth condition were more willing to engage in a short-term ($Emms = 3.24, SE = .09$) than a long-term ($Emms = 3.03, SE = .09$) relationship, $t(813) = 2.31, p = .020$. Also, male participants in the high warmth condition were more willing to engage in a long-term ($Emms = 3.62, SE = .09$) than a short-term ($Emms = 3.33, SE = .09$) relationship, $t(813) = 3.31, p = .001$.

Hypothesis Three. In line with sexual strategies theory and strategic pluralism theory, women will be more likely than men to prefer a high than a low economic status partner for a long-term relationship.

There was a significant main effect of economic status on ratings of willingness to engage in a relationship averaged across the short-term and long-term, $F(1,813) = 9.26, p = .002, \eta_p^2 = .01$. Overall, averaged across the other factors (gender, health, and warmth), participants were more willing to engage in a relationship in the high economic status condition ($Emms = 2.77, SE = .05$) than in the low economic status condition ($Emms = 2.55, SE = .05$).

In Study One, although the effect of economic status tended to have a greater effect on willingness to engage in a long-term than short-term relationship, the interaction between relationship type and economic status was non-significant. In Study Two, there was a significant interaction (see Figure 13) between economic status and relationship type, $F(1,813) = 14.02, p < .001, \eta_p^2 = .02$. Specifically, participants in the high economic status condition were more willing to engage in a long-term ($Emms = 2.89, SE = .06$) than a short-term ($Emms = 2.65, SE = .06$) relationship, $t(813) = 4.23, p < .001$. Further, participants in the high economic status condition were more willing to engage in a long-term relationship ($Emms = 2.89, SE = .06$) than participants in the low economic status condition ($Emms = 2.52, SE = .06$), $t(813) = 4.60, p < .001$.

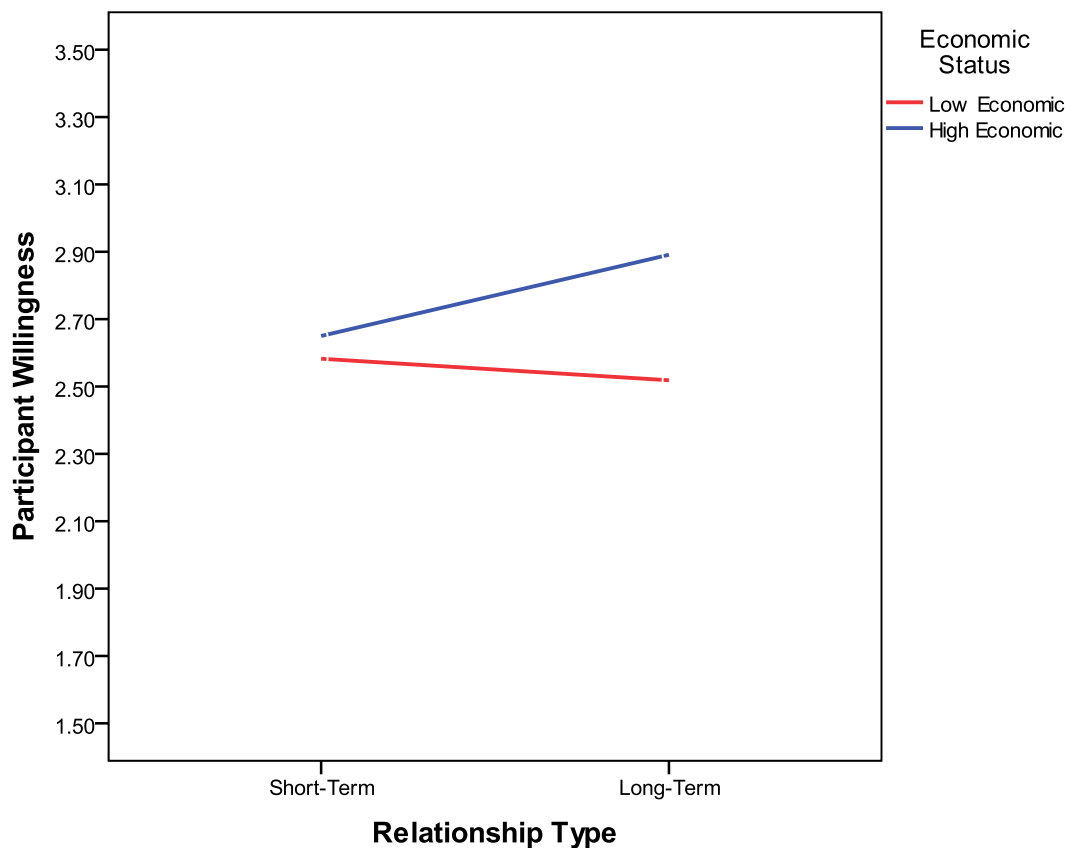


Figure 13. Ratings of participant willingness to engage in a short-term or long-term relationship with a high or low economic status individual in Study Two.

Although the interaction between participant gender and economic status was non-significant, $F(1,813) = 2.44, p = .119, \eta_p^2 = .003$, it is interesting to note that, as in Study One, economic status had a significant effect only on female participants, $t(813) = 3.58, p < .001$. Specifically, female participants were more willing to engage in a relationship averaged across the short-term and long-term in the high economic status condition ($Emms = 2.18, SE = .07$) than in the low economic status condition ($Emms = 1.85, SE = .07$).

Additionally, although the interaction between relationship type, economic status, and gender was non-significant, $WL = 1.00, F(1,813) = .19, p = .664, \eta_p^2 = .00$, as in Study One, Hypothesis 3 was confirmed. Specifically, female participants in the high economic status condition were more willing to engage in a long-term ($Emms = 2.33, SE = .07$) than a short-

term ($Emms = 2.03$, $SE = .08$) relationship, $t(813) = 4.12$, $p < .001$. Also, female participants in the high economic status condition were more willing to engage in a long-term relationship ($Emms = 2.33$, $SE = .07$) than female participants in the low economic status condition ($Emms = 1.83$, $SE = .07$), $t(813) = 4.84$, $p < .001$. Similarly, male participants in the high economic status condition were more willing to engage in a long-term ($Emms = 3.45$, $SE = .09$) than a short-term ($Emms = 3.27$, $SE = .09$) relationship, $t(813) = 2.03$, $p = .042$.

Hypothesis Four. The difference between men and women in willingness to engage in a relationship will be greatest when considering a short-term partner, with men more willing than women to consider a short-term relationship; however, this difference in willingness will converge when considering a long-term partner.

Replicating the results from Study One, the interaction between participant gender and relationship type was non-significant, $F(1,813) = 1.30$, $p = .254$. However, although the difference in male participants' ratings of willingness to engage in a short-term versus long-term relationship was non-significant, $t(813) = .68$, $p = .500$, female participants were more willing to engage in a long-term ($Emms = 2.08$, $SE = .05$) than a short-term ($Emms = 1.95$, $SE = .06$) relationship, $t(813) = 2.60$, $p = .010$.

Hypothesis Five. In line with the "good genes" hypothesis, when considering a partner for a short-term relationship, both men and women will value health, as represented by having or not having a physical disability.

Similar to Study One, the main effect of health on ratings of willingness to engage in a relationship averaged across the short-term and long-term was non-significant, $F(2,813) = .47$, $p = .624$, $\eta_p^2 = .001$. Overall, averaged across the other factors (warmth, gender, and economic status), the ratings of willingness to engage in a relationship were not affected by health. However, unlike Study One, there were no further significant interactions involving health.

Hypothesis Six. Overall, men will have a more unrestricted sociosexual orientation than women.

As in Study One, further analyses were conducted to test whether the effects of the categorical variables (e.g., health) differed according to different values of the covariate SOI (sociosexuality). In the current sample, Cronbach $\alpha = .74$ (based on standardised items). Participants were split into those who scored above the mean score for the whole group and those who scored below. In this way, participants with a 379 restricted orientation and 428 participants with an unrestricted orientation were obtained.

The sex difference for sociosexuality was replicated in this sample. Men ($M = .66$, $SD = .47$) scored significantly higher than women ($M = .44$, $SD = .49$) on sociosexuality, $F(1,805) = 34.13$, $p < .001$.

Hypothesis Seven. For both sexes, those with an unrestricted sociosexual orientation will show more willingness to engage in a short-term relationship, while those with a more restricted sociosexual orientation will show more willingness to engage in a long-term relationship.

As in Study One, the main effect of sociosexuality on ratings of willingness to engage in a relationship averaged across the short-term and long-term was significant, $F(1,759) = 16.94$, $p < .001$, $\eta_p^2 = .02$. Overall, averaged across the other factors (gender, health, warmth, and economic status), the SOI score of the participant positively affected ratings of willingness to engage in a relationship. As can be seen in Figure 14, there was a significant interaction between the sociosexuality score of the participant and relationship type, $WL = .93$, $F(1,759) = 56.43$, $p < .001$, $\eta_p^2 = .07$. There was a significant difference in participants' ratings of willingness to engage in a short-term versus long-term relationship for both the restricted participants, $t(759) = 6.73$, $p < .001$, and unrestricted participants, $t(759) = 3.61$, $p < .001$. Also, as in Study One, unrestricted participants were more willing to engage in a short-

term relationship ($Emms = 2.90$, $SE = .06$) than restricted participants ($Emms = 2.25$, $SE = .07$), $t(759) = 7.25$, $p < .001$.

