AN EVOLUTIONARY ASSESSMENT OF THE RELATIONSHIP BETWEEN
FEMALE PARTNER PREFERENCE AND PUPIL SIZE PREFERENCE

Selina Tombs

A thesis submitted to the Faculty of Graduate Studies
in partial fulfillment of the requirements for the degree of

Master of Arts

Graduate Programme in Psychology
York University
North York, Ontario

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by Selina Tombs

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ABSTRACT

The present study emanated from evolutionarily based hypotheses regarding the relationship between pupil size and perceived attractiveness. For females it was considered that high levels of aroused attention by males would be superfluous for mating success and potentially dangerous. Thus, female ratings of male targets were expected to show an inverse curvilinear function, with moderate pupil size rated most attractive. Background research in which female ratings of moderate pupil size (though rated most attractive) did not differ significantly from large pupil size suggested a relationship between the latter and preference in dating partners for personality traits which appeared to reflect Eysenck’s “psychoticism factor”. Thus, it was predicted that female ratings of pupil size would show a positive correlation with these traits and with partner’s score on the psychoticism scale (EPQ-R). It was also considered, on the basis that females preferring large male pupils may be seeking out the extraordinary interest this conveys, that they would score high on the personality measure of sensation-seeking. Thus, a positive correlation was also predicted between pupil ratings and score on the Sensation Seeking Scale (Form 5). The inverse curvilinear pattern of pupil preference was replicated, with moderate pupil size rated most attractive, though not differing significantly from that of the large. Hypothesized correlations did not obtain. There were, however, some incidental findings. Pupil preference correlated significantly and negatively with partner’s measure of extroversion, while the correlation between
sensation seeking score (Disinhibition) and partner's measure of psychoticism approached significance. Results are discussed in terms of the possibility that partner characteristics influence pupil size preference, rather than the reverse.
ACKNOWLEDGEMENTS

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>vii</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Method</td>
<td>30</td>
</tr>
<tr>
<td>Results</td>
<td>33</td>
</tr>
<tr>
<td>Discussion</td>
<td>43</td>
</tr>
<tr>
<td>References</td>
<td>49</td>
</tr>
<tr>
<td>Appendices</td>
<td>52</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>35</td>
</tr>
<tr>
<td>Table 2</td>
<td>36</td>
</tr>
<tr>
<td>Table 3</td>
<td>38</td>
</tr>
<tr>
<td>Table 4</td>
<td>39</td>
</tr>
<tr>
<td>Table 5</td>
<td>41</td>
</tr>
<tr>
<td>Table 6</td>
<td>42</td>
</tr>
</tbody>
</table>
INTRODUCTION

Many qualities have long been attributed to the eyes which have nothing to do with vision. Guillaume de Salluste expresses this well with his poetic description of the eyes as the "windows of the soul". Although not literally the case, evidence over the last several decades indicates that the eyes directly register activities of the nervous system, particularly the effects of visual stimulation. For example, pupillary dilation is controlled by the sympathetic division of the autonomic nervous system. Strong emotional states are accompanied by "general sympathetic stimulation", and "deep emotions of pleasure as well as fear are commonly accompanied by pupillary dilation" (Kuntz, 1929).

Research in the area of pupillometry dates back to the initial work conducted by Hess and Polt (1960) in which male and female subjects were presented with various pictorial stimuli. The pictures used were those of a baby, mother and baby, nude male, nude female, and landscape. Upon viewing each picture, the subject's change in pupil size was measured as a means of measuring interest and pleasure value. As expected, the percentage change in mean pupil area indicated that the men showed more interest in the nude female photo, and the photo of the nude male was more interesting to women. The researchers concluded that these results illustrate the effectiveness of pupil measurement in discerning interest value of visual stimuli within and between the sexes.

In 1965, Hess presented males with two near identical female photographs, varying only with respect to pupil size, and asked them to rate the attractiveness of each
one. In one photo, the woman's pupils were extra large, whereas in the other they were very small. Compared to the small pupil condition, the mean affective response to the photo with large pupils was significantly greater. When asked, the males indicated that they had not noticed the difference between photographs. They did state, however, that the female with large pupils appeared "warm" and "soft", whereas the female with small pupils seemed "cold". Hess suggested that the expressed preference may be a result of the "extraordinary interest" that larger pupils signify from a female, implying positive affect for the man at whom she is looking.

Following the work of Hess (1965), Hicks, Reaney, and Hill (1967) conducted an experiment using the same 2-point scale for pupil size, examining both male and female ratings of photographs of a young woman. Males expressed no preference for one size over the other; females showed a preference for the smaller female pupils.

In contrast to the use of photographs (Hess, 1965), Stass and Willis (1967) used an actual interaction to investigate the influence of pupil size on personal preference. In this experiment, subjects of both sexes were asked to choose either a male or female partner with whom to participate in an experimental task. Subjects were told to choose someone who they felt would be pleasant and easy to talk to, because the task would require very intimate communication. In terms of partner choice, two females and two males were available. The females were matched on attractiveness, while identical twins were used in the case of the males. One potential partner of each sex was administered a
drug in order to achieve pupil dilation, while the pupils of the remaining two potential partners remained unaltered. Upon completion of the session, subjects were asked to give reasons for their choice of partner. The researchers found that males were significantly more likely to choose the female partner with dilated pupils over the female with unaltered pupils. In addition, females chose the male partner with dilated pupils significantly more often. In terms of the reasons given for their choice, no subjects reported pupil size as an influencer, and while some could not explain their choice, others stated that the chosen partner appeared more friendly, pleasant, and good looking. This study was unique in terms of its use of live models to investigate pupil size preference (as opposed to photos) and suggests that, like men, women are also attracted to opposite sex partners who appear to show interest in them (by way of enlarged pupils).

In 1971, Jones and Moyel had male subjects rate photos of males differing in terms of iris colour and pupil size. In one subset of photos, the subject had light coloured irises. In the other subset, the subject’s irises were dark. Within each subset, one subject had large pupils and the other had small pupils. The male raters were asked to express either positive or negative (friendly or nonfriendly) feelings of affect for the subject in the photograph. A significant main effect for iris colour was found, while the main effect of pupil size and the interaction of iris colour and pupil size were nonsignificant. Positive affect statements were significantly higher for the photos with light irises as compared to those with dark irises. The researchers suggest that the appeal of large pupils and the
associated positive affect found in other studies was lessened in this case because the photographic subjects and the individuals rating them were of the same sex.

Two years later, Jones and Moyel (1973) reported another study investigating affective responses of both males and females to photographed subjects of both sexes differing in pupil size and iris colour. Subjects were shown photo sets of strangers (5 male and 5 female) and asked to indicate either positive or negative affect for each. A nonsignificant effect was found for pupil-size, iris-colour and all interactions between pupil size, iris-colour and sex, thus failing to replicate the earlier Jones and Moyel (1971) effect of iris-colour.

Hess (1975), discussing the implications of his previous research findings, noted that a person may use another person’s pupil size as an information source for that person’s attitudes or feelings, and that large pupils are an indicator of interest. Depending on the sex of the individual observing them, large pupils may be interpreted as an indication of sexual interest. He described his latest experiment, using drawings of faces without pupils, in which one version has a smiling face while the other is scowling. Men and women were asked to draw in the pupil size which they thought was the best fit for the face. Larger pupils were drawn significantly more often on the happy faces in comparison to the scowling faces. The study was repeated using Hess’s students and confirmed the original results unequivocally. When younger individuals (between the ages of 9 and 15) were tested, however, there was no significant difference between size
of pupils drawn on happy and scowling faces. Hess suggested that there may be a turning point, around age 14, at which time different meanings begin to be attributed to different pupil sizes.

In another experiment using two different female photographs, Hess (1975) altered the pupils of each target to represent small and large sizes. The photos were shown to males, who were asked to indicate which version (small or large pupil) was happier, more selfish, more attractive, and more unfriendly. No significant differences were found between targets on each of the measures, however, with respect to pupil size. Subjects overwhelmingly chose the large pupil version when questioned about positive attributes. Conversely, in the case of negative attributes, subjects chose the small pupil versions.

