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***FACTORS INVOLVED IN SEXUAL DESIRE:
ENVIRONMENTAL CUES AND THEIR
IMPACT***

A thesis submitted in partial fulfilment
of the requirements for the degree of
Doctor of Philosophy
at the
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ABSTRACT

Since the initial clinical description of sexual desire problems in the 1970s, increasing numbers of people have reported difficulties in this area of sexual functioning. Reports on treatment efficacy point to the difficulties in treating these disorders. One possible reason for the lack of clearly efficacious treatments might be the limited understanding of this phenomenon we call sexual desire, and the factors that affect it.

The present project utilized a package of self-report measures to investigate participants' sexual desire, and other personal characteristics such as sexual anxiety, mood, mood awareness, body esteem, and social desirability--qualities previously suggested as relating to sexual desire. These measures were combined in two of the studies with tasks involving differentiated responding to pictorial and semantic stimuli. Participants completed picture ratings and recognition tasks involving sexual, neutral, non-sexual and unpleasant slides from the International Affective Picture System. One experiment also included lexical decision tasks involving romantic, neutral, and sexual words to ascertain whether this paradigm offered additional information about how responding in persons with varying levels of sexual desire might differ. The combination of survey and information processing techniques enabled an exploration of some of the fundamental responses hitherto assumed to be associated with variation in libido, but not previously demonstrated empirically. The main hypothesis tested was that persons with low self-report sexual desire respond differently to cues of a sexual nature than do other people.

The findings suggest that mood, as determined using the Positive and Negative Affect Schedule was not significantly correlated with sexual desire levels, but sexual anxiety was strongly correlated. Those with lower levels of self-reported sexual desire also recorded lower levels of mood awareness. Individuals reporting low sexual desire completed picture recognition tasks more quickly, but the lexical decision tasks were carried out more slowly.

A further ancillary finding from these tasks was that there was a significant delay in time taken by all participants to respond to the sexual pictures in the recognition task compared to responses to the other types of pictures. There was a delay in the lexical decision task with respect to sexual words too, but this did not reach statistically significant levels. These tasks did not provide a useful means of differentiating persons of varying sexual desire levels.

Sexual desire levels were found to significantly affect the ratings given sexual, but not any other type of pictures in this protocol. Interest ratings varied with desire levels, and ratings given sexual words with respect to emotional content were also significantly different for those with varying desire levels. These aspects of the protocol yielded the most meaningful results.

Overall, this project has demonstrated the principal hypothesis--that people with lower sexual desire respond differently to cues of a sexual nature. It has also clarified the relationships between the measures employed, in a volunteer non-clinical sample, and suggests an approach for further investigating the phenomenon of sexual desire in a clinically diagnosed population. Expansion of the picture rating aspects of the experiment could yield a greater understanding of desire and how problems in this area are manifest, and therefore best treated.

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DEDICATION

For the people in my life who shared in this journey, kept my feet on the ground, and provided me with the support I needed when the going was rough.

To my 'unofficial' supervisor, and most important and loved travelling companion, John: thanks for being there. It would never have been the journey it was without your help.

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CHAPTER 1

Overview

Historical Points

Sexual desire or libido is not a new phenomenon as a topic of scientific or scholarly interest. Writing in the late nineteenth century von Krafft-Ebing described libido as ‘a physiological law’ during the years of sexual maturity (von Krafft-Ebing, 1886, translated 1965). Following his descriptions of sexual functioning and pathology, Freud’s writings about anxiety included sexual function as one way of demonstrating his distinction between symptoms and inhibitions:

The sexual function is liable to a great number of disturbances, most of which exhibit the characteristics of simple inhibitions. These are classed together as psychical impotence. The normal performance of the sexual function can only come about as the result of a very complicated process, and disturbances may appear at any point in it. In men the chief points at which inhibition occurs are shown by: a turning away of the libido at the very beginning of the process (psychological unpleasure¹); an abridgement of the sexual act (ejaculatio praecox), an occurrence which might equally well be regarded as a symptom; an arrest of the act before it has reached its natural conclusion (absence of ejaculation); or a non-appearance of the physiological results (lack of pleasure in orgasm). (p. 12-13) (Freud, 1926)

This description of separate phases of sexual functioning predates the work of Masters and Johnson by half a century.

¹ *Unpleasure used by the translator for the German “unlust”.*

The currently accepted models of sexual behaviour based on the work of Masters and Johnson have been expanded to include desire as a separated area of interest only since the 1970s. Prior to this, normal sexual activity was seen as a progression from arousal to orgasm and resolution as described in the physiological research presented in *Human Sexual Response* (Masters & Johnson, 1966). The descriptions of normal function based on eleven years of physiological research led, not surprisingly, to presentations of less than normal or abnormal sexual function and the treatment of such problems--*Human Sexual Inadequacy* (Masters & Johnson, 1970). This latter volume was based on clinical experience involving treatment and follow-up of patients over five years. The treatment programmes were well received and an 80% success rate was claimed by the book's authors at the time of publication. However, a relatively small group of individuals did not seem to respond to standard treatment processes. Initially these people were deemed 'resistant' to therapy and the final chapter of *Human Sexual Inadequacy* attempts an explanation of why there was an overall failure rate of 20% reported following treatment by the Masters and Johnson programme.

The small but consistent incidence of such problems led two leading clinicians in this field to the understanding that these cases represented another category of sexual difficulty--sexual desire problems. Helen Singer Kaplan (1977) published a description of Hypoactive Sexual Desire in the northern spring of 1977, and Harold Lief described what he termed 'Inhibited Sexual Desire' in October that same year. These therapists combined their expertise and formed a submission to the American Psychiatric Association's task force, proposing a new diagnostic category of desire disorders for the *Diagnostic and Statistical Manual-III* (DSM-III, American Psychiatric Association) in 1978. As Lief had predicted,

the description of desire disorders was followed by an acceptance and increased diagnosis of desire problems within the realm of sexual disorders. Masters and Johnson added the area to their list of human sexual inadequacies and, as Leiblum and Rosen expressed the process, “With little ado problems of inhibited desire became universally recognised as worthy of discrete diagnosis and treatment” (Leiblum & Rosen, 1988, p. 2).

Definitions

Kaplan described sexual desire as “an appetite that has its locus in the brain” (Kaplan, 1977); her physiological description allocated desire to circuits in the limbic brain, with some centres in the hypothalamus. Anna Childress’ recent research into drug cravings, defined as extremes of desire, located the processes that accompany craving in the limbic system, with little alteration detected in the higher centres of reasoning and will-power, the cerebral cortex. Observation of males watching explicit sexual videos has suggested the same centres in the limbic system are involved in their reactions (Concar, 1998). Such findings suggest that the anterior cingulate plays a part in controlling the attention levels enabling focus on an object of desire. Further, the amygdala probably acts as a pathway for incoming information about that desired object and enables the formation of Pavlovian associations in response to dangers or rewards. This research shows promise for the elucidation of the physiology and neurology accompanying desire--whatever the cues.

Kaplan (1977) also stated testosterone has importance in the sexual functioning of both males and females, a suggestion subsequently corroborated by Schiavi and Segraves with respect to males (1995), but reported to be less clear where females are concerned. In explanation for this Schiavi wrote, “Some of the

variation in results of studies with women have arisen out of operationalization of sexual desire within these studies,” a topic which will be returned to later.

Kaplan’s description of the clinical aspects of desire inhibition pointed to the lack of knowledge of “exactly what normal sexual desire is” (1977, p. 4). Her emphasis on anxiety as the “one basic cause” (p. 8) of all sexual dysfunction echoes Freud’s comments on the interference with sexual function of anxiety in his 1926 work cited above. Kaplan found that the extent and depth of anxiety experienced by patients was an important prognostic factor in this disorder.

The original article published by Lief (1977) described the clinical nature of Inhibited Sexual Desire and posited aetiologies. He pointed out that, while most people feel some reduction in what might be termed the ‘motive state’ at some stages of their lives, or under stressful circumstances, people with ‘inhibited sexual desire’ experience significant problems “in feeling enough desire to initiate or to respond to sexual cues ... so often that we speak of a syndrome” (p. 94). Lief described those with this condition as likely to avoid sex, or, paradoxically, if they do engage in sexual activities, these people frequently go on to enjoy normal levels of excitement and orgasm. Their main preoccupation is with the lack of a wish for sex, not any poor performance problems. The treatment outline was, however, not cheerful: “Of all the dysfunction, this is the most difficult group to treat. The results are rarely spectacular” (p. 95).

In a later article Lief outlined the difficulties in defining desire, the problem people have with the implications arising from the nomenclature of disorders of desire--inhibited sexual desire has been replaced by hypoactive sexual desire currently--and indeed the term sexual desire, when used in conjunction with ‘libido’ (Lief, 1988). The meaning that should be attached to the

word 'libido' has been confused, for many, by Freud's use of the term to describe motivational energy of any kind--not necessarily sexual. Add to this the perceived sexualising of developmental behaviour in Freud's theorising and it is small wonder some seem puzzled when confronted by the word 'libido'. However, while Freud's work forms an important backdrop to the topic of sexuality, it is intended that, throughout this work, the term libido be understood as interchangeable with 'sexual desire'--as common usage suggests.

Diagnostic criteria for sexual desire disorders. Variations in the American Psychiatric Association's diagnostic criteria for the desire phase conditions reflect changes in attitude to sexual conditions, differentiation of treatment approaches, and socio-political considerations. Full criteria from the *DSM-III*, *DSM-III-R*, and *DSM-IV* are included in Appendix A. The initial definition owed much to the psychoanalytic approach to psychiatry in the use of the term 'inhibited sexual desire'. This usage has since been deemed pejorative of those suffering from the condition and has been replaced by the milder, but medically oriented term 'hypoactive sexual desire', meaning low levels of desire for sexual behaviour.

The *DSM-III-R* (1987) described two sexual desire disorders, Hypoactive Sexual Desire Disorder, and Sexual Aversion Disorder. This distinction sought to separate those with low levels of sexual interest from those with more actively phobic responses to the idea of sexual activity, a distinction that both suggests, and results from, two differing treatment approaches. The wisdom of the separation has been questioned by some; Schover and LoPiccolo (1982), for example, argued the two conditions are part of a continuum. However Ponticas (1992) contradicted this, suggesting validation of the differences between the two

disorders via a treatment study of women diagnosed with sexual aversion disorder using the *DSM-III-R* criteria. Ponticas reported that these women experience normal sexual desire and orgasm, especially in a solitary situation, but demonstrate “a tremendous approach-avoidance conflict”. Sexually averse women report the same levels of drive as elicited from the Derogatis Sexual Functioning Inventory as women with other sexual dysfunction (except hypoactive sexual desire). Successful treatments involve the same addressing of anxiety producing events placed in a patient-generated hierarchy as occurs in treatment of other phobias. The women with hypoactive sexual desire, on the other hand, have been characterised as exhibiting a lack of sexual appetite (Kaplan, 1977), or ‘sexual anorexia’ and score very differently on this measure. Such differences suggest treatment approaches that are specific to each condition.

The *DSM-IV* (1994) has retained the definition of two sexual desire disorders, but now requires a clinical significance criterion to be met, and specification of contextual aspects of both conditions.

When confronted with the demand to clearly describe hypoactive sexual desire, some have responded that it is one of those conditions that ‘one knows when one sees it’. The tendency to describe how a phenomenon can be disrupted or disordered is often substituted for a sound understanding of the nature of the phenomenon itself. Writings exploring the nature of sexual desire can be found in a number of disciplines.

Other descriptions of sexual desire. Giles has outlined a theory of love and sexual desire that admits desire as an element of love between two individuals, and sees desire as relating to the various sexual phases described clinically (Giles, 1995). His view of arousal as having an effect on desire

describes the human reality that clinical divisions of sexual behaviour into separated phases can overlook. Giles also challenges the commonly held belief that orgasm is a goal of sexual desire, suggesting that instead it is feasible to take the view that orgasm can be an effect of sexual desire in a reciprocal relationship. His analogy of orgasm as the wake of a boat in the water, and desire as the boat itself, demonstrates how he understands desire and sexual behaviour to be connected, but not essentially of the same substance. The analogy supports his further caution against assuming “that the converse is true, i.e., that having sexual desire implies being in love” (p. 352). Sexual desire also operates outside the domain of love (Giles, 1995). This aspect of the phenomenon is not necessarily obvious in clinical discussions, but has been commented on by Kaplan (1977), with respect to examples of sexual desire for strangers, prostitutes and so on. The understanding that sexual desire is not necessarily confined to a reciprocal experience is corroborated in research carried out by Beck, Bozman, and Qualtrough (1991), and Regan and Berscheid (1996). The Sexual Desire Inventory published by Spector, Carey, and Steinberg (1996) appears to incorporate this understanding also. The studies associated with these ideas will be discussed in the chapter relating to the Clinical Measures Study.

Another view of how sexual desire affects our lives is given by Schnarch, who challenges the clinical approach to sexual desire, disagreeing with the notion that desire exists as a phase separate from arousal or orgasm (Schnarch, 1991). The validity of his point would seem evident if one were to accept that the literature relating to any of these topics is representative of the reality of assessment, diagnosis and treatment in sex therapy. However, very few practitioners of sex therapy would regard the research and theoretical discussion

of these topic areas as indicative that the ‘phases’ necessarily exist as stand alone entities. Even the *DSM*, which imposes the categorisation, suggests that more than one sexual dysfunction can occur co-morbidly.

So, while Schnarch’s objections to the ‘phase’ descriptions of sexual function bear hearing, they can be viewed as the counter-swing of a pendulum. The swings of the argument have, on the one hand, particularised sexual behaviour into phases in order to examine, understand, and treat problems specific to that phase, and on the other, proposed a combining of all aspects of sexuality into a cohesive whole which must be treated as an entity. Both points of view deserve consideration and, for the present argument, both can be accommodated. Figure 1.1 depicts how the described phases of sexual functioning can interact in an individual.

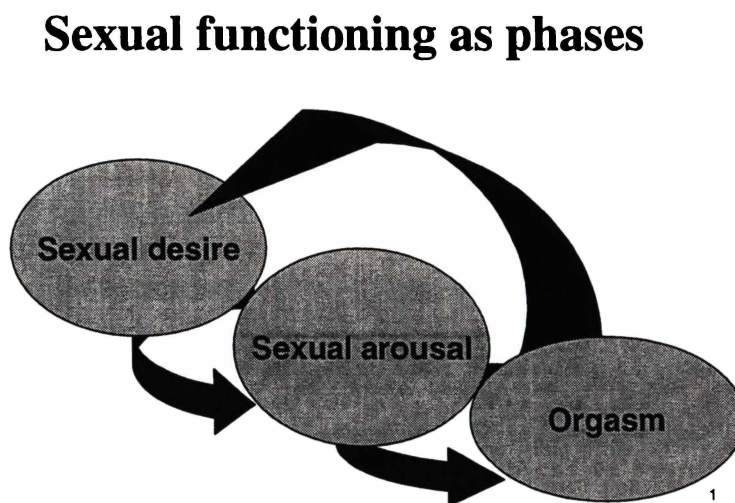


Figure 1.1. Sexual functioning represented as interacting phases.

The point made by Giles mentioned above, that sexual desire is affected by, and affects other phases of sexual activity goes part of the way to joining the opposing extremes of the pendulum swing. In other words, the enjoyment of positive experiences leads to a desire for more of the same, and not necessarily only after the event. The understanding that desire is contiguous with other phases of sexual activity, and exists outside those behaviours as well, was probably never meant to be overlooked by the reduction of behaviour into phases.

A further approach to understanding sexual desire, has been to compare the literatures about passionate love with those around sexual desire. Both areas examine the idea of 'desiring union with another,' the difference being seen as the 'sexual' element involved in sexual desire definitions (Hatfield & Rapson, 1987). Hatfield argues that research in this area would be enhanced if the two groups involved, social psychologists researching passionate love, and clinical and sexological researchers working in the area of sexual desire, joined forces. Whether these particular areas can best advance understanding is a moot point, but the notion that a combination of approaches will best uncover the salient characteristics of the phenomenology of sexual desire is one to which I adhere and hope this work will demonstrate.

The biological approach to this area necessarily operates from the understood frameworks within the medical and scientific disciplines. Levine has offered a theoretical definition of sexual desire in the light of his clinical experience in the psychiatric arena (Levine, 1992). He writes, "My formal definition of sexual desire is the psychobiologic energy that precedes and accompanies arousal and that tends to create sexual behavior. Sexual desire is a confusing concept because it consists of three inconstant elements; a biological

element called *drive*; a psychological element called *motive*; and a social element called *wish*. These elements are much clearer conceptually than they are operationally” (p. 51); (see also Levine, 1984; 1987). In his earlier papers Levine also suggested that the motive element could be understood within four contexts, these being sexual identity, the quality of the current sexual relationship, the reasons for sexual behaviour, and transference from past significant attachments. He described inhibitions in sexuality as stemming from one or more of these areas. His argument for the complexity of sexual desire as an integration within our minds of biologic, intrapsychic and interpersonal stimuli is persuasive, but his dismissal of the attempts to quantify desire, or aspects of desire, denies the further understanding that results from findings that admit the limitations of the utilised parameters. More can only be discovered by journeying to the edges of our known universe and looking beyond existing understanding.

Bancroft (1988) has outlined the role of the brain in sexual desire by using the analogy of sexual desire as similar to appetite for eating, a view he shared with Kaplan. He maintains that while mood is a variable of interest in both of these areas, the relationship with mood and desire has not been thoroughly investigated. His conclusion from exploring the association between mood and the hormonal substrate that facilitates sexuality in both males and females is that, while there are potentially similar mechanisms at work concurrently in the expression of mood and sexuality, there is insufficient carefully compiled evidence to explain variability in this area in humans.

Animal studies investigating areas of the brain affecting various sexual behaviours have shown the pre-optic area may be important for initiation of sexual activity, since stimulation of this area results in eliciting mounts but not

ejaculation in male rhesus monkeys (Perachio et al. 1979, cited in Bancroft, 1988). Another investigation of interest showed that lesions of the medial pre-optic-anterior hypothalamic area led to impairment of copulatory, but not masturbatory behaviours, again in males. Little investigation has been performed with females however.

Everitt (1995) has reported an interesting rat study that differentiated motivational sexual behaviour from the arousal and ejaculatory phases. But while these studies hold promise for the investigation of biochemical manipulations of motivation in the future, they say little at this point that is directly applicable to the human experience.

Schiavi and Segraves (1995) have acknowledged the multidimensionality of sexual desire describing it as “a complex construct involving physiologic, cognitive, and behavioral components and shaped by developmental and cultural influences” (p. 7). They go on to state that variations in ‘drive’ may “be inferred by frequency of sexual thoughts and fantasies, interest in initiating sexual experiences, awareness of sexual cues, and frustration due to lack of opportunity for sexual expression.” It is regrettable that many of the studies relating to sexual desire appear to have overlooked the detail of such aspects of functioning when protocols were designed.

Talmadge and Talmadge (1986) described their understanding of sexual desire from an object relations approach. They conceptualised sexuality as relational and see desire as part of a couple’s relating to each other. They suggested that the relative lack of success of treatments for low sexual desire has been due to a lack of recognition of the relational aspects of the problem. While the evidence they presented for their view is anecdotal, there has been quantitative

support for the importance of the quality of relationship to levels of sexual desire in research by Hurlbert and Apt (1994). Both groups of authors arrived at the common assertion of the importance of emotional involvement in the genesis and maintenance of sexual desire within a relationship.

These emotional and relational arguments are developments, if you like, of the basic learning theory ideas that individual experiences and external determinants are important in shaping sexual interests. Classical conditioning can account for the acquisition of meaning for stimuli apparent to an individual and operant conditioning for the new responses the individual might add to their repertoire (Staats, 1975). Later reinforcement or punishment of overt behaviours relating to those responses modify sexual behaviour as experiences continue (see Walen & Roth, 1987, and Fisher, 1986). The impact of social approval on those experiences also plays a role. The more one looks, it seems, the more factors are said to impinge on our understanding of this phenomenon. Is it possible to define such a multi-faceted quality?

One definition that encompasses Schnarch's desire-as-passion belief, Giles' interaction between phases understanding, the more traditional medical science approach, the social and learning theorists' ideas and the reductionist phase descriptions, is that offered by Leiblum and Rosen (1988). They describe sexual desire as "a subjective feeling state that may be triggered by both internal and external cues, which may or may not result in overt sexual behaviour" (p. 5). Internal cues may be emotional, biological, or cognitive, and external cues cover the range of senses. The cognisance and processing of cues seem fundamental to this definition, and are recognised as important factors with respect to desire in the existing treatment literature. However this literature seems to have accepted, with

little questioning, the idea that there may be a difference in the recognition and processing of sexual cues by persons with differing levels of libido.

Clinical Approaches

A number of published studies have sexual desire characteristics, diagnosis, or treatment as their apparent focus. An unpublished survey of the medical and psychological literatures reporting on sexual desire and its correlates since 1983 showed that of some 45 publications, 43 asked questions which were said to measure desire, but only 13 used a defined desire measure (Conaglen, unpublished data). Frequently the studies asked one or two questions about desire while focussing on some other condition or treatment process. This is especially true of medically oriented studies where the effect of a procedure or physical condition on desire is reported. These studies will be reviewed in more detail in the next chapter dealing with the clinical measurement of sexual desire.

The measurement of sexual desire via the available instruments is, however, only one strategy open to a clinician researcher. Another is to investigate those factors that have been suggested as influencing libido. It is well known that variation in mood, or combinations of positive and negative affect, contribute to changes in sexual functioning. This has been most frequently demonstrated in the area of sexual arousal. Barlow's (1986) model of the relationship between anxiety and arousal outlined differences in affect during stimulation, self-report of sexual arousal, distractibility during sexual activity and differential sexual responding while anxious when functional subjects are compared with dysfunctional. Aspects of this model have been further investigated since. For example, Beck and Bozman (1995) reported on the effects of anger and anxiety on sexual arousal as measured physiologically and

subjectively by participants. In addition, the association of depressed mood with lack of desire has been reported in the clinical literature (Goggin, Engelson, Rabkin, & Kotler, 1998; Graham & Sherwin, 1993; Prerost, 1993; Schiavi, White, Mandeli, & Levine, 1997; Sherwin, 1994). However none of the studies cited utilised quantifiable measures of desire and, regrettably, those studies that used such measures of desire or libido failed to measure the mood or affect characteristics of their samples. Hurlbert, for example, has carried out numerous studies measuring sexual desire in participants (Apt & Hurlbert, 1992, 1994; Hurlbert, 1993; Hurlbert & Apt, 1993, 1994; Hurlbert, Apt, & Rabeahl, 1993), but has not, to date, incorporated mood variability in his questionnaire batteries. Even those studies that have set out to describe the psychological characteristics of persons with Hypoactive Sexual Desire have seldom noted any affective parameters in their sample. Such omissions suggested value in the investigation of the role positive or negative affect might play in the self-reported levels of sexual desire. Four noteworthy exceptions used general well-being scales or specific clinical depression measures (see e.g., Beck & Bozman, 1995; Beck et al., 1991; Donahey & Carroll, 1993; Schreiner-Engel, Schiavi, White, & Ghizzani, 1989). These studies pointed to the combinative effect of mood parameters on sexual desire levels. Accordingly, the present project asked participants to record positive and negative affect when completing their questionnaires.

Cognitive theorists have suggested that people in positive mood frames will be more inclined to process information shallowly, have diffuse attention processes, and be inclined to broader categorisation and cognitive flexibility (Bless et al., 1990; Mackie & Worth, 1989; Murray et al., 1990, Sinclair & Mark, 1992 as cited in Martin, Ward, Achee, & Wyer, 1993). However later studies have

disputed aspects of these findings by investigating the role mood plays more closely.

One such study investigated the extent to which one notices variation in one's mood, and labels such changes in affect (see e.g., Swinkels & Guiliano, 1995). The corollary of one's monitoring processes is the idea that mood is an input in any behavioural context (Martin et al., 1993). The suggestion that people might ask themselves if they are in the mood to do, or continue doing something has been tested by Martin and colleagues using conscious queries within an experimental set-up. If, as he has found, mood can influence the continuation of experimental behaviours, there exists the possibility that sexual motivation and behaviours might also be similarly influenced. To some extent, this idea parallels the 'spectatoring' behaviour described by Masters and Johnson as one of the reasons people with sexual difficulties fail to enter into their activity, and so fall short of their own expectations of involvement and enjoyment of sexual encounters. In addition, it offers some explanation for the idea of inhibition or blocking of cues that seems to be fundamental to the clinical understanding of the mechanisms associated with lesser levels of sexual desire.

A further area of concern with respect to any investigation of sexuality and sexual responding is that of anxiety, as already alluded to several times above. However, anxiety is a broad concept, and it would seem adequately established at this point that anxiety per se plays a role in sexual functioning (see e.g., Barlow, 1986; Beck & Bozman, 1995; Bozman & Beck, 1991; Donahey & Carroll, 1993). The idea that a more focused enquiry into anxiety associated specifically with the area of concern seemed worthy of investigation. This is particularly so bearing in mind the distinction made in the desire disorder definitions between distress

experienced by low interest individuals, and that experienced by those with a more phobic response to sexual expression. This topic will be pursued more fully in the next chapter.

Age related issues, religious matters, sexual experience and gender factors relating to sexual desire have also been investigated. Because such investigations have typically been carried out within clinical studies they will also be discussed in that chapter.

Another consideration with respect to research in the area of sexuality is the issue of bias generated by the nature of the volunteer sample, or the way that sample might respond to the queries being asked.

Volunteer and Self-Report Biases in Sexuality Research

The characteristics of volunteers enrolling for research in studies relating to sexuality have been investigated on several occasions (see e.g., Farkas, Sine, & Evans, 1978, and more recently Strassberg & Lowe, 1996, and Bogaert, 1996). A recent study compared volunteers who signed up for sexuality research with those signing for personality research (Trivedi & Sabini, 1998). The researchers gave the same measures to both groups and suggested their results might demonstrate some degree of demand characteristic being shown by participants. They raised the possibility that those completing questionnaires in a sexuality study respond in order to fulfil what they think the researcher wants to find, and in personality research answer sexuality questions more honestly. The suggestion was made that some investigation into participant's beliefs about how sexuality researchers would want them to respond might be a first step in understanding possible bias from this direction.

The sign-up procedures frequently employed in sexuality research by American universities have also come under scrutiny for the possible lack of external validity they generate (Jackson, Procidano, & Cohen, 1989). The volunteer system usually employed in New Zealand universities is arguably less coercive than some American approaches, but still results in a self-selected proportion of a population of students who happen to be enrolled in psychology courses in many instances.

Wiederman (1993) reported on the volunteer bias that results from non-responses in large representative samples such as those found in national surveys. While such concerns do not impinge on the reliability of the present data set, the issue of non-response within the questionnaire format, which Wiederman also discusses, is one to be aware of. Omissions can be made by reason of haste in completing papers, for reasons of disagreement with the nature of the material being queried (e.g., on religious grounds), because of non-identifying with the topic (e.g., when a participant has no partner and is asked about situations specific to having one), and because of some degree of social desirability--not wanting to respond where a true response might mean an answer that is perceived to be unacceptable to the researcher. However, Wiederman reports that "the relationships between likelihood of response to sexuality items and religious attendance, ethnicity, and marital status in (his) study were idiosyncratic and inconsistent" (p. 32). Whatever the motivation for the non-response, the results of any survey need to take into account the proportion of omissions, and make inferences based on completed data sets where possible.

The reliability of questionnaire results derived from self-report measures has been frequently questioned, especially with respect to the sexuality literature.

There seems to be scepticism about the willingness of survey participants to be accurate when discussing their personal information in such a way. One investigation into how reliable sensitive topic surveys might be was carried out by Marquis, Marquis, and Polich (1986) in an attempt to determine response bias and validity of findings based on such research. Oddly enough, the researchers did not choose sexuality as one of the sensitive topic areas to investigate, but they did find that there was little response bias in the areas they looked at--receiving welfare, income, drug use, alcohol use, criminal history and embarrassing medical conditions.

The clinical literature has also furnished discussions of self-report bias via examples of discrepancies between questionnaire filling and responding to interview questions where sexuality is concerned (Solstad & Hertoft, 1993). The issues have been debated with respect to sexual topics by several authors, some arguing that self-report data are suspect, and others cogently suggesting the converse (for a review see Catania, Gibson, Chitwood, & Coates, 1990). In a research situation where clinical outcomes are not at stake, and the responses to the instruments are not identifiable, an intuitive approach might suspect that there is little to be gained from falsely representing one's experience, feelings and understandings.

Lying in research on sexuality was put under scrutiny by researchers in South Africa who surveyed 1,902 first-year students with respect to biographical details, sexuality attitudes, and socio-political issues (Nicholas, Durrheim, & Tredoux, 1994). Each of the three sections contained a short 'Attitude toward the Questionnaire Scale' which was used to assess how truthfully the participants answered each section. However, the findings, while suggesting the subjects were

less truthful about sexual and socio-political matters than biographical material, were contaminated by error variance to such an extent that the authors discounted them as probably trivial.

One method of safeguarding against falsified responses is to employ a social desirability scale in addition to the sexuality measures utilised. This action, however, brings with it another set of attendant issues. What are 'normal' levels of social desirability; does this vary with age, gender, culture? Should the researcher discard material from persons with aberrant social desirability scores, if their other scores fall within the average areas of responding? The positive side of utilising such a measure, though, is the ability to detect possible biasing by correlating each measure with the social desirability rating. Low to moderate correlation will indicate little untoward bias in data collected (Paulhus, 1991).

Paulhus has further suggested that socially desirable responding consists of two factors, self-deceptive enhancement and impression management (Paulhus, 1991). Self-deceptive enhancement is a relatively positive aspect of responding involving honest, but slightly overestimated positive assessment of self. This characteristic is relatively resistant to change according to Paulhus. However impression management "is highly influenceable under circumstances in which demand for positive self-representation is high", (Paulhus, in press, cited in Meston, Heiman, Trapnell, & Paulhus, 1998). One might think therefore that this latter facet should be less an issue in an anonymous study situation.

Another study examined socially desirable responding and sexuality self-reports to see whether response biases played a role in self-report sex data when collected under well-controlled, anonymous testing conditions (Meston et al., 1998). That study also looked at whether the two facets of socially desirable

responding were differentially related to subgroups of sexuality variables. Meston and colleagues found only one significant self-enhancement correlation with the sexuality measures they used (different to those employed in the present study) and two significant impression-management correlations. The self-enhancement item related to body image, and the impression-management items related to unrestricted sexual behaviour and unrestricted sexual attitudes and fantasies. All were demonstrated by females rather than males. The researchers concluded, “For the most part...sexuality self-reports, when collected under anonymous testing conditions, do not appear to be particularly subject to social desirability biases” (p. 154).

A different approach to the issue of self-report with respect to any area of functioning, but particularly those areas that people regard as sensitive, such as sexuality, is to measure behaviour directly rather than request voluntary report on its occurrence. The information processing approach to investigation of psychological variables offers one such methodological avenue.

Information Processing Approaches

From the definitional discussion above, it can be seen that the association of emotion with sexuality is not an unreasonable one. However, while theorists, clinicians and philosophers have explored these ideas, the empirical research into the area has tended to focus on arousal and orgasmic aspects of sexual functioning, or broad gender-based studies. This, to some extent, has been because of the greater ease with which these aspects of sexuality can be examined and measured.

One approach that has potential with respect to the exploration of sexuality and emotion is Lang’s (1979) model of emotion as applied to information

processing in sexuality. This model suggests that there are three types of proposition in emotion, the *semantic* and the *response* propositions, and the *meaning* propositions which combine to define emotion as a context-based disposition to act in particular ways. Semantic or content knowledge concerns content knowledge about the input stimulus. Response propositions contain information about the efferent outflow associated with the emotion network, and meaning propositions synthesise the semantic and response propositions. In addition emotion is also appetitive or aversive. This explanation is so compatible with the existing understanding of aspects of sexuality that it seems logical to explore the specifics of these ideas with respect to sexual desire.

Lang's extensive work in the area of anxiety theory elaborates the understanding that emotions can be described by polarity ratings along three orthogonal dimensions. In the anxiety situation, for example, a person experiences a degree of displeasure or low valence when confronted by a fear-producing cue (semantic proposition). They also exhibit a level of arousal, the physiological response to such a stimulus (response proposition). The further element in this three-dimensional description is the degree of control or dominance they feel in the situation in which they find themselves (meaning proposition). The three-dimensional approach can be utilised whether the stimuli and responses are positive or negative, imagined or real, semantic or pictorial (see Lang, 1985). This model was derived from Osgood, Suci, and Tannenbaum's (1969) work with the semantic differential and will be explained more fully in Chapter 3. Lang's (1994) review of research into the emotions summarised these studies in a way that leads logically to his own research in the area of emotional responding to pictures.