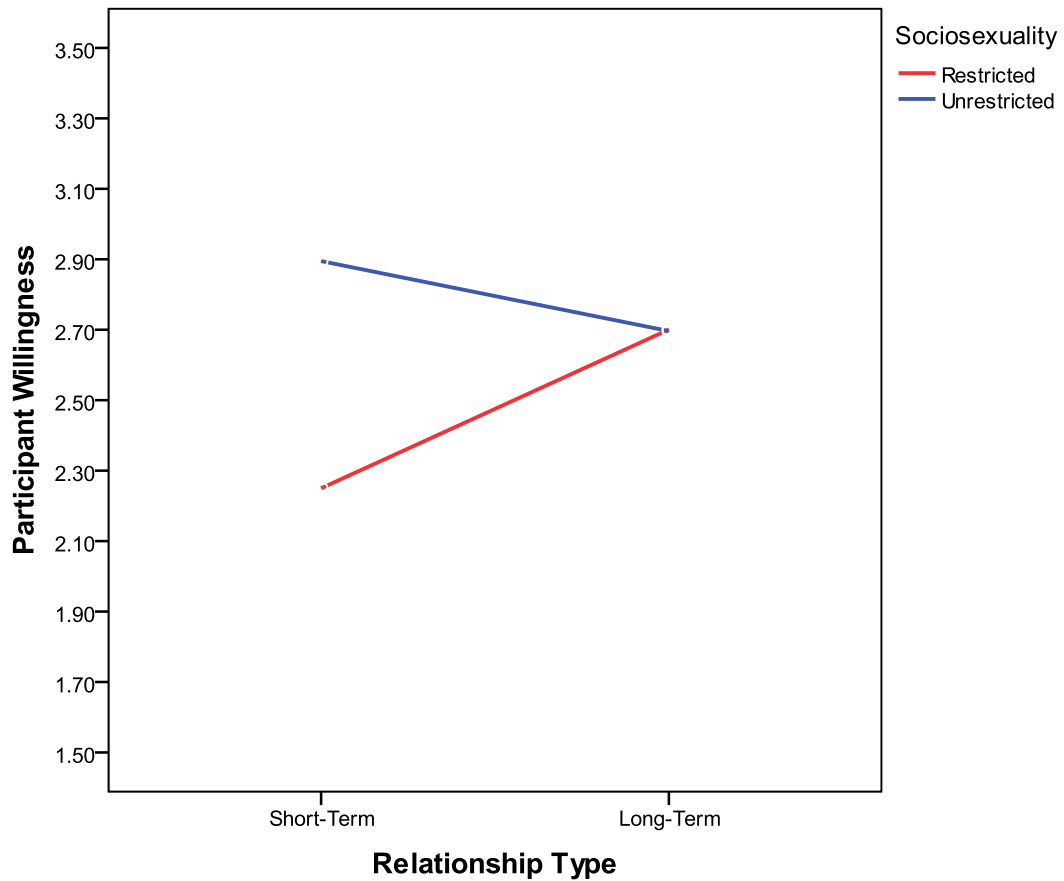


Figure 14. Willingness of restricted and unrestricted sociosexual orientation participants to engage in a short-term or long-term relationship in Study Two.

Hypothesis Eight. Levels of sociosexual orientation will moderate men's, but not women's, mate preferences in considering a long-term partner.

Contrary to this hypothesis and unlike Study One, the interaction between relationship type, participant gender, and sociosexuality (SOI) was non-significant, $WL = .99$, $F(1,759) = 1.99$, $p = .159$, $\eta_p^2 = .003$. As can be seen in Figure 15, sociosexuality affected both male participants', $t(759) = 5.45$, $p < .001$, and female participants', $t(759) = 4.78$, $p < .001$, ratings of willingness to engage in a short-term relationship. Specifically, female participants with an unrestricted sociosexual orientation were more willing to engage in a short-term relationship

($Emms = 2.23, SE = .08$) than female participants with a more restricted sociosexual orientation ($Emms = 1.70, SE = .07$). Similarly, male participants with an unrestricted sociosexual orientation were more willing to engage in a short-term relationship ($Emms = 3.57, SE = .08$) than male participants with a more restricted sociosexual orientation ($Emms = 2.80, SE = .12$). However, sociosexuality did not affect male or female participants' ratings of willingness to engage in a long-term relationship. As in Study One, male participants with a restricted sociosexual orientation were more willing to engage in a long-term ($Emms = 3.33, SE = .12$) than a short-term ($Emms = 2.80, SE = .12$) relationship, $t(759) = 4.72, p < .001$. Similarly, female participants with a restricted sociosexual orientation were more willing to engage in a long-term ($Emms = 2.07, SE = .07$) than a short-term ($Emms = 1.70, SE = .07$) relationship, $t(759) = 5.26, p < .001$.

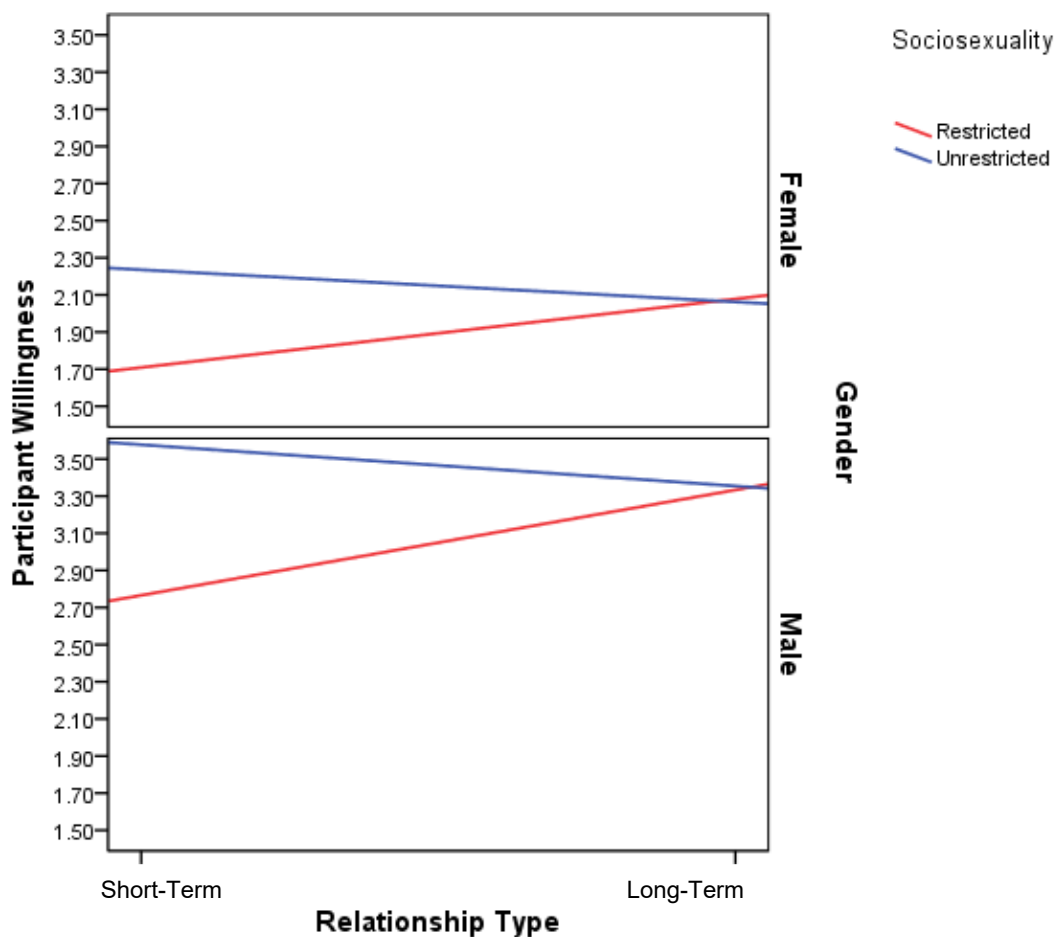


Figure 15. Willingness of restricted and unrestricted sociosexual orientation male and female participants to engage in a short-or long-term relationship in Study Two.

Hypothesis Nine. Compared to a non-heritable disability or no disability at all, having a heritable disability will be the least preferred when considering a partner for a relationship.

Contrary to this hypothesis, as discussed earlier, the main effect of health on ratings of willingness to engage in a relationship averaged across the short-term and long-term was non-significant. Overall, averaged across the other factors (warmth, gender, and economic status), participants' ratings of willingness to engage in a relationship were not affected by health. However, although statistically non-significant, it is interesting to note that having a heritable disability did most negatively affect willingness, compared to having a non-heritable disability or no disability.

Unlike Study One, the interaction effect between health and participant gender was non-significant. Further, although the interaction between relationship type, health, and gender was non-significant, $WL = .99$, $F(2,813) = .34$, $p = .715$, $\eta_p^2 = .001$, the individual effects of gender need to be considered. Specifically, female participants in the heritable disability condition were more willing to engage in a long-term ($Emms = 2.16$, $SE = .09$) than short-term ($Emms = 1.97$, $SE = .09$) relationship, $t(813) = 2.13$, $p = .035$. There were no further significant effects for female participants. For males there were no significant effects.