Sathers and Fothergill (1977) investigated the effects of pupil size on person perception using drawings of male and female faces. Each subject rated either a male or female face characterized by small, medium, or large pupils. The study was unique in using semantic differential scales to measure the dimensions of arousal, dominance and pleasure. Subjects also indicated, by way of a checklist, which facial characteristics were most influential in their assessments of the drawings. No significant effects were found for pupil size in terms of the three dimensions. A significant effect for sex was found in terms of the dominance dimension, with males being rated higher than females, regardless of pupil size. The characteristics identified by raters as most influential in
their assessments were the eyes, pupils of eyes, and eyebrows.

Hicks, Pellegrini, and Tomlinson (1978a) introduced the use of a three-point rating scale to pupillary research. In this study, female college students rated photographs of a male and a female model on the dimensions of pleasant-unpleasant and warm-cold, combined. They found an inverse correlation for ratings with pupil size for the female model and an inverted U-shaped relationship for ratings with pupil size for the male. They speculated that this divergence in the form of the distributions may have been a function of attractiveness differences between the two models.

To test their speculation, Hicks, Pellegrini, and Tomlinson (1978b) conducted another study, using the same method, with two male models, differing in attractiveness. Significant main effects in the expected directions were found for attractiveness and pupil-size, and there was a significant interaction of attractiveness and pupil-size such that the more attractive model showed an inverse linear relationship and the less attractive model showed an inverted U-shaped relationship.

Bull and Shead (1979) had both sexes rate the extent to which male and female faces were “good looking”, based on variations in pupil dilation, and sex and age of the observer. Male and female observers of various ages (10-yr.-olds, 16-yr.-olds, and 20-yr.-olds) rated faces of both sexes, some faces with dilated pupils, and others without. No significant effects were found for pupil dilation in the male photographs. The dilated female photographs were rated as significantly more “good looking” by the 16 and 20-
yr.-old male observers, compared to the ten year-old male observers and all age groups of female observers. The results suggest that pupil dilation increases ratings of female attractiveness, but not ratings of males, as expressed by either sex. The findings also gave support to the assertion made by Hess (1975) that different attributions to different pupil sizes may begin to develop around the age of 14 years.

In an attempt to replicate the findings of Hess (1975) relating pupillary attributions to happy and angry faces. Hicks, Williams, and Ferrante (1979) had college students draw in the pupils on various facial drawings. The results illustrated the reliability of this difference between pupillary attribution and Hess's happy vs. angry faces. That is. significantly larger pupils were drawn on the happy faces as compared to those with a sad expression. In contrast to Hess's results, however, the nonsignificant difference between mean male and female responses casts doubt on the possibility of a sex difference in sensitivity to pupillary cues.

In 1985. Cutler. Gilgen and Gilpin investigated the influence of pupil size. eye size. sex of stimulus face, and sex of subject on perceived emotion. Male and female college students were shown incomplete line drawings of faces of both sexes, and asked to fill in the missing features. The drawings were life-sized and were absent of all facial characteristics except pupils and eyes. Sex of drawing was indicated by way of hairstyle. Three versions of each drawing were used, corresponding to small. medium, and large pupils. In addition, each version had either narrow or large eye openings. Two male
judges rated the completed drawings in terms of negative or positive emotion, using a 7-point Likert scale. No significant main effects were found for sex of stimulus, pupil size, or size of eye opening. The effect of sex of subject on perceived emotion was found to be significant, with female drawings judged more positively than males. This study was unique in terms of the use of line drawings (instead of photographs) and subject-generated (instead of experimenter-generated) responses.

More recently, Hensley (1990) repeated Hess's experiment (1975) using the same photographs, but found no significant relationship between sex and female pupil size preference.

In sum, though pupil size preference seems ubiquitous, the data are somewhat inconsistent and theories vary. The present study represents an attempt to apply a different conceptual model to the phenomenon, based on evolutionary theory. The following section contains some relevant background information about evolutionary theory, particularly with regard to sexual selection.

Evolutionary Theory

Darwin's (1959) theories of natural and sexual selection have influenced the field of psychology greatly. Most significantly, with respect to the focus of this paper, Darwin provided the basis for the emergence of evolutionary psychology. This involves the study of evolved psychological mechanisms by sex, and seeks to find consistencies across
individuals, regardless of culture (e.g. in mating strategies). While controversy still pervades this field, major advances in the last twenty years have increased its scientific acceptance. Regularities in psychological phenomena by sex are emerging (e.g. Buss, 1994) and the more we learn in this respect, the better our understanding will be of the differential selective pressures that acted on humans in our evolutionary past.

**Darwin's Theory of Sexual Selection**

More than a century ago, Charles Darwin offered a revolutionary explanation for the mysteries of mating. He was intrigued by the development of characteristics in animals which appeared to hinder their survival. He wondered how such conspicuous features could have evolved in many species, and become more common, when they essentially provided a lure for predators (i.e. the peacock's tail). Darwin posited that some characteristics must evolve because of their reproductive benefits, rather than survival benefits. This is known as sexual selection theory.

The underlying assumption of sexual selection theory is that individuals strive to maximize their reproductive success. Reproductive success is dependent on one's value as a mate, as well as one's mate choice. According to Darwin, sexual selection takes two forms. First, same sex members of a species compete with each other, and the outcome of this contest gives the winner greater sexual access to members of the opposite sex. The characteristics that lead to success in these contests evolve because the victors mate
more often, hence passing on more genes. Second, members of one sex exercise preference for particular characteristics in the opposite sex. These characteristics evolve in the other sex because animals possessing them are chosen more often as mates, and hence their genes thrive. Thus, the two key processes leading to evolutionary change are:

1. Competition for a mate; and
2. Preferences for a mate.

**Evolved Psychological Mechanisms in Humans**

In the late 1970's and 80's, theoretical advances by major proponents of evolutionary theory provided a breakthrough in applying sexual selection to humans. These researchers (see Buss, 1994) set out to identify underlying psychological mechanisms that were products of evolution. Such mechanisms would help explain our enormous behavioral flexibility as humans, and the different mating strategies actively pursued by men and women. This new discipline is called "Evolutionary Psychology".

One focus in evolutionary psychology is on identifying universal mating desires, as well as sex differences across cultures. If mating desires have evolved and become characteristic of our species, then they should be found universally. The patterns that have emerged through cross-cultural research point to the existence of such species-characteristic psychological mechanisms in human mating.

Buss (1994), in particular, has carried out extensive cross-cultural research to investigate whether some mating desires are universal, whether certain sex differences are
characteristic of all people in all cultures, or whether culture exerts a powerful enough influence to override evolved preferences that might exist. He has conducted the largest study ever undertaken on human mating desires, surveying over ten thousand people worldwide (Buss, 1994). His findings have consistently shown that both men and women have different criteria by which they choose mates, regardless of culture. The differentially preferred characteristics are congruent with evolutionary reasoning, as discussed below. Men and women pursue different sexual strategies to select, attract, keep, or replace a mate.

These findings have implications for every sphere of human mating life (from marriage and extramarital affairs, to sexual harassment and patriarchy). Much of what has been found is not "nice", but these sexual strategies have evolved to solve adaptive problems, and those who did not practice them are not represented in the gene pool today.

Evolved Mate Preferences by Sex - Why?

A. Women's Evolved Preferences

That females exert choice about mates stems from the most basic fact of reproductive biology - the definition of sex. What defines biological sex is simply the size of the sex cells. Female gametes are large, loaded in nutrients, and in limited supply. Male gametes, conversely, are small and replenishable.

Women not only bear a greater initial investment with the egg, but consequently
also through fertilization and gestation. which occur internally. One act of sexual intercourse can lead to a nine month energy-consuming investment, which closes out other mating opportunities. Furthermore. women bear sole responsibility for lactation, another costly investment that can last 3-4 years. Among all 4000 species of mammals, including over 200 primate species, females bear these burdens of reproductive investment.

Women's greater initial parental investment makes them a valuable but limited resource. Their resources cannot be allocated indiscriminately, nor can one woman dispense them to many men. Those with valuable resources do not give them away unselectively or easily.

Women in our evolutionary past risked enormous investment as a consequence of having sex. and because of this, evolution favoured women who were highly selective about their mates. Over evolutionary history, women who were indiscriminate and selected mates with fewer resources would experience lower reproductive success, and fewer of their children lived to reproductive age. Historically, a woman who engaged in a casual encounter risked pregnancy, and the related costs could burden her for many years afterward. If a male indulged in such a mating, he lost some sperm. Sperm are relatively cheap. The loss did not diminish his future reproductive possibilities.