Exploration of emotional responding to pictorial stimuli by Lang's group has generated what is termed the *International Affective Picture System (IAPS)* (Lang, Bradley, & Cuthbert, 1996). The system is an extensive series of over 400 pictures of people, places and objects from life representing different affective possibilities. Each picture has been assigned specific combinations of valence (or pleasure), arousal, and dominance (or control) ratings during an ongoing process of evaluation by participants in laboratory research (Lang, Bradley, & Cuthbert, 1995). These values have been shown to hold for different cultural groups, and the presentations suggest that the stimuli form a system useful for investigating responding in varying groups of people (Lang, 1995). The Self-Assessment Manikin used to rate pictures for the various affective dimensions (see Figure 3.1) has been described as "pictographic in form, largely culture free, and able to be rapidly administered" (Lang, 1995, p. 374). It has been found that genders differ in response to various stimuli. Studies have also shown how some clinical groups, for example, persons with phobias, respond differently to their feared stimuli than do other persons (Hamm, Cuthbert, Globisch, & Vaitl, 1997). Such findings lead us to investigate how persons with different libido levels might vary with respect to responding to a mixed selection of pictures from the *IAPS*.

Another area of behaviour-oriented research dealing with variation between genders is that of cognitive processing of semantic material of sexual and neutral content. Schmidt, Sigusch, and Schäfer (1973) examined the effects on both men and women of reading erotic stories in terms of behaviours during the following twenty-four hours. Wells (1989; 1990) studied the use of sexual language in homosexual and heterosexual liaisons in males and females, concluding that both gender and sexual orientation made a difference to sexual

language usage. Another study that focuses attention more on individual words and the gender differences between sexual ratings of them, concluded that males rated sexually ambiguous words as more sexual than did women (Plaud, Gaither, & Weller, 1998). Geer and his colleagues investigated differences in responding to tasks involving words with double-entendre (Geer & Melton, 1997), ambiguous stimuli (Castille & Geer, 1993), words of varying categories including sexual, romantic and neutral words (Geer & Bellard, 1996), memory for erotic and non-erotic sentences (Geer & McGlone, 1990), and variation between genders in reading times of material with erotic content (Geer, Judice, & Jackson, 1994). Further subdivision within the genders has been restricted to age, although the convenience samples usually attracted into such studies vary little in this respect. The present project extends the techniques employed in Geer's work to a population of varying ages, whose lexical decision making responses have been further examined in the light of self-report libido scores. The details of this aspect of the study will be elaborated on in a later chapter.

Overview

The investigation of clinically oriented questions about participant's sexual desire, and other clinical characteristics such as mood, sexual anxiety, mood awareness, body esteem and social desirability, is combined in this project with responding to semantic tasks and responding to pictorial stimuli. Such a combination enables an exploration of some of the fundamental responses hitherto assumed to be associated with variation in libido, but not previously demonstrated empirically. Apart from the lack of such empirical evidence, there is also justification for such an investigation from the treatment literature relating to low desire disorders, which, despite the two decades that have passed since Lief wrote

about treatment difficulties, has not reported significant improvements in outcomes when working with people with such difficulties.

As Wiederman (1998) has written:

The field of sex therapy can only be as solid as the theories and research methods used in general sex research. Unfortunately for the field of sex therapy, there is a relative dearth of theory and data on even basic aspects of sexual functioning such as sexual desire or motivation (Hill & Preston, 1996; Levine, 1984; Lobitz & Lobitz, 1996). Accordingly, if we are unsure about factors underlying healthy sexual functioning, how can we say much about the causes of sexual dysfunction? These theoretical deficits regarding the nature of human sexuality appear to be what is most hindering further progress in research on the treatment of such dysfunctions as low sexual desire, as even basic issues, such as the measurement of sexual desire and the reliability of diagnosis, remain problematic (Beck, 1995; Levine, 1987; O'Carroll, 1991).

In the following pages each of the broad areas alluded to above will be examined in more detail. Each aspect of the project--clinical, picture rating tasks and word tasks--will be elaborated prior to description of each study. The final section of the work will examine the implications of the results and suggest further opportunities for investigation in this area.

CHAPTER 2

Clinical Measures Study

“In those terrains of practice in which problems are ill-formed, intensive observation and comprehensive description ought to precede hypothesis testing”

(Hoshmand & Polkinghorne, 1992, p. 57).

From the variety of definitions discussed in the previous chapter, it is clear that there are a number of ways sexual desire is conceptualized. The psychiatric definition leaves details to individual clinicians to determine. However, very little of the sexuality literature deals with what might be called ‘normal’ functioning in this area. This combination of factors leads to clinician-based decision making in the absence of normative data. Nevertheless, it is also recognized that normative data are of limited benefit in individual cases. One of the most frequent presentations of low libido is said to be that of desire discrepancy in a couple. In such cases, one partner has a sexual desire relatively incompatible with that of the other. Maybe both partners have desires that would be compatible with other people, but within their relationship their interest levels do not coincide. In assessment of such cases, some measurement of sexual desire may clarify aspects of functioning in that area, thus facilitating adjustment toward a mutually acceptable range of interest and initiating behaviour.

The aim of this chapter is to summarise the research to date that deals with clinical manifestations of sexual desire, principally low sexual desire problems. It

will also describe the rationale for the combination of clinical measures that have been utilised in conjunction with sexual desire measures in the present work. The designation of a person as having 'low sexual desire' implies some kind of measurement or quantifying of that quality. This 'measurement' is the focus of the present chapter and the study here described.

Studies of Sexual Desire

As mentioned in Chapter 1, there have been a number of studies purporting to examine sexual desire. Most of these have asked one or two questions of participants and used these to determine their desire levels. A relatively small number of studies sought an assessment of sexual desire through more rigorous means. These fall into three main groups; (a) those that pursue an understanding of sexual desire, or what the persons studied believed desire to be-- (implicit psychological theory), (b) those that measured parameters coexisting with low sexual desire in order to describe the phenomenon and its variation in different populations, and (c) those that assessed desire prior to and following treatment to determine the effect of sexual therapy on the participants.

The first type of study often asked open-ended questions of its participants and utilised qualitative methodology in deriving an understanding of the findings. Examples of this approach include the essay question asked by Regan and Berscheid (1996), and the questionnaire devised by Beck, Bozman, and Qualtrough (1991). Both of these studies sought responses from young university (US college) students. The findings suggested the nature of lay understanding of the concept of sexual desire--in the North American context. A replication of these studies would show how the concept of sexual desire and factors affecting it are understood in the New Zealand context.

The second approach which measures parameters co-existent with desire problems, was utilised by Donahey and Carroll (1993) in their investigation of gender differences associated with low or hypoactive sexual desire. They found that while manifestations of desire difficulties were similar between men and women, the ages at which these occurred were different, with men reporting problems at a later age (mean age = 50 years) than women (mean age = 33 years) in their clinic sample. It was also clear from their study that women with hypoactive sexual desire disorder experienced a greater degree of psychological distress, as reported via the Symptom Checklist (SCL-90), than men with the condition. These women also focussed more on the sexual problem than other symptoms of distress such as depression, possibly because they were typically dissatisfied with their primary sexual relationships. Men in this study, on the other hand, reported less psychological distress via the SCL-90, but often reported another sexual dysfunction, such as erectile failure, within the same period. The authors concluded that findings demonstrating gender-linked differences suggest different treatment approaches would be advantageous.

Gender linked differences have also been examined by Spector and her colleagues in university students (Spector, Carey, & Steinberg, 1996) and elders in retirement homes (Spector & Fremeth, 1996). Several other studies of this kind have reported overall poor dyadic adjustment as a common feature of the participants with low sexual desire (see e.g., Stuart, Hammond, & Pett; 1986; Trudel, 1991; and Trudel, Aubin, & Matte, 1995). Professional women are more likely than their non-professional counterparts to experience this problem according to another study of the correlates of sexual desire (Avery-Clark, 1986).

A history of a mood disorder was found to correlate with incidence of sexual desire disorder in another study (Schreiner-Engel & Schiavi, 1986). A further study showed that hormone levels were found not to be implicated in the disorder (Schreiner-Engel, Schiavi, White, & Ghizzani, 1989), although a peak of sexual interest, coincident with variation in the sexual hormones, has been noted in studies of women's cycles (Van Goozen, Wiegant, Endert, Helmond, & Van de Pol, 1997).

One study examining the interaction of hormones and attention tasks, suggested that attention to a dichotic listening task featuring sexual content differed when hormone variation occurred--a study interesting for its insistence that some task other than self-report record be responsible for determining of variation in some aspect of sexual behaviour (Alexander & Sherwin, 1993).

Zillman, Schweitzer, and Mundorf (1994) demonstrated variation in women's interest in erotic materials during different phases of their cycle; they suggested the desire to consume erotica was a manifestation of libido. However, they were unable to explain some of the relationships between interest and hormonal events. They reported that a postmenstrual surge in interest in erotica was evident, and a pronounced interest before, and during the menses. The low levels of interest associated with their operational measure of choice of erotic video was surprisingly low around ovulation and during the first half of the luteal phase when progesterone levels rise. A possible explanation offered for postmenstrual interest in erotica was that women may refrain from sexual activity during menses.

Zillman and colleagues also discussed the effect of moods, tying women's reported 'bad moods' to the luteal phase and 'positive moods' to the pre-ovulatory

phase of women's cycles. These 'mood' measures were elicited via two questions about depression, a further two about bad moods, and another two asking about irritability before and during menstruation. The level of libido experienced by these women was similarly elicited by four questions relating to interest in sex before, during, immediately following, and after menstruation. The majority of the studies of this kind have relied upon clinical interview, and patient self-report, rather than any psychometric measure, for the determination of low sexual desire.

Most of the third type of clinical studies specifically examining sexual desire have been conducted using the Hurlbert Index of Sexual Desire. This measure was devised in order to quantify desire in individuals, and has been used with populations as varied as women reporting low desire, women in lesbian relationships, females in distressed marriages, and women new to motherhood (Hurlbert, 1991, 1993; Hurlbert & Apt, 1993, 1994; Hurlbert, Apt, & Rabehl, 1993).

Some studies have reported on treatment of low sexual desire assessed via clinical or semi-structured interview, a further example of the more qualitative approach, and probably the preferred approach in clinical practice. However, for purposes of research into the fundamentals of sexual desire, the use of quantifiable measures has recognisable advantages.

Sexual Desire Measures

There have been three published 'measures' of sexual desire to date. The first, the Sexual Desire Questionnaire (Beck, 1990), was a research instrument designed to investigate whether some of the commonly accepted theoretical notions associated with desire or libido by professionals were within the real experience of those questioned. The students in Beck's sample gave responses

demonstrating that basing estimates of libido on frequency of sexual activity was not a reliable method to use, a finding that has since been replicated in other types of sample (see e.g., Galyer, Conaglen, Hare, & Conaglen, in press).

A number of commentators have suggested reasons why frequency and level of libido may not correlate highly. The principle reason among those stated was the possibility that partner initiated sexual activity can easily account for high frequency of activity in a person reporting low libido. Conversely a lack of frequency may be reported by a high libido subject who has no current sexual partner, or has a partner whose desires are not consonant with their own. The first of these notions is encapsulated in an inventory of initiating behaviours designed by Jesser (1978), which lists behaviours that might be used to signal a desire for coitus with a partner. Of interest is whether people with relatively low desire might report a lesser number of behaviours than those with higher levels. A further question that might be assayed in a similar way is whether those with lower desire levels might have more strategies for signalling a non-willingness to be engaged sexually by a partner. To this end an adaptation of the signalling inventory asking how participants might respond when in a non-desirous condition, was developed for the present study. While not strictly speaking a 'measure of desire' its use in conjunction with such measures may shed light on patterns of responding typical of high or low desire individuals.

The Sexual Desire Questionnaire is a qualitative instrument and not, therefore, truly a measure. However, its nature does provide information on the factors that may be understood to affect variations in desire in those completing the questionnaire. These factors might include other events in the respondents' lives, biological parameters, or partner availability.

Clinicians such as Arnett, Prosen, and Toews (1986), and Avery-Clark (1986) have made suggestions as to such factors based on their client populations. The Sexual Desire Questionnaire elicits examples, from the studied group, of those factors affecting this aspect of sexual experience. However, the data do not tally to an overall measure of sexual desire.

The acknowledgment of variability in desire also adds to the debate of whether desire is a trait or a state in individuals. Some have theorized that people demonstrate a high or low libido trait which is then influenced by context and events (Levine, 1992). Again, however, evidence for this point of view is anecdotal. Whether one views sexual desire as a stable personal quality or a variable factor, or some combination of the two, the ability to quantify levels of desire can only be seen as useful in a clinical setting. There are two instruments that have been developed with this end in mind.

Apt and Hurlbert (1992) published a measure designed to elicit a score for sexual desire between 0 and 100 such that low libido responders have a low total, and high sexual desire individuals a higher total. The instrument has several questions that are reverse scored in order to prevent response sets and also includes some paired questions in order that the scorer can check for consistency of responses by those completing the measure. The writers of the test claim “it has evidenced good internal consistency (Alpha = .89), test-retest reliability ($r = .86$ across two weeks), and construct validity” (Apt & Hurlbert, 1994). Hurlbert has also reported that the test is not influenced by social desirability response sets (Hurlbert, 1993). However there are, at this point in time, no published norms or cut-off points for use in clinical settings for the instrument.

Whether there is value in deciding what level of scoring should be deemed, for example, low desire, versus high desire, is one of those clinical conundrums so often encountered when using 'measures' of human qualities. As mentioned earlier, desire problems frequently present clinically as discrepancies in the wishes for sexual activity of the two partners in a relationship, but both people might be described as within a 'normal' range of interest. However, this instrument currently enables the clinician to measure sexual desire, express it as a total score, and make some comparisons with other individuals who have completed the instrument. To this end it is also useful as a research tool, and has been used frequently by its originator in his investigations of variations in sexual functioning among many differing groups.

Hurlbert has suggested in his published studies that lower sexual desire levels are correlated with marital and sexual dissatisfaction in males, but only marital dissatisfaction in females. Apt and Hurlbert have also found that women in physically abusive marriages report low sexual desire, but were discovered to have a higher frequency of sexual intercourse than non-abused women (Apt & Hurlbert, 1993). This finding, in combination with Beck's sample reporting a high frequency of sexual activity without sexual desire, makes a strong argument against the use of frequency of sexual behaviour, and intercourse in particular, as a measure of sexual desire.

A comparison of women in heterosexual and lesbian relationships showed the latter group to report less sexual desire as measured by Hurlbert's scale, but no lesser levels of sexual satisfaction in their relationships (Hurlbert & Apt, 1993). This is the only paper in which mean scores for the populations studied have been published.

Hurlbert and colleagues (Hurlbert, White, Powell, & Apt, 1993) have demonstrated that the Hurlbert Index of Sexual Desire (HISD) is sensitive to alterations in desire with treatment in a study comparing three groups of women with Hypoactive Sexual Desire Disorder. These women were given orgasm consistency training under one of three conditions: women only group, couples only groups, or a waiting list group. However, the data were reported as MANOVA tables and, while changes were statistically significant to the $p < .01$ level, there was no indication given of the magnitude of change in scores on the HISD that was needed to produce such a result.

One further unknown with this instrument is how total scores vary when utilized with different cultures. All published studies have been carried out in either United States of America or New Zealand. A comparison of HISD levels published from the American studies, with similar age and gender groups in the New Zealand studies might be of interest.

The Sexual Desire Inventory-2 (Spector, Carey, & Steinberg, 1996) is the third published instrument relating specifically to sexual desire. This measure was developed in apparent isolation from the other two, and according to its authors, purports to quantify “desire to behave sexually when alone”, and “desire to behave sexually with another person”. Spector and colleagues describe the measure as cognitive rather than behavioural. They have described their rationale for the development of this instrument as progressing from the existing literature describing sexual desire as “an interest in behaving sexually.” Factor analytic procedures examining a pool of items relating to interest in dyadic sexual behaviour, interest in individual sexual behaviour, cognition such as fantasies, and the importance of various sexual needs were carried out. Items were eliminated

when preliminary studies suggested their redundancy to the concept of sexual desire, and the resulting instrument comprising a total of 14 items was tested with a sample of 380 graduate and undergraduate students aged between 18 and 40 years ($M = 20.8$, $SD = 2.7$). The item analysis of the results from this sample showed that the instrument measures sexual desire in terms of two factors, the dyadic, and the solitary.

Because of its recent development there have been few published studies utilizing the measure, but its performance with respect to age and culture can be examined via those that have been published. The first paper by the authors of this inventory reported on a student convenience sample (Spector et al., 1996). The second used this measure among residents of a nursing home for elderly persons (Spector & Fremeth, 1996). The levels of the scores varied somewhat. The young ($M = 20.8$ years) Canadian sample recorded a mean score on the dyadic scale of this instrument of 24.3 for males and 22.9 for females (out of a possible 62). Scores with respect to the solitary sub-scale, measuring auto-erotic behaviour interest ranged from 7.0 for males to 2.8 for females (out of a possible 23). The older sample ($M = 82.5$ years), who were residents in senior citizen's homes, recorded a mean score for the dyadic scale of 10.6 for males and 2.6 for females, and a solitary sub-scale mean of 3.4 for males and zero for females. The comparison of scores between these two diverse populations is somewhat intriguing and a comparison with New Zealand samples will be of interest.

Measuring Mood

The importance of mood with respect to sexual desire has already been referred to, both as noted for its importance by theorists and clinicians, and for the

dearth of studies combining measures of mood with instruments assessing sexual desire.

Mood has been described by Watson and Clark (1992b) as consisting of two dominant dimensions--positive and negative affect. There is a substantial amount of evidence to suggest that these dimensions account for some three-quarters of the common variance among emotion-related items--see Watson and Clark (1992b) for a review. Negative affect indicates subjective distress and dissatisfaction, while positive affect connotes positive emotional experience. The two dimensions are largely independent of one another and relate to different classes of variables. Positive affect, but not negative affect, is found to relate to frequency of pleasant events, and measures of social and interpersonal satisfaction. One might anticipate, therefore that it would be related to higher levels of sexual desire. Negative affect correlates with health complaints, perceived stress, and frequency of unpleasant events. This affect might be associated with low levels of sexual desire.

Cohen and Rodriguez (1995) have reported the likelihood that negative mood results in negative biases in the evaluation of stimuli, a point to which I will later return. Martin et al. (1993) have reported that, when told to read about behaviours until they had enough information to form an impression, persons in positive moods spent less time at a task that involved collecting information about the behaviours than people in negative moods. Wegener, Petty and Smith (1995) have stated that positive mood can either increase or decrease message scrutiny; the effect of the mood depends on the hedonic consequences of the actions of the scrutineers. Thus, if a person in a happy mood encounters a message that does not

threaten that mood they will exercise more scrutiny of that message than if the message is depressing and thus threatening to their current mood.

The present project asked participants to record positive and negative affect using the Positive and Negative Affect Schedule (PANAS). This measure indicates both current positive and negative affect in the respondent, and is indicative of normal as well as abnormal function (Watson, Clark, & Tellegen, 1988). This latter aspect of the measure is important in a volunteer population, where one might expect a range of mood or affect that would not be differentiated by a measure of clinical depression such as the Beck Depression Inventory (BDI) as often used in psychopathological surveys.

The PANAS has been hailed as enjoying “the most solid psychometric credentials” of the current measures of affect (Kercher, 1992). The twenty-word measure requires respondents to indicate either *how much* or *how frequently* they experience a series of positive and negative qualities (specifically positive: enthusiastic, interested, determined, excited, inspired, alert, active, strong, proud, attentive, and negative: scared, afraid, upset, distressed, jittery, nervous, ashamed, guilty, irritable, and hostile). These characteristics reflect the appropriate factors in the two-factor circumplex model of emotion as described by Russell, (1980). There have been a number of studies that have demonstrated the orthogonal nature of positive and negative affect by way of consistently weak correlation of the two sub-scales, an indication of the discriminant validity of the measure (see e.g., Diener, Smith, & Fujita, 1995; Watson & Clark, 1984, 1992a; Watson, Clark, McIntyre, & Hamaker, 1992; Watson et al., 1988).

The relationship between the PANAS and more commonly used clinical measures of depression such as the BDI has been described by Watson et al

(1988) by statistical correlation. They found that there was a correlation of $-.36$ with the positive sub-scale of the PANAS and the BDI and a correlation of $.58$ with the negative sub-scale, reflecting the mixed affect present in depression, that is high negative affect and low positive affect.

In a discussion of the importance of time frames in assessing mood, Parkinson and colleagues have suggested the relevance of current measures in assessing longer term mood parameters (Parkinson, Briner, Reynolds, & Totterdell, 1995). They have also described how positive affect, but not negative affect, tends to be consistently higher when reported via daily diary method than when a momentary measure such as the PANAS was completed with respect to that same time frame. This suggestion, together with the understanding that remembered affect reports tend to be liable to a number of distortions, suggested measurement of current, rather than any remembered aspect of positive and negative affect in the present studies.

The interaction of affect and one's awareness of current affective parameters would also seem to offer insight into an investigation of a phenomenon such as sexual desire. The presence of high positive affect may be more effective in increasing a quality such as sexual desire if there were greater awareness of that presence. Conversely, a lack of awareness of one's level of negative affect may affect levels of sexual desire also. The authors of the mood awareness scale (Swinkels & Guiliano, 1995) suggest that the mood monitoring aspect of their measure correlates with affect intensity and negative affectivity, while the labelling sub-scale relates to one's experience of positive affect and self-esteem. Higher levels of mood labelling have been found to predict greater levels of extraversion. The test authors suggested this was due to individuals being freer

to engage in further social interactions once their present mood had been labelled. Mood monitoring though, requires more of a person's resources, thus subtracting from those available for positive interactions. The essential point in endeavouring to measure and correlate estimates of such factors, is the possibility that understanding them may clarify feasible therapeutic approaches.

Anxiety and Sexual Desire

The contribution of anxiety to sexual problems has already been alluded to above. The work of Beck and Bozman (1995), and Barlow (1986), with respect to anxiety and sexual arousal has contributed understanding of how a modicum of anxiety can have beneficial effects in some individuals but contrary effects in others. The tendency for sexually dysfunctional individuals to react to anxiety differently than control groups has been clearly described. The effects of anxiety on sexual desire are not so clear. Further, the effect of anxiety about sexual matters, on interest in sexual behaviour, has not been examined. In other areas of clinical endeavour where anxiety is a factor, such as obsessive compulsive disorder, the use of self-report inventories has distinguished between levels of dysfunction, and enabled clinicians to track progress where treatment addresses the problem. A self-report measure that quantifies sexual anxiety, then, may well be important in adequately describing factors contributing to a lack of sexual desire in an individual. Even if this is too simplistic an approach, the use of such a measure may contribute to the discussion about whether sexual desire disorder and sexual aversion disorder are part of a continuum as some argue, (see above) or of a different aetiology altogether.

The Sex Anxiety Inventory (Janda & O'Grady, 1980) was designed to quantify anxieties about sexual topics rather than guilt about sexual behaviours.

The authors claim that while both sexual guilt and sexual anxiety have the effect of inhibiting sexual behaviour, guilt refers to what those doing the action think of themselves, while anxiety has to do with what others will think of them. Janda and O'Grady also acknowledge the difficulty in differentiating between the two ideas and suggest the use of both concepts to predict sexual behaviour. However, in trying to ascertain factors influencing the genesis of desire rather than sexual behaviours as such, anxiety seems the more relevant concept. It was postulated that participants' levels of sexual anxiety would be somehow related to desire; those more anxious about things sexual might be less desirous than those with higher degrees of comfort with sexual topics. This might lead to a lack of activity, precluding the prerequisite for guilt--which can only be experienced once an activity has been carried out.

Summary

In summary then, the rationale for the present study was to see how various measures of a clinical nature might shed light on sexual desire, when the latter was reported by a volunteer sample. The qualitative aspects of the study--an open-ended essay question on sexual desire, and the free reporting format within the Sexual Desire Questionnaire--provided an opportunity to gather information on the phenomenon of sexual desire from participants. In addition, the use of self-report measures of affect, sexual anxiety, and sexual desire, alongside recording of behavioural responses to situations of a sexual nature, and the attributes of the participants (e.g., age, sexual experience and preference, and current relationship status) gave a chance to elucidate the relationships between these concepts and also contribute more to an understanding of the genesis of difficulties in the area of sexual desire.

Aims of Study

The first purpose of this study was to obtain data relating to a New Zealand population utilising self report measures of sexual desire that have been developed largely in North America. The second was to ascertain the relationships between the existing sexual desire inventories and measures of factors thought to be related to sexual desire. The study also sought to replicate a study by Regan and Berscheid (1996), employing an open-ended query to which participants could respond without a predetermined structure--a procedure that also provided data capable of comparison with that generated in North America.

Method

Participants

The participants were 61 students enrolled in the first year psychology courses at a New Zealand university. They were recruited by an advertisement on the departmental notice board asking for volunteers. The basic study procedure was outlined above the sign-up notice (see Appendix B). The students received course-credit for completing the study protocol.

Self-Report Measures

The Positive and Negative Affect Schedule (PANAS). This scale is a series of twenty words descriptive of feelings and emotions. Ten words form a positive mood scale and ten a negative scale. Scores range from a minimum of 10 to a maximum of 50 for each scale. The two mood factors are described as quite

separate dimensions in the self-report mood literature (Watson et al., 1988), and are most meaningfully represented as orthogonal in factor analytic representations of mood. The PANAS is reported as having high internal consistency, stability over a 2-month period, and supports evidence of both convergent and discriminant validity (Watson et al., 1988). The scales have also been tested with both student and non-student populations, and some normative data for USA samples exist. The version utilised contained the 'moment' instructions, asking respondents to rate how they felt 'right now', and appears within Appendix B.

Sexual Desire Questionnaire (SDQ). This measure is adapted from that developed by Beck, Bozman, and Qualtrough (1991) and records aspects of sexual desire ranging from frequencies of behaviour, manifestations of desire, stimuli which most affect desire, and ways participants listed they understood their desire to be affected by events around them. Scoring is both quantitative and qualitative, yielding an overview of the individual's experience of sexual desire. The nature of these data precludes any reliability or validity documentation. The version of the measure utilised is included in the complete questionnaire appended (Appendix B).

Sex Anxiety Inventory (SAI). This measure was developed to investigate anxiety about topics related to sexuality. The instrument's authors define sex anxiety as a "generalised expectancy for non-specific external punishment for the violation of perceived normative standards" (Janda & O'Grady, 1980). The SAI is a 25-item forced choice measure, normally presented with 13 filler items added. For the purposes of this study however, the 25 items that constitute the measure were presented without filler choices, since it was felt the participants would have insufficient time to complete the longer scale version. In all three studies carried

out for this project the SAI was entitled 'Feelings About Sex Topics Inventory' to avoid participants anticipating the nature of responses expected. Half of the potential responses are indicative of non-anxious responding and the others of anxious responding. Scores of 0 for non-anxious replies and 1 for anxious replies are totalled and reported as percentages in the present study. High scores indicate high levels of sexual anxiety. The authors report the measure as psychometrically sound, possessing internal consistency and test-retest reliability. However, the nature of the sample used to determine these findings was not reported (Janda & O'Grady, 1980).

Hurlbert Index of Sexual Desire (HISD). This measure is designed to give an estimate of sexual desire and consists of 25 items endorsed with a choice from 0, (*all of the time*), to 4, (*never*). Scores can range from 0 (hyposexual desire or low libido) to 100 (hypersexual desire or high libido). Beck reported that the HISD "has been demonstrated to have good construct, discriminant, and concurrent validity. Test-retest has been shown to be excellent ($r = .86$ across 2 weeks)" (Beck, 1995). The instrument's authors claim an internal consistency with $\alpha = .89$ for women (Apt & Hurlbert, 1992). The HISD was developed for use with women, but has been utilised in studies of dyads by its authors (Apt, Hurlbert, Sarmiento, & Hurlbert, 1996). However, there are no published norms for the instrument, although Hurlbert reports there is currently work being done in this area (personal communication, 29 April, 1998).

The Mood Awareness Scale (MAS). This scale consists of a series of statements intended to detect awareness of mood states, a phenomenon defined by the authors as "a form of attention directed toward one's mood states" (Swinkels & Guiliano, 1995). The scores from the instrument are divisible into two factors,

mood monitoring and mood labelling. Mood monitoring refers “to a tendency to scrutinise and focus on one’s moods” whereas mood labelling “refers to the ability to identify and categorise one’s moods” (Swinkels & Guiliano). The authors report on internal consistency, test-retest reliability, and predictive validity of the measure and found a statistically significant correlation of .34 with the positive affect scale of the PANAS (see above). They also published the means and standard deviations of the two factors within the measure for their campus sample ($n = 175$).

The Sexual Signalling Behaviors Inventory. This instrument is described by its author as an exploratory inventory designed “to determine the kinds of behaviors employed by college students wishing to signal their heterosexual partners when they want coitus” (Jesser, 1988). The items were developed with the assistance of student discussions. Participants endorse this list of 20 possible behaviours where appropriate. They answer initially as though their partner has not become aware of their desire, and then repeat the process endorsing those behaviours they would like their partner to use to alert them to his or her desire if they were not aware. This affords a survey of potential reciprocating behaviours.

Responding to Sexual Signalling Behaviours. This inventory is an adaptation of the Jesser list developed for this study. The measure was prefaced with the instruction “If your partner used the following behaviours and you FELT NO DESIRE for sex how would you usually respond? Put the appropriate score beside each behaviour.” Possible scores ranged from 1 to 5 corresponding to ‘very negatively’ through to ‘very positively’. A total scoring was recorded from this measure. The information was sought to explore the way a lack of desire might be communicated to a partner.

Procedure

The procedures used in this study were approved by the University of Waikato Ethics Committee.

Participants had the protocol explained to them and signed a consent form. They then completed the demographic section and an essay-style open-ended query as utilised by Regan and Berscheid (1996) in their study of college students in USA--'What is Sexual Desire?' These were handed to the researcher who supplied the questionnaire containing the measures listed above. (Information as supplied to participants, and the questionnaires for the two stages of the study appear in Appendix B.) Upon completion of the inventories and scales both sections were put together. This procedure was employed to avoid contamination of the essay query by prompts from the questionnaire section of the study. Students worked alone or in a small group in a lab setting with privacy assured. All questionnaires were unnamed in an effort to ensure privacy and to encourage honesty. On completion of the protocol students were given a course credit of 1% towards their course, thanked, and left the laboratory.

Analysis

Each section of the questionnaire was scored and quantitative data were entered into the *Statistica* programme for statistical analysis. Qualitative aspects of the study were processed as described under each aspect of the study below. Correlation and multiple regression procedures were carried out, as were ANOVA analyses where appropriate.

Results

Characteristics of Sample

Participants. The 61 subjects ranged in age from 18 to 55 years ($M = 23.7$, $SD = 8.5$). This sample consisted of 17 males and 44 females. The mean age overall was 23.7 years ($SD = 8.5$). The mean age for the males was 26.8 years ($SD = 11.2$) and that for females was 22.5 ($SD = 6.9$). For purposes of later analyses the sample was grouped into four age groups so that 1 < 21 (males = 7, females = 27), 2 > 20 and < 31 (males = 5, females = 10), 3 > 30 and < 41 (males = 3, females = 5), and 4 > 40 years of age (males = 2, females = 2). This was a relatively young sample overall.

Ethnicity. Most of the sample ($n = 44$, 72%) endorsed the *Pakeha/European* category, with 5 (8%) describing themselves as *Maori*, 3 (5%) as *Pacific Islander*, 2 (3%) *Mixed ethnicity*, and 7 (11%) designated *Other* as the best description of themselves. The majority of persons in this latter group were of Asian origin. These proportions reflect the ethnicity proportions recorded from 100 level psychology enrolment statistics for most groups except the Maori students who were under-represented in the experiment.

Religious affiliation. A survey of the religions the sample experienced in childhood, and their current religious affiliations showed that 17 (28%) were raised with no religious background. Of the 72% brought up in a religion 8 (13%) were *Anglican*, 8 (13%) *Presbyterian*, 13 (21%) *Roman Catholic* and 15 (25%) *Other* such as the Brethren, Buddhist, Hindu, Salvation Army, Quaker, Pentecostal Christian or Baptist denominations.

Participants with current religious affiliations totalled 42% of the sample and included 3 (5%) *Anglican*, 6 (10%) *Presbyterian*, 7 (11%) *Roman Catholic* and 10 (16%) *Other*. Thirty-five people (57% of the sample) did not currently affiliate with a particular religion.

Sexual relationships and preferences. Questions relating to relationship status and sexual preferences showed 39 (64% of the sample) were involved in a sexual relationship at the time of the study. Of these, one person (2%) said they were *in sexual relationships with several individuals*, 15 (25%) *in a sexual relationship with one person only*, 16 (26%) *in a long term relationship with one person only*, one (2%) reported being *in a de facto relationship*, and six (10%) stated that they were *married*.

Ninety-two per cent of the participants ($n = 56$) stated that they had had at least one sexual relationship and 54 (89%) preferred opposite sex partners. Three people (5%) stated a preference for same sex partners. The remainder (5%) said they did not know their sexual preference. Thus, at the time the questionnaire was completed 8% of the sample had never had a sexual relationship.

Essay Answers

Replication of Beliefs about the State, Goals, and Objects of Sexual Desire (Regan & Berscheid, 1996). Essay responses from the 61 participants were analysed according to the coding protocol set out by the above authors. This categorised responses to the topic “What is Sexual Desire?” according to a generalised format of the pattern: “Sexual desire is a [*state category*] aimed at [*goal category*] with [*object category*].” Responses were categorised by the first author and later checked and inter-rater agreement figures computed by an

assistant. An inter-rater agreement of 94% was achieved. Results obtained are detailed below under headings paralleling Regan and Berscheid's analysis.