Effect of social desirability. As in Study One, the variable social desirability (SDS) was added as a covariate to test whether a person's tendency to distort self-presentation toward a socially desirable bias affected their responses regarding willingness to engage with a potential partner. In this sample, there was a range of 1-31, a median of 17.00 ($M = 16.59$, $SD = 5.79$), and Cronbach $\alpha = .82$. As in Study One, participants were split into three categories of low scorers (0-8), average scorers (9-19) and high scorers (20-33). In this way, 70 participants in the low scoring group, 474 participants in the average scoring group, and 242 participants in the high scoring group were obtained.

Similar to Study One, the main effect of social desirability on ratings of willingness to engage in a relationship averaged across the short-term and long-term was non-significant, $F(2,716) = 1.40$, $p = .246$, $\eta_p^2 = .00$. Overall, averaged across the other factors (gender, health, warmth, and economic status), the social desirability score of the participant did not affect ratings of willingness to engage in a relationship. Unlike Study One, however, the main interaction effect of social desirability and health on ratings of willingness to engage in a relationship averaged across the short-term and long-term was non-significant, $F(2,716) = .91$, $p = .459$, $\eta_p^2 = .00$. The interaction between relationship type, health, participant gender, and their social desirability score was also non-significant, $WL = .99$, $F(4,716) = .88$, $p = .474$, $\eta_p^2 = .005$.

When social desirability was added to the previous analyses as a covariate, unlike Study One, the results remained unchanged.

Discussion

Study Two was conducted to establish the replicability of the findings from Study One using a slightly altered method, as well as to further explore the impact of heritable health and good genes. As in Study One, the manipulation check in Study Two showed that the dependent variables had the desired effects. Study Two also showed the same pattern of results as Study One for: Men's overall higher willingness to engage in a relationship (irrespective of temporal context or the mate characteristics being considered) compared to women (Hypothesis 1), the lack of a decrease in willingness from the short-term to long-term for men (Hypothesis 4), and the importance of warmth when considering a long-term relationship for both men and women (Hypothesis 2). The importance of economic status in the long-term was also replicated in Study Two; however, the results in Study Two differed slightly, as men showed a significant increase in willingness to engage in a short-term versus long-term relationship when considering a partner of high economic status. This result, although suggested in Study One, was not statistically significant. Generally, Study Two not only replicated the results of Study One, but obtained stronger effects, likely due to its larger sample size. These same patterns of results all lend further support to both the sexual strategies and strategic pluralism theories.

Furthermore, when sociosexual orientation was added as covariate in Study Two, the same patterns of results from Study One were found. The only difference found in Study Two regarding sociosexuality was the lack of difference in men's ratings of willingness to engage in a long-term relationship between restricted and unrestricted participants. That is, in Study Two, sociosexuality appeared to not only moderate women's long-term preferences, but also

men's long-term preferences. When social desirability was added as a covariate in Study Two, unlike Study One, the results remained unchanged.

The results from Study One and Two also differed, quite substantially, when considering the effects of health. That is, contrary to Hypotheses 5 and 9, health did not affect willingness to engage in a relationship in Study Two, regardless of the temporal context. The only significant effect of health was found for women considering a partner with a heritable physical disability in the short-term versus long-term. That is, in support of the "bad genes" hypothesis, women were more willing to engage in a long-term rather than a short-term relationship with an individual with a heritable disability. This result is very similar to the result found in Study One (even after social desirability was accounted for), that women were more willing to engage in a long-term rather than a short-term relationship with an individual with a disability. Although the other results involving health were not statistically significant, the heritability of health did appear to most negatively affect ratings of willingness.

Therefore, similar to Study One, many of the main predictions of Study Two were confirmed by the results. Given that the results in Study Two generally replicated the pattern of results from Study One, and the only distinction between Study One and Study Two was the representation of health, it is conceivable that the methodology used in Study Two was not as effective as the methodology utilised in Study One. That is, in Study One, participants were presented with a visible image of disability, whereas in Study Two, participants were presented with a written description of a heritable or non-heritable disability. In Study Two, the written description of a potential partner's health did not have the expected impact as the visual image of a disability presented in Study One. Perhaps this is because human beings, like all higher primates, are fundamentally visual creatures and visual information is central for mate choice. This is particularly true for men, as visually detected characteristics are very important and reliable indicators of health and youth (Symons, 1979). Of course, humans can

use information gathered from the olfactory, auditory, tactile, and gustatory senses in mate choice decisions. Nevertheless, we are remarkably visual creatures, and particularly in hypothetical self-report mate selection studies, visual information is able to be readily manipulated. Therefore, just as having actual persons (or photographs of actual persons) to represent physical attractiveness is particularly important for evolutionary studies, the visual, rather than written, assessment of health may be just as necessary. Perhaps the explicit knowledge of whether a health condition is heritable or not is not as powerful as implicit health information, such as that conveyed by appearance. Such effects of the heritability of health might be found in future research if assessments of health were visually differentiated between the heritable and non-heritable aspects of health.

In summary, the results of this study demonstrated that, in general, the mate preference and sociosexuality findings from Study One could be replicated using a slightly different methodology. Unfortunately, the effects of health and the heritability of health on mate preferences were not supported as strongly in Study Two, perhaps due to the differences in the visual versus written methodology used in Study Two. In the concluding chapter the findings of both studies in light of past theories will be discussed, and some avenues for future research will be suggested.

Chapter 5

General discussion

The two studies reported in this thesis explored the effects of restricted choices and disability on men's and women's willingness to engage in short-term and long-term relationships. The qualities men and women seek in a potential mate have important implications for their attitudes, behaviour, and for relationships with actual partners (Regan et al., 2000). This is particularly relevant for individuals with disabilities, as men and women may attempt to initiate relationships only with individuals who possess certain desirable attributes, and avoid or terminate relationships with individuals who do not meet these selection criteria.

The results from Study Two generally replicated the results from Study One, with both studies lending support to the "bad genes" hypothesis, some aspects of strategic pluralism theory and sexual strategies theory, good genes sexual selection, and thresholds of initial acceptance. The current findings also reinforced statistical and anecdotal data, as well as past research on attitudes towards disabilities in different social contexts of dating and marriage. These results suggest that no single theoretical perspective can wholly account for the many facets and dynamics of human mate selection.

According to the evolutionary model of mate selection, all humans aim to maximise their reproductive success when searching for a partner. Due to differential biology of reproduction, men and women employ different evolutionary strategies to achieve reproductive success, and hence there are strong gender differences in mating preferences. The current research showed strong support for the hypothesised gender differences. Specifically, men were consistently more willing to engage in a relationship than women (regardless of the temporal context being considered or the mate qualities being offered). Additionally, there was a maximal difference between men and women when considering a

short-term partner. However, although women were more willing to consider a long-term than a short-term partner, in contrast to predictions, men were equally willing to consider a short-term and long-term relationship.

This result across both Studies One and Two is in contrast to research which suggests that when levels of parental and relationship investment increase in a long-term relationship, the selectivity of men and women converge (Kenrick & Keefe, 1989). Rather, this finding appears to be in support of Townsend's thresholds of initial acceptance, which argues that for men, high physical attractiveness in a partner can render women desirable for dating, sexual relationships, and marriage, regardless of their occupation, income and education (Townsend, 1989; Townsend & Wasserman, 1998). Therefore, perhaps in the current studies, the potential partner being considered was of sufficient physical attractiveness, which determined their sexual desirability and set the baseline of acceptance for a higher-investment relationship. Once in this acceptable pool, men were willing to engage in both a short-term and long-term relationship, irrespective of the other mate characteristics being offered.

Another sex difference found in the current studies was the effect of health on mate preferences. In Studies One and Two, after the effects of social desirability were taken into consideration, women but not men, were more willing to engage in a long-term relationship with a low-health partner, as represented by a visible physical disability in Study One, and described as a heritable physical disability in Study Two. Social desirability, as expected, had some effects on participants' levels of willingness towards individuals with disabilities, in particular for men.

As previously noted, self-report ratings can be affected by a social desirability bias, particularly when the questions being asked are socially sensitive. Social desirability bias occurs when individuals are reluctant to convey their true feelings about sensitive topics and so choose to present themselves in what they believe is a more favourable light. In previous

research involving disabilities social desirability has been found to be a problematic issue, with participants magnifying or distorting their responses towards those with disabilities due to sympathy, political correctness and/or apparent kindness (e.g., Fichten et al., 1989; Pruett & Chan, 2006; Rojohn et al., 2008; Thomas & Lee, 1990). Several past experiments have demonstrated that individuals without disabilities will avoid individuals with disabilities if the choice to avoid them can be disguised as a socially or personally acceptable choice (Fichten, 1986; Kleck, 1969; Snyder et al., 1979). People may profess positive attitudes towards people with disabilities, however, do not always follow through with positive actions and will often avoid them.

In Study One, social desirability had some effects on participants' reported willingness to engage in a relationship with an individual with a physical disability, in particular for male participants. It is unclear why social desirability appeared to mainly affect men's responses toward physical disabilities, although as mentioned previously, disability research has consistently found that males generally view individuals with disabilities more negatively than females do (Chen et al., 2002; Ferguson et al., 1993). This highlights the importance of considering social desirability when exploring a potentially socially sensitive topic such as physical disabilities, particularly when using a self-report approach. Given this social desirability bias, it is warranted that future research explore different ways of tapping into "true" attitudes towards relationships and physical disabilities.