With the emergence of birth control technology, the costs to women have been altered. On the other hand, human sexual psychology evolved over millions of years to
cope with ancestral adaptive problems. Although our environment has changed, we still possess this underlying sexual psychology.

Because ancestral women faced such tremendous burdens of reproduction, they would have benefitted greatly by selecting mates who possessed resources. Powerful survival and reproductive advantages were reaped by having a mate who provided abundant resources. If an ancestral woman were to select a mate who failed to deliver these resources, her survival would be tenuous, and reproduction at risk. In contrast, a mate who provided abundant resources, who protected her and her children, and who devoted time, energy, and effort to the family would be a great asset. As a result, over thousands of generations, a preference for men with resources, who showed signs of being willing and able to commit to them, evolved in women.

B. Men's Evolved Preferences

A male's reproductive output is limited by his access to fertile females, whereas access to all the males in the world could not elevate a female's capacity. Once she has been fertilized, additional matings avail her nothing until she requires fertilization anew. But for the male, an additional mating may have a reproductive payoff at any time. Any male, unlike a female, has the prospect of increasing his reproductive output if he can somehow secure another fertilization.

This sex difference has important implications for variations between female and
male reproductive strategies. Investing little in each offspring, males are selected to sow their seed wherever opportunity arises. Investing considerably in each offspring, females are selected to exhibit greater selectivity in their choice of mates. Whenever males do invest parentally, they are under selective pressure to protect themselves against cuckoldry (investing in another man's offspring). This stems from the fact that, unlike any other species, ovulation in the human female is concealed internally. Basic reproductive biology dictates that paternity (unlike maternity) is always uncertain, and therefore males have a greater concern than females over the fidelity of their mates.

What could be the adaptive advantage to committing oneself to a female, when all an ancestral man needed to do to reproduce was to impregnate a woman? One solution is that of women's requirements for reliable signs of male commitment before consenting to sex. Men who failed to commit would have suffered selectively on the mating market - they would have failed to obtain the most desirable females, and perhaps would have failed to attract any women at all.

The failure to commit would have also impaired the survival and reproductive success of an ancestral man's children. Even children who did survive without the father's investment would have suffered from the absence of his teaching and political alliances - key assets for solving mating problems.

Men who were willing to commit would have secured a higher quality mate, because women typically desire a lasting commitment, and highly desirable women are in
the best position to get what they want. Men of higher status would have been in a position to insist on more stringent standards for a spouse - standards that most women would not have been able to meet.

To be reproductively successful, ancestral men had to choose long term partners with the capacity to bear children. The greater a woman's reproductive potential, the more valuable she would have been on the mating market. Men needed some basis to judge this potential.

Gauging reproductive value entails the evaluation of a female's physical features. Two obvious cues to her potential would have been youth and health. Clearly, old or unhealthy women could not reproduce as much as young healthy women. Ancestral men solved the problem of finding reproductively valuable women by preferring those who are young and healthy. Men who failed to prefer qualities that signal high reproductive value would have left fewer offspring, and their line would have died out.

Given this state of affairs, ancestral men would have maximized reproductive success through long-term investment in young, faithful mates, while remaining alert to extramural, low-cost sexual opportunity. As a result, over thousands of generations, these preferences evolved in the human male psyche.

**Relation to Pupilometry**

Differential mating strategies have evolved by sex, and preference for particular
characteristics in a mate serve to enhance reproductive success. If differential characteristics are conveyed to the observer by variations in pupil size, then there may be predictable pupil size preferences by sex.

In the case of females, the cardinal concerns relating to reproductive success are based on resource investment, thus requiring a mate who is not only effective at resource accrual, but who is also dependable and committed to providing these resources to her. Historically, and to some extent today, the physical protection provided by a man also proved valuable in averting problems such as rape. The aftermath of rape, if pregnancy occurred, was disastrous for the female, because her partner would surely not invest in offspring that were not his own. Thus, a male who signalled the willingness to provide these forms of committed attention should be preferred as a partner, as this would prove advantageous to her reproductive success. At the same time, however, a male who appears too focussed on a female may devote too much attention to her, for example, in terms of guarding, at the expense of resource accrual. Furthermore, highly aroused attention from him might signal a tendency to be overly jealous, or possessive, the behavioural manifestations of which could threaten her own safety, and that of her offspring. Based on this reasoning, in terms of pupil size preference, it would be expected that females prefer a moderate amount of aroused attention (as signalled by the medium pupil), while expressing aversion for highly aroused attention (as signalled by the large pupil).
In the case of males, the cardinal concerns relating to their reproductive success are those of obtaining sexual access to a young, healthy, faithful female partner. The first requirement, that of youthfulness, and to some extent the second, health, are easy enough to gage based on physical appearance (e.g., clear, smooth skin, a lively gait). But assessing faithfulness is not quite as simple a task, and yet it is just as important. With resource accrual concerns, a man cannot focus all of his attention on guarding and ensuring the faithfulness of his wife. Yet, should she sire the offspring of another male without his knowledge, not only is his paternity compromised, but even worse, he may invest resources and attention for many years to come in the continuing survival of someone else’s genes. Outside of the time during which he is able to monitor her activities, what cues would give him assurance that a female is remaining faithful in his absence? Certainly, highly focussed, unwavering attention from her would serve as reassurance that she does not have her sights on anyone else. Furthermore, as an indication of sexual interest, highly aroused attention on the part of a female would be perceived as attractive since this provides a signal of sexual interest and potential accessibility, another challenge which men face. Based on this reasoning, in terms of pupil size preference, the more attention and interest that is expressed by a female (by way of large pupils), the more attractive he will perceive her.
Pilot-Research

As pilot research, Tombs had male and female undergraduates rank their preferences for small, medium, and large pupil size in each of six target subjects (3 males and 3 females). Retouched photos were used. A photo rating sheet (Appendix 1) was developed on which respondents indicated their preferences. The questionnaire had participants indicate, for each photo sheet (1 through 6), which of the photos was the most and least attractive to them (write A, B, or C). The photos used were high school graduation photographs of three male and three female targets deemed to be at least moderately attractive. The male and female targets represented a range of variability in hair and eye colour (blonde hair, blue eyes; light brown hair, blue eyes; and brown hair, brown eyes, respectively).

Three versions of a photo (small, medium, and large pupils) were positioned on a page for each subject, with all other aspects of the photos constant throughout. Pupil alterations were done via computer using the Adobe Photoshop 2.0 program. The position of pupil size was randomized for each target in order to control for positioning effects. Each subject's photo sheet (of three males and three females) was contained in a file folder, in the same order throughout, with each sheet showing three versions of the subject's pupil size. They were labelled numerically (1 through 6). Furthermore, each version (of pupil size) was labelled alphabetically from left to right (A through C).

The investigator hypothesized a positive linear trend for male preference of pupil
size in females and an inverted U shaped curvilinear function for female preference of male pupil size. These results were anticipated based on the following evolutionary premises:

1. Men and women exhibit differential mating strategies relating to fitness. Female arousal toward a male will always lead to adaptive behaviour for him. The more arousal she exhibits, (i.e. the larger her pupils), the greater his chances of reproductive success. Psychologically, men view women as “ever in short supply, both as sexual partners and as wives.” (Daly and Wilson, 1983). Since sperm is relatively uncostly to expend, males “sow their seed wherever opportunity arises” (Daly and Wilson, 1983). On the other hand, arousal stimuli is more selective for females because their potential reproductive investment is much greater. In turn they are more judicious as to when they engage in sexual intercourse.

2. Males are more sexually possessive than females, based on paternal uncertainty. Ultimately, male sexual jealousy functions to “increase the probability that one’s wife will conceive one’s own rather than someone else’s child.” (Symons, 1979). Thus, highly focussed attention from a male directed toward a female may signal overpossessiveness. Further, males are “more likely to express jealousy in physical violence, hence their feelings are more often visible and less easily ignored.” (Symons, 1979). Females are always alert to this potential danger. At the same time, however, a female needs some male attention because this signals his willingness to invest resources
in her and potential offspring.