"The State of Sexual Desire." Most of the participants mentioned a state category in their definitions of sexual desire, and 58 (95%) made reference to motivational, cognitive, emotional or similar subjective psychological experiences. Specifically:

- 58 people referred to desire in such terms as 'want', 'drive', 'urge', 'sexual' or 'physical attraction', 'interest' or 'need.'
- Sexual desire was characterised as an emotional state by 25 participants (i.e., referred to emotion, feeling).
- Sexual desire was viewed as a cognitive state by 16 participants, (i.e., wrote about thoughts, fantasies, wishes).

Mention of sexual desire as a physiological or behavioural state was not frequent. Regan and Berscheid defined physiological as meaning arousal in their analysis and behavioural as meaning sexual activity and reported only small numbers of participants (< 5%) conceptualising sexual desire in this way. In the present sample physiological factors deemed to be associated with sexual desire were mentioned by several ($n = 7$) participants who mentioned 'hormones' and 'chemistry' alongside their psychological factors. Some also wrote of 'biological' factors. Most characterised sexual desire as leading to arousal rather than equating with it, and sexual activity was also seen as a possible consequence of the state of sexual desire, not as a definitional factor.

"The Goal of Sexual Desire." Fifty-seven of the 61 participants (men = 14, and women = 43) specified at least one goal for sexual desire in their definitions. Figures for responding within goal categories are summarised in

Table 2.1. The majority of the participants saw sexual activity as the goal of sexual desire, with a further group identifying development or enhancement of relationships as a goal. A few mentioned reproduction as the principal goal, and some suggested sexual desire would lead to a sharing and confirming of their sexuality.

Table 2.1

Goals of Sexual Desire as Expressed by Participants.

Goal category	Women		Men		Total	
	<i>n</i>	%*	<i>n</i>	%*	<i>n</i>	%*
Sexual activity	25	56	11	65	36	59
Love / emotional intimacy	17	40	5	30	22	36
Physical contact / closeness	10	24	5	30	15	25
Sexual satisfaction / pleasure	12	28	6	35	18	30
Reproduction	3	7	0	0	3	5
Other (romance, confirm or sharing sexuality)	5	12	2	12	7	12

Note. *Percentages are based on the number of respondents who specified a goal of desire in their essays. Figures in the analysis do not sum to 100% since some participants gave more than one category within their definitions.

“*The Object of Sexual Desire.*” At least one object of sexual desire was specified by 89% ($n = 54$) of the participants in the study. Some specified more than one object. Others stated the possibility of a partner ‘of either sex’. Eighty-two per cent ($n = 14$) of the men in the sample specified an object, as did 98% of the women ($n = 40$). Fewer categories were necessary in the present analysis than

in the American study. Their sample showed more tendencies to specify the gender of possible partners, whereas the local students frequently wrote that partners could be of either sex. A summary of the object categories as specified by participants appears in Table 2.2.

Eight (19%) of the females and three (18%) of the males specified physical attraction for their object as a necessary part of sexual desire. Several other participants ($n = 22$, 36%) mentioned the need for 'attraction' between two persons but did not specify physical attractiveness. This is in contrast with 6% of the American women and 30% of the American men in Regan and Berscheid's sample who specified that the desired object be either physically and sexually attractive, or at least one of these.

Table 2.2

Object Categories as Defined by Participants.

Object category	Women		Men		Total	
	<i>n</i>	%*	<i>n</i>	%*	<i>n</i>	%*
Another person	31	74	10	67	41	73
Loved one / partner	8	23	4	33	12	25
Self	1	2	1	6	2	3
Opposite sex	0	0	2	12	2	3

Note. *Percentages are based on the number of respondents who specified an object of desire in their essays. Figures in the analysis do not sum to 100% since some participants gave more than one category within their definitions.

An additional area of interest was found within the definitions given by participants with respect to factors that might affect sexual desire. Some 19

students offered their views, 4 of whom were male (24% of males in sample), and 15 female (35% of females in sample). The ideas submitted are summarised as follows: Five participants (1 male, 4 females) cited love as affecting sexual desire. Experiences in the past were given by three respondents (1 male, 2 females) as having possible effects on sexual desire. Attraction, physical attraction, looks or appearance were given by seven participants (1 male, 6 females) as affecting sexual desire. Two students cited age as affecting sexual desire but a third noted that one felt desire no matter what one's age. Religion was cited by two respondents as affecting sexual desire.

Self-Report Measures

The Positive and Negative Affect Schedule (PANAS). The positive affect scores had a mean value of 29.92 ($SD = 7.85$) out of a possible 50, and the negative score mean was 13.69 ($SD = 5.31$) out of 50. Females ($M = 29.16$, $SD = 7.5$) scored less than males ($M = 31.88$, $SD = 8.6$) on the positive affect scale. Scores for the negative affect scale were also lower for females ($M = 13.59$, $SD = 5.4$) than for males ($M = 13.94$, $SD = 5.2$). These differences were not statistically significant when assessed by t -tests. Positive PANAS scores recorded were normally distributed (Shapiro-Wilks's $W = .95$, $p = .07$) but the negative scores were not. The negative scores were positively skewed (skew statistic = 2.5) by the preponderance of scores between 5 and 15 recorded by participants. The kurtosis was 7.4 for this scale. Histograms showing both positive and negative affect scores can be seen in Figure 2.1.

Findings are similar to the normative findings from the USA studies (Watson, Tellegen, & Clark, 1988) in that participants usually scored higher positive scores than negative. Means also compare similarly; the overall mean in

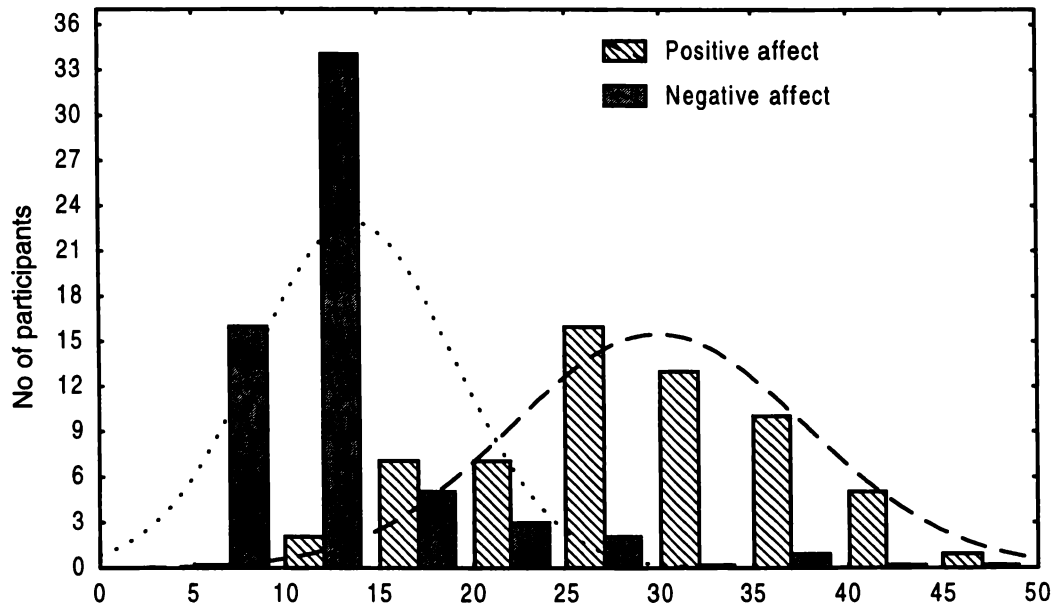


Figure 2.1. Histogram of positive and negative affect scores in Clinical Measures Study.

the USA sample for positive affect was 29.7 ($SD = 7.9$) and for negative affect 13.59 ($SD = 5.4$). The correlation between the two scales in this sample was $-.06$, and not significant. This compares favourably with the USA studies that demonstrate the orthogonal nature of these two aspects of affect.

Sexual Desire Questionnaire (SDQ). “Q.1: How often do you experience sexual desire?” The most frequently endorsed categories within this question were those stating frequency of sexual desire ranging from *several times per week* to *several times per day* ($n = 40$, 66% of participants). Four respondents reported experiencing sexual desire *several times per year*, 13 recorded *once per month* or *several times per month* as their frequencies, and four reported a frequency of *once per week*.

An examination of these responses by gender showed that 35% of males endorsed the *several times per day* category, and the same number chose the *several times per week* category. Twelve females chose the *several times per week* category (27%), ten (23%) chose the *several times per day*, and the same number chose the *several times per month* category as describing them best.

“Q.2: Have you ever been involved in sexual activity when you did not experience a high level of sexual desire?” This query was responded to positively by 46 (75%) of the participants, 65% of the males, and 80% of the females in the sample. Of those males who reported having sex with no desire, twice as many also reported low libido levels. One third of the females in the sample reporting sex with no desire recorded low libido levels.

“Q.3: How often do you experience sexual desire without accompanying behaviour?” This question required endorsement of a frequency; options ranged from *always*, through *sometimes*, *occasionally*, *seldom* and *never*. The most

frequently endorsed answer was *sometimes*; that is 39 (65%) of the sample reported that they sometimes had sexual desire without accompanying sexual behaviour. This was true of 59% of males and 67% of females. A further 12 (20%) of the sample said they *occasionally* had sexual desire without accompanying sexual behaviour, and 8% said they *seldom* experienced desire without sexual behaviour. Two people said they *always* had desire with no proximal sexual behaviour, and two women said they *never* had sexual desire without accompanying sexual behaviour. The responses for this query were evenly distributed across the libido levels.

“Q.4: Which of the following most accurately reflects your level of sexual desire?” The responses to this question are summarised by behaviour and gender in Table 2.3. In this sample more people thought that sexual dreams, and intercourse were better indicators of their sexual desire than the other options offered in the measure.

“Q.5: Do you feel that the amount of sexual desire you experience is easily affected by the events happening in your life?” Responses showed 53 people (87% of the sample) thought events did affect their desire levels. In this sample those who did not think events influenced their sexual desire, were all female. However they were evenly distributed with respect to sexual desire levels. The events most frequently given by participants as likely to affect the amount of sexual desire they experience included relationship factors and the availability of potential partners, work load and stresses, and general health, tiredness and mood considerations.

“Q 6: Which type of stimulation has the greatest effect on increasing your level of sexual desire?” Tactile stimuli accounted for 44% of the responses, with

Table 2.3

Endorsement of Behaviours Reflecting Sexual Desire, by Gender

Item endorsed	Males		Females		Total	
Sexual dreams	0	-	2	5%	2	3%
Sexual fantasy	2	12%	6	14%	8	13%
Day dream	3	18%	11	5%	8	13%
Intercourse	6	35%	8	18%	14	23%
Masturbation	2	12%	3	7%	5	8%
Non-intercourse sexual contact	0	-	12	27%	12	20%
Genital arousal	2	12%	4	9%	6	10%
Column Totals	17 ¹	89%	44 ²	85%	55 ³	90%

Note. ¹Data missing for two participants; ²data missing for four participants; ³ data missing for six participants.

emotional next most numerous at 30%. Visual stimuli were endorsed as most important by 21% of participants and auditory stimuli were endorsed by 5%. None of this sample regarded olfactory stimuli as most important to them. Stimulus endorsements varied by gender with more women than men regarding emotional (34% vs. 18%) and tactile (48% vs. 35%) stimuli as most important, and a larger proportion of men than women viewing visual stimuli (47% vs. 11%) as most important. Of these men three had low libido, four reported average libido, and 1 high libido. While two high, and two average libido women reported visual stimuli as most important to them, only one low libido woman did so.

“Q.7: Has the recent increase in media publicity about sexually communicable diseases changed your desire for sexual activity with other

persons?" More of the women ($n = 27$, 61%) than the men ($n = 7$, 41%) answered yes to this question.

"Q.8: Do you feel that it is necessary to love someone before you could feel sexual desire toward them?" Most participants responded in the negative to this question. Over 85% of the sample did not feel they had to be in love in order to feel sexual desire for someone.

"Q.9: How can you tell that you have an increased desire for sex?" Responses to this section included increased fantasising and day-dreaming, thinking and talking about sex, increased excitement and arousal, feeling sensual, touching, and showing affection as signs of increased desire for sex.

"Q.10: What other things do you feel affect your desire for sex?" The environment, circumstances and atmosphere, the state of one's relationship, stresses, mood and feelings at the time were some of the things people said affected their desire for sex. Films, videos, books, drink and drugs were also frequently said to have effects. Monthly variation in desire was noted by several, as were factors such as partner's mood and behaviours, own emotions and how others have been treating self during the day.

The results from this questionnaire demonstrated that, as in the American sample, a greater proportion of the males reported higher frequency of sexual desire than females. This sample was also apparently able to separate desire from arousal for some responses, but more of the males than the females regarded intercourse (which includes arousal by implication) as the behaviour most likely to indicate sexual desire. Females more often reported non-intercourse sexual contact as reflecting sexual desire. Beck and colleagues (1991) reported on the social desirability correlation with the various aspects of this questionnaire, a

technique that may well be useful in future studies. Perhaps the most significant aspect of this questionnaire is the confirmation of the frequency with which sexual behaviour occurs in both males and females without accompanying sexual desire-- a finding which is robust in both US and NZ university population samples.

Sex Anxiety Inventory (SAI). Total score for this inventory ranged from 12 to 95, out of a possible 100, with an overall mean figure of 41.4 ($SD = 18.01$). Males ($M = 37.5$, $SD = 15.0$) scored lower totals with respect to sexual anxiety than females ($M = 43.0$, $SD = 19.0$). The scores from this inventory were normally distributed (Shapiro-Wilks's $W = .96$, $p = .07$). There were no statistically significant differences between males and females with respect to this variable, $t(59) = -1.07$, $p > .05$. Participants were grouped into high, average and low anxiety groups by gender using a quartile split cut-off. This process led to 5 males and 14 females classified as high with respect to sexual anxiety, 6 males and 17 females in the mid-range, and 6 males and 13 females low on sexual anxiety.

Hurlbert Index of Sexual Desire (HISD). Scores on this measure of sexual desire ranged from 28 to 92 out of a possible 100 ($M = 64.5$, $SD = 14.9$). The totals were normally distributed (Shapiro-Wilks's $W = .97$, $p = .37$), see Figure 2.2. There were no significant differences between males and females on this measure, $t(59) = 1.25$, $p > .05$. However, since the mean for males was 68.3 ($SD = 15.98$) while that for females was 63 ($SD = 14.41$), and in keeping with previous literature suggesting differences between genders, it was decided to group males and females into high, average and low sexual desire groups separately. The groups were decided on the basis of a quartile split for each gender. The upper quartile level for both genders was a score of 76, but while the

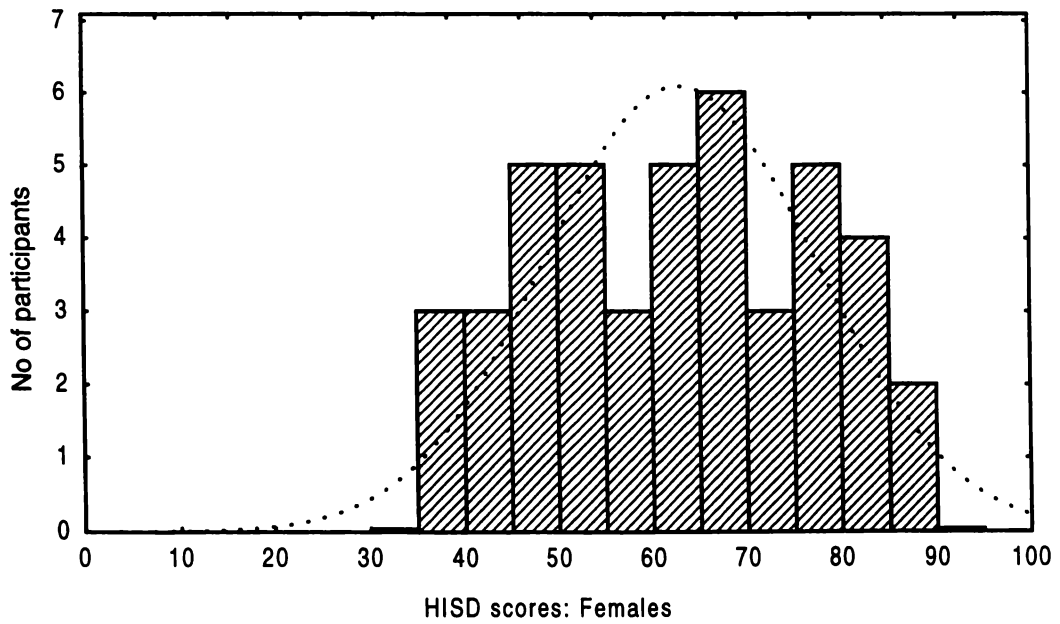
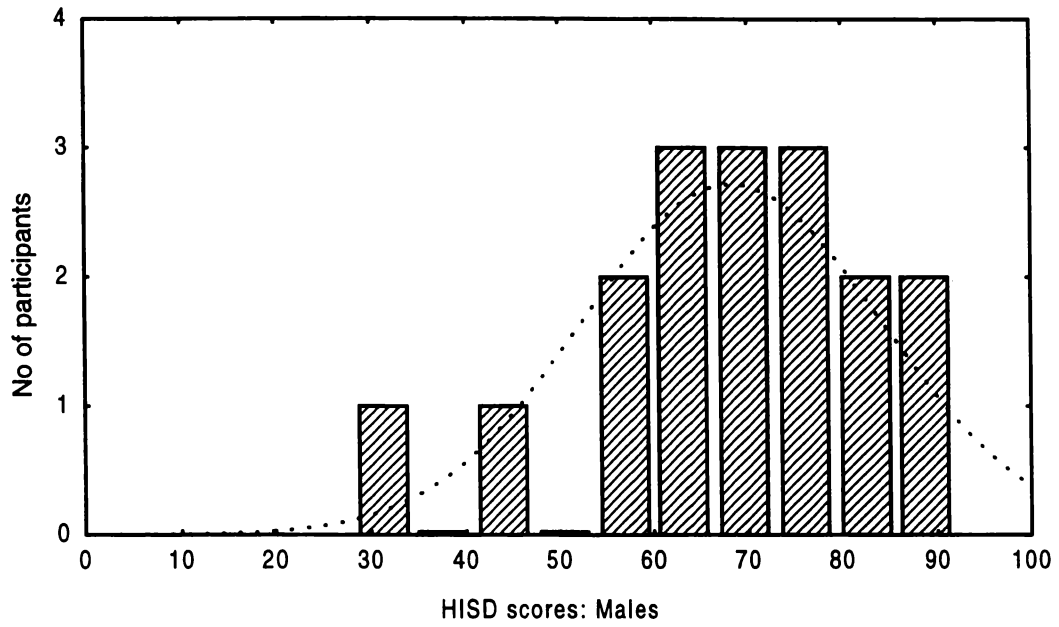


Figure 2.2. Histograms of Hurlbert Index of Sexual Desire scores, by gender, in Clinical Measures Study.

male lower quartile level was 61, that for the females was 51. The division of participants into three groups resulted in 4 males and 11 females being categorised as high sexual desire, 11 males and 22 females as average, and 2 males and 11 females as low sexual desire on the basis of the HISD scores.

The Mood Awareness Scale (MAS). Scores ranged from 28 to 55 ($M = 42.52$, $SD = 6.43$) out of 60 on this scale. The results for this measure were normally distributed (Shapiro-Wilks's $W = .96$, $p = .14$). There were no significant differences between males and females with respect to this characteristic, $t(59) = .04$, $p > .05$. The mood monitoring and the mood labelling sub-scales correlated to $r = .15$ ($p > .05$) a finding that differs from the kind of relationship the test authors found for this measure ($r = .21$, $p < .05$). The total scores on this measure and those from the positive PANAS in this sample were positively correlated ($r = .37$, $p < .01$). This was in accord with Swinkels and Guiliano's (1995) report of the nature of the relationship they found between these two measures.

The Sexual Signalling Behaviors Inventory. Tallies were recorded of the behaviours endorsed by participants completing this measure, and appear in Appendix C. A ranking of the behaviours by self toward partner deemed most popular by this sample is given in Table 2.4. The totals obtained for the behaviours by self toward partner score formed a normal distribution (Shapiro-Wilks's $W = .98$, $p = .54$). The totals scored with respect to behaviours toward self by partner were also normally distributed (Shapiro-Wilks's $W = .98$, $p = .58$). There were no significant differences between males and females on either aspect of this measure.

A similar ranking for behaviours that respondents would like their partners to use with them appears in Table 2.5. While some behaviours were more popular

Table 2.4

Behaviours by Self toward Partner in Order of Frequency Endorsed.

Behaviour category	Women		Men		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Use touching	37	97	12	100	49	98
Allow hands to wander	34	90	11	92	45	90
Tease	33	87	9	75	42	84
Use more eye contact	28	74	10	83	38	76
Make compliments ('I love you,' 'You're nice')	26	68	11	92	37	74

Table 2.5

Behaviours Participants Preferred Partners To Use Toward Them in Order of Frequency Endorsed.

Behaviour category	Women		Men		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Allow hands to wander	34	90	11	92	45	90
Use touching	31	82	11	92	42	84
Make compliments ('I love you,' 'You're nice')	30	79	11	92	41	82
Tease	29	76	8	67	37	74
Set mood atmosphere (music, lighting etc.)	29	76	8	67	37	74
Use more eye contact	25	66	9	75	25	50
Use 'suggestive' body movements or postures	24	63	9	75	24	48
Make indirect talk about sex	16	42	9	75	16	32

with males than females, there were no statistically significant differences between the groups.

Responding to Sexual Signalling Behaviours. Total scores for this measure were calculated and found to be normally distributed (Shapiro-Wilks's $W = .97, p = .24$). There were no statistically significant differences between males and females with respect to this checklist. Those responses most frequently endorsed are shown in Table 2.6.

Table 2.6

Responses Most Frequently Endorsed in the Responding to Sexual Signalling Behaviours Checklist

Behaviour	1*	2	3	4	5
Used some code words with which you are familiar			23		
Used more eye contact			24		
Used touching				23	
Changed tone of voice			22		
Made indirect conversation about sex			24		
Shared a drink with you			25		
Used some force	22				
Allowed hands to wander				22	
Lay down			20		

Note. * Endorsements were ranked 1 to 5 by participants where 1 = *Very negatively* and 5 = *Very positively* in response to the directions: "If your partner used the behaviours listed below and you *FELT NO DESIRE* for sex how would you usually respond? Put the most appropriate score beside each behaviour."

Relationships Between Measures

Correlation. The scores on each measure were correlated with each other, and are summarised in Table 2.7. The significant positive correlation between the scores from the positive PANAS and the sexual desire inventory was predictable if one accepts sexual desire as an emotionally positive phenomenon. This relationship is the strongest correlation with positive affect for this sample ($r^2 = .194$). The statistical significance of the relationship between the positive PANAS scores and the MAS scores attests to its importance, and the strength of the association is shown by the r^2 of .168. Examination of the sub-scale relationships shows that mood labelling rather than mood monitoring is important in this relationship. Positive affect also appears to relate to the sexual signalling behaviours list results--all three were positively, and significantly correlated with positive mood.

The sole significant correlation with negative affect in this sample was with the mood labelling sub-scale of the Mood Awareness Scale. However, since the data were not normally distributed for negative affect there can be few conclusions drawn with respect to negative affect based on this correlation matrix. The negative relationship with the mood labelling sub-scale accords with the test authors' suggestion that those with higher negative affect would not be inclined to demonstrate this aspect of mood awareness.

Sexual anxiety was significantly negatively correlated with all the other variables in this matrix. The relationship shown with the sexual desire measure suggests the importance of this factor in people's experience of sexual desire ($r^2 = .176$). There was also a strong correlation with the mood awareness concept. The sexual behaviours checklists were correlated more strongly with sexual anxiety

Table 2.7

Correlation Between Measures

Clinical Measures	1	2	3	4	5	6	7	8
Positive PANAS ¹ [1]	-	.002	.176	.194	.168	.078	.152	.152
Negative PANAS [2]	-.05	-	.058	.0001	.0004	.0001	.014	.008
Sex Anxiety Inventory [3]	-.42***	.24	-	.221	.194	.203	.096	.090
Hurlbert Index of Sexual Desire [4]	.44***	.01	-.47***	-	.221	.230	.250	.096
Mood Awareness Scale [5]	.41**	-.02	-.44***	.47***	-	.096	.053	.023
Mood monitoring	.20	.25	-.26*	.34**				
Mood labelling	.43***	-.31*	-.40***	.37***				
Sexual signalling, self [6]	.28*	-.01	-.45***	.48***	.31*	-	.476	.107
Sexual signalling, partner [7]	.39**	.12	-.31*	.50***	.23	.69***	-	.048
Responding to signals [8]	.39**	-.09	-.30*	.31*	.15	.33*	.22	-

Note. Correlation statistics (r) appear below diagonal in lower left of table while strength of association (r^2) statistics appear in upper right of table.

¹ Positive and Negative Affect Schedule.

* $p < .05$; ** $p < .01$; *** $p < .001$.

where recording referred to behaviours one would undertake, than for those participants reported their partners would undertake in similar circumstances--suggesting a greater reluctance to initiate sexual activity in those with more sexual anxiety.

The highly significant correlation and the strength of association statistic ($r^2 = .221$) between mood awareness and the sexual desire measure used in this study demonstrates the importance of this concept in understanding interest in and wish for initiation of sexual activity.

A multiple regression analysis was performed with the sexual desire measure as dependent variable and positive affect, sexual anxiety, mood monitoring and mood labelling, sexual signalling (self), sexual signalling (partner) and responding to sexual signalling scores as independent variables. The equation derived to predict the Hurlbert Index of Sexual Desire (HISD) was as follows:

$$17.5 + .09 PP - .17 SAI + .16 MM + .18 ML + .08 SSSB + .29 SSSP + .10 RSSB$$

Equation 1

where *PP* = positive affect, *SAI* = sexual anxiety, *MM* = mood monitoring, *ML* = mood labelling, *SSSB* = sexual signalling (self), *SSSP* = sexual signalling (partner) and *RSSB* = responding to sexual signals; $R = .67$, $R^2 = .45$, Adjusted $R^2 = .37$, $F(7, 49) = 5.63$, $p < .001$, Std Error of estimate: 11.88.

This formula accounts for 45% of the variance in the expression. However, it should be noted that this kind of analysis presupposes a larger sample than was available in this study so the beta coefficients generated here will be less stable than would be the case for a larger sample.

Graphical analysis. The group results were examined via graphical analysis to assess the relationships between variables. While the numbers involved were not large, the following trends were observed.

While there were few statistically significant differences between males and females on the various measures there were some observable variations. These are best seen on a graph--see Figure 2.3. Positive affect was higher in males, but more variable than in females. Sexual anxiety was lower in males than females. Sexual desire was higher in males and less variable within the group. There was little difference in negative affect or mood awareness.

A graph depicting the levels scored on various measures by the four age groups can be seen in Figure 2.4.

Those individuals who had never experienced a sexual relationship generally scored in the mid-range of the clinical measures. Scores for the inexperienced group of participants showed little variation with respect to sexual desire or sexual anxiety. A graph of results grouped according to participant's level of experience with sexual relationships can be seen in Figure 2.5.

Figure 2.6 illustrates how those who were categorised as high in sexual desire on the HISD were more likely to score in the higher levels with respect to positive affect on the PANAS than others. They were also more likely to score less on the sexual anxiety scale. They did, however, record a greater variety of scoring for the negative PANAS scale than others.

A cross-tabulation was carried out to find how many in the sample scored both high SAI scores and low HISD scores. There were no males, but six females in the group that scored high on sexual anxiety and low on sexual desire. One male was low on sexual desire but also low on sexual anxiety ratings, and one male and one female were each high on sexual desire as well as high on sexual anxiety ratings. However, most of those with high sexual desire ratings were also low on sexual anxiety (1 male, 7 females).

Discussion

This study set out to investigate the use of American self-report measures of sexual desire and factors that might be associated with variations in that desire,

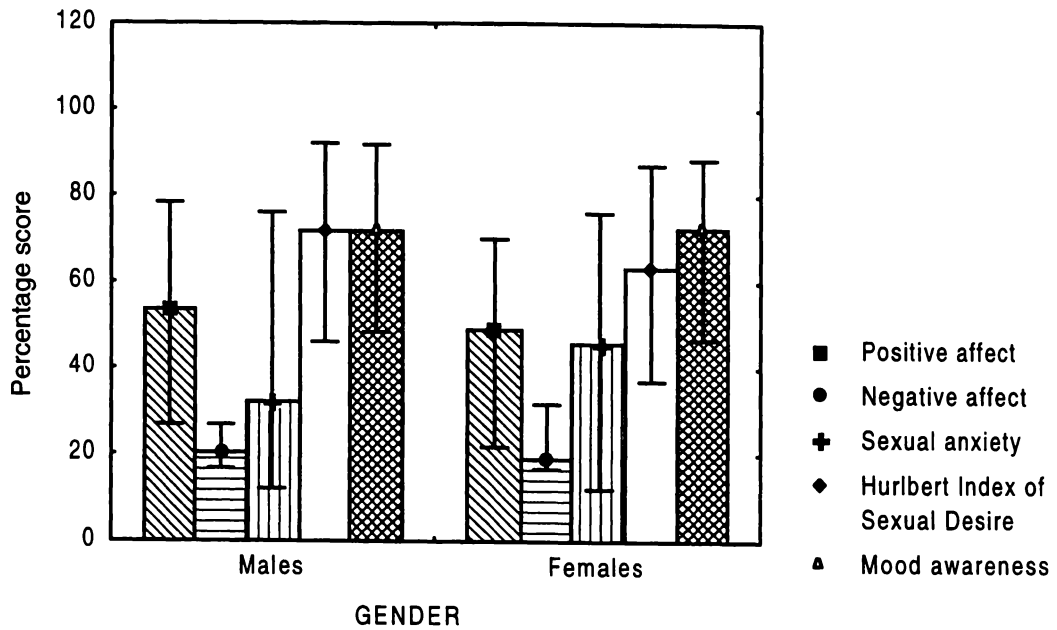


Figure 2.3. Comparison of scores from clinical measures by gender.

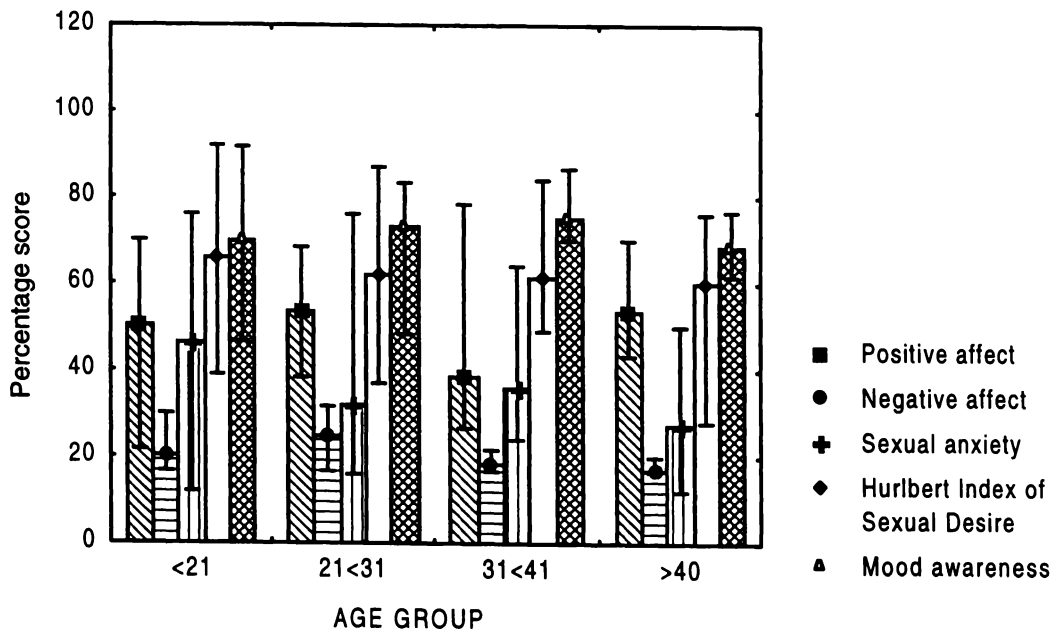


Figure 2.4. Scores on clinical measures by age group.