Although this does not support strategic pluralism theory predictions, the result that women were more willing to engage in a long-term relationship with a low-health partner supports disability acceptance studies which show that attitudes towards people with physical disabilities are more positive when considering marriage rather than a dating relationship, and that women are generally more positive towards disabilities than men (Hergenrather & Rhodes, 2007; Laws & Kelly, 2005; Werner & Davidson, 2004). Additionally, these results

mirror disability research which shows that while men with physical disabilities are less likely than women to be in a relationship, men are not less likely to be married (Bowe, 1984; Taleporos & McCabe, 2003). In disability research, the reason for the difference in attitudes between social contexts has been explained by the shifting of attitudes in society to a more conservative stance and the impact a disability may have on an intimate relationship (Ferguson et al., 1993; Hergenrather & Rhodes, 2007). However, the findings from the current studies propose that there may be a more basic evolutionary basis for these discrepancies between the sexes and social contexts. That is, the discriminatory attitudes and significant disadvantages those with disabilities experience, particularly in a short-term dating or sexual relationship, can be explained from an evolutionary point of view: Specifically, disabilities do not represent good genes and health, which are highly valued in a short-term mate and less valued (and hence perhaps more acceptable) in a long-term mate (Buunk et al., 2002; Regan & Berscheid, 1997).

The effect of heritable health on women's long-term preferences suggests that when considering a potential partner's health, the potential heritability of their genetic fitness is taken into consideration due to the potentially serious reproductive implications in producing healthy offspring. Although the current health condition of a partner is important for other aspects of mating, such as avoiding contagion and securing future investment, heritable health is vital to fecundity and the health of offspring (Luevano, 2007). Therefore, given the central importance of health in mate choice decisions, additional research into the heritable aspects of health is warranted and future research should identify the visual cues used to assess heritable health.

These findings appear to favour the "bad genes" hypothesis which implies that when poor genetic fitness is detected in a potential mate, that individual is avoided in order to fulfil the human biological imperative of increasing one's own fitness by producing and supporting

healthy offspring (Zebrowitz & Rhodes, 2004). That is, the evolutionary importance and benefits to reproductive success of recognising individuals with disease or bad genes has produced a strong preparedness to respond to qualities that can mark low fitness, such as a physical disability (Buss, 2003; Neuberg et al., 2000; Park et al., 2003).

However, in direct contrast to strategic pluralism theory, which suggests that both sexes use ecologically contingent and conditional short-term mating tactics in order to secure good genes in a potential partner (Cronin, 1991; Gangestad & Simpson, 2000), women in the current studies did not show heightened preferences for health in the short-term. Perhaps this is not necessarily related to the specific criteria of health, as women had lower rates of willingness to engage in a short-term relationship, regardless of the mate characteristics being offered. Women in general have a more selective reproductive strategy and have significantly higher mating standards in short-term relationships, given their higher cost-to-benefit ratio in mating (Buss & Schmitt, 1993; Kenrick et al., 1990; Li et al., 2002; Regan, 1998a). On the other hand, both economic status and warmth had significant effects on the short-term preferences of women. This suggests that perhaps in a woman's quality-based strategy, health is not as highly valued in the short-term, as is economic status and warmth. Townsend (1993) suggested that women value nonphysical characteristics in the short-term, and cannot decide for certain whether they want to copulate with strangers on the basis of physical appearance and economic status cues alone. In order to determine whether strangers are acceptable for a short-term relationship, women need to know more about their values, personality compatibility, and whether the person would invest in them (Townsend & Levy, 1990a,b). This finding lends support to sexual strategies theory, which argues that physical appearance, attractiveness, and health, are less important to a woman's preferences because a mate can still be reproductively valuable with lower levels of attractiveness but higher levels of economic status and potential.

Despite these sex differences, there was also a similarity in men's and women's preferences. Warmth had a significant effect on long-term willingness in both Studies One and Two for men and women. Warmth is a personality trait that has been suggested to have been ancestrally important for parenting and providing, and maintaining long-term relationships (Buss, 1989; Goetz et al., 2010; Neff & Karney, 2009).

In general, regardless of the mate characteristics being offered by the hypothetical partner, men showed a much higher willingness to engage in both a short-term and long-term relationship. In both studies, men also had more unrestricted sociosexual orientations than women. It follows from most evolutionary theories of human sexuality anchored in the theory of paternal investment that men should score higher than women on sociosexuality (Buss & Schmitt, 1993). Also as expected, sociosexuality had a moderating effect on men's and women's short-term preferences in both studies. That is, having a more restricted orientation led to lower rates of willingness in the short-term, whereas having a more unrestricted orientation led to higher rates of willingness in the short-term. In Study One, sociosexuality continued to have a moderating effect on men's long-term preferences, as men with a more restricted orientation had higher rates of willingness in the long-term, while men with a more unrestricted orientation had lower rates of willingness in the long-term.

In both Studies One and Two, as predicted by Hypothesis 8, sociosexuality did not moderate women's long-term preferences. This supports Wilbur and Campbell's (2010) study which suggests that women's long-term preferences are relatively stable across the continuum of sociosexuality due to the less risky nature of long-term commitments, and both restricted and unrestricted women essentially favour entering monogamous long-term relationships. However, unexpectedly in Study Two, sociosexuality also did not have a moderating effect on men's long-term preferences. It is unclear why this finding involving sociosexuality is in

contrast to past research and current predictions, and hence future research with a larger and more diverse sample is needed to determine this ambiguity of results.

The SOI, although a valuable instrument, merely provides a general picture of whether an individual is generally restricted or unrestricted in their sociosexual orientation, and given that most people score between the restricted and unrestricted extremes of the sociosexuality continuum, most individuals actually exhibit attributes that are combinations of the two prototypic orientations. The SOI also does not completely account for changes in short-term versus long-term relationships throughout developmental time, or during different stages of romantic relationships, and fails to capture the variability as a result of recent changes to an individual's mate value or the qualities of their current romantic partner. There is actually a big gap in research on the impact of sociosexuality in long-term relationships, particularly marriages. Furthermore, according to Schmitt (2005), the degree of sexual differentiation in sociosexuality may vary with certain aspects of culture and local ecological conditions. Therefore, given these concerns and the obscure nature of the current findings, further research is needed into sociosexuality and the impact it has on sexual strategies and long-term mating preferences.

The forced-choice design of the current studies examining the partner preferences of contemporary society aims to further deepen our understanding of mate selection and explore disability-based prejudice in relationships. Quite separate from the evolutionary logic behind these studies, the studies have yielded findings that contribute to our knowledge of contemporary prejudicial reactions to individuals with disabilities and the variables that may moderate those attitudes. The goal of the current research was not merely to articulate how an evolutionary perspective adds another level of understanding to existing knowledge about disabilities and prejudice, but rather more significantly, to show how this evolutionary psychological approach can contribute in generating new hypotheses and novel discoveries by

understanding the evolutionary mechanisms and adaptations behind these attitudes. By learning and understanding the evolutionary origins of specific psychological mechanisms, it is hoped this assist in leading positive changes towards disability-related prejudice.

Limitations and directions for future research

Before discussing the potential implications of these results, several limitations of the studies should be noted. The first limitation relates to the method of data collection; that is, the current studies were based on self-report measures of responses towards a hypothetical partner. Given intentions are generally known to be a reliable indicator of human behaviour, one would expect the external validity of such self-reported preferences to be reasonable (Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975). Further, self-ratings are less constrained by factors such as the participant's own characteristics or mate value, the pool of available partners, as well potential risks in engaging in such behaviours. However, when compared with actual mate choices, it must be acknowledged that self-reported mate preferences about a decontextualized photograph cannot be taken to completely reflect real-life encounters, and hence some differences may be found between self-reported preferences for hypothetical partners and the choices made with real-life partners. Therefore, future studies could consider using different methods, such as behavioural observations of direct, personal interaction in naturalistic contexts to examine actual behaviour.

However, given the importance of first impressions and the increasing frequency by which potential partners do now meet via a single photograph and description (e.g., on social networking or dating websites), the current studies may have tapped into underlying dispositions and psychological mechanisms more than would be possible using behavioural methods by using an experimental design based on hypothetical situations, and removing typical constraints on people's behaviour. For this same reason, studying people's desires and

attitudes through the Sociosexual Orientation Inventory may provide a better picture of their sexual tendencies than examining their actual sexual behaviours (Buss, 2003; Ellis & Symons, 1990).

A second limitation of the current studies was the participant sample. It would be useful in future research to expand the sample of participants to include a wider range of ethnic and racial backgrounds, as well as those with significant exposure to individuals with disabilities. Individuals who have experience and contact with persons with disabilities are found to have more positive attitudes than individuals who do not have any experience with persons with disabilities (Stachura & Garven, 2007; Ten Klooster, Dannenberg, Taael, Burger, & Rasker, 2009). Societal, cultural and ethnic factors can also influence attitudes toward individuals with disabilities (Henry, Duvdevany, Keys, & Balcazar, 2004; Tervo, Azuma, Palmer, & Redinius, 2002). For instance, a study by Westbrook, Legge, and Pennay (1993) compared the attitudes of individuals from six different cultures and found that Germans were the most accepting of individuals with disabilities, followed by Anglo Australians, Italians, Chinese, Greeks, and Arabs, respectively. Therefore, although the current sample was relatively diverse compared to many mate preference studies using college populations, it was relatively homogenous in terms of the majority of participants being from an Anglo/Caucasian background. Hence, ongoing efforts in this area of research into the evolutionary perspective of sexual and romantic attraction toward people with disabilities should focus on the collection of data with more diverse sample populations.