3. Men rape, and women do not. Any sexual encounter (whether forcible or not) has the potential to enhance a male’s inclusive fitness, and at little cost to him in terms of sperm expenditure. Forced intercourse is well within his physical means, and women remain aware of this possibility. The threat of rape puts a female’s physical well being, and in turn her reproductive potential at risk. If pregnancy occurs, she is faced with considerable reproductive investment without the aid of paternal resources. The common tendency to “blame the victim... [and] devalue the woman accordingly” (Daly and Wilson, 1983) can create a social stigma that leaves her unable to attain a quality mate, or even one at all.

For these reasons the investigator concluded that both small pupils, connoting little arousal and attention, and large pupils, connoting much, would be less attractive to the female than moderate sized pupils. This study rendered no particular predictions for males rating males or females rating females, but examined these as a point of possible interest.

Female ratings of male pupil size showed an inverted U shaped relationship, whereas ratings of female pupil size by males depicted a positive linear function. This interaction effect, which comprised the main hypothesis, was significant beyond the .001 level (n = 60). However, for female ratings, no simple effects were found between medium and large pupils, although both did differ significantly from the small size.
Significant simple effects were found at all levels for male ratings. The distributions of female ratings tended to be similar to males' for the three female photos.

The results for large pupil preference in females, ranking a close second to the medium size, were unexpectedly high. Hence, the investigator assessed the correlations between photos, across female subjects, to ascertain whether preference for large pupils could represent a trait. The three correlation coefficients were all a positive direction, with one reaching and another approaching significance. Despite the fact that Ns were lower than would be considered adequate for this kind of analysis.

Based on the suggestion from these data that unusual preference for large pupils (and, assumably, concentrated male attention) is characteristic of some females, the investigator conducted further pilot research which examined correlations among photo ratings and types of personality characteristics preferred in a prospective partner.

The subjects were female undergraduate psychology students. The male photos from the first pilot study were used. A revised photo rating sheet was developed (Appendix 2). The questionnaire asked participants to indicate, for each photo sheet (1, 2 and 3), which of the photos was the most and least attractive to them (write A, B, or C).

Three versions of a photo (small, medium, and large pupils) were positioned on a page for each subject. All other aspects of the photos were constant throughout. The position of pupil size was randomized for each male target to control for positioning effects. Each subject's photo sheet (3 in total) was contained in a file folder, in the same
order throughout. Each sheet, showing three versions of the subject's pupil size, was numbered (1 through 3). Furthermore, each version (of pupil size) was labelled alphabetically from left to right (A through C).

To investigate what personality characteristics are preferred in a partner, the Partner Questionnaire (Appendix 3) was developed. On this checklist, consisting of 54 adjectives, respondents were asked to indicate what kinds of personality traits they like and dislike in a prospective partner. A five-point scale was used for ratings, with 1 = very negative, 2 = moderately negative, 3 = neutral, neither negative nor positive, 4 = moderately positive, and 5 = very positive. A factor analysis was conducted on the 54 adjective checklist and the emerging factors were correlated with pupil size preference (n = 60).

The results of the correlational analysis (Appendix 4) verified that pupil preference was consistent across photos 1 and 2, and photos 1 and 3. In terms of the factor analysis, the correlation between Factor 3 and pupil preference approached significance (r = 0.25, p = 0.055). The researchers termed this factor "Tough Guy" because it contained the following traits: hardheaded, opportunistic, fickle and frivolous. The larger the pupil size preference, the less negatively these traits were evaluated in a dating partner. Furthermore, when a cutoff of 0.4 was used in the analysis, the following terms were included in Factor 3: conceited, vindictive and autocratic.
Present Study

On the basis of the background research, the present study focussed further on the personality traits women prefer in a dating partner, and the question of how these preferences relate to pupil size preference. With respect to the additional pilot research, the combination of traits that constitute Factor 3 seemed to fit with those traits that intercorrelate to form a higher-order of 'psychoticism' (Eysenck, 1976); thus, the focus of the present study was on this dimension of personality.

Psychoticism and Eysenck's P-Scale

Psychoticism (P) refers to a dimension of personality that is more or less normally distributed throughout the population, and is in many ways the obverse of conforming behaviour. The isolation and naming of the 'psychoticism' factor is firmly based on a large body of experimental and empirical evidence (see Eysenck & Eysenck, 1992). The cluster of traits that are associated with P are the following: aggressive, antisocial, cold, creative, egocentric, impersonal, impulsive, tough-minded and unempathic. The intercorrelations between these traits provide the ultimate justification for postulating P as a personality dimension (Eysenck & Eysenck, 1976). It is characteristic of individuals who are high on the P continuum to express these traits in a psychopathological way. Furthermore, they often have some form of mental illness or personality disorder. Most individuals fall in the average range on this dimension, and represent the middle part of
the continuum.

For the purpose of measuring normal (non-psychotic) groups, the Psychoticism Scale was constructed by Eysenck and Eysenck (1975) and incorporated into a general scale of personality measurement, termed the 'Eysenck Personality Questionnaire' (EPQ). Besides psychoticism, this scale also provides a measure of two other major personality dimensions: neuroticism, extraversion; and in addition, lying. More recently, a revised version of the scale, termed the Short Scale EPQ-R, has been designed by Eysenck, Eysenck, and Barrett (1985). This version was used for the present study. This self-report scale consists of 48 forced choice (Yes or No) items and the four subscales: Psychoticism (P), Neuroticism (N), Extraversion (E) and Lying (L). Twelve items are allocated to each subscale.

In addition to the traits already identified as characteristic of high P scorers, in terms of their value and interest systems, these individuals characteristically undervalue people, particularly those in authority, and tend to be interested in impersonal sex (Eysenck & Eysenck, 1976). Eysenck (1981) also identifies how sexual attitudes relate to the various dimensions of personality. In particular, libido, promiscuity and hostility are most strongly related to high P. To a slightly lesser extent, curiosity, premarital sex, and sexual pathology (vs. satisfaction) are also associated with high P scorers.
Pupil Preference and Mate Preference: Hypothesis 1

As noted above, the traits that constitute the personality characteristics of psychoticism are: cold, egocentric, impersonal, impulsive, antisocial, unempathic, creative, and tough-minded. These traits were incorporated into a larger revised adjective checklist (Appendix 5) and administered to a female sample with directions to note which traits they "like or dislike in a prospective dating partner." Hypothesis 1 of the present study was that significant positive correlations would be obtained between female partner preference for the personality traits of psychoticism and large pupil size preference.

Pupil Preference and Actual Partner Choice: Hypothesis 2

If female preference for larger pupils does in fact relate significantly to preference for personality traits of psychoticism, then this preference should manifest itself in terms of partner choice. Thus, the EPQ-R, described above and shown in Appendix 6, were administered to the partners of females participating in the study. Hypothesis 2 posited a positive correlation between a female's pupil size preference and her partner's psychoticism score.

Pupil Preference and Personality: Hypothesis 3

Hypothesis 3 deals with possible relationships between personality variables and preference for large male pupils in females, which requires a brief review of the literature
Zuckerman (1979) defined the construct of sensation seeking, and devised various measures of it, termed Sensation Seeking Scales (SSS). As Zuckerman (1979) explains, "the term sensation is used in contrast to cognition. Although sensation seeking is not incompatible with intellectual curiosity, the latter is not a typical expression of the trait defined by the SSS. Furthermore, the term seeking is used because the trait is expressed in an active mode. The sensation seeker is rarely the victim of a lack of opportunity or restriction of environment, although the environment may restrict the forms of the sensation-seeking activity." (Zuckerman, 1979)

Specifically, sensation seeking is "a trait defined by the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience." (Zuckerman, 1979) These are the stimulating qualities most valued by the sensation seeker. In this definition, "varied" is used because it reflects the sensation seeker’s need for change, while "novel" is used in order to indicate maximal unpredictability. Finally, "risk" refers to the probability of a negative outcome as appraised by the sensation seeker. The high sensation seeking individual actively seeks out external stimuli to maximize his or her internal sensations, and is particularly sensitive toward his or her internal state.