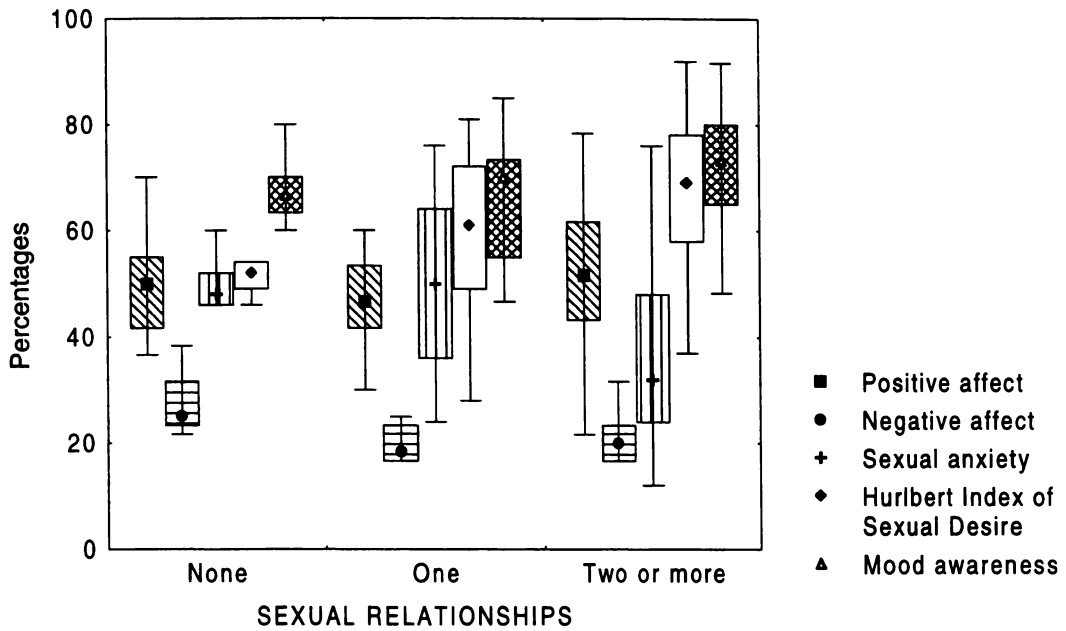


Figure 2.5. Clinical measure scores grouped by participants' level of sexual experience.

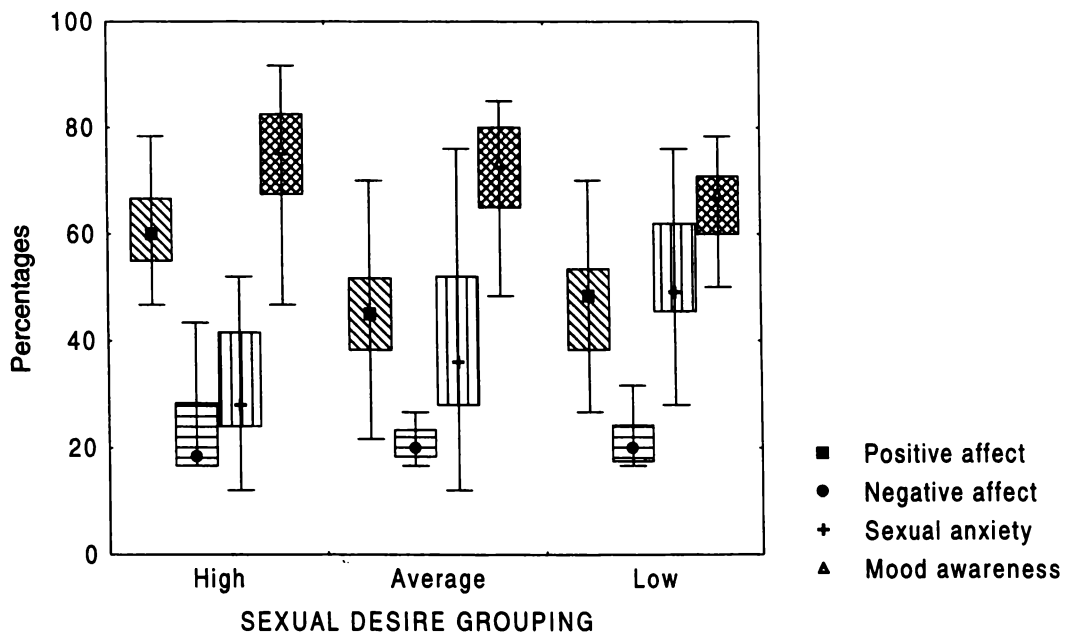


Figure 2.6. Clinical measure scores shown by sexual desire grouping.

in a New Zealand sample. The relationships between the levels on the measures recorded were examined for the understanding they might yield of the factors that co-vary with levels of self-report sexual desire in individuals. The qualitative aspects of the study allowed comparison of the concept of sexual desire within the New Zealand culture with findings from studies carried out in the USA (Beck et al., 1991; Regan & Berscheid, 1996).

In a nutshell the study demonstrated that there are only subtle differences apparent in such a cross-cultural examination of ideas relating to sexual desire. The measures employed proved to be useful in the New Zealand context and yielded similar levels on most parameters to those reported from the USA studies. However, the relationships between the measures when correlated showed how the clinical understanding that surrounds the topic of sexual desire can be clarified using such means.

Free Response Format Findings

Many of the specific findings from the replication of Regan and Berscheid's (1996) study corroborated their reports about how student participants described sexual desire. Key issues were the understanding of the majority of respondents that desire was a concept that should be described in a psychological, motivational, emotional or equivalent non-physiological manner. Students also reported that sexual activity was, for most, the goal of sexual desire, although some elaborated on enhancement of their relationship and confirmation of their sexuality as possible goals of desire. In writing about the 'object' of sexual desire the New Zealand sample varied slightly from the USA students. While the American respondents tended to specify the gender of an object of sexual desire, usually opposite to their own, this was not the case with the New Zealand

students. The local participants were more inclined to be non-committal about their 'object' stating partners might be of either gender, and in some cases suggesting more than one possibility. A further difference was in the relatively larger numbers of females in the New Zealand sample who specified physical attraction as necessary for sexual desire, and a lesser proportion of males reporting along these lines. This could be a subtle cultural difference, but might also be due to the fact that there were fewer participants in this study than in Regan and Berscheid's sample (1996).

Factors that were said to affect sexual desire were sought from both the open-ended essay portion of the study and the Sexual Desire Questionnaire (Beck, 1990). While some students wrote in their essays that they felt love was important to the genesis of desire, the question directly asking if love was necessary for desire was answered in the negative by over 85% of the participants. This demonstrated a level of understanding of the difference between these concepts. Some wrote that experiences in the past could possibly affect sexual desire, which accords with the learning and reinforcement approach to desire. There was no distinct requirement to record whether one was referring to positive or negative effects on desire in some parts of the study, so some of the factors were recorded without knowing the direction of their effect. Most of the responses agreed with the negative influence on desire of work related (especially exam) stress, difficulties in relationships, general health, tiredness and mood, as reported by Arnett et al. (1986), and Avery-Clark (1986). The relatively small number of males in the sample does not allow any conclusions to be drawn as to whether these factors differ significantly between genders. When students listed external factors they thought influenced desire they included such things as company,

environment, atmosphere, and opportunity. Media such as film, books, videos, and drink and drugs were also said to have effects. Some respondents suggested that there was a monthly variation in desire tied to their menstrual cycle. This agrees with the suggestions made by Van Goozen and colleagues (1997), and Zillman et al. (1994).

A further important corroboration of previous studies is the finding that in this New Zealand student-sample most of the respondents, whether male or female, reported having experiences of sexual activity without sexual desire. Other studies have recorded findings of this nature, but there is still a tendency for sexuality research to equate sexual behaviour with sexual desire, and to quantify desire or libido as number of sexual episodes without recording the willingness or interest in that behaviour on the part of the participant.

Findings from Specific Measures

The measures of mood, sexual anxiety, mood awareness and sexual desire all originated in the USA. The comparison of mean scores from student populations in both countries reveals few differences in the essential understanding and measurement of the respective concepts under scrutiny in this study. Both the affect measure (PANAS) and the sexual anxiety measure (SAI) yielded mean scores in this population that were very similar to those recorded in their respective development studies in USA. A summary of these and the Hurlbert Index of Sexual Desire (HISD) mean scores appears in Table 2.8.

While the overall means for the Sex Anxiety Inventory differed very little between the two samples being compared here, there were interesting variations between gender with this measure. The males in the American sample in 1980 typically recorded lower sexual anxiety than the females, a trend that was repeated

in the more recent New Zealand study. However, while the males were less anxious than the females, the 1980 males in the USA were less anxious about sexual matters than the 1996 New Zealand males. In addition the New Zealand 1996 females were less anxious about these topics than the 1980 American students. This trend toward less anxiety in females may be due to a historical and social factors in the sexuality arena such as increased public education associated with AIDS, and more equality of opportunity for women with respect to their sexuality.

Table 2.8

Comparison of Mean Clinical Measure Scores from American and New Zealand Studies

Measure	American Means	New Zealand Means
PANAS ¹		
Positive	29.7 (<i>SD</i> = 7.9)	29.9 (<i>SD</i> = 7.9)
Negative	14.8 (<i>SD</i> = 5.4)	13.7 (<i>SD</i> = 5.3)
SAI ² : overall mean	10.24 (1980 study)	10.02 (1996 study)
Males	8.09 (<i>SD</i> = 5.19)	9.4 (<i>SD</i> = 3.8)
Females	11.76 (<i>SD</i> = 5.31)	10.5 (<i>SD</i> = 4.6)
HISD ³ : overall mean	55.6	64.5 (<i>SD</i> = 14.9)
Males	-	68.3 (<i>SD</i> = 15.98)
Females	55.6	63 (<i>SD</i> = 14.41)

Note. ¹ PANAS = Positive and Negative Affect Schedule; ² SAI = Sex Anxiety Inventory; ³ HISD = Hurlbert Index of Sexual Desire.

The Hurlbert Index of Sexual Desire (HISD) scores differed the most when scores from the two countries were compared. However, the populations sampled in the two studies in question were not well matched in that the American sample was heterosexual women whose mean age was 26 years and all of whom

were in a sexual relationship. The women in this New Zealand sample, on the other hand, were younger at 22 years old and 31% were not involved in a sexual relationship at the time of the study. Further data collection comparing New Zealand figures with the American experience with this measure will be of considerable interest.

However, the relationships between the various clinical measures are of greater interest than the score comparisons. The positive affect and mood labelling correlations with sexual desire suggest the importance of these constructs in the genesis of sexual desire. This study suggested that the presence of negative affect was not necessarily as important. The only statistically significant correlation with negative affect was a negative one with the mood labelling aspect of mood awareness--which, as mentioned above, accords with the understanding of labelling as connected with positive affect, less mood variability, extraversion and generally a positive and relatively constructive approach to life. Swinkels and Guiliano (1995) have suggested the possible usefulness of understanding mood awareness in relationships in order to enhance them, and this finding suggests the measure may be useful in the more specific area of sexuality within relationships as well.

The number of statistically significant negative correlations with the sexual anxiety measure underlines the importance of the connection between anxieties about sexual matters and lessened sexual desire, and decreasing numbers of signalling behaviours that are associated with interest in sexual activity. Anxiety would appear to interfere with mood awareness, monitoring and labelling as well.

The importance of the relationship between levels of sexual desire and mood awareness, especially the ability to label one's current mood, is also apparent in this sample via the correlation matrix, and corroborated by the regression approach. However the limitations of this technique and the graphical analyses with a small sample must be noted and further confirmation of these relationships in other samples will be sought. It is also important to seek some behavioural corroboration of these self-report measures to enhance our understanding of the factors that influence sexual desire.

CHAPTER 3

Picture Rating Calibration Study

From the preceding chapters it is clear that most investigation of the phenomenon of sexual desire has centred on clinical and theoretical approaches. The key definition encompassing these ideas is worth re-iterating here since it informs the shift in emphasis from the more traditional viewpoints to an alternative that may serve to supplement the knowledge we already have. Leiblum and Rosen's definition of desire as "a subjective feeling state that may be triggered by both internal and external cues, which may or may not result in overt sexual behaviour" points to a number of potential starting places for further investigation (Leiblum & Rosen, 1988, p. 5). The 'may or may not result in overt sexual behaviour' aspect of the definition has been corroborated by the specific questions asked via the Sexual Desire Questionnaire portion of the previous study. The essay question also allowed description of the goals and objects of sexual desire. However all the techniques involved in questionnaire studies rely on language and verbal expression rather--albeit written--of what people say they do, or would do in given circumstances. The social psychologists tell us that saying and doing are not always a good match, so a more direct assay of reactions to situations might offer greater insight into the differences between individuals that cause us to view them as demonstrating high or low sexual desire.

What is needed is some kind of examination of "the subjective feeling state that may be triggered by both internal and external cues" that is referred to in Leiblum and Rosen's definition. Subjective feeling states, or emotions, have long

been the subject of debate with respect to their definition. Gray (1990) hypothesised that four basic emotions corresponded to his three neurologically based motivational systems. Reward was seen as corresponding to the behavioural approach system, anxiety to the inhibition system, and rage and terror to the fight or flight system. Other theorists have posited alternative lists. I have already discussed the reliability and validity of the affective descriptions afforded via the two dimensional PANAS (Watson & Clark, 1984, 1992a, 1992b; Watson, Clark, McIntyre, & Hamaker, 1992; Watson, Clark, & Tellegen, 1988). A further model of emotion is that suggested by Lang (1979), which describes three dimensions as capturing most of the variability reported by individuals. This has already been alluded to in Chapter 1. The usefulness of Lang's explanation of the connections between emotion and cognition is the understanding it affords of how both interact to generate response dispositions in individuals. It is these response dispositions that are of interest in an investigation of what 'feeling states' might be triggered by 'external cues' in persons with varying levels of self-report sexual desire.

Feeling states are not very amenable to description without some kind of facilitating tool. One such device that has developed out of the triple dimension theory of affect is the Self-Assessment Manikin scale utilised by Lang and colleagues in research into responses to a wide range of pictorial stimuli. The scale has been derived to describe the distillation of affect into three stable dimensions termed affective valence, arousal, and dominance or control. These three have been arrived at after many investigations into the expression of affect largely by means of semantic differential techniques (see for example, Osgood,

Suci, & Tannenbaum, 1969). Osgood and colleagues described this technique thus:

The semantic differential is essentially a combination of controlled association and scaling procedures. We provide the subject with a concept to be differentiated and a set of bipolar adjectival scales against which to do it, his only task being to indicate, for each item (pairing of a concept within a scale), the direction of his association and its intensity on a seven step scale.... Ideally the sample (of descriptive polar terms) should be as representative as possible of all the ways in which meaningful judgements can vary, and yet small enough to be efficient in practice (p. 58).

The cumulative effect of various investigations and factor analyses of the results have led to the understanding that three dimensions assayed can result in a reliably representative description of the emotional response to a presented stimulus. Valence is the term given to the judgement of response along the dimension between maximum joy or pleasure to disgust, extreme displeasure or repugnance. Most investigators have found this quality accounts for a majority of variance in reports of emotion. Arousal accounts for the second greatest share of variance in affective reports. At one extreme arousal is characterised by acute panic, anxiety, or in a positive sense, excitement. The other end of the continuum denotes apathy, calm and indifference. The third dimension is reported less consistently, but refers to either a degree of self-control or control over the environment felt in response to the stimulus.

In an arrangement similar to the semantic differential, the self-assessment manikin consists of a series of bipolar dimensions along which the participant in the experiment rates their association and the intensity of that aspect of feeling.

The three dimensions are, in this instance, pictorial representations of the valence, arousal and control concepts and are depicted in a series of figures whose expressions connote the emotional dimension and intensity of that feeling being experienced. So, in essence, the range of adjectives that some have described as a dictionary list that was used to elicit understanding of emotional responding, has been exchanged for a simpler three-scale series of pictorial options among which the respondent chooses to indicate their emotional response to the stimulus presented. Lang (1995) has made the claim that the figures that make up the SAM scale are “largely culture free”, and correlate highly with ratings made on semantic differential scales. In addition they are easy to administer.

Which brings us to the stimuli themselves. Pictures of various kinds are usually looked at because it is pleasant and interesting to do so. Some of the quality that attracts one toward the picture is its representational meaning. Reaction to the picture or representation will be related to reaction that would be expected to the object depicted were it present in reality. These reactions occur according to socialised behaviour tendencies and, while the intensity of reaction may be different for a picture when compared to the experience of reality, the information contained in a picture can match the stimulus properties of the real situation, triggering emotional and visceral responses of a similar nature. One model that explains the occurrence of these reactions is the paradigmatic behaviour theory, which suggests that, as humans, we learn through classical conditioning but widen the applications from those experiences to a range beyond the initial repertoires and derive emotional responses to hitherto unknown situations in this fashion (see for example, Staats, 1990).

It will be noted from the Osgood et al. (1969) quotation above that the choosing of options for subjects to respond to, within the semantic differential paradigm, requires some careful consideration. The options need to be representative of the area being examined, but also have equivalence within that area. The same is true of pictorial representations. There have been a number of studies in the area of sexuality that have utilised pictorial stimuli in order to assess participant arousal or distraction or some other pertinent quality (see for example Brown, 1979; Haerich & Khoury, 1994; Laan & Everaerd, 1995; Laan, Everaerd, van Bellen, & Hanewald, 1994; Rosen & Beck, 1988; Sapsky, 1984). Of these only Haerich's work has used a replicable and standard set of images as stimuli--the *International Affective Picture System (IAPS)*. The other studies may have established credibility for their stimulus selection in some way, but until the development of the *IAPS* it has not been possible to have data upon which to base expectations as to what the emotional response to stimuli presented might be.

The *IAPS* is a standardised collection of pictures that samples content across a wide range of emotional and semantic categories. Contents include animals, nature scenes, erotica, household objects, expressive human faces, weapons, mutilated bodies, and others. Affective valence, arousal and control/dominance ratings for each slide have been obtained in previous rating studies, allowing precise placement of these stimuli in a three dimensional affective space (see for example, Bradley, Greenwald, Petry, & Lang, 1992; Bradley & Lang, 1994; Greenwald, Cook III, & Lang, 1989; Lang, Bradley, & Cuthbert, 1996, 1995; Lang, Greenwald, Bradley, & Hamm, 1993). Aside from the emotional data represented in these pictures, effort has been taken to ensure equivalence of detail and quality across the system so that any variation in

response noted is relevant to that response rather than variation in some visual or technical quality of the stimuli.

When people are confronted with the same stimuli, under the same conditions, differences in responses may be due to cognition or information processing differences within the individual. Examining how these responses vary within groups of individuals may assist in understanding how the group as a whole differs from other groups, based on the way they respond to the same stimuli. Researchers have already demonstrated that males and females respond differently stimuli depending on the task proposed. The *IAPS* data show that in the American studies there are differences in ratings by the two genders for various pictures. One of the purposes of the present study is to ascertain whether the overall ratings of the *IAPS* pictures given by New Zealanders are similar to those recorded in USA, and also whether the gender differences are consistent. This was a necessary preliminary assay before further investigation of the responding of sub-groups within the genders could be done.

Aims of Picture Rating Calibration Study

The first purpose of this study was to collect ratings of a selection of pictures from the *International Affective Picture Scale* from a sample of New Zealand participants, and compare these with ratings from an American sample to see whether there were any significant differences. This is a partial replication of the procedure utilised by Bradley and Lang (1994). The comparison was done to

establish the validity, or otherwise, of the American ratings for use in New Zealand in further research.

The second aim in this study was to extend the collection of data from a New Zealand sample utilising self-report measures of sexual desire and further ascertain the relationships between the existing sexual desire inventories and measures of factors thought to be related to sexual desire.

Method

Participants

The participants were 50 students enrolled in the first year psychology courses at a New Zealand university. The students received course credit for completing the study protocol.

Self-Report Measures

Several clinical measures were utilised, most of which were used in the previous Clinical Measures Study--see Chapter 2. Those common to both studies were:

- The Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988)
- Sexual Desire Questionnaire (Beck, Bozman, & Qualtrough, 1991)
- Sex Anxiety Inventory (Janda & O'Grady, 1980)
- Hurlbert Index of Sexual Desire (Apt & Hurlbert, 1992)
- The Mood Awareness Scale (Swinkels & Guiliano, 1995)

In addition to the scales above, there were two further scales in the compilation, one a recently published sexual desire scale, The Sexual Desire Inventory-2

(Spector, Carey, & Steinberg, 1996) and the other, a scale scoring body-esteem, the Body-Esteem Scale (Franzoi & Shields, 1984).

The Sexual Desire Inventory-2 (SDI-2). This is a self-administered measure which elicits information about the subject's dyadic sexual desire and their solitary desire characteristics which, when combined, give a measure of overall sexual desire (Spector, Carey, & Steinberg, 1996). It consists of 14 questions, most answered by choosing from a range of numbered options, which progress from *none* to *many* or *frequent*, or from a negative to a positive pole depending on the query. A total high score of 109 is possible. In the development study the measure was administered in its revised (SDI-2) form to 249 female and 131 male undergraduate students in a North American university. This sample ranged in age from 18 to 40 years ($M = 20.8$, $SD = 2.7$). The results from administration of the measure to this group showed an internal consistency for the measure (Cronbach's alpha) for the Dyadic desire scale of .86, and for the Solitary desire scale of .96. Factor analysis suggested the validity of the two sub-scales as measuring separate constructs. The authors point out the innovative nature of the instrument for its concentration on cognitive rather than behavioural aspects of sexual desire.

The Sexual Desire Inventory-2 has been used in one other published study, investigating sexuality in elders (Spector & Fremeth, 1996). This study reported on differences in sexual desire between elderly men and women, and age variations in sexual desire.

Body-Esteem Scale. This scale was developed to ascertain relative measures of body-esteem (Franzoi & Shields, 1984). The scale was generated from the Body-Cathexis Scale, using a factor analytic approach, which determined

which items to exclude according to their low factor loading. Several additional items were also included resulting in the present instrument. The Body-Esteem scale is a self-report inventory consisting of 32 items endorsed with a numerical score denoting a range of responses from 1 to 5. Possible high total score is 155. The scores can be sub-totalled in three sections, each corresponding to a different aspect of overall body-esteem. The authors have found that the body-esteem construct differs for males and females, with a greater degree of inter-relatedness being found in males than females. Questions 1 to 13 inclusive load on a factor labelled sexual attractiveness for females and physical attractiveness for males. Questions 14 to 23 inclusive deal with weight concerns for females, and upper body strength for males, and the final grouping of questions, 24 to 32 inclusive, can be summed for a measure of physical condition in both males and females. Means and standard deviations for the college sample (males $n = 331$, females, $n = 633$) have been published, as have reliability, convergent validity and discriminant validity. Test-retest reliability has also been demonstrated (Franzoi, 1994).

Apparatus

The slide show was run on a 120 Pentium digital computer equipped with 16 MB RAM, a 14 inch colour monitor and a standard two button mouse. Colour resolution allowed the full detail of the 1024 by 768 pixels in the *International Affective Picture System (IAPS)* series to be experienced by the subjects in the experiment. The slide show was generated within the *PowerPoint* programme, which allowed precise timing of the exposure of each slide to the viewer.

The picture series consisted of 21 slides, which represented a wide range of affective scores in the USA studies. Small depictions of the slides used in this

experiment are shown in Appendix D. Mean affective valence, arousal and dominance ratings given each of these slides by the USA samples appear in Appendix E.

There were two slide shows prepared, one for males, and one for females. The *IAPS* slide numbers included in every show were: 1090, 1240, 1500, 2040, 2110, 2200, 2500, 3010, 3150, 4310, 5000, 5600, 6230, 7000, 7270, 8030, 9090, 9140, 9160. In addition to these 19 slides there were two, numbers 4500 and 4520, included in the selection for females, and two, 4180 and 4220, included in the male show. In order to avoid any order effects the slides were arranged into four different series, two for females, and two for males, each in an order determined by applying random numbers to the selection. Half the male students saw the male selection in one order and the other half in the second order. The same was true for the female students and the female selection of slides.

Picture ratings were recorded using pen and paper procedures similar to those described by Bradley and Lang (1994). Each rating was done on a separate page in a small A5 booklet. Participants were asked to record their levels of affective valence or pleasure, arousal, and dominance or sense of control on viewing each slide in the series. They recorded these ratings by placing a cross over the part of the Self-Assessment Manikin (SAM) scale that best applied to them, on each of the three scales, for every slide. A sample of the SAM scales appears in Figure 3.1. The scales enable a nine-point categorisation of affective responses on the three dimensions.

Pen and paper questionnaires were also completed. The additions to the original questionnaire are included in Appendix D. The protocol was carried out by individuals working alone in a cubicle within a laboratory situation.

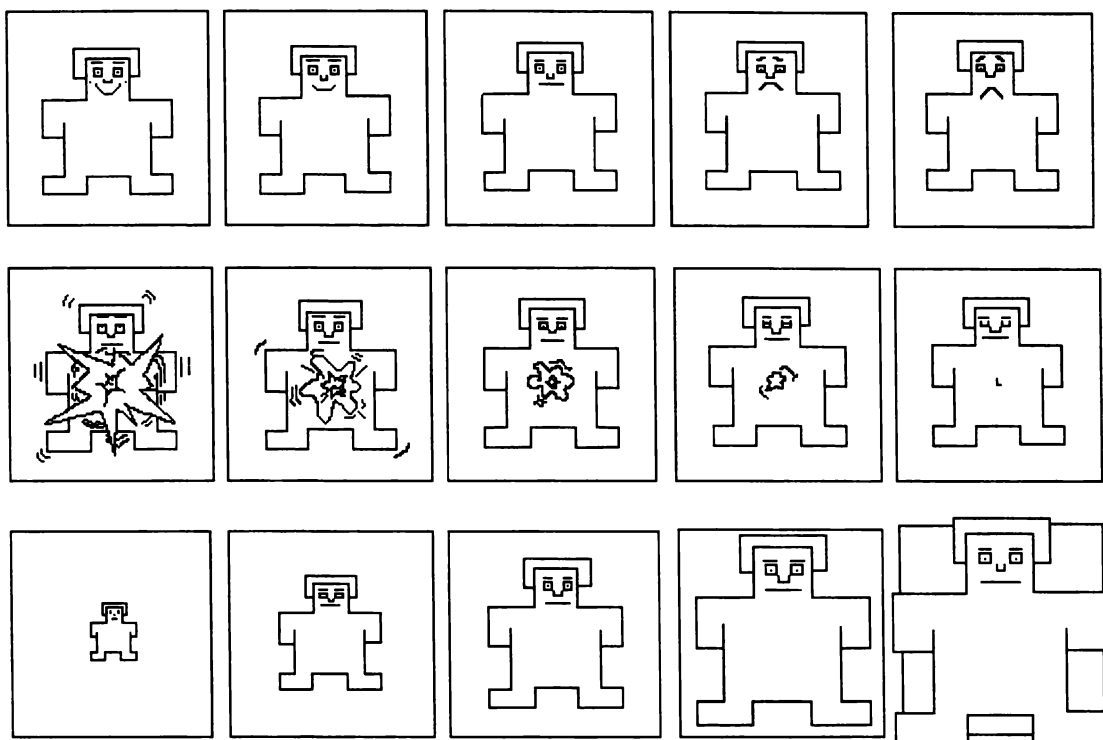


Figure 3.1. Self-Assessment Manikin (SAM) scales as used in the Picture Rating Calibration Study

Procedure

The procedures for this study were approved by the University of Waikato Ethics Committee through the Psychology Department Ethics Committee.

Participants had the protocol explained to them by the author and signed a consent form. They then completed the demographic section and the questionnaire packet. All questionnaires were unnamed in an effort to ensure privacy and to encourage honesty. Advertisements used to recruit students, the information sheet, and questionnaire additions as used in this study appear in Appendix D.

Upon completion of the inventories and scales the students had the slide rating procedure explained to them. This was done via a protocol reworded from the procedure outlined by Lang, Bradley, and Cuthbert (1995) in the technical manual accompanying the *IAPS*. Some aspects of the wording were adapted since this experiment was carried out using a computer to show the pictures rather than screening a slide show as in the original protocol. The exact wording of this explanation is shown in Appendix D.

The rating sheets for the present study were arranged so that the affective valence rating was followed by the arousal rating, and then the dominance rating for each picture, whereas in the American studies this order was varied. A further difference in the procedure was that the students completed their ratings alone rather than in a group setting.

During the picture rating procedure explanation the participants were able to work through three practice slides with the researcher present, in order to ensure that they understood the procedure. They then worked through the rating process alone. This process involved viewing slides one at a time on the computer

for a timed interval of six seconds. At the end of that time a computer generated camera-click sound alerted them to a screen change. The new screen instructed them to complete their rating and remained visible for fifteen seconds. The instruction included the appropriate page of the booklet to use for each rating. The time allowed was usually sufficient for subjects to make the three ratings.

The questionnaires and ratings booklets were each assigned a number so the demographic information from the former could be applied to the latter where necessary, but the data were all strictly anonymous.

On completion of the picture series, participants were given a course credit form to complete, thanked, and left the laboratory.

Results

Characteristics of Sample

Participants. There were 35 females and 15 males in the sample, which is a slightly higher percentage of males in the study (30%) than the proportion doing the introductory psychology courses at that time (25-27%). The males ranged from 16.9 to 31.7 years of age ($M = 25.1$, $SD = 9.3$), while the females ranged from 18 to 53.9 years of age ($M = 27.8$, $SD = 9.7$). The overall mean age of the sample was 27.0 years ($SD = 9.6$).

For purposes of later analyses the sample was categorised into four age groups so that 1 was < 21 (6 males and 11 females), 2 was < 31 and > 21 (5 males and 11 females), 3 was < 41 and > 31 (3 males and 7 females), and 4 was > 40 years of age (1 male and 6 females).

Ethnicity. Thirty-one participants (62% of the sample) were *Pakeha/European*, with nine (18%) of *mixed ethnicity*, five (10%) *Maori*, one (2%) *Pacific Islander* and four (8%) designated *Other*. These proportions broadly reflect the ethnicity proportions recorded from 100-level psychology enrolment statistics for most groups, although the available statistics did not record a category for those of mixed ethnicity.

Religious affiliation. A survey of the religions those in the sample were brought up in, and their current religious affiliations showed that fifteen (30%) were brought up with no religious background. Of the 70% brought up in a religion, eight (16%) were *Anglican*, seven (14%) *Presbyterian*, nine (18%) *Roman Catholic* and eleven (22%) *Other*, including several different religious organisations.

Participants with current religious affiliations totalled 46% of the sample and included two (4%) *Anglican*, two (4%) *Presbyterian*, six (12%) *Roman Catholic* and thirteen (26%) *Other*. Twenty-seven (54% of the sample) reported no current affiliation with a particular religion.

Sexual relationships and preferences. Questions relating to relationship status and sexual preferences showed 28 (56% of the sample) were involved in a sexual relationship at the time of the study. Of these, three (6%) said they were *in sexual relationships with several individuals*, six (12%) *in a sexual relationship with one person only*, eleven (22%) *in a long term relationship with one person only*, four (8%) reported being *in a de facto relationship*, and another four (8%) stated that they were *married*.

Forty-four (88%) of the participants stated that they had had at least one sexual relationship. Thirty-nine (78%) preferred opposite sex partners. Seven

(14%) stated a preference for same sex partners. Most of the remainder (4%) said they did not know their sexual preference, and one (2%) said they preferred no sexual partner. There was also one participant whose preference was for partners of both sexes. At the time the questionnaire was completed 12% of this sample had never had a sexual relationship.

Self-Report Measures

The Positive and Negative Affect Schedule (PANAS). The range of scores on the positive affect scale was from 18 to 43 with a mean value in this sample of 30.3 ($SD = 6.4$). The negative scores ranged from 10 to 26 and the mean was 13.7 ($SD = 5.3$). Females ($M = 31.7$, $SD = 6.1$) scored higher than males ($M = 26.9$, $SD = 5.6$) on the positive affect scale. Scores for the negative affect scale were also higher for females ($M = 13.0$, $SD = 3.5$) than for males ($M = 12.5$, $SD = 3.6$). The differences for the negative affect scores were found to be not statistically significant via t -tests, but the difference between the genders was significant for the positive PANAS scores; $t(48) = -2.54$, $p < .05$. Positive PANAS scores recorded were normally distributed (Shapiro-Wilks's $W = .97$, $p = .26$) but the negative scores were not. Most of the participants recorded negative affect scores in the 8 to 12 range out of a possible 50, so the kurtosis statistic for these data was 4.0, and there was a positive skewness statistic of 1.95. The affect scores are depicted in Figure 3.2.

The correlation between positive and negative affect scores in this sample was not significant and relatively low as one would expect ($r = -.23$). This is in agreement with the theoretical and experimental findings from other studies, indicating the two dimensions of affect are independent.