Despite these limitations, the current studies are the first to systematically test the impact of physical disabilities on mating and relationships within an evolutionary framework and hence extend our understanding of good genes sexual selection and the way it impacts on the relationships of individuals with disabilities. Given the paucity of investigations in this area of sexuality, disability, and evolutionary psychology, the need for further research is

warranted. The current studies are a step forward in raising our awareness and opening the door to future research into the role physical disabilities play in relationships. By analysing societal attitudes and preferences towards dating and marriage of individuals with disabilities, future research and programs can aim to modify these attitudes and eliminate barriers that restrict sexuality for individuals living with a disability (Chen et al., 2002; Esmail et al., 2010). Therefore, these findings not only have theoretical implications for future research but also bear practical implications for individuals with disabilities, as well as general society.

Implications and conclusions

By marrying two seemingly distant areas of interest, the evolutionary psychology of mate preferences with the attitudinal theories of disability-related societal barriers to relationships, the current studies do not seek to disagree with the existing theories on attitudes towards sexual and romantic relationships with individuals with disabilities, but rather aim to complement the existing research. By understanding the foundation and development of these anti-social responses and attitudes towards disabilities, it is hoped that interventions and social change that might prevent these responses can be better considered and applied (Park et al., 2003). According to evolutionary theory, although these psychological adaptations that give rise to these behaviours are natural and automatically activated, that is not to say these responses cannot be controlled. That is, when we are aware of our implicit emotional and cognitive reactions, despite them being automatic and often unconscious, and have a deeper understanding of why these reactions exist, then we are better able to prevent these responses from influencing our attitudes and behaviours (Park et al., 2003).

Therefore, based on evolutionary theory and the activation of the disease-avoidance mechanism, approaches designed to reduce irrational concerns about disease and contagion may be useful in addressing disability-based prejudice. In fact, it has previously been found

that the most effective strategy in reducing negative attitudes towards individuals with disabilities is the combination of contact and information provision (Allport, 1954; Corrigan & Penn, 1999; Pettigrew & Tropp, 2000, 2006). Public education campaigns distributing information about sexuality and disabilities should emphasise the fact that people with disabilities are sexual beings and potential partners (Rintala et al., 1997), as well as dispel any potential erroneous knowledge about disabilities; that in fact, many of the physically disfiguring and behaviourally disabling conditions result from external causes and are not dangerous, contagious, or hereditary. Additionally, for individuals with disabilities, contact and interaction has the largest effect on attitude change (Pettigrew & Tropp, 2006). Social interactions not only can have a positive impact on attitudes and societal aversion, but also provide individuals with disabilities greater opportunities to meet others and form relationships (Taleporos & McCabe, 2003).

Several studies have shown that individuals vary in the extent to which they perceive themselves to be vulnerable to disease and that individuals who are persistently worried about disease transmission or have an perceived increased susceptibility to disease are particularly prejudiced against out-groups, especially when disease threat is visually noticeable (Duncan & Schaller, 2009; Faulkner, Schaller, Park, & Duncan, 2004; Schaller, Park, & Mueller, 2003). That is, psychological processes play a vital role in the success of the behavioural immune system, and expectancies about one's own immune system influence its functioning (Huang, Sedlovskaya, Ackerman, & Bargh, 2011). An interesting study by Huang and colleagues found that perceptions of immunity actually mediated the link between protection from disease and prejudice (Huang et al., 2011). They suggested that interventions for physical diseases, such as influenza vaccinations, can also assist in addressing the social maladies of prejudice and discrimination. Therefore, public-health interventions can be used not only to promote good health and prevent the spread of disease, but also to help negate the prejudices associated with the behavioural immune system. In other words, to the extent that

perceptions of disease threat activate the psychological mechanisms of the behavioural immune system, if the potential threat of contagion can be eliminated, it is possible that automatic responses associated with disease-related fears will follow (Huang et al., 2011).

Additionally, given the quick activation of the behavioural immune system and the significant influence of first impressions, it is important to empower individuals with disabilities with the strategies of self-presentation or self-impression tactics, especially for persons with a visible disability (Chan, Pruett, Kubota, Ong, & Lee, 2010). Impression management is a goal-directed conscious or unconscious attempt to control the impressions made on other people and to influence the perceptions of others by regulating and controlling information in social interactions (Chan, Livneh, Pruett, Wang, & Zheng, 2009). Therefore, individuals with disabilities can present themselves as desirable sexual beings, as potential dates, and as legitimate partners by enhancing the mate qualities they possess.

For instance, Gangestad (1993) suggested that to remain competitive in the mating market, men who fluctuate in levels of heritable fitness must demonstrate varying levels of investment potential, such as showing the ability or willingness to commit time to a relationship. That is, to be chosen as mates, these men must demonstrate sufficient investment potential to counterbalance any deficits in their heritable fitness characteristics (Burley, 1977). Gangestad and Thornhill (1998) tested whether this trade-off occurs and found that more symmetrical men, representing good heritable fitness, typically provided less investment in long-term relationships than less symmetrical men. Therefore, rehabilitation professionals working with individuals with disabilities can assist their clients in the way they present themselves as a potential partner, as well as fostering positive expectations, confidence, and attitudes towards self-worth, positive body image, and social skills required to meet the societal challenges to negotiating a satisfying sexual and romantic life (Milligan & Neufeldt, 2001; Vilchinsky et al., 2010).

Therefore, the current research, by proposing and testing an evolutionary perspective for the negative attitudes and prejudice towards disabilities in intimate relationships, seeks to theoretically complement other theories on the stigma of disabilities and contribute to a more complete understanding of these phenomena. The evolved psychological mechanisms discussed herein are often unconscious and occur automatically outside of one's conscious awareness. This, however, does not necessarily mean that attitudes and prejudice against disabilities are justifiable on the grounds that they have an evolutionary theoretical explanation (Miner & Shackelford, 2010). Rather, an evolutionary understanding of origins of these attitudes, responses, and behaviours can assist in attempts to eliminate inequality and prejudice (Tybur et al., 2009). Hopefully the current studies have yielded findings to provide a different perspective in generating new hypotheses and strategies to deal with contemporary prejudicial reactions towards disabilities in the mating market and go a long way toward helping men and women with disabilities achieve full social inclusion and integration, particularly in the domains of sexual and romantic relationships.

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Recruitment advertisement and email

WHO DO YOU LIKE TO DATE?

You are invited to participate in a study investigating dating preferences of today's young adults. This research explores society's attitudes towards dating and sexuality. You will be required to fill in some brief questionnaires and offer your opinions on a hypothetical situation.

The study is being conducted by Agnes Ko (email: agnes.ko@students.mq.edu.au) to meet the requirements for the Doctorate of Counselling Psychology at Macquarie University. No identifying information will be requested and you may choose to withdraw from completing the study at any time without consequence.

At the end of the study, participants will have the opportunity to enter a prize draw to win one of four \$50 Myer gift cards for participation.

If you are aged 18-35years, please go to:

http://macquariehs.qualtrics.com/SE?SID=SV_4PjvCGdxTTX1mug

Information and consent

You are invited to participate in a study of dating preferences. The purpose of the study is to investigate the dating preferences of contemporary young adults and also to explore society's attitudes towards sexuality. The study is being conducted by Agnes Ko (mobile []; email agnes.ko@students.mq.edu.au) to meet the requirements for the degree of Doctorate of Counselling Psychology under the supervision of Dr Julie Fitness (telephone []; email Julie.Fitness@psy.mq.edu.au) of the Department of Psychology.

If you decide to participate, you will be asked to complete a series of questionnaires taking 20 to 30 minutes. The demographic questionnaire requires general demographic information, and the two social questionnaires ask about social relationships and sexual orientation. You will also be required to read a brief vignette and answer some questions about it.

Your responses are completely anonymous and no individual will be identified in any publication of the results. The researcher will not be able to identify your responses.

All information gathered in the course of the study is confidential. Data in the form of an anonymous spread sheet will only be accessible to the chief investigator and supervisors. However, given the nature of the Internet, although responses will be anonymous, the tracking of responses, although highly unlikely, is possible. The data will be used to write up scientific reports for publication, but your responses will remain anonymous and will only be made available to qualified researchers.

At the end of the questionnaires, if you would like the opportunity to win one of four \$50 Myer gift cards, please supply your contact details (name and email address) in the appropriate spaces provided. This will be on a separate webpage to the study so that your responses are anonymous. Feedback on the results will be available on the First Year Noticeboard at the end of the study, or by contacting the chief investigator, Agnes Ko. If you decide to participate, you are free to withdraw from further participation in the research at any time without having to give a reason and without consequence.

I have read and understand the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence.