There are two ways to describe sensation seeking: as a "trait" or as a "state". In the case of the trait, it is characterized by "... the tendency to seek relatively novel and
stimulating situations and to explore them.” (Zuckerman. 1979). Zuckerman (1979) explains that the trait “is involved in a broad range of appetitive activities”, and that “It also provides a new view of sex that suggests that the sexual motive is secondary to a broader and perhaps earlier developing need for varied sensations.” In contrast, the sensation seeking state refers to “... a predominance of characteristic types of strong, positive affect feelings in situations of great novelty and risk.” (Zuckerman. 1979).

The trait-state distinction is important in terms of personality assessment. A trait refers to an enduring disposition whereby a consistent type of perception or reaction occurs in a variety of different situations (Allport. 1937). A state occurs in a specific or delimited period of time, during which a motive or affect is aroused. In terms of sensation seeking, someone with the trait “might be regarded as a person who tends to perceive less risk than others in a variety of novel situations and tends to engage in a variety of risky activities that more ‘sensible’ people refrain from”, while the state of sensation seeking “might be some kind of eager, positive feeling aroused by the prospect of a new experience.” (Zuckerman. 1979).

It was for the purpose of measuring the trait of sensation seeking that the Sensation Seeking Scales (Zuckerman. 1979) were developed. The latest version of the Sensation Seeking Scale (Form V) was administered to participants for the Master’s study (Appendix 7). The test form consists of 40 questions, beginning with brief instructions on completing the form. Each of the items contains two choices: A or B. For
each item, the respondent is asked to choose the response which "most describes your likes or the way you feel." (Zuckerman, 1979). The complete instructions are given in the Methods section of this paper. There are 10 items pertaining to each of the following subfactors: Thrill and Adventure Seeking (TAS): Experience Seeking (ES): Disinhibition (Dis): and Boredom Susceptibility (BS). The measure of sensation seeking may be taken as a total for all 40 items, or may be measured out of 10 for each particular subfactor. The subscales (corresponding to each subfactor) are moderately correlated and have shown good internal consistency and retest reliability (Zuckerman, 1979).

The first subfactor, Thrill and Adventure Seeking, is based on a desire to engage in adventurous or thrill seeking activities that are risky in nature (i.e. mountain climbing). As Zuckerman (1979) describes, "The basic theme of the factor is summed up by the item 'I sometimes like to do things that are a little frightening'". The second subfactor, Experience Seeking, reflects "a desire to have a variety of experiences, whether through seeking external stimuli in music, art, travel or internal sensations through drugs. Some items also express the desire to associate with persons who are unpredictable and different." (Zuckerman, 1979) Thirdly, the Disinhibition subfactor is one that represents a more traditional kind of sensation seeking in that it reflects a desire for release and social disinhibition through "drinking, partying, gambling, and sex. In a sense, Dis reflects a traditional pattern of nonconformity through rebellion against strict codes about acceptable social behaviour." (Zuckerman, 1979). The fourth subfactor, Boredom
Susceptibility reflects an aversion for any kind of repetitive experience, boring or dull people, and routine types of work. Furthermore, it reflects "extreme restlessness under conditions when escape from constancy is impossible."

(Zuckerman, 1979).

To return to the hypotheses. it has been explained in previous sections why females would prefer medium sized pupils as opposed to both small pupils (signifying lack of interest and focus) and large pupils (signalling a possibly dangerous excess of interest and focus). It appears, however, that there is a segment of females who prefer large pupils. One apparent explanation is that they are high sensation seekers, particularly with regard to sexual activity. Thus, the investigator hypothesized a significant positive correlation between large pupil preference and sensation seeking scores.

Replications

In addition to the above hypotheses. it was anticipated that the present research would replicate the nature and form of the distribution of male pupil size preferences by females found in the investigator's prior pilot research.

Summary of Hypotheses

The hypotheses for this study were as follows:

1. In terms of pupil size preference, females will show an overall preference for
the medium sized pupil and a secondary preference for the large sized pupil. although the
only significant comparisons will occur with the small size pupil.

2. There will be a significant positive correlation between female preference for
male pupil size and preference for personality traits related to psychoticism. both in terms
of individual traits and the combined score. in a prospective dating partner.

3. There will be a significant positive correlation between female preference for
male pupil size and partner score on the EPQ-R scale of Psychoticism.

4. There will be a significant positive correlation between female preference for
male pupil size and their sensation seeking scores.

METHOD

Participants

The study solicited 70 female introductory psychology volunteers from the York
University undergraduate population by way of the Undergraduate Research Participant
Pool. Sign up sheets were posted on the URPP Bulletin Board for the “Mate Choice
Study”. specifying that participants must currently have a steady male partner or main
dating partner. Participants signed up for specified half-hour time slots. Participants
were informed that they would be required to rate photos, fill out several brief
questionnaires, and pass on a questionnaire to their current partner. who would be
required to return it promptly by mail. As an incentive, participants were informed that
they would receive two bonus points toward their grade in Introductory Psychology for participating in the study.

Materials

To investigate female pupil size preference in males, the investigator made use of the male photos from the pilot research. These consist of high school graduation photographs of three male targets who are deemed to be at least moderately attractive. The male targets represent a range of variability in hair and eye colour (blonde hair, blue eyes; light brown hair, blue eyes; and brown hair, brown eyes, respectively).

Three versions of a photo (small, medium, and large pupils) are positioned on a page for each subject. All other aspects of the photos are constant throughout. Pupil alterations were done via computer using the Adobe Photoshop 2.0 program. The position of pupil size is randomized for each male subject in order to control for positioning effects. Each subject's photo sheet (3 in total) is contained in a file folder, in the same order throughout. Each sheet, showing three versions of the subject's pupil size, is numbered (1 through 3). Furthermore, each version (of pupil size) is labelled alphabetically from left to right (A through C).

For use in conjunction with the photos, the investigator administered the Photo Rating Sheet on which respondents indicated their photo preferences. The questionnaire asks participants to indicate, for each photo sheet (1, 2 and 3), which of the photos is the
most and least attractive to them (write A, B, or C).

To investigate the relationship between large pupil size preference and dating partner preference, the investigator administered the Revised Adjective Checklist, which includes the adjectives identified by Eysenck (1976) as descriptive of the higher-order factor of psychoticism. The Revised Adjective Checklist asked participants to indicate their degree of preference for 20 attributes in a prospective dating partner.

The 40-item Sensation Seeking Scale, Form 5 (Zuckerman, 1979) was administered to participants as a measure of sensation seeking. Subjects indicated interest and preference for one of two possible statements (i.e. A or B).

The revised version of the Short-Scale Eysenck Personality Questionnaire (Eysenck, Eysenck, and Barrett, 1985) was administered to participant's male partners as a measure of their personality. This scale consists of a total of 48 questions, divided into four sections of 12 questions each, to assess the following: neuroticism, psychoticism, extraversion, and lying.

Procedure

Participants were tested in classrooms in groups of twelve for a period of half an hour. Participants were given the following instructions: "The following study will require approximately half an hour. Please refrain from talking or referring to other respondents answers, and direct any questions to me [the investigator]. The study
consists of 4 parts. You are responsible for completing the first three sections. The last section will be distributed to you before you leave and must be given to your steady male partner or main date to complete. A self-addressed, stamped envelope is enclosed in order for your partner to return the completed form. I will now hand out each section, one at a time. Once a section is completed, turn it over, then raise your hand and you will be given the next part of the study to complete. Once you have finished all three sections, please return them to me before leaving, and I will give you the fourth section to pass on to your partner. Thank-you for your participation."

First, the photo sets were distributed along with the Photo Rating Sheet. Second, the Revised Adjective Checklist was distributed to participants. Third, the participants were given the Sensation Seeking Scale (Form 5) (Zuckerman, 1979) to complete.

As the participants left, they were given the Short-Scale EPQ-R (Eysenck, Eysenck, and Barrett, 1985) to give to their partner to fill out. The scale was accompanied by a self-addressed, stamped envelope in which the partner was to place the scale (after completing it in private) and send back to the investigator.