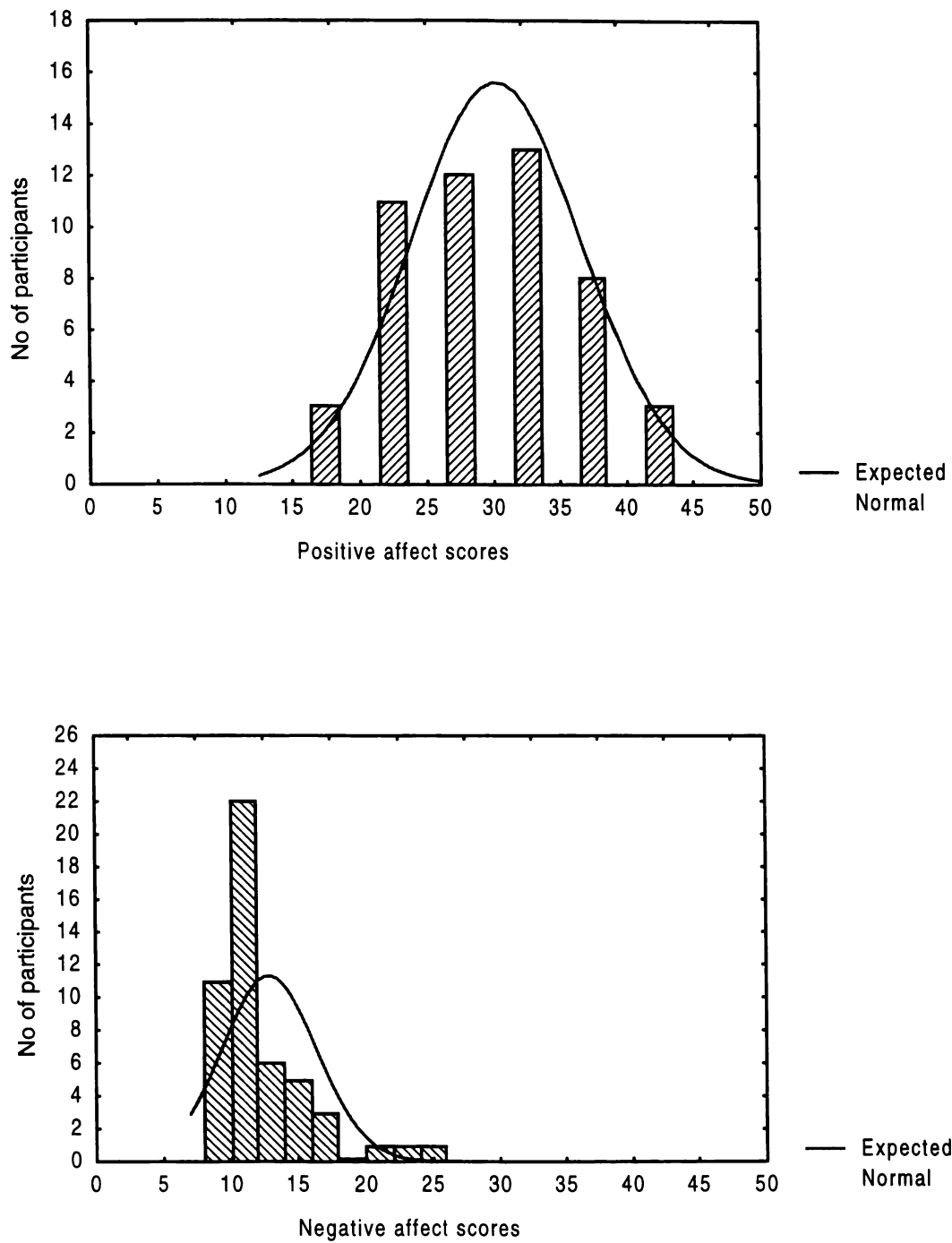


Figure 3.2. Positive and negative affect scores from the PANAS in the Picture Rating Calibration Study.

Sexual Desire Questionnaire. “Q.1: How often do you experience sexual desire?” Males endorsed the three most frequent categories on this measure in 93% of cases. Females endorsed those same categories in 51% of cases reporting their frequency of sexual desire ranged from *several times per week* to *several times per day*. These categories were endorsed by 64% of the sample. Of those remaining 11% of the females endorsed the *several times per year* category, and 31% the *several times per month* category. Table 3.1 summarises the data from this question.

“Q.2: Have you ever been involved in sexual activity when you did not experience a high level of sexual desire?” In this sample 37 (74%) of participants said they had been involved in sexual activity without experiencing a high level of sexual desire. This reply was given by 7 (47%) of the males and 30 (86%) of the females in the sample.

“Q.3: How often do you experience sexual desire without accompanying behaviour?” This question required endorsement of a frequency; options ranged from *always*, through *sometimes*, *occasionally*, *seldom*, and *never*. The most frequently endorsed answer was *sometimes*; that is 46% of the sample reported that they sometimes had sexual desire without accompanying sexual behaviour. This was true of 47% of males and 46% of females. A further 28% of the sample said they *occasionally* had sexual desire without accompanying sexual behaviour, and 14% said they *seldom* had sexual desire without accompanying sexual behaviour. Four people said they *always* had desire with no proximal sexual behaviour, and two females said they *never* had sexual desire without accompanying sexual behaviour.

Table 3.1

Frequency of Sexual Desire, by Gender

Frequency category-- <i>How often do you experience sexual desire?</i>	Males		Females		Total	
Never	0	-	1	3%	1	2%
Several times per year	0	-	4	11%	4	8%
Once per month	0	-	0	-	0	-
Several times per month	0	-	11	31%	11	22%
Once per year	1	7%	1	3%	2	4%
Several times per week	3	20%	10	29%	13	26%
Once per day	3	20%	6	17%	9	18%
Several times per day	8	53%	2	6%	10	20%
Column totals	15	100%	35	100%	50	100%

“Q.4: Which of the following most accurately reflects your level of sexual desire?” The responses to this question are summarised by category and gender in Table 3.2. In this sample a larger proportion of people regarded daydreams and intercourse as the items that best reflected their sexual desire levels, than other items available.

“Q.5: Do you feel that the amount of sexual desire you experience is easily affected by the events happening in your life?” Responses showed 36 (72% of the sample) thought eventdid affect their desire levels. Seventy-three per cent of males and 71% of females shared this view. Emotional stresses (reported by 18% of sample), workload (12%), family and relationship issues (18%), tiredness (5%) and mood (12%) were cited as events that decreased sexual desire in this sample. Participants reported that happiness (4%), surrounding stimuli such as people, TV

Table 3.2

Endorsement of Behaviours Reflecting Sexual Desire, by Gender

Item endorsed	Males		Females		Total	
Sexual dreams	1	7%	0	-	1	2%
Sexual fantasy	2	13%	2	6%	4	8%
Day dream	4	27%	8	23%	12	25%
Intercourse	2	13%	12	34%	14	29%
Masturbation	1	7%	3	9%	4	8%
Non-intercourse sexual contact	1	7%	5	14%	6	13%
Genital arousal	4	27%	3	9%	7	15%
Column Totals*	15	100%	33	95%	48	100%

Note. *Data for two participants missing.

and books (16%), partner involvement (8%) and generally positive relationship experiences (12%) increased their sexual desire. Other events that influenced desire in this sample were menstruation (4%), environment (6%), mood (8%) and the length of time since the previous sexual experience (2%).

“Q 6: Which type of stimulation has the greatest effect on increasing your level of sexual desire?” Tactile stimuli accounted for 29 (54%) of the responses, with emotional next most numerous at 15 (30%). Visual stimuli were endorsed as most important by 7 (14%) of participants and auditory stimuli were endorsed by one person (2%). None of this sample regarded olfactory stimuli as most important to them. Stimulus endorsements varied by gender, with more women than men regarding emotional (37% vs. 13%) stimuli as most important, and a larger proportion of men than women reporting visual stimuli (27% vs. 9%), and tactile (60% vs. 51%) stimuli as most important.

“Q.7: Has the recent increase in advertising relating to sexually communicable diseases reduced your desire for sex?” More of the women (10 = 66%) than the men (5 = 33%) answered yes to this question.

“Q.8: Do you feel that it is necessary to love someone before you could feel sexual desire toward them?” Most participants responded in the negative to this question. Over 78% of the sample did not feel they had to be in love in order to feel sexual desire for someone.

“Q.9: How can you tell that you have an increased desire for sex?” The most frequent response to this question was an increase in physical, especially genital sensations. Twenty-six participants recorded ideas of this nature, which suggest some blurring of the differentiation between desire and arousal. Fifteen reported an increase in thoughts about sex as indicative of increased desire, and a further six wrote that increased daydreams and fantasy were signs that they were experiencing increased desire for sexual activity. Wishing to be emotionally (10 participants) or physically (5 participants) closer to their partner, was also reported as indicative of increased desire, as were an increased feeling of excitement (7 participants), and an increase in attention to their partner, reported by five participants.

“Q.10: What other things do you feel affect your desire for sex?” Participants reported that a lack of energy (10%), health problems (4%), workload (8%), depression (4%) and emotional stress (4%) decreased their sexual desire. Increases in desire were reported in response to feeling happy, having leisure time, or relaxation (8%), exercise (6%), feelings of security or comfort (12%), and attraction (8%). Surrounding stimuli were given as increasing desire by 24% of respondents, with some specifically stating visual stimuli (6%) as important and

others indicating other senses (8%) as important. The most commonly reported cause of increased sexual desire was a sense of physical and emotional closeness to one's partner, or in one's relationship (30%). Alcohol was also listed as something that increased sexual desire by 12% of participants. Miscellaneous causes of changing desire listed included, sports (4%), self-esteem (4%), menstruation (6%), environment (14%), mood (8%), romance (2%), food (6%), the weather (8%) and talking (14%); there was not always an indication of whether these things caused increased or decreased desire.

Males in this sample reported more frequent experience of sexual desire than females; this accords with the findings from previous studies including the Clinical Measures Study (see Chapter 2).

Males and females reported day dreaming as indicative of sexual desire in almost equal numbers, but more males specified fantasy and sexual dreams as indicators of their desire than did females. Males more often equated genital arousal with sexual desire; females more often reported non-intercourse genital contact as indicating increased desire when responding in the written questions, but over a third of the women in this sample had endorsed intercourse as the behaviour most likely to reflect their sexual desire levels. It is possible that having answered the initial question indicating intercourse as the best indicator of desire, the following questions were used to indicate other less significant means of knowing sexual desire was increased or decreased.

Most participants shared the view that events and circumstances in their lives affected their sexual desire levels, citing emotional and relationship issues, and stresses as affecting their interest in sexual activity.

Sex Anxiety Inventory. Total score for this inventory ranged from 0 to 80, out of a possible 100, with an overall mean figure of 40.1 ($SD = 19.2$). Males ($M = 38.3$, $SD = 18.6$) scored lower totals with respect to sexual anxiety than females ($M = 40.9$, $SD = 19.7$). The results from this inventory were normally distributed (Shapiro-Wilks's $W = .98$, $p = .59$). There were no statistically significant differences between males and females with respect to this variable.

Hurlbert Index of Sexual Desire (HISD). Scores on this measure of sexual desire ranged from 28 to 90 out of a possible 100 ($M = 63.8$, $SD = 15.3$). The totals were not normally distributed (Shapiro-Wilks's $W = .95$, $p = .04$). The distribution was asymmetrical (skewness = $-.48$), and there was a kurtosis of $-.65$. On inspection histograms of the data showed peaks for the scores between 70 and 80 above the normal curve, while the majority of the remainder of the scores fell below the normal curve. There were no significant differences between males and females on this measure, nor were there any differences by age group. The distribution of scores by gender can be seen in Figure 3.2. Since the mean HISD score for males was 72.1 ($SD = 9.8$) while that for females was 60.2 ($SD = 16.0$) it was decided to group males and females into high, average and low sexual desire groups separately. The groups were decided on the basis of a quartile split for each gender. The upper quartile level for males was 79 while that for females was 76. The male lower quartile level was 64, and that for the females was 48. The division of participants into three groups resulted in 4 males and 9 females being categorised as high sexual desire, 7 males and 16 females as average, and 4 males and 10 females as low sexual desire on the basis of the Hurlbert Index of Sexual Desire scores.

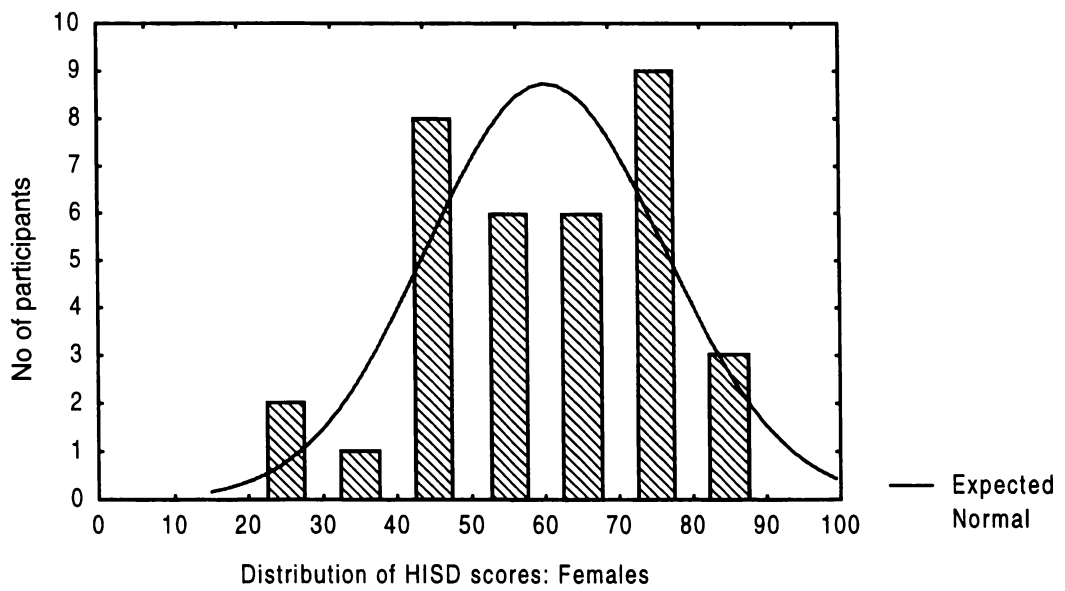
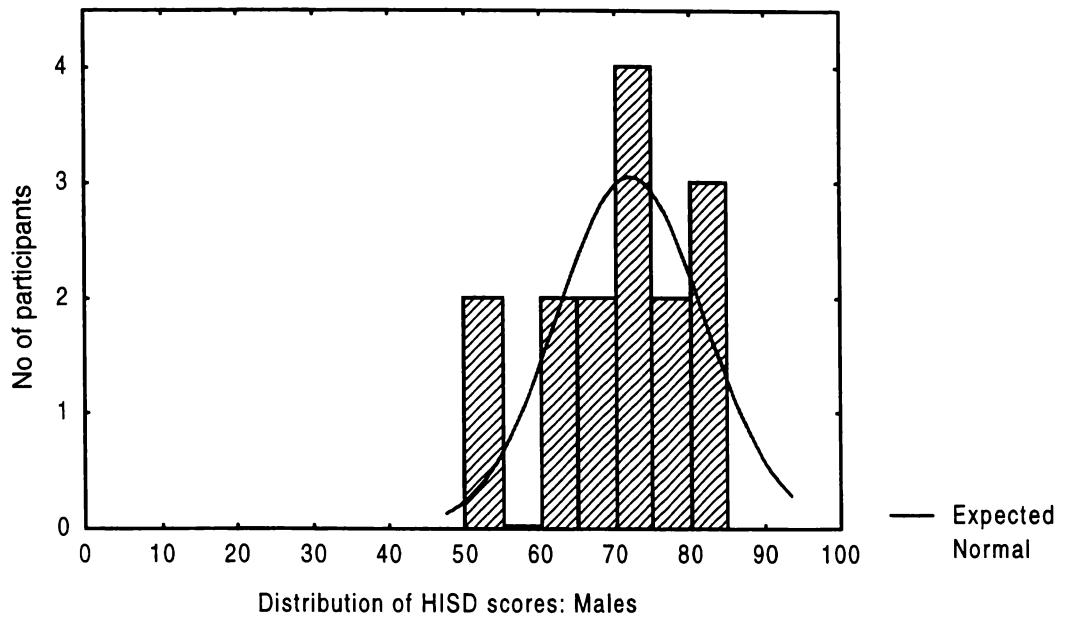


Figure 3.3. Histograms of Hurlbert Index of Sexual Desire scores, by gender, in Picture Rating Calibration Study.

The Mood Awareness Scale. Scores ranged from 25 to 57 ($M = 42.4$, $SD = 8.0$) out of 60 on this scale. The results for this measure were normally distributed (Shapiro-Wilks's $W = .97$, $p = .39$). There were no significant differences between males and females with respect to this characteristic.

The correlation of the scores from this measure with the positive PANAS scores in this sample was $r = .17$, and not statistically significant. This finding is somewhat at odds with Swinkels and Guiliano's (1995) study developing this measure in which $r = .34$ ($p < .001$), and that from the Clinical Measures Study (Chapter 2) in which $r = .37$ ($p < .01$). Closer examination revealed that the sub-scale correlation in this sample was not what might be expected. The mood monitoring (MM) and mood labelling (ML) scales correlated so that $r = .34$ ($p < .01$), but the correlation of those scales with the positive and negative PANAS scales did not parallel those reported by Swinkels and Guiliano (In the present study MM vs. Positive PANAS, $r = .03$, *not significant (ns)*; MM vs. Negative PANAS, $r = .17$, *ns*; ML vs. Positive PANAS, $r = .27$, *ns*; ML vs. Negative PANAS, $r = -.15$, *ns*). The small sample size may explain some of these differences.

Sexual Desire Inventory-2. Scores from the 49 participants who completed this measure ranged from 19 to 100 out of the possible 109 ($M = 57.6$, $SD = 17.9$). This total is comprised of two sub-scales, the dyadic (Q.1 to 8), and solitary (Q.10 to 12) scales, and two other questions. The range for the dyadic scale was from 15 to 61 with a mean score of 39.7 ($SD = 10.6$), while the range for the solitary scale was 1 to 36 with a mean score of 13.1 ($SD = 9.5$). The correlation between the dyadic and solitary sub-scales of this measure within this sample was $r = .37$ ($p < .01$). This is somewhat lower than that reported by

Spector and Fremeth (1996) in their study of elders, but theirs was a smaller sample living in somewhat different circumstances to the participants in the present study.

Males and females scored somewhat differently on aspects of this measure. Males recorded a mean score of 45.4 ($SD = 9.2$) on the dyadic scale, 16.6 ($SD = 7.2$) on the solitary scale, and a total mean score of 66.8 ($SD = 18.3$). The mean dyadic score for the females was lower at 37.2 ($SD = 10.5$), while their solitary score was 11.5 ($SD = 6.2$), and the total was 53.6 ($SD = 16.4$). The importance of these differences was tested by a one-way ANOVA procedure and found to be statistically significant for the dyadic, $F(1, 47) = 6.98, p < .05$, and total scores, $F(1, 47) = 6.26, p < .05$ but not the solitary sub-scale scores. Data for the dyadic (Shapiro-Wilks's $W = .98, p = .66$) and total (Shapiro-Wilks's $W = .98, p = .56$) scales were normally distributed and the Levene's test for homogeneity of variance was not significant. The correlation between the two sub-scales was significant ($r = .39, p < .05$). The authors of the test reported a correlation between sub-scales of .35 in the study they carried out during the development of the measure.

Age had some effect on the scores recorded on this measure. Mean totals were similar for the first ($M = 57.4$) and second ($M = 56.3$) age groups, higher for the third age group ($M = 67.2$), but lower for the fourth ($M = 48.8$). These levels are depicted in Figure 3.5. The oldest (> 40) and youngest (< 21) age groups had the lowest mean solitary sexual desire scale scores (10.2 and 10.7 respectively), while the 31 to 40 year old group had the highest ($M = 17$). The mean dyadic scale scores were the highest in the 31 to 40 year old group ($M = 44.8$) and lowest in the over 41 year old group ($M = 33.5$). Tests of the significance of these differences

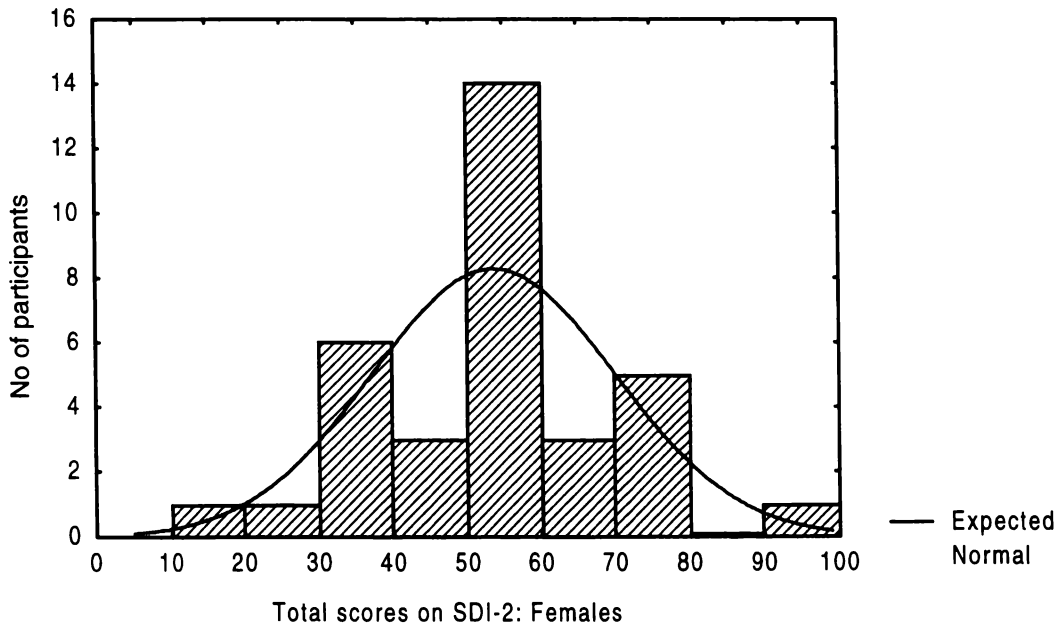
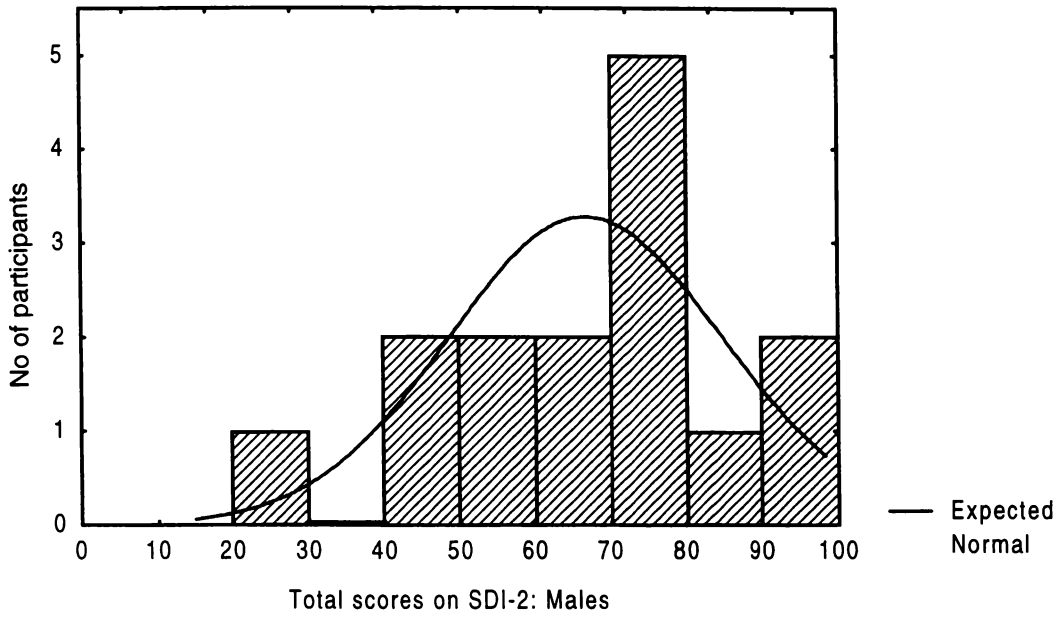


Figure 3.4. Histograms of Sexual Desire Inventory-2 scores, by gender, in Picture Rating Calibration Study.

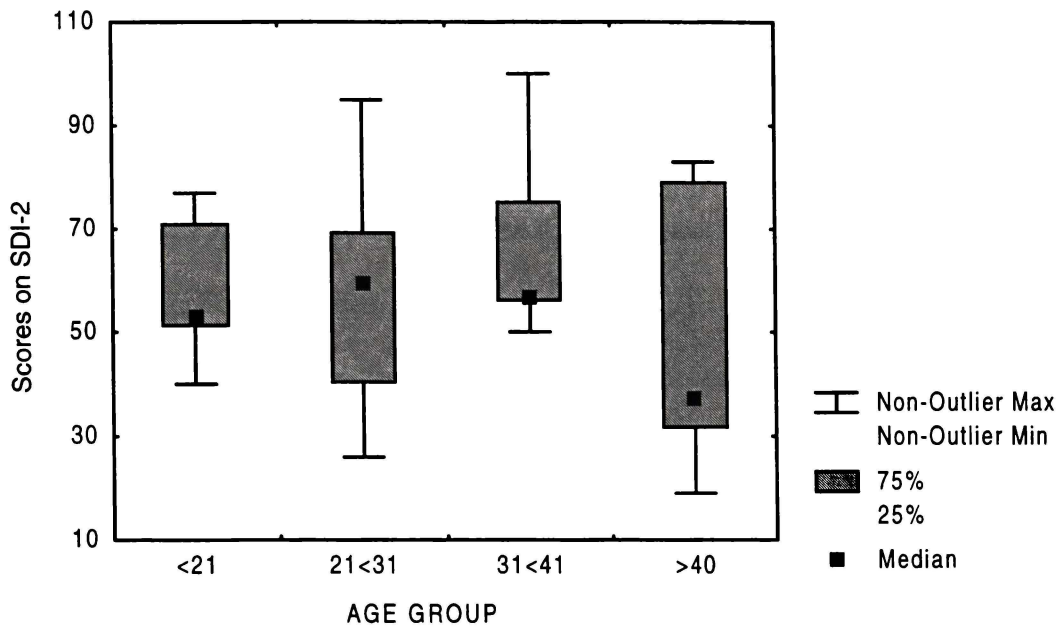


Figure 3.5. Variation in Sexual Desire Inventory-2 scores, by age group, in Picture Rating Calibration Study.

with respect to this sample showed that there were no statistically significant differences between age groups for the solitary, dyadic or total scales of the SDI-2 in this sample.

As was done with the Hurlbert Index of Sexual Desire, the participants were grouped into high, average and low sexual desire for this measure on the basis of a quartile split for each gender. The upper quartile level for males was a score of 77, whereas that for females was 61. The male lower quartile level was 53, and that for the females was 44. The division of participants into three groups resulted in 4 males and 9 females being categorised as high sexual desire, 7 males and 16 females as average, and 4 males and 10 females as low sexual desire on the basis of the Sexual Desire Inventory-2 scores.

Body-Esteem Scale. Scores on the Body-Esteem Scale ranged from totals of 86 to 149 out of a possible 175, with a mean score for the 49 data sets in this sample of 109.2 ($SD = 15.4$). Data on each of the sub-scales, and the total were normally distributed in this sample (Shapiro-Wilks's $W = .96$, $p = .12$, for total score). The mean scores for males and females vary to some extent on this measure with the male mean total recorded being 116.8 ($SD = 18.3$), while that for females was 105.8 ($SD = 12.9$). While the differences for the sub-scales on this measure did not reach statistical significance, the total scores were significantly different by gender, $F(1, 47) = 5.79$, $p < .05$.

There were no significant differences between age groups for this measure.

Combination sexual desire rating. In order to have one grouping variable that represented sexual desire measure scores by which to examine the picture rating data, scores from the two main measures (HISD and SDI-2) were standardised, summed, then divided by a quartile split by gender to give a three

code grouping. This manipulation resulted in 3 men and 9 women being coded as high libido, 8 men and 17 women as average, and 4 men and 9 women as low libido in this sample.

Correlation between measures. The correlation between measures for this sample is shown in Table 3.3. There was a significant positive correlation between negative affect and sexual anxiety, the strongest relationship between this affect any of the clinical measures ($r^2 = .144$). The strength of the significant negative correlation of negative affect with the HISD scores ($r^2 = .084$) was not as great as the association of negative affect with sexual anxiety ($r^2 = .144$). The significant negative correlation between sexual anxiety scores and the HISD was stronger ($r^2 = .260$) than the relationships between either of these measures and negative affect. There was a similarly strong relationship between sexual anxiety and the Sexual Desire Inventory–2 (SDI-2) in this sample ($r^2 = .260$). Body-esteem was positively and significantly correlated with both the HISD and the SDI-2 ($r = .33$, $p < .05$, and $r = .42$, $p < .01$ respectively). This relationship was stronger for the SDI-2 ($r^2 = .176$) than for the HISD ($r^2 = .109$). These findings suggest that a sense of self-esteem with respect to one's body contributed to higher sexual desire in this sample.

There were however some important differences between the correlation of measures for this sample and for the sample in the Clinical Measures Study. While the first study showed no relationship between sexual anxiety and negative affect, this study revealed a significant relationship. The reverse was true of positive affect and the HISD measure--in the Clinical Measures Study there was a significant relationship between positive affect and sexual desire, but in this study

Table 3.3

Correlation Between Measures

Clinical Measures	1	2	3	4	5	6	7
Positive PANAS ¹ [1]	-	.044	.063	.014	.026	.023	.014
Negative PANAS ² [2]	-.21	-	.144	.084	.001	.032	.058
Sex Anxiety Inventory [3]	-.25	.38**	-	.260	.006	.260	.017
Hurlbert Index of Sexual Desire [4]	.12	-.29*	-.51***	-	.001	.281	.109
Mood Awareness Scale [5]	.16	.03	-.08	-.01	-	.032	.001
Mood monitoring	.03	.17	.04	.01			
Mood labelling	.25	-.13	-.19	-.02			
Sexual Desire Inventory-2 [6]	.15	-.18	-.51**	.53***	.18	-	.176
Dyadic	.18	-.24	-.37**	.58***	.07		
Solitary	.05	-.04	-.48**	.25	.26		
Body-Esteem [7]	.12	-.24	-.13	.33*	.03	.42**	-
Sexual attractiveness	.23	-.31*	-.21	.46***	.13	.49***	
Weight concerns	-.06	-.04	.11	.03	-.04	.13	
Physical condition	.12	-.23	-.25	.30*	-.02	.41**	

Note. Correlation statistics (r) appear below diagonal in lower left of table while strength of association (r^2) statistics appear in upper right of table.

¹Positive Affect Scale, ²Negative Affect Scale, of the Positive and Negative Affect Schedule.

* $p < .05$; ** $p < .01$; *** $p < .001$.

the relationship was not statistically significant. In the first study mood awareness correlated with several other measures, but there were no significant relationships found in the present study.

This study afforded the first opportunity to compare the HISD with the SDI-2 within subjects. The two measures correlated significantly ($r = .53$, $p < .001$). The strength of the association is shown by the r^2 statistic of .281, the strongest relationship in this matrix. An examination of the sub-scale correlation

showed that the HISD related to the dyadic scale of the SDI-2, but not the solitary sub-scale, explaining some of the difference between these two measures, which purport to examine the same phenomenon.

Picture Rating Task

Participants rated each picture, recording their response in terms of affective valence, arousal, and dominance or control on a 1 to 9 scale, with 1 denoting a low level of response and 9 a high level. The mean ratings for each slide in this study given by all the participants are summarised in Table 3.4.

The means from the New Zealand sample together with those from the American studies are given in Appendix E. Statistical testing to determine whether there were significant differences between the means found in the two countries was carried out. A series of *t*-tests revealed that there were no significant differences between the two groups on ratings for any of the pictures. Correlation of the two sets of means showed all were significantly correlated, with agreement ranging from .83 to .97. The levels of correlation between the NZ and American data for all participants, males only, and females only, can be seen in Table 3.5.

Since the slides were viewed by participants in one of four possible orders--two for males and two for females--an ANOVA was performed to see whether there was any effect of order on the picture ratings as recorded. Of the 78 slide ratings compared (26 pictures with three ratings for each), 19 ratings showed a significant difference according to the order in which the slide ratings were completed. However, post-hoc analysis of these 19 results showed that all but one was due to the difference between male and female ratings for the slides, or not significant on post hoc examination.

Table 3.4

Mean Ratings for Valence, Arousal and Dominance for Each Slide in Picture Rating Calibration Study.

Slide Number	Valence Rating	Arousal Rating	Dominance Rating
7010 Basket	5.6	3.1	5.7
4100 Male dancers	6.3	4.7	5.8
3100 Burn victim	1.9	5.5	3.6
6230 Gun	2.7	6.5	3.0
2110 Angry adult	3.3	5.2	4.5
9090 Exhaust	3.0	4.8	4.6
3010 Mutilation	1.6	6.4	3.7
4310 Female nude	5.6	5.3	5.0
5000 Flower	7.2	3.5	6.6
2200 Neutral adult	5.5	4.7	5.8
9140 Cow	2.4	5.2	5.1
3150 Finger	1.8	6.5	4.1
1240 Spider	4.9	5.0	4.9
4520 Male erotic	7.3	6.7	6.2
2500 Man	6.5	3.4	5.9
1090 Snake	3.9	6.2	3.8
4500 Male Nude	6.2	5.3	6.1
7270 ChocoDrink	7.0	5.5	6.0
8030 Ski Jump	6.7	6.8	5.4
9160 Soldier	3.2	6.1	4.0
5600 Mountains	7.8	5.0	5.6
7000 Rolling Pin	4.9	3.1	6.0
2040 Happy Baby	7.8	5.0	6.4
1500 Dog	7.5	4.7	6.4
4180 Female Nude	7.2	6.6	5.7
4220 Female erotic	7.2	6.3	5.3

Table 3.5

Correlation Figures for Ratings Given by New Zealand Sample versus American Sample.

	Valence	Arousal	Dominance
All subjects	.97	.90	.93
Males only	.96	.90	.83
Females only	.97	.94	.93

The two slide ratings that suggested an effect of order were the female ratings for dominance for slide 5000, labelled 'Flower', $F(3, 46) = 3.6, p < .05$, and the valence rating for slide 4500, labelled 'Male Nude', $F(1, 33) = 7.1, p < .05$. For slide 5000, females ($n = 18$) in the first slide order group rated the slide 5.4, and the other group ($n = 17$) gave it a rating of 7.7. The two groups were similarly discrepant with respect to the valence ratings for slide 4500, labelled 'Male Nude', one group rating the slide 5.2 and the other 7.2. However, these ratings may be due to the other characteristics of the individuals within the groups. Overall, there appeared to be little effect of slide order within this sample.