Please tick here to continue to the questionnaires:

☐

Section A: Demographic questions

1. What is your age?

- ☐ 18-20
- ☐ 21-25
- ☐ 26-30
- ☐ 31-35

2. What is your cultural/ethnic background?

- ☐ Aboriginal/Torres Strait Islander
- ☐ African
- ☐ Anglo/Caucasian
- ☐ Asian (Chinese/Southeast Asian)
- ☐ Indian
- ☐ Middle Eastern/Arabic
- ☐ Southern European/Mediterranean
- ☐ Other

3. Please list your country of birth.

4. What is your current marital status?

- ☐ Single, never married
- ☐ Defacto
- ☐ Married
- ☐ Separated
- ☐ Divorced
- ☐ Widowed

5. How long have you been this marital status?

6. What are your thoughts on having children? I would like to have children...

- ☐ Never
- ☐ Within the next year
- ☐ In the next 5 years
- ☐ In the next 10 years
- ☐ Have not thought about it / don't know

7. Do you currently have any children? If YES, how many children do you have?

- ☐ No
- ☐ Yes

8. How would you rate your own physical health?

	Extremely poor		Neither good nor poor		Extremely good
My Physical Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Please indicate the highest level of education completed.

- | | |
|---|---|
| <input type="radio"/> School Certificate or equivalent | <input type="radio"/> Bachelor Degree |
| <input type="radio"/> Higher School Certificate or equivalent | <input type="radio"/> Graduate Diploma / Graduate Certificate |
| <input type="radio"/> Certificate I to IV (inc. trade cert.) | <input type="radio"/> Postgraduate Degree |
| <input type="radio"/> Advanced Diploma / Diploma | <input type="radio"/> Other <input type="text"/> |

10. Please indicate your current household income.

- | | |
|---|---|
| <input type="radio"/> Under \$10,000 | <input type="radio"/> \$50,000-\$74,999 |
| <input type="radio"/> \$10,000-\$19,999 | <input type="radio"/> \$75,000-\$99,000 |
| <input type="radio"/> \$20,000-\$29,999 | <input type="radio"/> \$100,000-\$150,000 |
| <input type="radio"/> \$30,000-\$39,999 | <input type="radio"/> \$150,000+ |
| <input type="radio"/> \$40,000-\$49,999 | |

11. Which of the following best describes your employment status?

- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Self-employed
- ☐ Not employed, looking for work
- ☐ Student
- ☐ Homemaker

12. How would you describe your current and primary occupation?

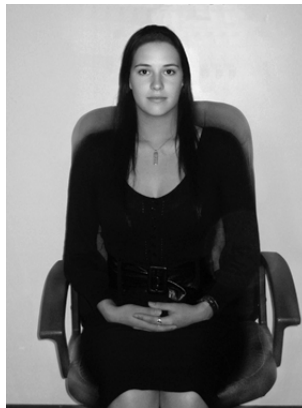
- | | |
|---|--|
| <input type="radio"/> Machine operator, hospitality staff, assistant, labourer and related worker | <input type="radio"/> Senior management in large business organisation, government administration and defence, and qualified professionals |
| <input type="radio"/> Tradesman/woman, clerk and skilled office, sales and service staff | <input type="radio"/> Student |
| <input type="radio"/> Other business manager, arts/media/sportsperson and associate professional | <input type="radio"/> Other <input type="text"/> |

13. What is the title of your current and primary occupation?

14. What is your sex?

- ☐ Female
- ☐ Male

Section B: Vignette option 1 (male participants)



Sarah is in her 20s. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 2 (male participants)



Sarah is in her 20s. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

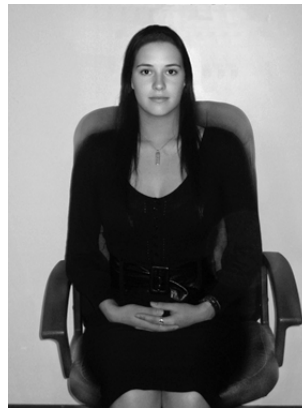
(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 3 (male participants)



Sarah is in her 20s. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Sarah

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Sarah's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

- (c) How warm would you rate Sarah to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

- (d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 4 (male participants)



Sarah is in her 20s. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

- (a) Have a short-term sexual relationship with Sarah

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Sarah

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Sarah's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Sarah's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Sarah to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

- (d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 5 (male participants)



Sarah is in her 20s. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Sarah

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Sarah

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Sarah's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Sarah's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Sarah to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

- (d) How attractive would you rate Sarah to be?

1 **2** **3** **4** **5**

Not attractive at all

Extremely attractive

Section B: Vignette option 6 (male participants)



Sarah is in her 20s. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 7 (male participants)



Sarah is in her 20s. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 8 (male participants)



Sarah is in her 20s. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

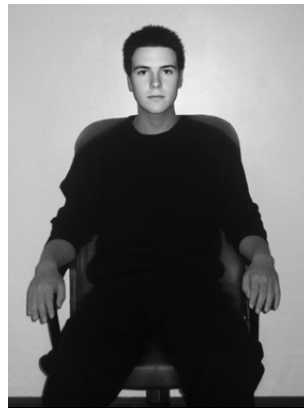
(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 1 (female participants)



Matt is in his 20s. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

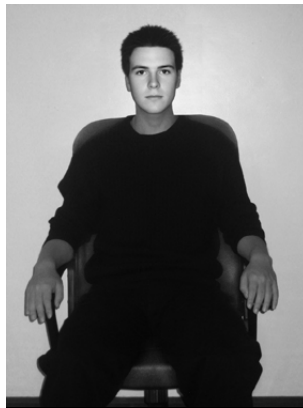
- (d) How attractive would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not attractive at all

Extremely attractive

Section B: Vignette option 2 (female participants)



Matt is in his 20s. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

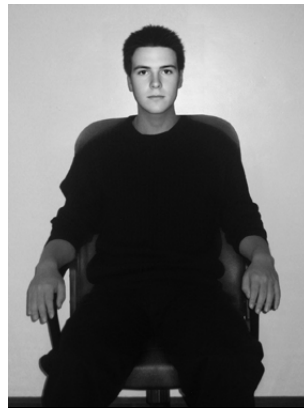
- (d) How attractive would you rate Matt to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

Section B: Vignette option 3 (female participants)



Matt is in his 20s. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

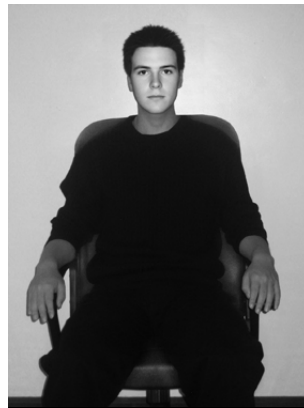
- (d) How attractive would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not attractive at all

Extremely attractive

Section B: Vignette option 4 (female participants)



Matt is in his 20s. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1 **2** **3** **4** **5**

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1 **2** **3** **4** **5**

Not warm at all

Extremely warm

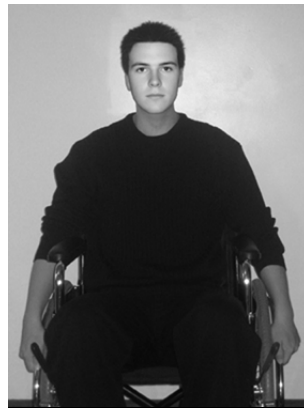
- (d) How attractive would you rate Matt to be?

1 **2** **3** **4** **5**

Not attractive at all

Extremely attractive

Section B: Vignette option 5 (female participants)



Matt is in his 20s. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1	2	3	4	5
----------	----------	----------	----------	----------

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

- (d) How attractive would you rate Matt to be?

1 **2** **3** **4** **5**

Not attractive at all

Extremely attractive

Section B: Vignette option 6 (female participants)



Matt is in his 20s. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

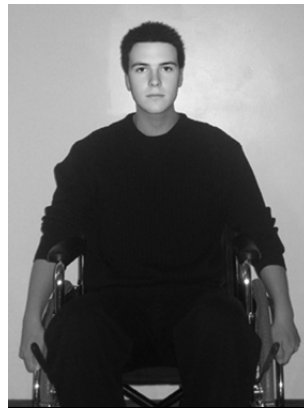
- (d) How attractive would you rate Matt to be?

1 **2** **3** **4** **5**

Not attractive at all

Extremely attractive

Section B: Vignette option 7 (female participants)



Matt is in his 20s. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

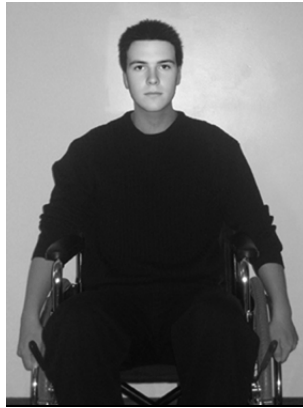
- (d) How attractive would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not attractive at all

Extremely attractive

Section B: Vignette option 8 (female participants)



Matt is in his 20s. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to (*please circle your response*):

(a) Have a short-term sexual relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

- (b) Have a long-term romantic relationship with Matt

1	2	3	4	5
---	---	---	---	---

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions (*please circle your response*):

- (a) How would you rate Matt's physical health?

1	2	3	4	5
---	---	---	---	---

Extremely poor

Extremely good

- (b) How would you rate Matt's earning capacity?

1 **2** **3** **4** **5**

Extremely low

Extremely high

- (c) How warm would you rate Matt to be?