RESULTS

Replications

Pupil size preference was measured by assigning a numeric rating to each version on a photo sheet. If the large pupil size was preferred, the response for that sheet was
assigned a number value of 3 by the investigator. If the large size was the respondent’s second preference, it was assigned a value of 2. If the large size was least preferred, the response for the photo sheet was given a value of 1. A total of three scores (corresponding to each photo sheet) were obtained for each subject. The correlational coefficients between photos are presented in Table 1. Photo 2 and Photo 3 were significantly correlated ($p = .003$, two-tailed). This indicates that when a participant preferred large pupils in Photo 2, she also preferred them in Photo 3, and vice versa. The correlation between Photo 1 and Photo 2 approached significance ($p = .058$, two-tailed).

With respect to the overall means for pupil size preference (Table 2), an overall preference for the medium pupil was found ($u = 6.57$), followed by preference for the large pupil ($u = 6.36$), with the small pupil the least preferred ($u = 5.07$).

A repeated measures ANOVA was conducted for pupil size preference. As indicated by superscript in Table 2, preference for the small pupil differed significantly from that of the medium pupil ($t = 5.41, p < 0.000$, two-tailed) and the large pupil ($t = 3.35, p < 0.001$, two-tailed). The difference between medium and large pupil preference was nonsignificant ($p > .05$).
Table 1

**Correlation Coefficients for Preference for Large Pupils Across Target Persons (Photos)**

<table>
<thead>
<tr>
<th>Correlation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo 1 x Photo 2</td>
<td>.23</td>
</tr>
<tr>
<td>Photo 1 x Photo 3</td>
<td>.18</td>
</tr>
<tr>
<td>Photo 2 x Photo 3</td>
<td>.35*</td>
</tr>
</tbody>
</table>

* p < 0.01.
Table 2

Overall Means for Pupil Size Preference

<table>
<thead>
<tr>
<th>Pupil size</th>
<th>Mean</th>
<th>St. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>5.07 a</td>
<td>1.69</td>
</tr>
<tr>
<td>Medium</td>
<td>6.57 b</td>
<td>1.15</td>
</tr>
<tr>
<td>Large</td>
<td>6.36 b</td>
<td>1.72</td>
</tr>
</tbody>
</table>

Note: Means with different superscript differ significantly

(p < .001)
Overall Pupil Preference and Preference for Personality Traits of Psychoticism

The preference scores corresponding to each of the three targets were added together to obtain a single preference score for each subject, signifying overall pupil size preference across photos. A maximum score of 9 was possible (high on large pupil preference) and the minimum score possible was 3 (low preference for large pupils).

Rated preference for each personality trait of psychoticism in a dating/long-term partner was correlated with overall pupil size preference. These correlation coefficients are presented in Table 3. The correlations between the personality preference measures and overall pupil preference were nonsignificant (p > .05).

The nine scores corresponding to each personality trait of psychoticism in a dating/long-term partner were added together by subject into an overall score for preference for personality traits of psychoticism. The correlation between this score, termed "Overall Psychoticism", and overall pupil preference (Table 3) was nonsignificant (p > .05).

Pupil Size Preference and Sensation Seeking

Scores were first analysed based on overall pupil preference and correlated with overall sensation seeking score (sum of 4 subscales). The relationship between these two variables was non-significant (r = -.06, p > .05). Overall pupil preference was also
Table 3

Correlations Between Overall Pupil Preference and Preference for Personality Traits of Psychoticism in a Partner

<table>
<thead>
<tr>
<th>Component of Psychoticism</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Psychoticism</td>
<td>.10</td>
</tr>
<tr>
<td>Components of Psychoticism</td>
<td></td>
</tr>
<tr>
<td>Antisocial</td>
<td>-.14</td>
</tr>
<tr>
<td>Aggressive</td>
<td>.06</td>
</tr>
<tr>
<td>Cold</td>
<td>-.12</td>
</tr>
<tr>
<td>Creative</td>
<td>.19</td>
</tr>
<tr>
<td>Egocentric</td>
<td>.05</td>
</tr>
<tr>
<td>Impersonal</td>
<td>.12</td>
</tr>
<tr>
<td>Impulsive</td>
<td>.12</td>
</tr>
<tr>
<td>Tough-minded</td>
<td>.20</td>
</tr>
<tr>
<td>Unempathic</td>
<td>.08</td>
</tr>
</tbody>
</table>
### Table 4

**Correlations Between Overall Pupil Preference (Overpup) and Sensation Seeking**

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Sensation Seeking</td>
<td>-.06</td>
</tr>
<tr>
<td><strong>Subscale</strong></td>
<td></td>
</tr>
<tr>
<td>Thrill and Adventure Seeking</td>
<td>-.00</td>
</tr>
<tr>
<td>Boredom Susceptibility</td>
<td>-.15</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>.02</td>
</tr>
<tr>
<td>Experience Seeking</td>
<td>-.05</td>
</tr>
</tbody>
</table>
For each subscale, the relationship with overall pupil preference was found to be non-significant (p > .05).

**Pupil Preference and Short Scale EPO-R Self Report of Partner**

Overall pupil preference was correlated with the partner's measures on the EPQ-R (Table 5). The relations of psychoticism, neuroticism, and lying with overall pupil preference were non-significant (p > .05). A significant negative correlation between overall pupil preference and partner's level of extraversion (r = -.2405, p = .045) was found.

**Sensation Seeking and EPO-R Measures**

In a supplementary analysis, the partner's score on psychoticism was correlated with each subscale on the Sensation Seeking Scale (Table 6). For Boredom Susceptibility (BS), Thrill and Adventure Seeking (TAS), and Experience Seeking (ES), the relationship with partner's measure of psychoticism was non-significant (p > .05). However, the relationship between Disinhibition (DIS) and partner's measure of psychoticism approached significance (p = 0.066).
Table 5

Correlations Between Overall Pupil Preference and Partner Score on Subscales of Short-Scale Eysenck Personality Questionnaire - Revised

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>-.24*</td>
</tr>
<tr>
<td>Lying</td>
<td>.08</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.07</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>-.00</td>
</tr>
</tbody>
</table>

*p<.05.
Table 6

Correlations Between Partner Measure of Psychoticism and Sensation Seeking Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boredom Susceptibility</td>
<td>-.04</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>.22</td>
</tr>
<tr>
<td>Experience Seeking</td>
<td>.13</td>
</tr>
<tr>
<td>Thrill and Adventure Seeking</td>
<td>.09</td>
</tr>
</tbody>
</table>
DISCUSSION

With respect to the significant correlations amongst photos, the overall means for pupil size preference (showing an inverse curvilinear function), and the repeated measures ANOVA (with small pupil preference differing significantly from that of the medium and the large), the investigator's previous findings (from pilot research) were replicated in this study. It appears that the photos are a reliable measure of pupil size preference, and that a consistent preference exists for the medium male pupil, followed closely by that of the large. This overall expressed preference for the medium pupil gives partial support for evolutionary theory. That large pupil preference once again ranked a close second to the medium size does indicate, contrary to evolutionary reasoning, that a distinct group of women does exist that prefers large pupils. It is important to note, however, that preference for both the medium and large pupils were significantly different from the small.

The challenge of this study was to further explore and attempt to explain the expressed preference for large pupils, by investigating the associated personality characteristics of these women (by way of the Sensation Seeking Scale), their expressed preferences for personality traits in a partner (by way of the Revised Adjective Checklist), and furthermore, the personality characteristics of the partner himself (using the Eysenck Personality Questionnaire - Revised). In these respects, all but one of the measures used in the study yielded nonsignificant results. This exception is the significant
negative correlation found between overall pupil preference and partner's measure of extroversion. A relation that was not hypothesized but investigated as a matter of interest since it is a measure that is part of the Short-Scale EPQ-R.

Why partner extroversion decreases as pupil size preference increases is not clear if the direction of inference is interpreted from pupil preference to partner choice. Based on the hypothesized personality characteristics associated with large pupils, it would follow more logically that partner extraversion would correlate positively with pupil size preference and not the reverse. Since the larger pupils signal overattention, it would be expected that an extroverted partner would be more likely to express such behaviour as opposed to one who is introverted. The partner choice of these women clearly does not follow with this reasoning. However, the relationship becomes clearer if it is examined in the reverse order, from the direction of partner choice to pupil preference. A better explanation might be that women with such introverted partners are expressing a greater preference for large pupils (and the overattention this signifies) because these preferred characteristics are missing in their mate. Since the partner one chooses will not correspond 100% with those characteristics one prefers most, this effect may be an indication of the discrepancy between what is desired in a partner and the partner choice that is in fact realized.