To assess the possibility of difference in ratings of sexual pictures by participants with differing levels of sexual desire (high, average, or low as described above), their ratings for those sexual pictures in this study were examined.

An examination, by ANOVA, of the differences in responding by the various libido groups showed there to be significant differences on two ratings for the pictures shown, the dominance ratings for slide 4310, labelled 'Female Nude', $F(2, 46) = 3.24, p < .05$, and slide 1500, labelled 'Dog', $F(2, 46) = 4.30, p < .05$. Post hoc analysis showed that only the rating for dominance with respect to slide

4310 was significant. Those in the average libido grouping gave this slide a mean dominance rating of 4.28, whereas those in the high libido group gave it a dominance rating of 6.33. This result was further examined by gender to see where the differences in ratings originated. Two males in the high libido group gave this slide a dominance rating of 7, while 5 females with high libido gave the slide a rating of 7 or 9. Nine women in the average libido group gave the slide a rating between 1 and 3, and two males in the same libido group rated the slide with a 3. This being the case, it would appear that the main differences were due to the low sense of control or dominance expressed by the average libido group. Examining ratings of different picture types in this fashion could potentially differentiate between groups of participants with varying levels of self-report sexual desire.

Discussion

This study aimed to establish that the ratings assigned to pictures in the *IAPS* by students in a New Zealand sample would be similar to those given to the same pictures by American students in laboratory trials. Previous to this study there had been no corroborative evidence upon which to base the assumption that American valence, arousal and dominance ratings for these pictures could be applied in New Zealand. The high correlation between the USA mean ratings for each slide, and the New Zealand ratings show that choosing pictures for future experiments based on the ratings from the American studies would be a reliable way to determine their probable impact within the New Zealand context.

The second aspect of this study has, however, produced a more mixed result. While the study has confirmed some of the findings from the first project with respect to the relationships between clinical variables as determined by self-report, there have also been some failures to replicate what had seemed strong relationships in the first study.

The most robust relationships from both studies were those between the sexual anxiety measure and the sexual desire measures. There would seem to be no question that higher levels of sexual anxiety are related to lower levels of sexual desire. The relationships between positive mood and sexual desire though, vary between the studies. While in the first study the presence of positive affect was related to lower sexual anxiety, greater sexual desire and mood awareness as well as increased numbers of sexual signalling behaviours, this was not so in the second sample. Here the positive mood scale was not related to any of the other measures. This may be an artifact of this particular sample, and points to the need for larger samples in studies where effects are relatively small or an accumulation of several factors, as is probable in sexual desire.

A further query raised by this correlation series is the lack of relationship between the mood awareness measure and other scales. In the initial study it appeared that this measure showed promise in helping to explain how mood, the awareness of that mood, and the presence of sexual desire were related. However the present study leaves one wondering if there is indeed such a relationship or not. One consistent aspect of the results in this sample is that mood awareness was not related to either of the two sexual desire measures. A further study with a larger sample may clarify the importance, or otherwise, of this relationship.

The inclusion of the Body-Esteem measure in this study also produced interesting data in relation to sexual desire measures. Both measures of sexual desire were significantly related to the overall Body-Esteem total, suggesting that one's view of self with respect to body attractiveness, condition and weight does indeed have some relationship to self-reported sexual desire. Examining the sub-scales shows that the sexual attraction, or physical attraction in the case of males, and physical condition sub-scales were both more important in this relationship than the weight concerns or upper body condition aspect of this measure.

Apart from the replication, or otherwise, of earlier clinical measure relationships, this study can also be examined for the relationships between picture ratings and clinical measures. Within this varied and relatively small selection of slides from the *IAPS* there were some that might be seen as pertinent to the study of sexuality. Examination of the responding of this sample in terms of their sexual desire levels showed that those with average libido recorded a lower rating of their sense of control for at least one of the four sexual pictures than did those reporting high levels of sexual desire. The use of a wider selection of stimuli matched for expected classes of responding might well be a useful way to understand how persons with varying levels of sexual desire respond to various kinds of stimuli. Such a procedure in conjunction with a larger sample and tasks other than simple picture rating, as well as the repeating of clinical measures, will be discussed in the next section.

CHAPTER 4

Responding to Pictorial and Semantic Cues in a Laboratory Situation

The first study in this series examined how various clinical measures and one specific measure of sexual desire inter-relate. Sexual anxiety and positive mood were found to be related to levels of sexual desire, but negative mood was not.

In the second study, the range of clinical measures was altered, and a second specific measure of sexual desire was introduced. Alongside these measures, a picture-rating task was carried out. The principal aim of this study was to validate the use of American generated picture ratings in planning experimental procedures in a New Zealand context. The high correlation of mean ratings for the picture selection from the *IAPS* demonstrated that this was a valid procedure. From this second study it was also seen that those with higher self-reported libido levels rated their feelings of control or dominance with respect to the sexual pictures higher than did those with average levels of self-report libido. Further, the relationship between the two measures of sexual desire was examined for the first time, and the way sexual anxiety, mood awareness, positive mood and body esteem related to levels of sexual desire were described for that sample. However, some of the relationships between clinical measures found in the first study were not clearly replicated in the second. Positive affect, which had been strongly correlated with sexual desire levels ($r = .44, p < .001$) in the first study, did not correlate significantly with either of the sexual desire measures in the second study. Sexual anxiety was still found to be negatively correlated with

levels of sexual desire, and the body esteem measure was also shown to have a significant relationship with sexual desire in that sample.

Both of the foregoing studies consisted of relatively small samples, and pointed to the need for larger groups to establish the relationships between variables. They also pointed to the potential of the inter-relating of information processing techniques and clinical measures so that within subject examination of both self-report and behavioural processing connected to sexual desire could be carried out.

The ratings of pictures according to one's view of how pleasant and arousing they seem and how controlled or controlling one feels when responding to them does have a relatively direct evaluative nature. Tasks that require fast responding to a wide range of stimuli, where the responses involve processing material that relates to the quality under study can be less obvious in their evaluation of that processing. Such techniques have been collectively termed Information Processing techniques.

Geer, Lapour, and Jackson (1993) have pointed to the usefulness of information processing as a method of approaching the study of cognition in sexuality. This approach suggests humans function somewhat like a computer in that information is input to the system or individual, processed or acted upon by that individual and behaviour ensues. The first step in this process is the availability of the stimulus to the individual. As discussed in previous chapters, the stimuli can be auditory, olfactory, visual or tactile--the 'cues' referred to elsewhere. Participants in the two previous studies in this series reported on the types of cues that contributed to their levels of sexual desire, many citing visual and emotional stimuli as important to them. They also ranked the behaviours they

preferred to use, and have used toward them by their partners, as cues to their level of sexual desire at any time. Stimuli can also result from thoughts and images such as fantasy and so on (see e.g., Staats, 1975). The use of pictorial stimuli has been shown to lead to a greater response than auditory or semantic methodologies where erotic stimuli are concerned, particularly for males (see e.g., Abel, Barlow, Blanchard, & Mavissakalian, 1975). In auditory protocols, sexual information or stimuli have been found to have high salience. With semantic stimuli, shorter latencies for recognition of erotic sentences are found in males and said to indicate greater attention to those elements of the sentences (Geer & McGlone, 1990). One difficulty arising with the use of more than one type of stimulus modality is the difficulty in equating for example, pictorial and semantic variables with respect to novelty, complexity and context. Be that as it may, the essential idea here is that the incoming stimuli, of whatever kind, need to be processed by the individual.

Such stimuli activate memory structures that an individual may or may not recognize as sexual. This recognition process points to the importance of cognition in sexuality, an idea also indicated in a number of other places (see e.g., Rosen & Beck, 1988; Geer, Lapour, & Jackson, 1993). The awareness of these stimuli on the part of the individual is a necessary part of the processing mechanism. However, we are continually presented with stimuli in our environment and do not respond to all of them. What is it that makes some stimuli more salient than others? What mechanisms operate to determine which we respond to? There is some debate about how this part of the process works. It has been suggested that our capacity to attend limits the stimuli we process. The limiting is sometimes a conscious process where, as Lazarus suggests (see e.g.,

Lazarus et al., 1970), we 'appraise' the stimulus, and in the domain under study here, decide that it is sexual. How one knows that a stimulus is sexual is another area of exploration. Learning from positively reinforced experiences is the most likely mechanism for this process. But we are not always aware of stimuli at a conscious level, so methods have been developed to see how less obvious stimuli influence responding. Some techniques require participants to carry out a task requiring some degree of identification with presented stimuli. One such task is the rating of pictures with respect to their affective valence, arousal, and the sense of control or dominance felt by the viewer as utilized in the second experiment in the present project. Others require attention plus a decision to be made. The nature of the decision might mean that the step beyond attention focus is involved.

Encoding and memory processes. The second aspect of information processing is the encoding and remembering of the stimulus. Here the nature of the stimulus is again a concern with respect to research in the area since there is uncertainty as to how various types of stimuli become encoded. For example, do we process a word read on a page in the same way as that same word said aloud to us? Similarly, how different is the encoding of a word that is also representative of a picture? There is considerable debate about the nature of memory--in which the stimulus input will be encoded and stored. It is not necessary to detail the discussion here. What is important is to realize that in sexuality both the explicit or volitional, conscious aspects of memory, and the implicit or non-conscious, automatic aspects of memory are important (see Geer et al., 1993). Evidence of the interaction between explicit and implicit memory exists from the experiments involving sexual stimuli impinging on the explicit system, and measures of arousal as demonstrated through genital changes involving the implicit system.

There are also examples of the explicit aspects of memory being transformed into implicit, as when well practiced tasks become automated (e.g., driving a car), but the degree to which this might occur in the sexuality area is not clear.

Memory and emotion have been studied in a number of ways. Traumatic events have been shown to be more clearly recalled than neutral events (see e.g., Christianson & Loftus, 1987). The so-called 'Pollyanna' effect, wherein memory is better for pleasant materials, has been demonstrated with verbal stimuli by Matlin and Stang (1978, cited in Bradley, et al., 1992). With respect to the *IAPS* pictures, Bradley and colleagues (Bradley, Greenwald, Petry, & Lang, 1992) found that arousal to stimuli affected the immediate and delayed recall tasks, and assisted in a speeded recognition task. They suggested that while both pleasure and arousal are important at the encoding stage, arousal alone affects recall.

In all the kinds of experimentation discussed here, one has to remember that the responding is being carried out by a complex human being. Just as we acknowledged the possible influence of mood on self-report measures, we need to be aware of the possible effects of mood with respect to attention and memory processes. The hypothesis that when mood at encoding and mood at recall match, memory retrieval will be improved has been demonstrated with respect to depression states, that is when low negative and low positive affect co-exist in an individual. Whether a person's current mood, as recorded by self-report, affects how they respond to the range of tasks asked of them, will be of interest in the present context, both for the general effect on task performance and the specific effects on sexual, as opposed to other, material processed.

Response production processes. As discussed earlier, it is in the nature of response propositions to generate behaviour. Such propositions arise as an effect

of being confronted by a cue of some kind, which has a particular semantic value. Response propositions involve the arousal due to processing of that value, and preparation for reaction to the cue. The emotional processing of stimuli by way of the memory systems leads to autonomic responses, which, Geer maintains, must be genital where sexuality is concerned. Given that most of the sexual response cycle is indeed behavioural, and genitally focussed, one can understand this assertion. However, as some participants in this research clearly revealed, sexual desire, also very much a part of that cycle and sexuality as an area, is not necessarily accompanied by genital responses--although it often can be. How desire and the processing of stimuli of a sexual nature relate becomes an even more interesting question when viewed in the context of the information processing approach to human sexuality.

Gender differences in response to sexual stimuli. Research into sexuality has tended to focus on variation between genders when examining responding to whatever kind of stimuli presented. It has been shown that women tend to remember more accurately, and report more enjoyment of, romantic rather than blatantly sexual or erotic stimuli than do men. This has been demonstrated via semantic protocols where stories were read, and sentences from those stories presented for recognition by participants (Geer, Judice, & Jackson, 1994). Women were found to read more quickly than men, and remembered romantic material better than men, while men were more accurate with respect to sexual material. The experimenters also categorized their participants using the erotophilic / erotophobic scale of the Sexual Opinion Survey (Fisher, Byrne, & White, 1983). They found that those with high erotophobic scores read all types of sentences more slowly than other participants.

Confounds such as reading time, familiarity with words, and gender differences in the ratings of sexual words have led to further exploration of facets of this kind of task. One refinement of the 'sentences within the stories' protocol presented isolated words of a sexual, neutral and romantic nature in a lexical decision task to see if the trend shown in the earlier study persisted (Geer & Bellard, 1996). The researchers reported on a phenomenon called 'Sexual Content Induced Delay' from this experiment, a construct referring to the longer latency times in the lexical decision task to sexual, as opposed to neutral, stimuli. However, other confounds could easily be detected in that protocol. Although the words chosen were grouped according to type by way of a validated procedure, the length of the words, and the frequency with which those words are used in the English language were not controlled within the experiment. These two factors have been demonstrated to influence responding to semantic stimuli in several experiments (see Balota, 1994, for a review). The precedent for connecting semantic processing with sexuality measures, and the need to clarify which factors might contribute to Sexual Content Induced Delay, suggest the usefulness of exploring this protocol further. Improvements possible would be the tighter controls on the stimuli presented, and the use of the clinical and sexuality measures from the previous experiments. Such a protocol would enable further exploration of the notion that those with low interest in sex might respond differently to semantic stimuli than other participants in a laboratory situation.

Previous research has shown that there is an impact of the mode of presentation, on gender differences in relation to sexuality. From the first two studies in this project it was found that males and females differed in their reports of the stimuli they thought most influenced sexual desire. In the first study, 47%

of men thought visual stimuli were most salient for them, but only 11% of the women. In the second study fewer men reported visual stimuli as most important (27%) but 60% of the men in that group thought tactile stimuli were most important--a more difficult stimulus type to use for research! These variations suggested that a multi-modal approach to the provision of stimuli for the tasks to be done would be beneficial. They also point to the variability within genders, and the way couples may find themselves interested in quite different cues for sexual activity--a factor which may contribute to the mismatch of desire mentioned in earlier chapters. The determination of the kinds of differences in what appears salient to individuals could have implications for treatment approaches for sexual desire disorders.

From the outline of the information processing approach detailing stimulus as input, encoding and memory as processing, and the production of arousal or behaviour as response production, it can be seen that there is a useful framework here for the design of a protocol examining differences in responding to sexual and non-sexual stimuli in different groups of people. The present experiment then, sought to do this. There were several specific hypotheses to be tested, within the overall design. From the earlier studies involving the clinical measures the question had arisen as to whether there were any consistent relationships to be found if a larger sample was surveyed. Accordingly, the protocol was designed for up to 200 participants. Whether the participants in sexuality studies exhibit socially desirable responding in the anonymous and non-clinical format of a laboratory experiment was also to be tested here. The nature of the correspondence between clinical measures and ratings of a wide range of pictures, including sexual and matched non-sexual types was also under examination.

Further, the experiment investigated differences in responding to the different types of pictures when a timed recall task was required. By way of contrasting modality, although also essentially visual, a lexical decision task was included. This required a timed lexical decision. In addition responding to different word types, (romantic, neutral and sexual) paralleling the sexual, neutral, and non-sexual picture stimuli was also measured. Participants gave ratings to both the pictorial and semantic stimuli during the protocol.

The main experimental process tested the assumption, widely held in clinical practice, that people with low libido either ignore or inhibit responding to sexual stimuli. Whether this potential difference in processing is able to be measured as a significant difference through these tasks is the key question. Then, whether the measurement enables differentiation of those with low libido from others is also an important aspect of the investigation.

CHAPTER 5

Cues Study: Method

Participants

One hundred and ninety-three volunteer participants completed the experimental procedure. In an attempt to attract a sample more representative of a normal population than the usual university sampling generates, this study sought a wider range of participants, in addition to the student population enrolled in 100 level classes in each of the two semesters during which the project was run. The undergraduate psychology students who participated received course credit for completing the protocol. Other participants who responded to widely placed advertisements (see Appendix F) were offered a five-dollar petrol voucher as a token of thanks for the time they spent completing the protocol. All participants completed the same procedures. The procedures carried out for the project were approved by the Waikato Ethics Committee, the nationally accredited ethical review body for the area in which the study was carried out.

Self-Report Measures

As in the two previous studies, there were several measures utilised. Those common to all three studies were:

- Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988)
- Sexual Desire Questionnaire (Beck, Bozman, & Qualtrough, 1991)
- Sex Anxiety Inventory (Janda & O'Grady, 1980)
- Hurlbert Index of Sexual Desire (Apt & Hurlbert, 1992)

- Mood Awareness Scale (Swinkels & Guiliano, 1995)
- A brief demographic questionnaire seeking information about ethnicity, religious affiliation, relationships, and sexual experience, from participants.

Further measures utilized in the second study were also employed in this project. These were the Sexual Desire Inventory-2 (Spector, Carey, & Steinberg, 1996) and the Body-Esteem Scale (Franzoi & Shields, 1984).

A measure of social desirability, the Marlowe-Crowne Scale (Crowne & Marlowe, 1964), was also included in this study. The additional questionnaire utilized in this study appears in Appendix F.

Apparatus

Participants were tested on IBM-compatible 120 Pentium computers equipped with 16 MB RAM, Digital 14 inch colour monitors, and standard two button mouse devices. Each of the mouse buttons had a label affixed to it reading *yes* (left mouse button) or *no* (right mouse button) to assist participants remembering which key to use during the rapid response sections of the protocol.

The programme, which ran the protocol, was written using Pascal for Windows and the Delphi version 2 programme, by the psychology department computer technician. This enabled millisecond timing of the tasks involved, and direct writing of timing and rating data into *Word Perfect* files for conversion to *Statistica* files for eventual analysis.

Each of the two computers used was set up in a small windowless laboratory room, which was occupied only by the participant once the procedure had been explained to each of them. Each participant was encouraged to arrange the monitor so they would be comfortable viewing the screen for much of the 90 minutes during which they would be completing the protocol.

While the original slides were available in a 1024 by 768 pixel format, this had to be altered to a 800 by 600 pixel format to allow for the greatest possible definition of the stimuli from the *International Affective Picture System (IAPS)* within the programme as written for the experiment. The difference in viewed picture quality was not easily detectable.

Ratings were recorded on the Self-Assessment Manikin (SAM) scale as used by Lang, Bradley, and Cuthbert (1995). This figure was incorporated into the computer programme written by the computer technician and a print of the screen version as used appears in Figure 5.1. Ratings were chosen by means of participants sliding the cursor along the horizontal rating bar under each scale until it was placed in correspondence with the feeling they wished to record. The affective valence dimension showed a figure that ranged from *happy* to *unhappy*. The SAM pictures on this scale ranged from a manikin smiling with raised eyebrows at one end of the scale, to another frowning with knitted eyebrows at the other end of the scale. The arousal dimension sought a rating between *excited* and *calm*. The manikin depiction of this scale ranged from a figure having an active body and eyes wide open to another with an inactive body and closed eyes. The dominance or control dimension ranged from *controlled* to *in control* with the manikin figure growing from a small in size model depicting the feeling of being controlled, to a larger version for the *in control* end of the scale. Each dimension was scored on a nine-point scale. Scores from this process were directly entered into individual data files for each participant.

Pen and paper questionnaires were placed beside the computer for each person, since these were to be completed after the first computer based task.

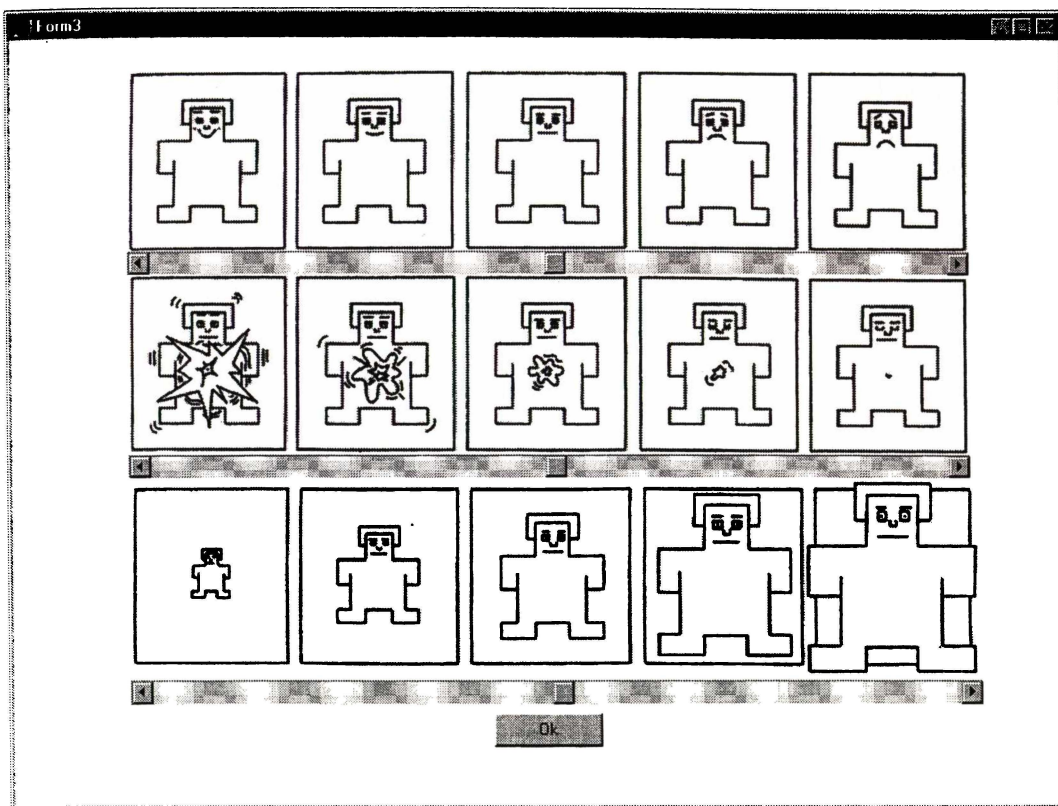


Figure 5.1. Self-Assessment Manikin (SAM) screen as viewed by participants for rating phase of the picture experiments. Top scale allows rating of valence, middle scale is for rating of arousal, and bottom scale is for ratings of control or dominance for picture viewed. Grey bars are horizontal scroll bars referred to in text, along which cursor is moved by participant to record their ratings. (Adapted from Lang, Bradley, & Cuthbert, 1994 ©).

Pictorial Stimuli

Colour slides representing four types of images were chosen from the *International Affective Picture System (IAPS)* (Lang, Bradley, & Cuthbert, 1996). Those chosen were 19 'high valence sexual' slides, 19 'high valence non-sexual' slides, 11 neutral valence slides, and 12 'low valence' unpleasant slides. The high valence slides were chosen so that the American ratings for each were as closely matched as possible. This task was carried out manually by choosing nine slides from the sexual and non-sexual groups that were high in valence and arousal for both genders, then five further slides that were high in valence and arousal for females only, and five more that were high in valence and arousal for males only. Thumbnail prints of these slides, and their respective ratings, together with those for the matched slides are shown in Appendix F.

A further selection from these groups was chosen to be the 30 pictures for the first part of the protocol, a slide-rating task. This sub-selection consisted of 10 high valence, sexual content slides (slides 4510, 4532, 4535, 4603, 4607, 4640, 4652, 4659, 4660, and 4680 from *IAPS* system), nine high valence non-sexual slides (slides 1999, 4150, 5260, 5480, 8034, 8180, 8190, 8370, 8500), five neutral slides (numbers 2840, 7002, 7050, 7233, 7235 from *IAPS*) and six low valence slides (slides 3000, 3053, 3060, 3080, 3120, 9040). All slides were presented in a predetermined pseudo-random order in each part of the protocol.

Semantic Stimuli

Words were a selection chosen from lists of words used in a previous experiment by Geer and Bellard (1996). The lists used by those authors contained words that had been unanimously categorised by participants in their sample as *romantic*, *neutral*, or *sexual*. Words not appearing as entries in the *Pocket Oxford*

New Zealand Dictionary (1997) were eliminated from the Geer and Bellard lists (*fuck* and *cunt*). In order to keep the stimuli lists matched two neutral words and two domestic words were removed from the original array of twenty words per group. A comparison of the Geer and Bellard lists of romantic, neutral and sexual words for frequency of use in the Brown corpus (Francis & Kucera, 1982) showed large discrepancies in frequency of usage between the groups (mean frequency of use romantic words = 33.7, neutral words = 33.2, sexual words = 8.1). There were also differences in the mean length of words in the Geer and Bellard lists (mean length romantic words = 6.7, neutral words = 6.1, sexual words = 7.6). However, those authors had used Gernsbacher's (1984) argument for familiarity ratings of words, rather than frequency of words appearing in print, as a measure of equal currency in the language. It was decided that for this study we would use only words that do appear with frequency of use ratings, and to make the groups of words as closely matched for usage and length characteristics as possible. In addition, ratings of familiarity, social acceptability, and emotional impact would also be collected for the words.

Seven of the Geer and Bellard sexual words did not appear in the Francis and Kucera publication (1982). The number of sexual words available from the original experiment limited the size of the three groups to nine words in each. Selection was made so that the differences between the mean length of the nine words in each group were minimised, since word length is known to influence response times in lexical decision tasks (Balota, 1994). The mean frequencies of use for the three groups of words were also factored into the choice of words, again because this word quality has been shown to affect response time. Thus, in the selection made there were nine romantic words (mean length = 7.3 letters,

mean frequency of use = 9.3), nine neutral words (mean length = 6.3 letters, mean frequency of use = 9.3), and nine sexual words (mean length = 6.5 letters, mean frequency of use = 9.3).

A comparison group of 27 non-word letter-strings was generated from the same letters, for the lexical decision task. These words were structured to be pronounceable and as close as feasible to English orthography. A complete list of the semantic stimuli, real words and non-words, appears in Table 5.1.

Procedure

The experimental procedure was explained to each participant individually by the researcher. This process was assisted by the use of a series of a series of instruction screens arranged as a slide show using the *PowerPoint* programme. These acted as prompts for the researcher, and ensured no important aspects of the protocol were omitted from the explanation. The text from those screens is reproduced in Appendix F.

Following the explanation and three practice slides each with their own rating screen, each participant worked alone completing the tasks in the sequence which follows.

Picture rating of 30 IAPS slides using the Self-Assessment Manikin (SAM) rating scale to record affective valence, arousal and dominance ratings.

Firstly, participants were shown a screen that gave a brief set of instructions recapping the procedure. For this part of the experiment the screen read:

Slide ratings

You will be shown a series of pictures.

After each picture has shown for six seconds a rating screen will appear.

You are to rate each picture as follows:-

Table 5.1

Words and Non-words Used in the Semantic Task.

orgasm	fireplace	darling
vagina	plaster	tender
screw	sponge	embrace
testicles	broom	valentine
balls	saucepan	hugging
prick	oven	beloved
nipples	groceries	cherish
intercourse	stove	caring
pussy	vase	belonging
grasom	acfilerp	graldin
ticselset	teprasl	redent
navaig	negpso	bremace
cresw	bomor	tennevile
blasl	sanapuce	gingugh
kripc	vone	delvobe
plespin	gersiocre	shechir
tricneusore	evost	cranig
sypus	seva	glenobing

Move the scroll pointer according to how each picture made you feel. You have fifteen seconds to respond.

Complete this task for each picture, then complete the questionnaire that is on the desk beside the computer.

Participants read the screen, entered the subject number that they had been given when they signed the consent form, then carried out the picture-rating procedure. They were directed to complete the questionnaire when the final screen was reached.

Questionnaire completion. Following the picture task the participants completed the questionnaire. The last page of the questionnaire directed them back to the computer screen to click on icon 2. This action brought up a screen outlining the next portion of the experiment.

Word decision task. This portion of the experiment involved a lexical decision task. Participants had to decide whether a letter string was a real word or not as quickly as possible. The task was preceded by an opening screen that read:

Word decision task

For this task you are required to watch the screen for the appearance of a letter string. When the letters appear decide as quickly as possible whether they form a real word or not.

- If the letters are a word press the LEFT mouse button immediately.

The letter string may form a nonsense string like 'dorw' which is not a real word.

- If they are not a word press the RIGHT mouse button immediately.

The participant's current data filename was displayed beneath the instructions and a start button allowed the experiment to begin. A fixation point appeared centre screen for 500 ms, then a letter string appeared for 2 seconds, or until a response was made. Each response was followed by a further fixation point symbol and letter string. The experiment was set up so that the first three responses were practice words, which were then left out of the data processing. The fixation point

plus letter string cycle was repeated until all the stimuli had been sighted and responded to. The final screen of this part of the experiment asked the participants to *Please click on Icon number 3 to continue.*

Picture viewing task. Following from the lexical decision task participants carried out a further pictorial task series. This involved a memory decision, a self-determined viewing time, and then a rating process using the same screen arrangement as in Part 1 of the experiment. This was followed by an interest statement, and an adjective-choosing task for each of the 60 images. The memory task was generated by adding 30 slides to those viewed in the first portion of the experiment and mixing the two groups. The slides were arranged in a pseudo-random order that did not allow more than three of any type of picture to be viewed in sequence. Thus the subjects had seen half of the stimuli, but not the rest, and were asked to decide whether they had seen the current slide or not. The opening screen for this series of tasks read:

Picture viewing task

This task involves viewing pictures again. Some you will have seen in Part 1; others will be new to you.

- The first thing you decide is whether you have seen the picture before. Do this as quickly as possible, responding 'yes' in the same way as in the word decision task (i.e., mouse key press, left mouse press for yes and right mouse press for no).

- Then you can view the picture until you wish to do the rating. Press the left mouse button to bring up the rating screen. Complete the rating as in Part

1. - Next a screen will ask you to rate your interest in the picture. Following

that another screen will ask you to choose an adjective for the picture from the list provided.

- Then the next picture in the series will appear. Complete these tasks for each picture, then double click on the number 4 icon.

Timing was recorded from the onset of the slide to the response made by the participant, for the duration of the viewing time allowed by the participant, and for the time taken to rate the picture. Affective valence, arousal and dominance ratings were recorded for each picture viewed, as for the first part of the experiment.

In addition, a record of the participant's interest rating was collected via a cursor manipulation on a horizontal scroll bar similar to those in the ratings screens. The screen involved in this interest rating appears in Figure 5.2.

Once participants had rated their interest in the picture just viewed, they were shown a further screen asking for them to make a choice of adjective that best described their reaction to that same picture. This screen is shown in Figure 5.3. The procedure of deciding whether the current picture was one that had been seen before, viewing the slide, rating the slide for affective valence, arousal, dominance, interest, and choosing an adjective, was repeated for the sixty different slides. When the participants had completed these picture tasks a prompt computer screen appeared asking them to move to the final part of the protocol by clicking on icon 4.

Word rating task. The final portion of the protocol involved rating the real words that had appeared in the earlier part of the present study. Participants were shown the words one at a time and asked to rate that word for familiarity to them, social acceptability, and then emotional impact. These tasks were not timed, but

were presented in a similar format to the earlier tasks, with a cursor for each rating that could be manipulated along a horizontal scroll bar. All three ratings were done on one screen for each word. A typical screen is shown in Figure 5.4. Prior to the appearance of the first word an opening screen appeared containing the following instructions:

Word rating task.

This is the final task in the series of experiments.

Here you are asked to rate each of the words that you saw in Stage 2. We want to know how familiar the words are to you, whether you think they are socially acceptable (would you use them anywhere, or only in a few places, to any-one, or only to specific people?), and how emotional you think the words are.

Follow the instructions on each screen and click on 'OK' when you have finished.

The ratings that were recorded ranged from 1 to 7 for familiarity, and 1 to 5 for social acceptability and emotional impact. However, whereas 1 indicated *not at all familiar*, and 7, *extremely familiar*, 1 on the social acceptability scale meant *acceptable* and 5 *highly unacceptable*. On the emotionality scale, 1 indicated a *highly negative* content and 5 a *highly positive* content. This different arrangement of each rating was clearly labelled on the screen, as can be seen in Figure 5.4, and was designed to discourage any automatic responding to the three scales. When they reached the end of the series of words the participants were thanked for their completing the parts of the experiment and told to see the researcher for their course credit forms, or petrol voucher.

Most participants completed the procedure in about 90 minutes.

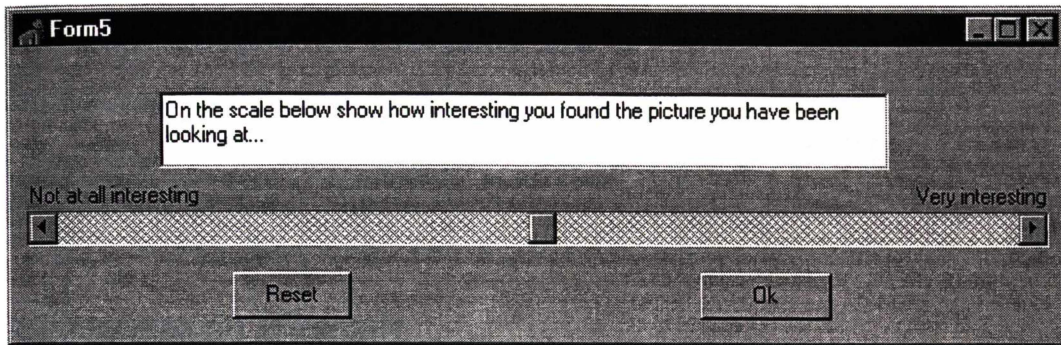


Figure 5.2. Interest rating scale used in Cues Study experiment.