1	2	3	4	5
---	---	---	---	---

Not warm at all

Extremely warm

- (d) How attractive would you rate Matt to be?

1 **2** **3** **4** **5**

Not attractive at all

Extremely attractive

Section C: SOI

Please answer all of the following questions honestly. For the questions dealing with behaviour, please type your answers in the blank spaces provided. For the questions dealing with thoughts and attitudes, please circle the appropriate number on the scales provided.

1. With how many different partners have you had sex (sexual intercourse) within the past year?
2. How many different partners do you foresee yourself having sex with during the next five years?
(Please give a *specific, realistic* estimate).
3. With how many different partners have you had sex on *one and only one* occasion?
4. How often do you fantasize about having sex with someone other than your current dating partner?
(*Circle one*).

1. Never
2. Once every two or three months
3. Once a month
4. Once every two weeks
5. Once a week
6. A few times each week
7. Nearly every day
8. At least once a day

5. Sex without love is OK (*Circle one*).

1	2	3	4	5	6	7	8	9
Strongly disagree	⇔	Neither agree nor disagree				⇔	Strongly agree	

6. I can imagine myself being comfortable and enjoying "casual" sex with different partners.

1	2	3	4	5	6	7	8	9
Strongly disagree	⇔	Neither agree nor disagree				⇔	Strongly agree	

7. I would have to be closely attached to someone (both emotionally and psychologically) before I could feel comfortable and fully enjoy having sex with him or her.

1	2	3	4	5	6	7	8	9
Strongly disagree	⇔	Neither agree nor disagree				⇔	Strongly agree	

Section D: MCSD

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is *true* or *false* as it pertains to you personally.

1. Before voting I thoroughly investigate the qualifications of all the candidates.
2. I never hesitate to go out of my way to help someone in trouble.
3. It is sometimes hard for me to go on with my work if I am not encouraged.
4. I have never intensely disliked anyone.
5. On occasion I have had doubts about my ability to succeed in life.
6. I sometimes feel resentful when I don't get my way.
7. I am always careful about my manner of dress.
8. My table manners at home are as good as when I eat out in a restaurant.
9. If I could get into a movie without paying and be sure I was not seen I would probably do it.
10. On a few occasions, I have given up doing something because I thought too little of my ability.
11. I like to gossip at times.
12. There have been times when I felt like rebelling against people in authority even though I knew they were right.
13. No matter who I'm talking to, I'm always a good listener.
14. I can remember "playing sick" to get out of something.
15. There have been occasions when I took advantage of someone.
16. I'm always willing to admit it when I make a mistake.
17. I always try to practice what I preach.
18. I don't find it particularly difficult to get along with loud mouthed, obnoxious people.
19. I sometimes try to get even rather than forgive and forget.
20. When I don't know something I don't at all mind admitting it.
21. I am always courteous, even to people who are disagreeable.
22. At times I have really insisted on having things my own way.
23. There have been occasions when I felt like smashing things.
24. I would never think of letting someone else be punished for my wrongdoings.
25. I never resent being asked to return a favour.
26. I have never been irked when people expressed ideas very different from my own.
27. I never make a long trip without checking the safety of my car.
28. There have been times when I was quite jealous of the good fortune of others.
29. I have almost never felt the urge to tell someone off.
30. I am sometimes irritated by people who ask favours of me.
31. I have never felt that I was punished without cause.
32. I sometimes think when people have a misfortune they only got what they deserved.
33. I have never deliberately said something that hurt someone's feelings.

Section E: End of survey and prize

You have now completed the surveys. Thank you for your participation! Your responses are completely anonymous and no individual will be identified in any publication of the results. The researcher will not be able to identify your responses.

Feedback on the results will be available on the Macquarie University First Year Noticeboard at the end of the study, or by contacting the chief investigator, Agnes Ko []; agnes.ko@students.mq.edu.au).

If you would like the opportunity to win one of four \$50 Myer gift cards, please supply your contact details (name and email address) in the appropriate spaces provided. This will be on a separate webpage to the study so that your responses are anonymous.

Please tick here to continue to the prize draw entry:

☐

Recruitment advertisement and email

WHO DO YOU LIKE TO DATE?

You are invited to participate in a study investigating dating preferences of today's young adults. This research explores society's attitudes towards dating and sexuality. You will be required to fill in some brief questionnaires and offer your opinions on a hypothetical situation.

The study is being conducted by Agnes Ko (email: agnes.ko@students.mq.edu.au) to meet the requirements for the Doctorate of Counselling Psychology at Macquarie University. No identifying information will be requested and you may choose to withdraw from completing the study at any time without consequence.

At the end of the study, participants will have the opportunity to enter a prize draw to win one of four \$50 Myer gift cards for participation.

If you are aged 18-35years, please go to:

http://macquariehs.qualtrics.com/SE?SID=SV_4PjvCGdxTTX1mug

Information and consent

You are invited to participate in a study of dating preferences. The purpose of the study is to investigate the dating preferences of contemporary young adults and also to explore society's attitudes towards sexuality. The study is being conducted by Agnes Ko (mobile []; email agnes.ko@students.mq.edu.au) to meet the requirements for the degree of Doctorate of Counselling Psychology under the supervision of Dr Julie Fitness (telephone []; email Julie.Fitness@psy.mq.edu.au) of the Department of Psychology.

If you decide to participate, you will be asked to complete a series of questionnaires taking 20 to 30 minutes. The demographic questionnaire requires general demographic information, and the two social questionnaires ask about social relationships and sexual orientation. You will also be required to read a brief vignette and answer some questions about it.

Your responses are completely anonymous and no individual will be identified in any publication of the results. The researcher will not be able to identify your responses.

All information gathered in the course of the study is confidential. Data in the form of an anonymous spread sheet will only be accessible to the chief investigator and supervisors. However, given the nature of the Internet, although responses will be anonymous, the tracking of responses, although highly unlikely, is possible. The data will be used to write up scientific reports for publication, but your responses will remain anonymous and will only be made available to qualified researchers.

At the end of the questionnaires, if you would like the opportunity to win one of four \$50 Myer gift cards, please supply your contact details (name and email address) in the appropriate spaces provided. This will be on a separate webpage to the study so that your responses are anonymous. Feedback on the results will be available on the First Year Noticeboard at the end of the study, or by contacting the chief investigator, Agnes Ko. If you decide to participate, you are free to withdraw from further participation in the research at any time without having to give a reason and without consequence.

I have read and understand the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence.

Please tick here to continue to the questionnaires:

☐

Section A: Demographic questions

1. What is your age?

- ☐ 18-20
- ☐ 21-25
- ☐ 26-30
- ☐ 31-35

2. What is your cultural/ethnic background?

- ☐ Aboriginal/Torres Strait Islander
- ☐ African
- ☐ Anglo/Caucasian
- ☐ Asian (Chinese/Southeast Asian)
- ☐ Indian
- ☐ Middle Eastern/Arabic
- ☐ Southern European/Mediterranean
- ☐ Other

3. Please list your country of birth.

4. What is your current marital status?

- ☐ Single, never married
- ☐ Defacto
- ☐ Married
- ☐ Separated
- ☐ Divorced
- ☐ Widowed

5. How long have you been this marital status?

6. What are your thoughts on having children? I would like to have children...

- ☐ Never
- ☐ Within the next year
- ☐ In the next 5 years
- ☐ In the next 10 years
- ☐ Have not thought about it / don't know

7. Do you currently have any children? If YES, how many children do you have?

- ☐ No
- ☐ Yes

8. How would you rate your own physical health?

	Extremely poor		Neither good nor poor		Extremely good
My Physical Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Please indicate the highest level of education completed.

- | | |
|---|---|
| <input type="radio"/> School Certificate or equivalent | <input type="radio"/> Bachelor Degree |
| <input type="radio"/> Higher School Certificate or equivalent | <input type="radio"/> Graduate Diploma / Graduate Certificate |
| <input type="radio"/> Certificate I to IV (inc. trade cert.) | <input type="radio"/> Postgraduate Degree |
| <input type="radio"/> Advanced Diploma / Diploma | <input type="radio"/> Other <input type="text"/> |

10. Please indicate your current household income.

- | | |
|---|---|
| <input type="radio"/> Under \$10,000 | <input type="radio"/> \$50,000-\$74,999 |
| <input type="radio"/> \$10,000-\$19,999 | <input type="radio"/> \$75,000-\$99,000 |
| <input type="radio"/> \$20,000-\$29,999 | <input type="radio"/> \$100,000-\$150,000 |
| <input type="radio"/> \$30,000-\$39,999 | <input type="radio"/> \$150,000+ |
| <input type="radio"/> \$40,000-\$49,999 | |

11. Which of the following best describes your employment status?

- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Self-employed
- ☐ Not employed, looking for work
- ☐ Student
- ☐ Homemaker

12. How would you describe your current and primary occupation?

- | | |
|---|--|
| <input type="radio"/> Machine operator, hospitality staff, assistant, labourer and related worker | <input type="radio"/> Senior management in large business organisation, government administration and defence, and qualified professionals |
| <input type="radio"/> Tradesman/woman, clerk and skilled office, sales and service staff | <input type="radio"/> Student |
| <input type="radio"/> Other business manager, arts/media/sportsperson and associate professional | <input type="radio"/> Other <input type="text"/> |

13. What is the title of your current and primary occupation?

14. What is your sex?

- ☐ Female
- ☐ Male

Section B: Vignette option 1 (male participants)



Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 2 (male participants)



Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 3 (male participants)



Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 4 (male participants)



Sarah is in her 20s and has a physical disability which she inherited from one of her parents. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 5 (male participants)



Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is not regarded as a warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 6 (male participants)



Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is not regarded as a warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 7 (male participants)



Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is regarded as a very warm person. She is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 8 (male participants)



Sarah is in her 20s and has a physical disability which was not inherited from either of her parents. She is regarded as a very warm person. She is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Sarah

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Sarah's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Sarah's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Sarah to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Sarah to be?