The most plausible explanation, however, for the significant relationship found between large pupil preference and partner introversion appears to be as follows. In
terms of the sexual attitudes relating to the introverted personality. Eysenck (1981) has identified these individuals as high on nervousness, while low on promiscuity. From an evolutionary perspective, it may be that large pupils are not interpreted threateningly by these women, because highly aroused attention, in this case, is more an indication of partner nervousness. This raises an important issue with respect to pupillary perception and factors influencing the interpretation of characteristics associated with pupil size: that of the role of partner personality. In this study, the investigator has focussed on how the size of the male pupil influences perception of characteristics in a partner. The findings indicate, however, that perhaps the question should be phrased in the reverse order. That is, how does partner personality influence how pupil size is interpreted? Certainly, this is a limitation of the current study, and may account for the nonsignificant findings that were obtained with respect to the correlations between pupil preference and: (a) Preference for Personality Traits of Psychoticism; (b) Partner Measure of Psychoticism; and (c) Sensation Seeking.

As an incidental finding, the correlation between female sensation seeking (disinhibition) and partner psychoticism approached significance. However, these women did not differ significantly from others in their expressed preference for personality traits of psychoticism. This suggests that the former relationship may stem from a tendency for females who are disinhibited in nature to be substantially less deterred against such characteristics of psychoticism in a mate, however, they do not
overtly acknowledge seeking out such characteristics in a mate. The key distinction between these women and those who do not choose partners scoring higher on the measure of psychoticism may be the level of experienced intimidation from such candidates, because the females scoring higher on disinhibition do not screen out the individuals scoring higher on psychoticism. The preference may have been deliberately hidden on the Revised Adjective Checklist due to the social undesirability of expressing a preference for personality traits of psychoticism, or their preference may be an unconscious one that is only recognizable in this case at the level of partner selection.

An important commonality that exists between disinhibited sensation seekers and individuals scoring high on psychoticism is their expressed attitudes and preferences regarding sex. As has been mentioned, high P scorers characteristically score high on libido. Furthermore, Eysenck (1981) notes that these individuals are high on sexual curiosity, premarital sex, and promiscuity. They are distinguished mainly by considerable sexual experience by way of a wide variety of sexual practices. In terms of disinhibited sensation seekers, recall that they are characterized by a desire for release and social disinhibition through sex, and furthermore, in this respect, resist conforming to strict codes about acceptable social behaviour. Both permissiveness in sexual attitudes and sexual experience correlate positively and significantly with general sensation seeking (Zuckerman, 1979). Furthermore, high sensation seekers "are more permissive in their attitudes toward sexual activities, even when these activities are not sanctioned by
strong social or emotional relationships such as marriage or love... They tend to accept sex as a basically sensual-pleasurable activity.” (Zuckerman, 1979). High sensation-seeking women particularly tend to prefer a high frequency of intercourse (Zuckerman, 1979). Evidently, males scoring high on the psychoticism scale and females high on sensation seeking are compatible in terms of sexual behaviour and preferences, and this would account for the relationship found between them which approached significance.

Studies in this area have been limited in their cultural context. Both targets and subjects have been racially and geographically homogeneous. Given the evolutionary basis of the current argument with respect to pupillometry, a more diverse approach in these respects is warranted in future research. Furthermore, there might be some value in extending the subject pool to include homosexuals. Although same-sex relations do not directly support the evolutionary argument from the perspective of maximizing reproductive success, it may be argued that the evolved psychological preferences are still sex specific. That is, homosexual males will still prefer highly aroused attention from a partner, as signalled by the large sized pupil.

The current study does not differentiate between preference for a dating versus mating partner (as in other studies) because the theories proposed apply to both situations. In each case, males still desire as much sexual attention as they can get, and females must remain aware of possible dangers associated with attention that is too intense or focussed.
In summary, although the predicted results were not realized with respect to the relationship between pupil preference and psychoticism, nor with pupil preference and sensation seeking, the original findings from pilot research were replicated in terms of an inverse curvilinear pattern of pupil preference. The significant relationship found in the current study between partner introversion and pupil preference sheds important light on why some predicted results were not obtained, and indicates the direction that further research might take. Perhaps a shift is needed in terms of conceptualization of the phenomena being investigated. In particular, the perceptions one associates with an individual’s pupil size do not arise solely based on that which one sees: the personality characteristics of the individual one is looking at also appear to play an important role in how large pupil size is interpreted. Future investigation with this in mind may help to further clarify the intricate relationship between pupil preference, person perception, and partner choice.
REFERENCES


Zuckerman. M. *Sensation Seeking: Beyond the Optimal Level of Arousal*. Copyright 1979 by Lawrence Erlbaum Associates Inc.
APPENDIX 1
**PHOTO RATING SHEET**

AGE: YRS. _____ NOS. _____

**DIRECTIONS**

The folder before you contains three photo displays, each of a different male. The displays are numbered 1 through 3 in the upper left hand corners. Look through them briefly.

Note that each display consists of three copies of the same photo, labelled A, B, and C. Each copy, however, has been slightly retouched.

Examine each display in the order they are numbered. After examining each display, indicate in the scales below, which of the three photos is most attractive to you and which of the three photos is least attractive to you. Repeat this for each of the three displays.

<table>
<thead>
<tr>
<th>DISPLAY NUMBER</th>
<th>MOST ATTRACTIVE (WRITE A, B, OR C)</th>
<th>LEAST ATTRACTIVE (WRITE A, B, OR C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 2
PHOTO RATING SHEET

SEX: M ___ F ___ AGE: YRS. ___ MOS. ___

DIRECTIONS

The folder before you contains six photo displays, each of a different person. The displays are numbered 1 through 6 in the upper left hand corners. Look through them briefly.

Note that each display consists of three copies of the same photo, labelled A, B, and C. Each copy, however, has been slightly retouched.

Examine each display in the order they are numbered. After examining each display, indicate, on the scales below, which of the three photos is most attractive to you and which of the three photos is least attractive to you. Repeat this for each of the six displays.

*************************************************************

<table>
<thead>
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*************************************************************
The purpose of this questionnaire is for you to say what kinds of personality traits you like and dislike in a prospective dating partner. On the line next to each of the 54 traits listed below, write the number from one to five which best describes how positive or negative you feel about this trait in a prospective dating partner. Use the scale below to make your ratings.

1 = very negative
2 = moderately negative
3 = neutral; neither negative nor positive
4 = moderately positive
5 = very positive

aggressive ____ feminine ____ outspoken ____
appreciative ____ fickle ____ praising ____
arrogant ____ forceful ____ self-confident ____
assertive ____ foresighted ____ sensitive ____
autocratic ____ forgiving ____ sentimental ____
conceited ____ frank ____ sharp-witted ____
confident ____ friendly ____ shrewd ____
considerate ____ frivolous ____ sincere ____
contented ____ handsome ____ stern ____
cooperative ____ hardheaded ____ strong ____
cynical ____ helpful ____ submissive ____
deliberate ____ industrious ____ sympathetic ____
dependent ____ ingenious ____ talkative ____
dominant ____ inventive ____ timid ____
emotional ____ jolly ____ tough ____
enterprising ____ masculine ____ vindictive ____
excitable ____ modest ____ warm ____
fearful ____ opportunistic ____ worrying ____
**Correlations Between Photos**

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<td>Photo 2 x Photo 3</td>
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*p < 0.01*
APPENDIX 5
REVISED ADJECTIVE CHECKLIST

Age: Years _____ Months _____

The purpose of this questionnaire is for you to say what kinds of personality traits you like and dislike in a prospective dating partner. On the line next to each of the 20 traits listed below, write the number from one to five which best describes how positive or negative you feel about this trait in a prospective dating partner. Use the scale below to make your ratings.