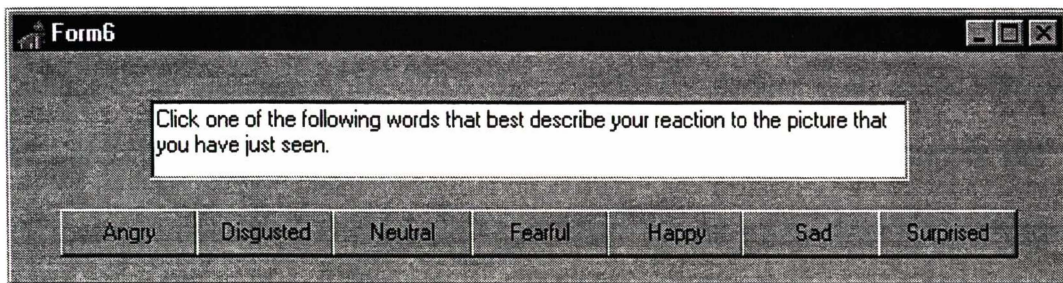


Figure 5.3. Screen used in adjective choice portion of Cues Study experiment.

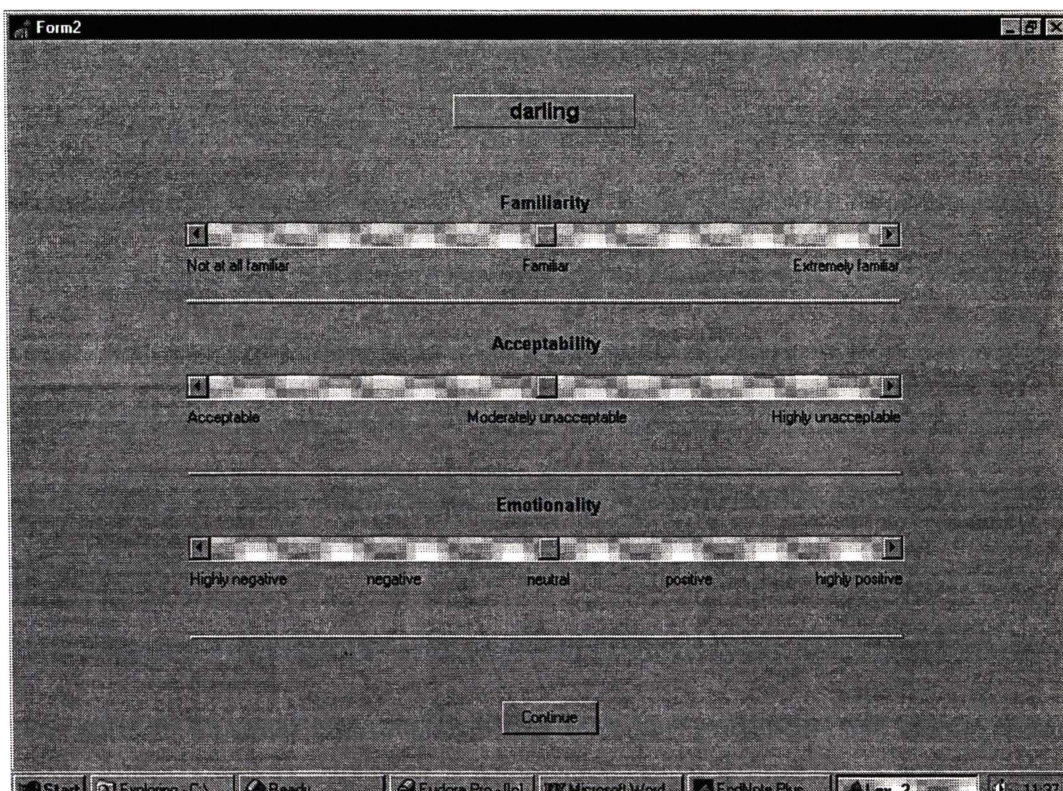


Figure 5.4. Screen used for word rating portion of Cues Study experiment.

CHAPTER 6

Results: Specific Study Components

Characteristics of sample

Participants. One hundred and ninety-three people completed the experiment, 70 of whom were males and 123 females. The sample ranged in age from 17.2 to 60.8 years ($M = 29.4$, $SD = 11.1$). For further analysis the sample was coded into age groups so that 1 was < 21 (males = 18, females = 44), 2 was > 20 and < 31 (males = 27, females = 35), 3 was > 30 and < 41 (males = 12, females = 21), and 4 was > 40 years of age (males = 13, females = 23).

Ethnicity. Most participants categorised themselves as *Pakeha/European* with respect to ethnicity ($n = 148$), 19 described their ethnicity as *Mixed*, and 14 as *Maori*. Two were *Pacific Islanders* and 10 endorsed the *Other* category.

Religious affiliation. A large proportion of the sample reported being brought up in no religion ($n = 69$), 41 grew up as *Anglicans*, 34 were *Roman Catholic* in upbringing, 14 were brought up as *Presbyterians*, and 33 endorsed *Other*. Current religious affiliations were quite different. More participants affiliated with no religion ($n = 116$), 13 currently affiliated with *Roman Catholicism*, 10 with *Anglicanism*, 3 with *Presbyterianism*, and 49 endorsed *Other*.

Sexual relationships and preferences. Seventy-six participants reported not being in a sexual relationship at the time they completed the questionnaire (39.6%). Of those in relationships, 6 said they were *in sexual relationships with several individuals*, 36 *in a sexual relationship with one person only*, 40 *in a long*

term sexual relationship with one person only, 9 reported being in a *de facto relationship*, and 49 endorsed *married*. Thus over 60% were in a sexual relationship at the time they answered the questionnaire.

The majority of the sample stated that they preferred partners of the opposite sex ($n = 160$), 22 preferred same sex partners, four said they preferred partners of both sexes, five said they did not know their sexual preference, and two people said they preferred to have no partners.

Those who had never had a sexual relationship were in the minority in this sample ($n = 23$). The same number of people reported having had one sexual partner only, but the majority reported two or more sexual partners ($n = 146$). So 88% of the sample reported having at least one or more sexual partners.

Looking at the data from the current relationship query, together with the above sexual experience query, it can be seen that in this sample those who were not currently in a sexual relationship, but did have a sexual partner in the past numbered 56. Thus there were 19 individuals who had never had a sexual partner, and were not currently in a sexual relationship.

English language usage. For most of the sample English was their primary or most used language ($n = 183$). The data from the 10 participants for whom this was not the case were omitted from the word task analyses.

In summary the sample represented a range of ages, backgrounds and sexual experience.

Self-Report Measures

Positive and Negative Affect Schedule (PANAS). Scores for the positive affect scale ranged from the minimum possible score of 10 to 48 ($M = 29.2$, $SD = 6.9$) out of a possible 50. Higher scores represent a tendency to higher levels of

positive affect. The data were normally distributed (Shapiro-Wilks's $W = .98$, $p > .05$) and there was no significant difference with respect to gender for this measure. There was no significant difference between scores obtained by people in different age groups, nor were there any significant differences found with respect to the other demographic parameters.

The scores for the negative scale of the PANAS ranged from the minimum of 10 to 43 ($M = 14.7$, $SD = 5.8$) out of a possible 50. Higher scores on this scale indicate more negative affect. The data were not normally distributed since a large number of participants recorded scores in the 10 to 15 range (46%). There was a positively skewed distribution (+2.1 where 0 = symmetrical distribution) and a kurtosis of 5.1--there was a peaking of scores in the 10 to 15 range, while scores in other ranges were below the normal fit line, and the top end of the distribution was leptokurtic. A non-parametric Wald-Wolfowitz runs test established that there were no significant gender differences on this aspect of the measure. (This statistical test was also used to confirm that there were no significant differences with respect to any of the other demographic variables.) The distributions of the positive and negative scales of the PANAS are shown in Figure 6.1.

There was a negative, but not significant, correlation between the positive affect mean and the negative affect mean for this sample ($r = -.12$). This suggests the orthogonal nature of these two scales with respect to each other, and accords with findings in the previous two studies in this series as well as findings reported elsewhere.

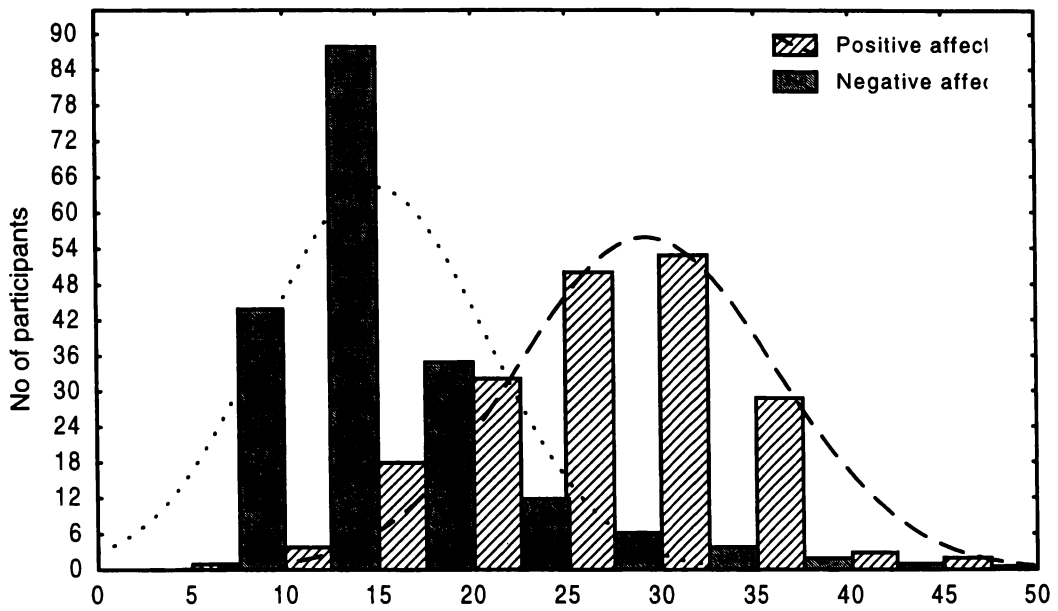


Figure 6.1. Histogram of positive and negative affect scores in Cues Study.

Sexual Desire Questionnaire. This questionnaire asked a series of questions designed to establish how participants view sexual desire and things that affect desire in their lives.

“Q.1: How often do you experience sexual desire?” The majority of the participants reported frequency of sexual desire in the three categories ranging from several times per week to several times per day ($n = 154$). Within that range 63 (33%) endorsed the *several times per week* item, 27 (14%) the *once per day* option, and 64 (33%) the *several times per day* item. Five (2.6%) reported *never* experiencing sexual desire, 10 (5.2%) endorsed either the *several times per year* or *once per month* categories, and 12 (6.2%) reported experiencing sexual desire *several times per month*, and another 12 (6.2%) *once per week*.

There was gender difference with respect to this question (Wald-Wolfowitz runs test, $Z = -3.16$, $p < .01$), males reporting a mean frequency of 7.3 out of a possible 8, while females reported 5.8. The endorsements by each gender, in the categories offered are summarised in Table 6.1.

“Q.2: Have you ever been involved in sexual activity when you did not experience a high level of sexual desire?” One hundred and forty-three (74%) persons in the sample reported that they had been involved in sexual activity without a high level of sexual desire. Looking at this question by gender, 47 (67%) of the males endorsed this question positively, while 96 (78%) of women reported that they had experienced sex with little desire. Of the 50 who had not had sex with little desire, some were those who had never had a sexual relationship ($n = 16$).

Table 6.1

Frequency of Experiencing Sexual Desire by Gender (Percentages in brackets)

Category endorsed	Males (<i>n</i> = 70)		Females (<i>n</i> = 123)	
Never	0	(0)	5	(4)
Several times per year	0	(0)	3	(2)
Once per month	1	(1)	6	(5)
Several times per month	1	(1)	11	(9)
Once per week	2	(3)	10	(8)
Several times per week	13	(19)	50	(41)
Once per day	11	(16)	16	(13)
Several times per day	42	(60)	22	(18)

“Q.3: How often do you experience sexual desire without accompanying sexual behaviour?” This question required endorsement of a frequency; options ranged from *always*, through *sometimes*, *occasionally*, *seldom* and *never*. The most frequently endorsed answer was *seldom*; that is 109 participants (57% of the sample) reported that they seldom had sexual desire without accompanying sexual behaviour. This was true of both males and females. A further 39 (20% of the sample) said they occasionally had sexual desire without accompanying sexual behaviour, and 26 (14%) said they sometimes fell into this category. Six people (3%) said they always had desire with no proximal sexual behaviour, and 13 (7%) said they never had sexual desire without accompanying sexual behaviour. There were no significant differences with respect to gender and age group for this question.

“Q.4: Which of the following most accurately reflects your level of sexual

desire?” Options for answering this question were *sexual dreams, sexual fantasy, day dream, intercourse, masturbation, non-intercourse sexual contact, and genital arousal*. The responses to this question are summarised by age group and gender in Table 6.2.

Table 6.2

Endorsement of Behaviours Reflecting Sexual Desire, by Gender and Age Group

Item endorsed	Gender	< 21 years	>21 and < 31 years	>31 and < 41 years	> 40 years	Row Totals
Sexual dreams	Males	<i>n</i> = 0	<i>n</i> = 2	<i>n</i> = 0	<i>n</i> = 0	2
	Females	<i>n</i> = 0	<i>n</i> = 5	<i>n</i> = 0	<i>n</i> = 0	5
Sexual fantasy	Males	<i>n</i> = 1	<i>n</i> = 5	<i>n</i> = 2	<i>n</i> = 4	12
	Females	<i>n</i> = 2	<i>n</i> = 6	<i>n</i> = 4	<i>n</i> = 2	14
Day dream	Males	<i>n</i> = 4	<i>n</i> = 8	<i>n</i> = 2	<i>n</i> = 0	14
	Females	<i>n</i> = 4	<i>n</i> = 9	<i>n</i> = 3	<i>n</i> = 1	17
Intercourse	Males	<i>n</i> = 3	<i>n</i> = 5	<i>n</i> = 3	<i>n</i> = 6	17
	Females	<i>n</i> = 12	<i>n</i> = 13	<i>n</i> = 4	<i>n</i> = 10	39
Masturbation	Males	<i>n</i> = 1	<i>n</i> = 6	<i>n</i> = 2	<i>n</i> = 1	10
	Females	<i>n</i> = 1	<i>n</i> = 2	<i>n</i> = 4	<i>n</i> = 6	13
Non-intercourse sexual contact	Males	<i>n</i> = 2	<i>n</i> = 1	<i>n</i> = 3	<i>n</i> = 1	7
	Females	<i>n</i> = 6	<i>n</i> = 3	<i>n</i> = 1	<i>n</i> = 2	12
Genital arousal	Males	<i>n</i> = 1	<i>n</i> = 4	<i>n</i> = 1	<i>n</i> = 0	6
	Females	<i>n</i> = 3	<i>n</i> = 7	<i>n</i> = 6	<i>n</i> = 4	20
Column Totals		40	76	35	37	188*

Note. * Five participants did not provide data for this question.

In this sample the differences between the genders were not statistically significant.

When an age group comparison was done, the youngest age group was significantly different to the 40+ age group with respect to items endorsed, Wald-Wolfowitz runs test, $Z = -2.8, p < .01$. The 21 to 30 year old group was also significantly different to the oldest group, Wald-Wolfowitz runs test, $Z = -2.9, p < .01$.

“Q.5: Do you feel that the amount of sexual desire you experience is easily affected by the events happening in your life?” Responses showed 146 (76%) of the sample thought events did affect their desire levels. The kinds of events that decrease desire most often listed by participants included stresses, both physical and emotional ($n = 48$), workload ($n = 35$), relationship factors ($n = 33$) and tiredness ($n = 13$) or health concerns ($n = 6$). Factors reported to increase sexual desire included relationship issues ($n = 52$), surrounding stimuli ($n = 22$), attraction ($n = 18$), and general well-being factors such as relaxation ($n = 6$), happiness ($n = 8$), leisure time ($n = 6$) and exercise ($n = 4$). Visual stimuli were specified by 19 participants, and stimuli affecting other senses by 4 people. Mood ($n = 8$), self-esteem ($n = 6$) and menstruation ($n = 4$) were other factors suggested by participants as affecting sexual desire.

Of those who did not think events influenced their sexual desire, 16 were male and 30 were female.

“Q 6: Which type of stimulation has the greatest effect on increasing your level of sexual desire?” For this question the most important stimulus for each participant was noted. Options given were *visual*, *auditory (sounds)*, *touch*, *olfactory (smell)*, and *emotional*. Seventy-six participants (39% of the sample)

regarded touch as the most important stimulation, with visual regarded as the most important stimulus type by 47 people (24%). Emotional stimuli were endorsed as most important by 40 participants (21%), and olfactory stimuli were endorsed by 19 persons (10%). Auditory stimuli were deemed most important to them by 10 people (5% of sample). Stimulus endorsements by each gender are shown in Figure 6.2.

“Q.7: Has the recent increase in media publicity about sexually communicable diseases changed your desire for sexual activity with other persons?” There were 84 (44%) participants who thought that publicity had altered their desire for sexual activity, while 107 (56%) said that it had not. More males said *no* (47) than *yes* (22), while more females said *yes* (62) than *no* (60). Examination of the responses by age groups showed an even split within each age group with respect to this question.

“Q.8: Do you feel that it is necessary to love someone before you could feel sexual desire toward them?” Responses to this question indicated that most people ($n = 157$, 81%) thought it was not necessary to love someone before they could feel sexual desire toward them. A higher proportion of males thought this was the case (90%, $n = 63$) than females (76%, $n = 94$).

“Q.9: How can you tell that you have an increased desire for sex?” Almost two-thirds of participants listed physiological signs such as genital ($n = 41$) and other sensations ($n = 37$), or both ($n = 36$), as signs of heightened sexual desire. More frequent thoughts about sex were listed by 53 participants in response to this query, and 39 wrote that increased attention to their partner, or increased intimacy with their partner also signified increased sexual desire. Other signs listed included daydreams or fantasies, wishing for contact or touch,

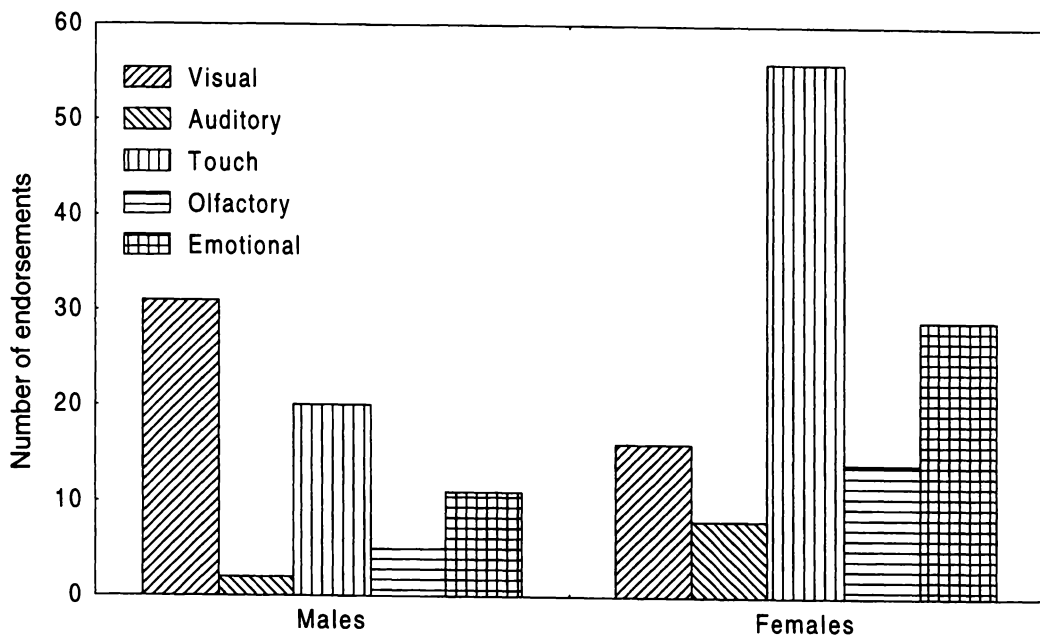


Figure 6.2. Stimuli judged to most affect sexual desire, by gender.

increased tactile awareness, feelings of excitement, increased happiness and confidence as signs of increased desire. Eight people reported anxiety or increased nervousness and frustration associated with increased sexual desire.

“Q.10: What other things do you feel affect your desire for sex?” Answers to this question paralleled those for question 5. Emotional, physical and financial stresses were said by 14 people to decrease sexual desire, and workload was given by another 14 as also affecting them. Tiredness ($n = 21$) and health problems ($n = 7$) were further factors reported as affecting sexual desire. Seventeen people gave relationship factors as affecting their sexual desire, some meaning family or children, others mentioning partners or friends. Increases in sexual desire were attributed to stimuli by many participants. Visual stimuli were specifically mentioned by 36 participants, stimuli affecting other senses by 8, and general stimulation from their surroundings were reported as affecting sexual desire in thirteen participants. Attraction to a partner or potential partner increased desire in 28 participants, while physical or emotional proximity to ($n = 13$) or involvement with a partner ($n = 23$) were also said to increase sexual desire. Other factors listed as affecting desire included alcohol ($n = 28$); participants were not in agreement as to whether this factor increased ($n = 6$) or decreased ($n = 2$) desire, and 20 merely stated alcohol had an effect without specifying which type of effect. Mood was cited by 25 people as affecting sexual desire in this question, and partner behaviour was also seen as an important contributor to desire by 23 people.

Several of these suggestions may have been listed in the free-format sections of this questionnaire as secondary factors to those specifically sought in, for example, the stimuli, or earlier queries about events affecting sexual desire.

Mood was recorded by several participants ($n = 40$) as affecting sexual desire. There was a greater tendency in this sample to report physiological responses as denoting increased sexual desire, than had been evident in the earlier studies.

Correlation of the responses to this questionnaire showed the frequency of experience of sexual desire to be significantly correlated with experience of desire with no accompanying sexual behaviour ($r = .25, p < .001$). The desire without behaviour query was also significantly correlated with responses about events influencing sexual desire, but negatively so ($r = -.22, p < .01$). In this sample the query about experiencing sexual behaviour without a high level of sexual desire was significantly correlated with the scores on the Marlowe-Crowne Social Desirability scale ($r = .15, p < .05$), a finding that suggests the respondents felt sex was expected of them in such situations.

Overall, this sample confirmed the understanding that sexual desire is a multi-faceted phenomenon, and dependent on factors both internal and external to the individual concerned.

Sex Anxiety Inventory (SAI). The scores recorded by participants covered the maximum possible range from zero to 100, where 100 denoted a high level of anxiety toward sexual matters. The mean score was 43 ($SD = 19.9$). The scores from this inventory were not normally distributed (Shapiro-Wilks's $W = .97, p < .01$). There was a positive skew (0.4) with a peak in scores between 20 and 40. This being the case, and mindful of the convention that data with indices of skew less than ± 0.5 are generally treated as being normally distributed (see e.g., Runyon & Haber, 1989, p.140), parametric testing of hypotheses relating to this variable was carried out.

Males produced a mean score of 38.4 ($SD = 18.3$) while the mean female sexual anxiety score was 45.6 ($SD = 20.4$). An ANOVA showed that this was a significant main effect of gender, $F(1, 190) = 5.9, p < .05$. A Levene's test showed homogeneity of variance.

While there was a reduction in anxiety scores as age increased in this sample, this effect was not statistically significant when tested by ANOVA.

Hurlbert Index of Sexual Desire (HISD). The scores for this measure varied between 11 and 100 ($M = 67.0, SD = 14.2$) out of a possible 100, where a higher score suggests a higher level of sexual desire. The data from the 187 participants who completed this measure were normally distributed (Shapiro-Wilks's $W = .98, p > .05$). In this sample the Cronbach's alpha was .93, and there was an average inter-item correlation of .39.

The mean score for males was 74.2 ($SD = 11.9$), while that for the females was 62.8 ($SD = 13.7$). This difference was shown to be statistically significant by ANOVA, $F(1, 185) = 33.4, p < .001$. The distribution of scores on the HISD by gender is shown in Figure 6.3.

There were no statistically significant age effects with this measure.

Mood Awareness Scale. Scores on this measure ranged from 18 to 59 out of a possible 60, where a higher score indicates a greater level of mood awareness in an individual. The data were normally distributed (Shapiro-Wilks's $W = .98, p > .05$). The mean score was 43.0 ($SD = 6.6$).

There were no statistically significant gender or age group differences for this measure. The scale has two sub-scales quantifying the mood monitoring and mood labelling components of the measure. In the developmental studies these sub-scales correlated positively and significantly ($r = .21$). However in this study

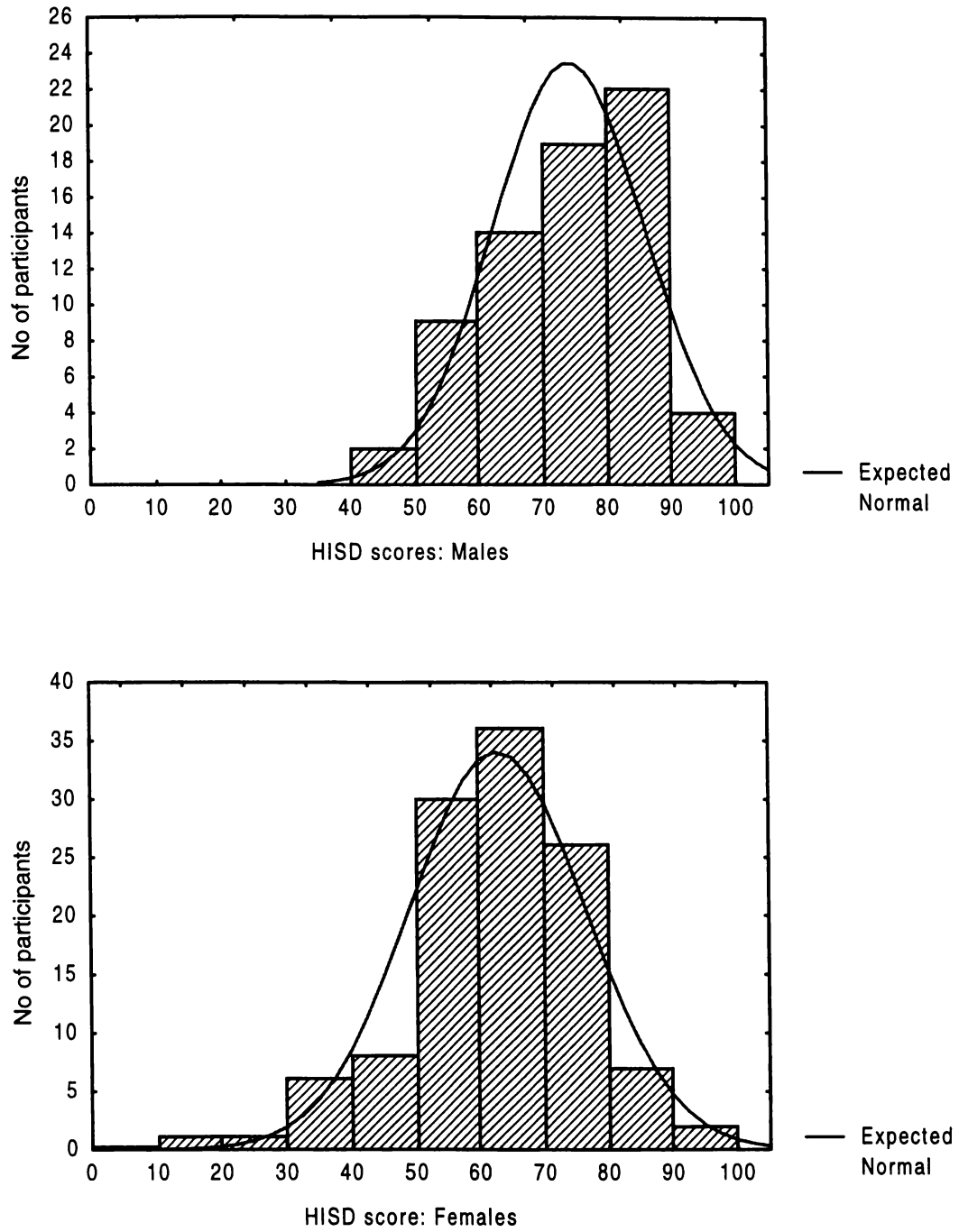


Figure 6.3. Histograms of scores from Hurlbert Index of Sexual Desire in Cues Study.

this study the correlation was not significant ($r = .04, p > .05$). The authors of this scale had also found a significant positive correlation of mood awareness with the positive affect scale of the PANAS ($r = .34, p < .001$). In this sample the correlation was .06 and not statistically significant.

Sexual Desire Inventory (SDI-2). This measure was completed by all the participants and scores ranged from 3 to 99 out of a possible 109 ($M = 61.8, SD = 17.3$). Low scores indicate a low level of sexual desire. The data were not normally distributed (Shapiro-Wilks's $W = .96, p < .001$). The negative skew index was -0.65, largely due to the numbers of participants scoring between 60 and 80. The level of kurtosis was 1.23. The modal value was 55 ($n = 10$). This scale had a Cronbach's alpha for this sample of .89, indicating a good reliability and little error in the variances between participants. The average inter-item correlation was .36, indicating the items measure the same construct.

The total score is comprised of two sub-scales, the dyadic scale, and the solitary scale, and two other questions. Scores on the dyadic aspect of the measure ranged from 3 to 59, while the solitary scores ranged from 0 to 23. There was a significant correlation between the dyadic sub-scale and the solitary sub-scale of .40. This is in accord with the finding from the Picture Rating Calibration Study (see Chapter 3), where a similar level of correlation between these two sub-scales was found in a smaller sample.

The mean scores for males were 46.2 ($SD = 7.4$), 10.9 ($SD = 6.4$), and 69.7 ($SD = 15.5$) for the dyadic, solitary, and total scales respectively. Females scores were generally lower, with means calculated as 38.8 ($SD = 10.5$), 7.4 ($SD = 6.2$), and 56.9 ($SD = 17.0$) for the dyadic, solitary and total scales respectively.

Distributions of scores for the dyadic and solitary sub-scales of this measure for each gender are shown in Figure 6.4.

There were significant gender differences on all three aspects of the scoring of this measure; (Kruskal-Wallis non-parametric ANOVA by ranks)

Dyadic, $H(1, N = 193) = 33.7, p < .001$; $\chi^2(1, N = 193) = 23.5, p < .001$;

Solitary, $H(1, N = 193) = 13.2, p < .001$; $\chi^2(1, N = 193) = 3.8, p < .05$;

Total, $H(1, N = 193) = 34.7, p < .001$; $\chi^2(1, N = 193) = 37.9, p < .001$.

There was no statistically significant age group effect.

Body-Esteem Scale (BES). Total scores of body-esteem ranged from 71 to 152 out of a possible 175, with a mean of 102.2 ($SD = 15.3$) recorded. Higher scores indicate a greater sense of body-esteem in the individual. The total scores were not normally distributed (Shapiro-Wilks's $W = .97, p < .05$). The skewness statistic of .44 suggests that the data can be treated ($< \pm .5$) as normally distributed (see e.g., Runyon & Haber, 1989, p.140). The means for women ($M = 99.6, SD = 14.2$) were lower than those for men ($M = 106.9, SD = 16.2$). This was a significant main effect of gender as confirmed by a one-way ANOVA, $F(1, 190) = 10.5, p < .01$.

There were no statistically significant differences found on the body-esteem measure with respect to age groups.

This measure has three sub-scales, which differ slightly in emphasis for each gender. The first sub-scale relates to physical attractiveness for males, but is described as a sexual attractiveness scale where females are concerned. The second sub-scale deals with upper body strength for males but is termed weight concern for females. The third scale deals with physical condition for both genders.