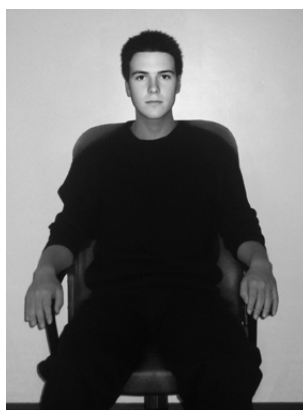
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Sarah has? Please describe.

Section B: Vignette option 9 (male participants)



Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

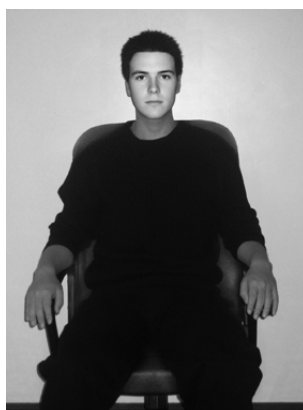
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 2 (female participants)



Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

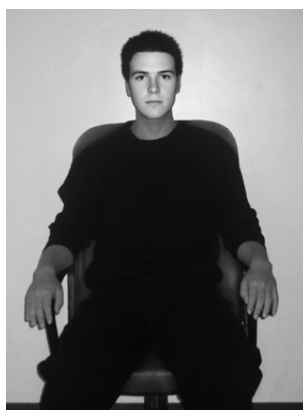
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 3 (female participants)



Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

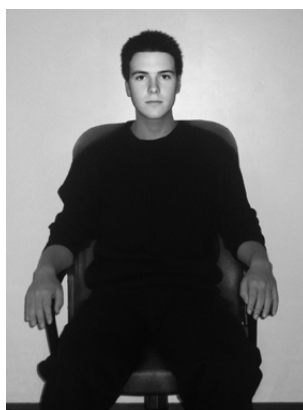
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 4 (female participants)



Matt is in his 20s and has a physical disability which he inherited from one of his parents. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

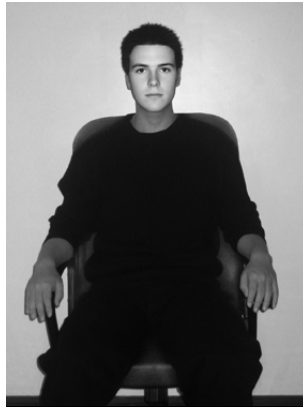
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 5 (female participants)



Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is not regarded as a warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

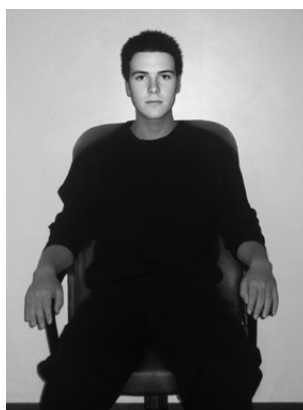
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 6 (female participants)



Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is not regarded as a warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

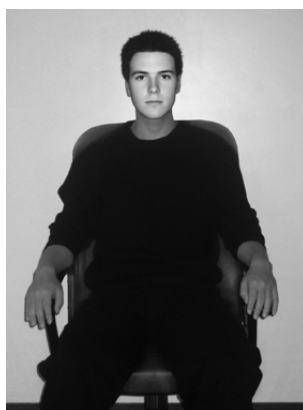
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 7 (female participants)



Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is regarded as a very warm person. He is currently employed and is regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

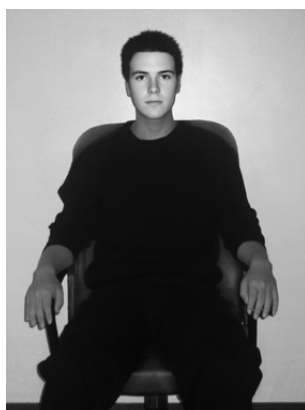
1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 8 (female participants)



Matt is in his 20s and has a physical disability which was not inherited from either of his parents. He is regarded as a very warm person. He is currently unemployed and is not regarded as financially successful.

Please answer the following questions.

1. Rate on a scale from 1 to 5, your willingness to *(please circle your response)*:

(a) Have a short-term sexual relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

(b) Have a long-term romantic relationship with Matt

1 2 3 4 5

Not at all willing

Extremely willing

2. Rate on a scale from 1 to 5, your response to the following questions *(please circle your response)*:

(a) How would you rate Matt's physical health?

1 2 3 4 5

Extremely poor

Extremely good

(b) How would you rate Matt's earning capacity?

1 2 3 4 5

Extremely low

Extremely high

(c) How warm would you rate Matt to be?

1 2 3 4 5

Not warm at all

Extremely warm

(d) How attractive would you rate Matt to be?

1 2 3 4 5

Not attractive at all

Extremely attractive

3. What sort of disability do you imagine Matt has? Please describe.

Section B: Vignette option 9 (female participants)

Please answer all of the following questions honestly. For the questions dealing with behaviour, please type your answers in the blank spaces provided. For the questions dealing with thoughts and attitudes, please circle the appropriate number on the scales provided.

1. With how many different partners have you had sex (sexual intercourse) within the past year?
2. How many different partners do you foresee yourself having sex with during the next five years?
(Please give a *specific, realistic* estimate).
3. With how many different partners have you had sex on *one and only one* occasion?
4. How often do you fantasize about having sex with someone other than your current dating partner?
(*Circle one*).

1. Never
2. Once every two or three months
3. Once a month
4. Once every two weeks
5. Once a week
6. A few times each week
7. Nearly every day
8. At least once a day

5. Sex without love is OK (*Circle one*).

1	2	3	4	5	6	7	8	9
Strongly disagree	⇔	Neither agree nor disagree				⇔	Strongly agree	

6. I can imagine myself being comfortable and enjoying "casual" sex with different partners.

1	2	3	4	5	6	7	8	9
Strongly disagree	⇔	Neither agree nor disagree				⇔	Strongly agree	

7. I would have to be closely attached to someone (both emotionally and psychologically) before I could feel comfortable and fully enjoy having sex with him or her.

1	2	3	4	5	6	7	8	9
Strongly disagree	⇔	Neither agree nor disagree				⇔	Strongly agree	

Section D: MCSD

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is *true* or *false* as it pertains to you personally.

1. Before voting I thoroughly investigate the qualifications of all the candidates.
2. I never hesitate to go out of my way to help someone in trouble.
3. It is sometimes hard for me to go on with my work if I am not encouraged.
4. I have never intensely disliked anyone.
5. On occasion I have had doubts about my ability to succeed in life.
6. I sometimes feel resentful when I don't get my way.
7. I am always careful about my manner of dress.
8. My table manners at home are as good as when I eat out in a restaurant.
9. If I could get into a movie without paying and be sure I was not seen I would probably do it.
10. On a few occasions, I have given up doing something because I thought too little of my ability.
11. I like to gossip at times.
12. There have been times when I felt like rebelling against people in authority even though I knew they were right.
13. No matter who I'm talking to, I'm always a good listener.
14. I can remember "playing sick" to get out of something.
15. There have been occasions when I took advantage of someone.
16. I'm always willing to admit it when I make a mistake.
17. I always try to practice what I preach.
18. I don't find it particularly difficult to get along with loud mouthed, obnoxious people.
19. I sometimes try to get even rather than forgive and forget.
20. When I don't know something I don't at all mind admitting it.
21. I am always courteous, even to people who are disagreeable.
22. At times I have really insisted on having things my own way.
23. There have been occasions when I felt like smashing things.
24. I would never think of letting someone else be punished for my wrongdoings.
25. I never resent being asked to return a favour.
26. I have never been irked when people expressed ideas very different from my own.
27. I never make a long trip without checking the safety of my car.
28. There have been times when I was quite jealous of the good fortune of others.
29. I have almost never felt the urge to tell someone off.
30. I am sometimes irritated by people who ask favours of me.
31. I have never felt that I was punished without cause.
32. I sometimes think when people have a misfortune they only got what they deserved.
33. I have never deliberately said something that hurt someone's feelings.

Section E: End of survey and prize

You have now completed the surveys. Thank you for your participation! Your responses are completely anonymous and no individual will be identified in any publication of the results. The researcher will not be able to identify your responses.

Feedback on the results will be available on the Macquarie University First Year Noticeboard at the end of the study, or by contacting the chief investigator, Agnes Ko []; agnes.ko@students.mq.edu.au).

If you would like the opportunity to win one of four \$50 Myer gift cards, please supply your contact details (name and email address) in the appropriate spaces provided. This will be on a separate webpage to the study so that your responses are anonymous.

Please tick here to continue to the prize draw entry:

☐