1 - very negative
2 - moderately negative
3 - neutral: neither negative nor positive
4 - moderately positive
5 - very positive

antisocial _____
aggressive _____
appreciative _____
cold _____
creative _____
dependent _____
egocentric _____
enterprising _____
frank _____
forgiving _____

helpful _____
impersonal _____
impulsive _____
praising _____
sentimental _____
shrewd _____
self-confident _____
tough-minded _____
unempathic _____
worrying _____
A revision version of the P scale

Short-scale EPQ-R

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
</tr>
</thead>
</table>

1. Does your mood often go up and down? | YES NO |
2. Do you take much notice of what people think? | YES NO |
3. Are you a talkative person? | YES NO |
4. If you say you will do something, do you always keep your promise no matter how inconvenient it might be? | YES NO |
5. Do you ever feel ‘just miserable’ for no reason? | YES NO |
6. Would being in debt worry you? | YES NO |
7. Are you rather lively? | YES NO |
8. Were you ever greedy by helping yourself to more than your share of anything? | YES NO |
9. Are you an irritable person? | YES NO |
10. Would you take drugs which may have strange or dangerous effects? | YES NO |
11. Do you enjoy meeting new people? | YES NO |
12. Have you ever blamed someone for doing something you knew was really your fault? | YES NO |
13. Are your feelings easily hurt? | YES NO |
14. Do you prefer to go your own way rather than act by the rules? | YES NO |
15. Can you usually let yourself go and enjoy yourself at a lively party? | YES NO |
16. Are all your habits good and desirable ones? | YES NO |
17. Do you often feel ‘fed-up’? | YES NO |
18. Do good manners and cleanliness matter much to you? | YES NO |
19. Do you usually take the initiative in making new friends? | YES NO |
20. Have you ever taken anything (even a pen or buttons) that belonged to someone else? | YES NO |
21. Would you call yourself a nervous person? | YES NO |
22. Do you think marriage is old-fashioned and should be done away with? | YES NO |
23. Can you easily get some life into a rather dull party? | YES NO |
24. Have you ever broken or lost something belonging to someone else? | YES NO |
25. Are you a worrier? | YES NO |
26. Do you enjoy co-operating with others? | YES NO |
27. Do you tend to keep in the background on social occasions? | YES NO |
28. Does it worry you if you know there are mistakes in your work? | YES NO |
29. Have you ever said anything bad or nasty about anyone? | YES NO |
30. Would you call yourself tense or highly-strung? | YES NO |
31. Do you think people spend too much time safeguarding their future with savings and insurances? | YES NO |
32. Do you like mixing with people? | YES NO |
33. As a child were you ever cheeky to your parents? | YES NO |
34. Do you worry too long after an embarrassing experience? | YES NO |
35. Do you try not to be rude to people? | YES NO |
36. Do you like plenty of bustle and excitement around you? | YES NO |
37. Have you ever cheated at a game? | YES NO |
38. Do you suffer from nerves? | YES NO |
39. Would you like other people to be afraid of you? | YES NO |
40. Have you ever taken advantage of someone? | YES NO |
41. Are you most often quiet when you are with other people? | YES NO |
42. Do you often feel lonely? | YES NO |
43. Is it better to follow society’s rules than go your own way? | YES NO |
44. Do other people think of you as being very tidy? | YES NO |
45. Do you always pronounce what you pronounce? | YES NO |
46. Are you often troubled about feelings of guilt? | YES NO |
47. Do you sometimes put off until tomorrow what you ought to do today? | YES NO |
48. Can you get a party going? | YES NO |
APPENDIX G:
Sensation Seeking Scale—Form V

Directions: Each of the items below contains two choices, A and B. Please indicate on your answer sheet which of the choices most describes your likes or the way you feel. In some cases you may find items in which both choices describe your likes or the way you feel. Please choose the one which better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike least.

It is important you respond to all items with only one choice. A or B. We are interested only in your likes or feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers as in other kinds of tests. Be frank and give your honest appraisal of yourself.

1. A. I like "wild" uninhibited parties.
   B. I prefer quiet parties with good conversation.
2. A. There are some movies I enjoy seeing a second or even a third time.
   B. I can't stand watching a movie that I've seen before.
3. A. I often wish I could be a mountain climber.
   B. I can't understand people who risk their necks climbing mountains.
4. A. I dislike all body odors.
   B. I like some of the earthy body smells.
5. A. I get bored seeing the same old faces.
   B. I like the comfortable familiarity of everyday friends.
6. A. I like to explore a strange city or section of town by myself, even if it means getting lost.
   B. I prefer a guide when I am in a place I don't know well.
7. A. I dislike people who do or say things just to shock or upset others.
   B. When you can predict almost everything a person will do and say he or she must be a bore.
8. A. I usually don't enjoy a movie or play where I can predict what will happen in advance.
   B. I don't mind watching a movie or play where I can predict what will happen in advance.
9. A. I have tried marijuana or would like to.
   B. I would never smoke marijuana.

10. A. I would not like to try any drug which might produce strange and
dangerous effects on me.
    B. I would like to try some of the new drugs that produce hallucinations.

11. A. A sensible person avoids activities that are dangerous.
    B. I sometimes like to do things that are a little frightening.

12. A. I dislike "swingers."
    B. I enjoy the company of real "swingers."

13. A. I find that stimulants make me uncomfortable.
    B. I often like to get high (drinking liquor or smoking marijuana).

14. A. I like to try new foods that I have never tasted before.
    B. I order the dishes with which I am familiar, so as to avoid
disappointment and unpleasantness.

15. A. I enjoy looking at home movies or travel slides.
    B. Looking at someone's home movies or travel slides bores me
tremendously.

16. A. I would like to take up the sport of water-skiing.
    B. I would not like to take up water-skiing.

17. A. I would like to try surf-board riding.
    B. I would not like to try surf-board riding.

18. A. I would like to take off on a trip with no pre-planned or definite
routes, or timetable.
    B. When I go on a trip I like to plan my route and timetable fairly
carefully.

19. A. I prefer the "down-to-earth" kinds of people as friends.
    B. I would like to make friends in some of the "far-out" groups like
artists or "hippies."

20. A. I would not like to learn to fly an airplane.
    B. I would like to learn to fly an airplane.

21. A. I prefer the surface of the water to the depths.
    B. I would like to go scuba diving.

22. A. I would like to meet some persons who are homosexual (men or
women).
    B. I stay away from anyone I suspect of being "queer."

23. A. I would like to try parachute jumping.
    B. I would never want to try jumping out of a plane with or without a
parachute.

24. A. I prefer friends who are excitingly unpredictable.
    B. I prefer friends who are reliable and predictable.

25. A. I am not interested in experience for its own sake.
    B. I like to have new and exciting experiences and sensations even if they
are a little frightening, unconventional or illegal.

26. A. The essence of good art is in its clarity, symmetry of form and
harmony of colors.
    B. I often find beauty in the "clashing" colors and irregular forms of
modern painting.

27. A. I enjoy spending time in the familiar surroundings of home.
    B. I get very restless if I have to stay around home for any length of time.

28. A. I like to dive off the high board.
    B. I don't like the feeling I get standing on the high board (or I don't go
near it at all).

29. A. I like to date members of the opposite sex who are physically exciting.
    B. I like to date members of the opposite sex who share my values.

30. A. Heavy drinking usually ruins a party because some people get loud
and boisterous.
    B. Keeping the drinks full is the key to a good party.

31. A. The worst social sin is to be rude.
    B. The worst social sin is to be a bore.

32. A. A person should have considerable sexual experience before
marriage.
    B. It's better if two married persons begin their sexual experience with
each other.

33. A. Even if I had the money I would not care to associate with flighty
persons like those in the "jet set."
    B. I could conceive of myself seeking pleasure around the world with the
"jet set."

34. A. I like people who are sharp and witty even if they do sometimes insult
others.
    B. I dislike people who have their fun at the expense of hurting the
feelings of others.

35. A. There is altogether too much portrayal of sex in movies.
    B. I enjoy watching many of the "sexy" scenes in movies.

36. A. I feel best after taking a couple of drinks.
    B. Something is wrong with people who need liquor to feel good.
37. A. People should dress according to some standards of taste, neatness, and style.
   B. People should dress in individual ways even if the effects are sometimes strange.

38. A. Sailing long distances in small sailing crafts is foolhardy.
   B. I would like to sail a long distance in a small but seaworthy sailing craft.

39. A. I have no patience with dull or boring persons.
   B. I find something interesting in almost every person I talk with.

40. A. Skiing fast down a high mountain slope is a good way to end up on crutches.
   B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.