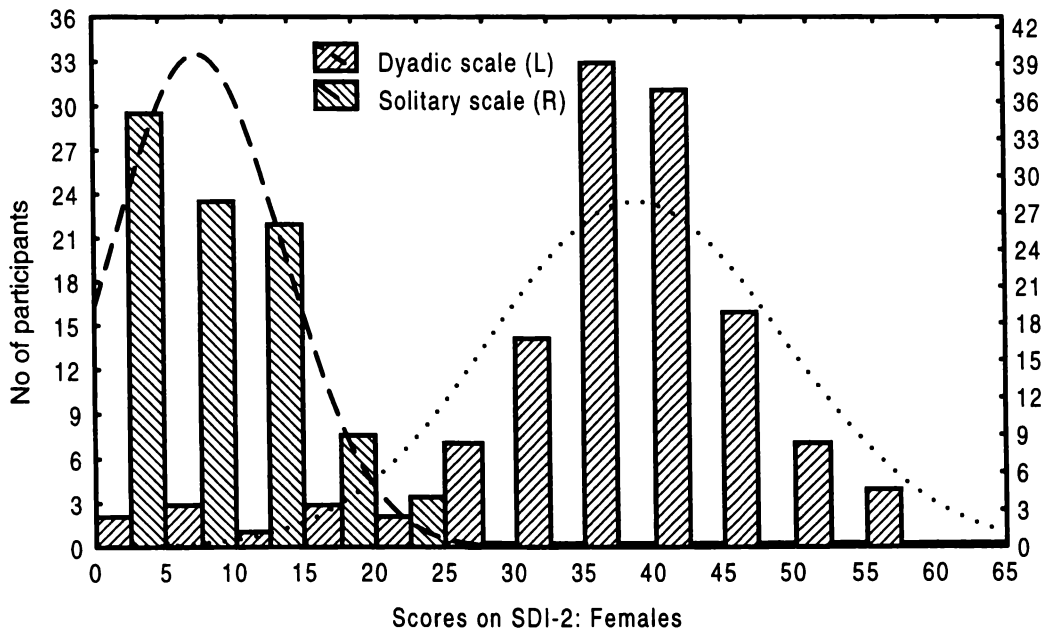
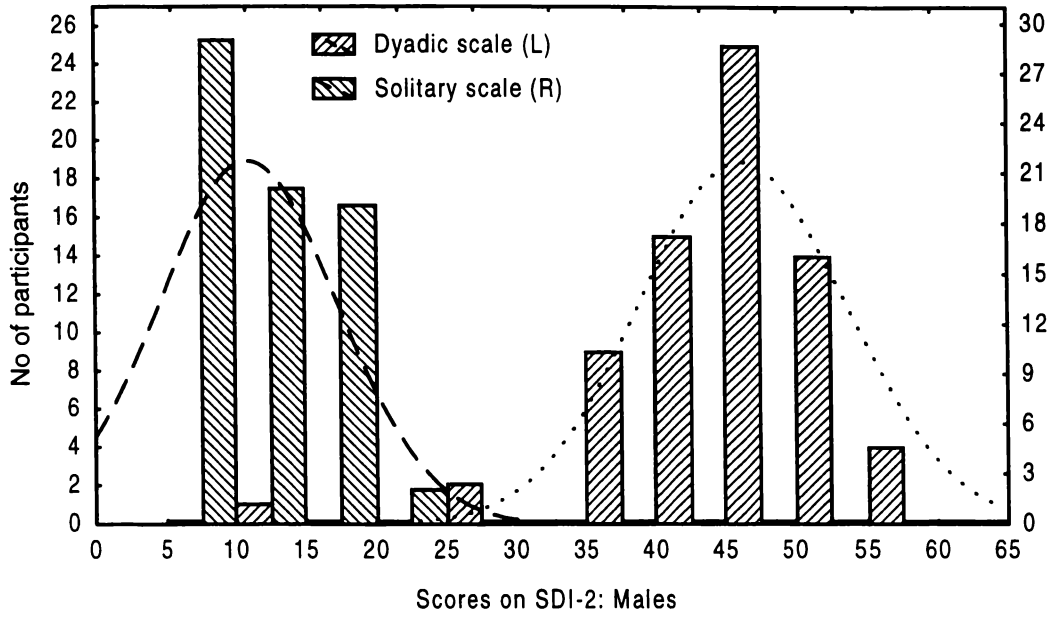


Figure 6.4. Histograms of scores on Sexual Desire Inventory-2 from Cues Study

Men recorded a mean score of 33.5 ($SD = 6.3$) on the upper body strength sub-scale, while the mean score for women was 28.0 ($SD = 8.1$), indicating women were less likely to think positively about their bodies with respect to items associated with weight. There was also more variability among women with respect to this sub-scale. Statistical analysis by one-way ANOVA (distribution of this sub-scale was normal) confirmed that scores on this sub-scale were significantly different by gender, $F(1, 190) = 24.3, p < .001$.

The other two sub-scales showed no significant differences by gender.

Marlowe-Crowne Scale. Participants scored between 2 and 29 out of a possible 33 on the Marlowe-Crowne Scale ($M = 13.0, SD = 4.8$). Higher scores are said to indicate a greater need for approval. The data were normally distributed (Shapiro-Wilks's $W = .97, p > .05$).

The mean scores for both men and women were 13.0, with standard deviations of 4.7 and 4.9 respectively. There were no gender or age group effects on this variable.

Normal scores from published research with other samples were higher than the mean levels in this sample (Paulhus, 1991) indicating no detectable levels of socially desirable responding bias in the data.

Integration of findings. A summary of the correlation between self-report measures is given in Table 6.3. There was significant, but low, negative correlation between positive affect and sexual anxiety. The significant relationship with body-esteem was positive; there was a similar positive significant relationship with between negative affect and solitary sexual desire. Strong negative correlations between the anxiety measure and Hurlbert Sexual Desire Inventory ($r^2 = .212$), and the Sexual Desire Inventory-2 ($r^2 = .240$), were also

Table 6.3

Correlation Between Self-Report Measures

	1	2	3	4	5	6	7	8
Positive PANAS ¹ [1]	-	.008	.023	.014	.005	.020	.040	.010
Negative PANAS ² [2]	-.09	-	.123	.002	.003	.017	.036	.014
SAI ³ [3]	-.15*	.35***	-	.212	.014	.240	.078	.014
HISD ⁴ [4]	.12	-.04	-.46***	-	.044	.436	.102	.004
MAS ⁵ [5]	.07	-.05	-.12	.21**	-	.040	.029	.0001
Mood monitoring	.12	.06	.02	.20**				
Mood labelling	-.02	-.13	-.20**	.10				
SDI-2 ⁶ [6]	.14	-.13	-.49***	.66***	.20**	-	.078	.010
Dyadic	.14	-.09	-.46***	.69***	.22**	.86***		
Solitary	.06	-.15*	-.34***	.35***	.11	.78***		
BES ⁷ [7]	.20**	-.19*	-.28***	.32***	.17*	.28***	-	.078
Sex attraction	.14	-.16*	-.39***	.42***	.21**	.33***		
Weight concern	.06	-.08	-.09	.14	.05	.18*		
Physical condition	.28***	-.21**	-.18*	.17*	.13	.11		
Marlowe-Crowne ⁸ [8]	.10	-.12	-.06	.01	-.01	-.10	.28***	-

Note. Correlation statistics (r) appear below diagonal in lower left of table, while strength of association (r^2) statistics appear in upper right of table.

¹Positive affect scale, ²Negative affect scale, of the Positive and Negative Affect Schedule; ³Sex Anxiety Inventory; ⁴Hurlbert Index of Sexual Desire; ⁵Mood Awareness Scale; ⁶Sexual Desire Inventory-2; ⁷Body-Esteem Scale; ⁸Marlowe-Crowne Social Desirability Scale.

* $p < .05$; ** $p < .01$; *** $p < .001$.

evident. The relationship between the sexual anxiety measure and the Body-Esteem measure was weaker ($r^2 = .028$), but statistically significant ($p < .001$).

The low correlation between all of these measures and the Marlowe-Crowne Scale of social desirability suggests little socially desirable responding. The one significant correlation--with the body-esteem scale--is not unexpected given the reported tendency of the Marlowe-Crowne to indicate 'impression management' concerns, an area closely allied to how one reports on feelings about

body concerns (Paulhus, 1991). Meston, Heiman, Trapnell, and Paulhus (1998) also found a significant correlation between socially desirable responding and body image.

The correlation between the sexual desire measures themselves is interesting for the degree of difference suggested by the figure itself ($r = .69$, $p < .001$). While the strength of the association is relatively high ($r^2 = .476$), the two scales, the SDI-2 and the HISD appear to assay cognition on the one hand and behaviour on the other. While both require recording of intensity of response, the HISD appears to be designed for assessment of sexual desire in a couple's situation rather than assessment of desire *per se*. In order to assess factors contributing to sexual desire self-report measures more clearly, the relationships between all the measures used need to be more closely examined.

One way to envisage how the clinical factors assessed vary within this sample is to examine a graphical representation of the measures. Figure 6.5 shows the clinical measures expressed as percentages and compared by gender.

The graphical depiction of the relationships between the measures together with the correlation findings suggested that further analysis via multiple regression technique analysis of the measures might be useful. When the positive affect and sexual anxiety scores, together with the sub-scales of mood monitoring, mood labelling and sexual attractiveness/physical attractiveness were used to predict the HISD levels, the equation found was as follows:

$$39.18 + .022 \text{ PPANAS} - .36 \text{ SAI} + .17 \text{ MM} + .01 \text{ ML} + .26 \text{ SA} \quad (1)$$

where PPANAS = positive mood levels, SAI = sexual anxiety levels, MM = mood-monitoring score, ML = mood labelling score, and SA = sexual attractiveness/physical attractiveness sub-scale score from the Body Esteem Scale; $R = .56$, $R^2 = .31$, Adjusted $R^2 = .29$, $F(5, 175) = 16.05$, $p < .001$, Std Error of estimate: 11.77.

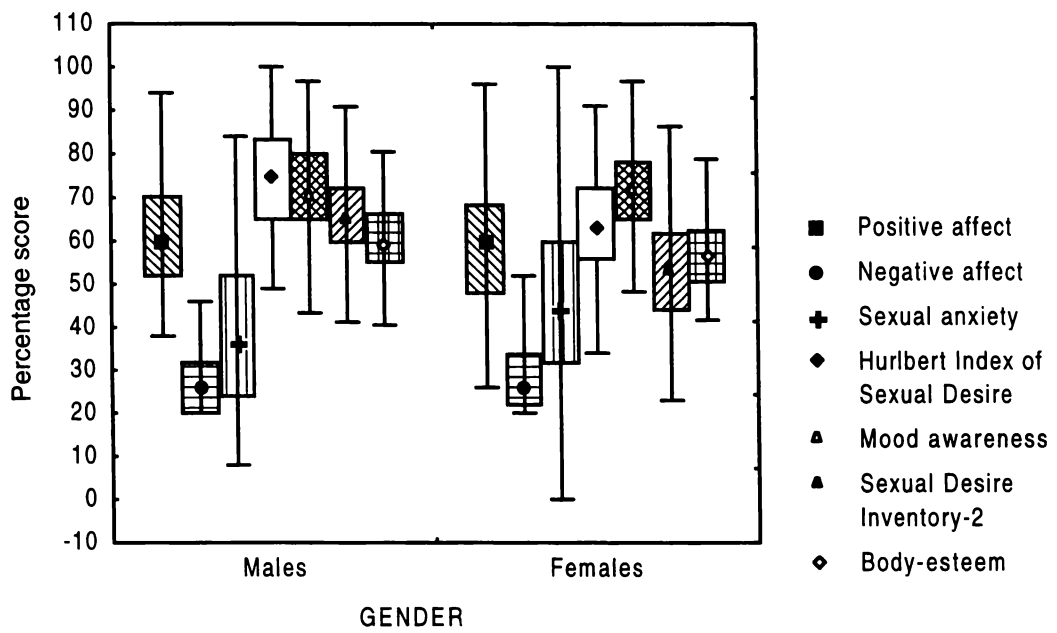


Figure 6.5. Comparison of self-report measures expressed as percentages across genders.

Those variables that contribute significantly are the sexual anxiety score, the mood monitoring score and the sexual attractiveness/physical attractiveness score. Equation 1 accounts for 31% of the variance in the HISD score. The residuals from this analysis were normally distributed.

Using the same technique with respect to the SDI-2 measure, a multiple regression equation was found as follows:

$$46.99 + .07 PPANAS - .46 SAI + .19 MM - .03 ML + .11 SA \quad (2)$$

where *PPANAS* = positive mood levels, *SAI* = sexual anxiety levels, *MM* = mood monitoring score, *ML* = mood labelling score, and *SA* = sexual attractiveness/physical attractiveness sub-scale score from the Body-Esteem Scale; $R = .57$, $R^2 = .32$, Adjusted $R^2 = .30$, $F(5, 181) = 17.10$, $p < .000$, Std Error of estimate: 14.43.

In this case those variables that contribute significantly are the sexual anxiety levels and the mood monitoring sub-scale of the Mood Awareness Scale. Equation 2 accounts for 32% of the variability in the SDI-2. The residuals from this analysis were also normally distributed.

Both of these analyses have included data from all participants regardless of gender. Since there are significant gender differences with respect to both the HISD and the SDI-2 a further analysis was done by gender.

Because there were data from only 65 males in this sample, the regression results are not as reliable as for a larger sample. The equation for the males with respect to the HISD accounted for 9.6% of the variance of the measure, $F(5, 59) = 1.25$, $p > .05$. For the SDI-2, the equation accounted for 10.5% of the variance, $F(5, 59) = 1.38$, $p > .05$.

The female sample was larger and yielded statistically significant results. For the HISD, the equation generated was:

$$33.90 - .05 PPANAS - .41 SAI + .11 MM + .39 SA \quad (3)$$

where *PPANAS* = positive mood levels, *SAI* = sexual anxiety levels, *MM* = mood monitoring score, and *SA* = sexual attractiveness sub-scale score from the Body-Esteem Scale; $R = .70$, $R^2 = .49$, Adjusted $R^2 = .47$, $F(5, 110) = 21.31$, $p < .001$, Std Error of estimate: 10.03.

This accounts for 49% of the variability in the HISD figures for females. The statistically significant variables in Equation 3 are the sexual anxiety scores and the sex attitudes sub-scale figures.

The SDI-2 was predicted by the equation as follows:

$$38.33 + .025 PPANAS - .48 SAI + .22 MM + .016 SA \quad (4)$$

where *PPANAS* = positive mood levels, *SAI* = sexual anxiety levels, *MM* = mood monitoring score, and *SA* = sexual attractiveness sub-scale score from the Body-Esteem Scale; $R = .65$, $R^2 = .42$, Adjusted $R^2 = .39$, $F(5, 110) = 15.86$, $p < .001$, Std Error of estimate: 12.54.

Equation 4 accounts for 42% of the variance in the SDI-2 scores for females. For this measure, the sexual anxiety scores and the mood monitoring scores were the significant contributing variables.

While the regression equations assist understanding of factors contributing to sexual desire self-report scores, the inconsistency of findings with respect to these two measures suggests they concentrate on different aspects of the experience of sexual desire in individuals.

Coding of clinical measure results. In order to facilitate analysis of the behavioural response data in the other aspects of the present experiment the scores

from the two quantifiable sexual desire measures were combined to give a libido code with which to separate participants into high, average and low libido groups. This was achieved by standardising the raw scores for the Hurlbert Index of Sexual Desire and the Sexual Desire Inventory-2, then summing them. The quartile split of this sum was then used to separate out the three libido groups. A further coding was performed by gender for each of the self-report scales employed in the study. The upper and lower quartile limits used for each measure, together with the numbers of participants grouped in this way for each measure by gender are summarised in Table 6.4. These codes are used to investigate the influence of each variable on other aspects of the participants' performance in the experimental protocol later in this chapter.

Picture Rating Task

In the first picture rating task of the protocol, participants rated 30 pictures from each of the four groups (sexual and non-sexual high valence, neutral and low valence) with respect to (1) affective valence, (2) arousal and (3) dominance or control ($N = 189$). Ratings ranged from 1 to 9 for each affective component with 1 being a low level of pleasure or valence, arousal, and dominance or control, felt by the participant.

High valence sexual pictures. These ten pictures were those with high valence ratings from the American data that included sexual subject matter. Valence ratings for the 189 participants who completed this portion of the protocol ranged from 3.1 to 8.9 on a scale from 1 to 9, where 9 indicated a high level of pleasure, with the mean rating being 6.7 ($SD = 1.0$). The range for the arousal ratings was from 1 to 8.5 with a mean of 5.8 ($SD = 1.4$) and the dominance rating range was from 2.3 to 9.0 with a mean of 6.3 ($SD = 1.5$). All

Table 6.4

Coding of Participants From Self-Report Measures

Measure	Males			Females		
Positive PANAS	Quartile scores					
	Lower		Upper		Upper	
	26		35		34	
	Grouping (n)					
	Low	Mid	High	Low	Mid	High
	21	29	20	34	53	35
Negative PANAS	Quartile scores					
	Lower		Upper		Upper	
	10		16		17	
	Grouping (n)					
	Low	Mid	High	Low	Mid	High
	19	32	19	39	53	31
Sex Anxiety Inventory	Quartile scores					
	Lower		Upper		Upper	
	24		52		60	
	Grouping (n)					
	Low	Mid	High	Low	Mid	High
	22	30	18	39	48	36
Body-Esteem Scale	Quartile scores					
	Lower		Upper		Upper	
	97		116		109	
	Grouping (n)					
	Low	Mid	High	Low	Mid	High
	21	31	18	31	60	32
Hurlbert Index of Sexual Desire	Quartile scores					
	Lower		Upper		Upper	
	65		83		72	
	Grouping (n)					
	Low	Mid	High	Low	Mid	High
	19	28	23	36	55	32
Sexual Desire Inventory	Quartile scores					
	Lower		Upper		Upper	
	65		79		67	
	Grouping (n)					
	Low	Mid	High	Low	Mid	High
	21	28	21	31	60	32
Sexual Desire Coding	Grouping (n)					
	Low	Mid	High	Low	Mid	High
	18	34	18	29	59	29

ratings for this study and the original American data are contained in Table G1, Appendix G.

The effect of gender on picture ratings was tested by one-way ANOVA and showed no significant differences between the two, nor was there a main effect of age group.

A test of the main effect of sexual desire levels on ratings using the libido level coding derived from the quartile split of the self-report measures in a one-way ANOVA was also performed. This showed a significant main effect of desire group on valence, $F(2, 180) = 6.27, p < .01$, and arousal, $F(2, 180) = 3.52, p < .05$, but not on the dominance ratings of the high valence sexual content pictures. The post hoc Tukey's Spjotvoll/Stoline test results showed that the low libido group recorded significantly lower mean valence ratings ($M = 6.3$) than both the average ($M = 6.8$) and high level ($M = 7.0$) sexual desire groups for these pictures. For the arousal ratings the low libido group mean ratings ($M = 5.4$) were significantly lower than the high sexual desire group ($M = 6.1$).

Figure 6.6 shows how these libido code differences interact with gender to affect the ratings of these sexual content pictures.

High valence non-sexual pictures. These nine pictures were described as high valence in the American data but did not contain sexual matter. The participants rated this group of pictures on a scale from 1 to 9 as follows: valence, $M = 6.7$ ($SD = 1.0$); arousal, $M = 5.5$ ($SD = 1.4$); dominance, $M = 5.8$ ($SD = 1.4$).

Males ($M = 5.2$) rated these pictures less arousing than females ($M = 5.7$). A one-way ANOVA confirmed these arousal differences were significant, $F(1, 187) = 4.49, p < .05$, but there were no significant differences for valence or dominance ratings.

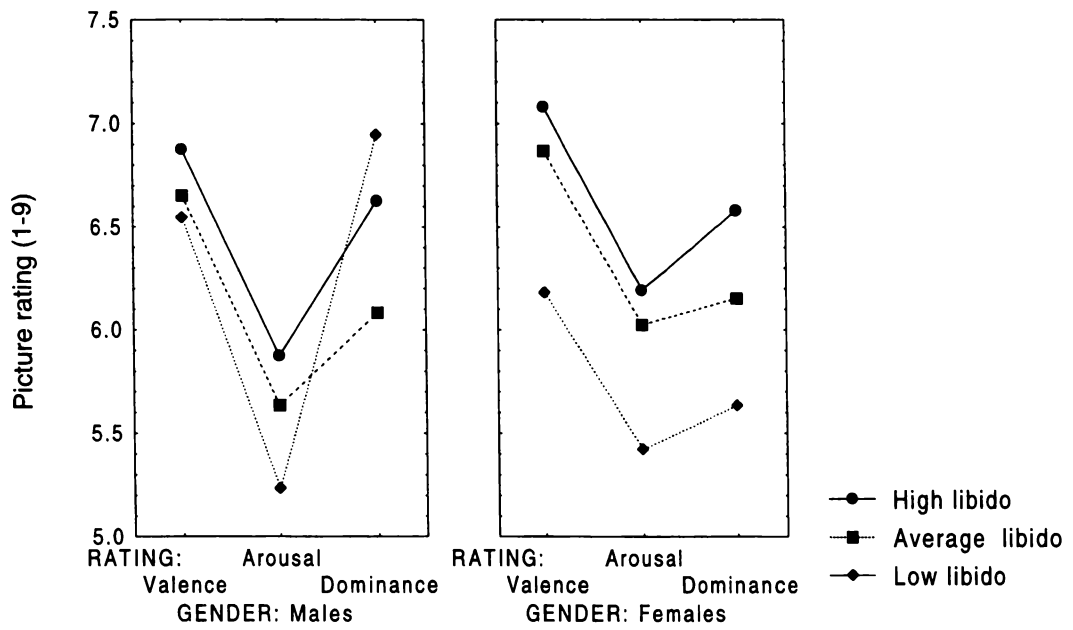


Figure 6.6. Gender by libido group ratings of valence, arousal and dominance for sexual pictures.

There were no significant differences in the ratings given these pictures by the four age groups.

There was a significant difference in the valence ratings by those in the three sexual desire groups for this group of pictures, $F(2, 180) = 3.74, p < .05$, but not the arousal or dominance ratings. However, while the low and high sexual desire groups both gave these pictures a mean rating of 6.5, and the average sexual desire group rated them 6.9 out of 9, post hoc analysis showed that these differences were not statistically significant. This is probably due to the larger numbers found in the average group in comparison to the high and low groups.

Neutral pictures. The five pictures in this group were labelled neutral in valence in the American data and depicted common household items. Valence ratings for these pictures ranged from 1.4 to 9 on a scale from 1 to 9, where 9 indicated a high pleasure rating, and resulted in a mean of 5.1 ($SD = 1.0$). The arousal ratings ranged from 1 to 6.2 and the mean was 2.6 ($SD = 1.4$). The dominance ratings ranged from 1.8 to 9 with a mean figure of 7.4 ($SD = 1.5$), indicating most people felt a high degree of control or dominance over these items.

There was no gender effect for this group of pictures.

There was an age group effect with respect to arousal for this group of pictures, $F(3, 185) = 2.91, p < .05$, but post hoc testing showed no one group significantly different to any other.

There was no effect of the sexual desire groupings on the ratings for these pictures.

Low valence, unpleasant pictures. The final group of six pictures was labelled low valence, that is, unpleasant pictures as rated by the American

students. Valence ratings ranging from 1 to 6.8 resulted in a mean of 1.8 ($SD = 1.0$) where 1 was the least pleasant rating. The arousal ratings ranged from 1 to 9 and the mean was 6.8 ($SD = 1.9$). The dominance ratings ranged from 1 to 8.6 and the mean score was 3.1 ($SD = 1.8$).

Males recorded higher mean ratings for valence and dominance than the females (males 2.0 and 3.8, and females 1.7 and 2.8 respectively) and lower ratings for arousal than females (males 6.1, females 7.2). Males found the pictures less unpleasant, or distressing, and felt more in control of the situation pictured than did the females in the sample. The gender effect was confirmed with respect to the ratings for these pictures by ANOVA; valence, $F(1, 187) = 3.91, p < .05$, arousal, $F(1, 187) = 13.47, p < .001$, and dominance, $F(1, 187) = 15.39, p < .001$.

There was also an age group effect, but only with respect to the dominance ratings, $F(3, 185) = 4.02, p < .01$. Post hoc analysis confirmed that the youngest age group ($M = 2.5$) rated these pictures significantly differently to the two oldest groups ($M = 3.7, 3.6$), that is, they found the situations made them feel less in control or dominant. The age group by gender interaction, which was not significant, is depicted in Figure 6.7.

Ratings for this group of pictures showed no significant differences when tested for a libido group effect.

Integration of findings. The high valence sexual pictures and the high valence non-sexual pictures differed in content but were rated similarly with respect to valence and arousal in the *IAPS* data. A comparison was performed to see whether this was so in this data set. The test results showed that there were no

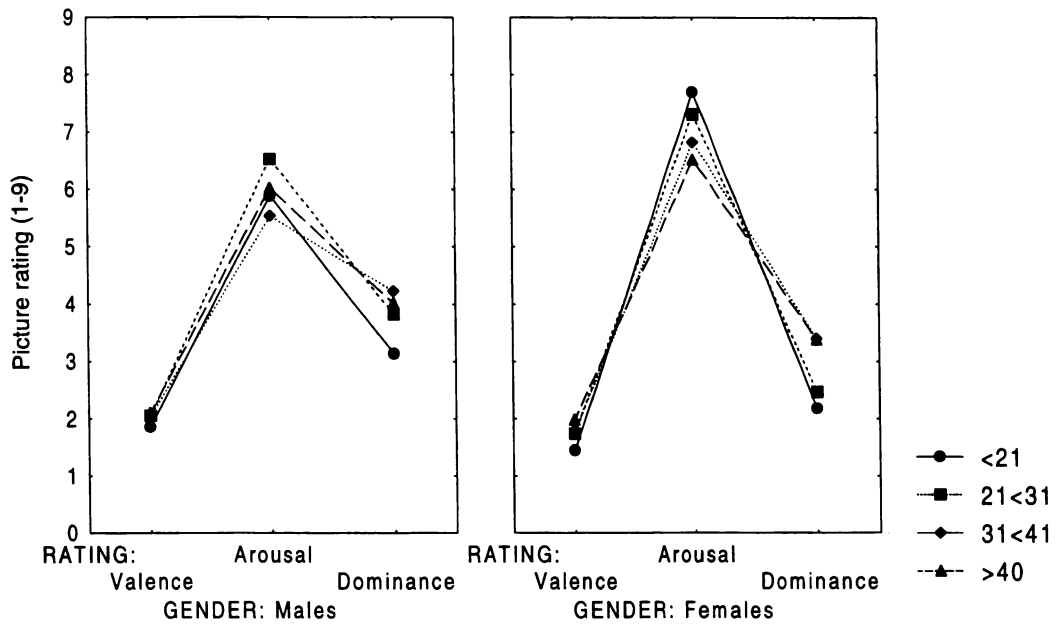


Figure 6.7. Gender by age group ratings of valence, arousal and dominance for unpleasant pictures.

significant differences between the sexual pictures and the non-sexual pictures for valence or arousal, but that there was significant difference between the two groups for dominance ratings; $t(376) = 2.78, p < .01$. The sexual pictures were given a mean dominance rating of 6.2, while the non-sexual pictures were rated 5.8, that is to say participants felt less control or dominance with respect to the non-sexual pictures. (Ratings for this scale run from 1 = *controlled* to 9 = *in control*.) However, it was the valence and arousal ratings of the two groups that were important to the experimental hypotheses, and these were not significantly different. This allowed a controlled comparison between material of a sexual nature and that of a non-sexual nature with respect to responding during the experimental procedures. The finding that only the pictures in the high valence sexual group were rated differently by those in the three libido groups confirms the hypothesis that persons with differing libido levels respond differently to sexual stimuli.

Picture Recognition Task

This section of the project required participants to respond to the question *Have you seen this picture before?* when each slide in the selection appeared on the computer monitor. Half of the slides had been shown in the picture-rating task earlier in the experiment. One hundred and forty-eight participants recorded data that could be analyzed. Responses were correct in 92.7% of the cases ($n = 9,028$). Incorrect responses numbered 657. An analysis of the correct and incorrect responses to determine whether there was a significant difference in the numbers of particular picture types found no such bias. Therefore all further analysis was based only on the correct responses.

The dependent variable in this task was the time taken to respond *yes* or *no* via a mouse key. These response times were computer recorded in milliseconds. The mean time recorded for all correct responses was 2,940 ms ($SD = 3,950$). This figure included times ranging from 350 ms to 127,488 ms, with some of the values being statistical outliers. Graphical analysis suggested that response times above 40,000 ms were outliers, so all statistical processing was based on response times of less than 40,000 ms.

Differences in response times by picture type. The mean times recorded for each picture type by gender are shown in Figure 6.8. The mean data are summarized in Table G2, Appendix G. The longest response latencies were recorded for the low valence unpleasant pictures ($M = 3,478$ ms), with the high valence sexual pictures resulting in the next longest response latencies ($M = 3,240$ ms). The neutral pictures resulted in the shortest latencies ($M = 2,128$ ms), and the high valence non-sexual pictures had a mean response latency of 2,582 ms recorded. A one-way ANOVA determined that the differences in responding according to picture type were significant, $F(3, 8356) = 72.17, p < .001$. Post hoc analysis of this finding (Tukey's Spjotvoll/Stoline test) showed that response latencies to the unpleasant pictures were significantly longer than those for the other types. These findings accord with previous experiments recording responses to various types of slides (Lang, 1993).

Further analyses were performed on the mean response times for each picture type per participant. Males took longer to respond to all except the neutral picture groups, than the females (sexual, $M_{male} = 4,007$ ms vs. $M_{female} = 3,020$ ms; non-sexual, $M_{male} = 3,216$ ms vs. $M_{female} = 2,401$ ms; neutral, $M_{male} = 2,131$ vs. $M_{female} = 2,158$ ms; unpleasant, $M_{male} = 3,730$ ms vs. $M_{female} = 3,403$ ms). A two-

way ANCOVA of response time by picture type by gender, with age as a covariate, showed there to be no significant difference with respect to gender, but a significant difference in response times for picture types, $F(3, 429) = 22.28, p < .001$. Figure 6.8 shows the response time by gender and picture type. However this interaction was not statistically significant.

Differences in responding by the four age groups were not statistically significant.

Graphical analysis demonstrated that people in the low libido group showed shorter response latencies to all types of pictures (see Figure 6.9). However, a test of the response time means for the sexual desire groups showed that the differences in response times were not statistically significant.

Since age is often a confound in situations requiring fast reactions, a further analysis of response times with respect to sexual desire grouping was performed with age as a covariate. The two-way ANCOVA result showed that there was a significant main effect of picture type, $F(3, 417) = 16.84, p < .001$, but not libido group. The mean response latencies for the high valence sexual pictures ($M = 3,317$ ms) and the low valence pictures ($M = 3,469$ ms), were significantly different to the mean times for the neutral ($M = 2,140$ ms) and the high valence, non-sexual pictures ($M = 2,495$ ms). This analysis was also carried out for each gender separately to ascertain whether patterns of responding were varied by gender. The graphs illustrating how each gender responded to the types of pictures show that low libido males responded more quickly to all except the low valence type of pictures (Figure 6.9: middle). However there was no significant main effect of libido group for males. Females with low self-report sexual desire responded more quickly to all types of pictures ($M = 2,017$ ms) than other women

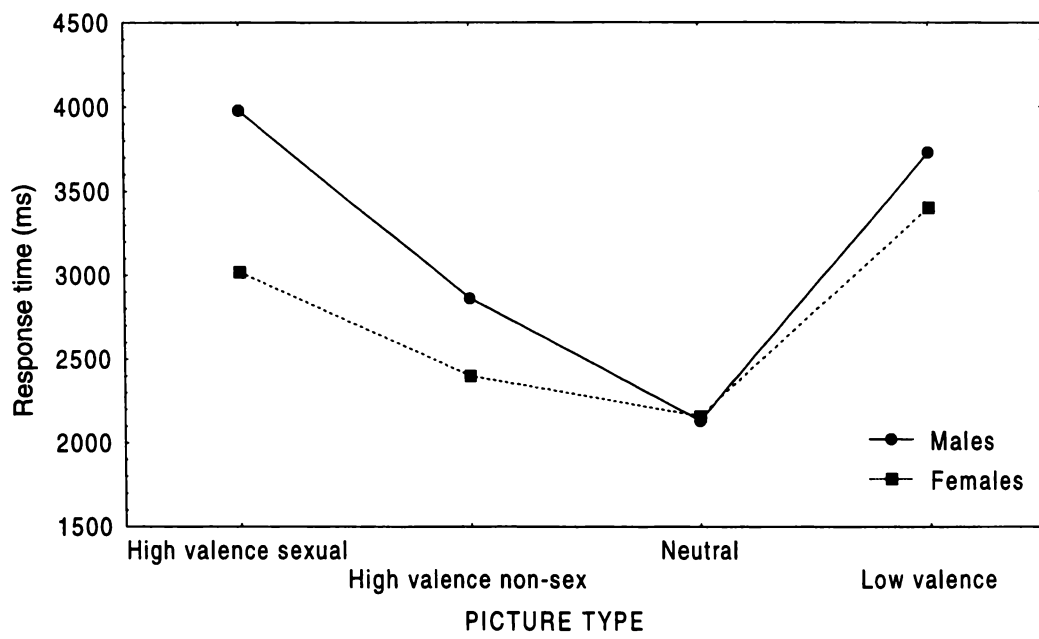


Figure 6.8. Response time by gender by picture type.

($M_{High} = 2,966$; $M_{Average} = 2,950$ ms)--see Figure 6.9 (bottom), $F(2, 82) = 3.27$, $p < .05$.

Delay in response times for sexual content. The question of whether there is a phenomenon parallel to Sexual Content Induced Delay (SCID) in this pictorial modality is interesting. Given that the process in the semantic arena involves like valence and neutral stimuli this seems appropriate here. Analysis was therefore performed with similar stimuli, that is, high valence sexual, and non-sexual, and neutral valence slides (i.e., low valence material was omitted from the analysis).

In addition, it has been found that in the semantic studies the phenomenon of SCID is different for each gender. Therefore, a gender by response to picture type analysis for the three picture groups involved was carried out. The analysis showed that while gender differences were not statistically significant, there was a significant difference in the responses by picture type, $F(2, 286) = 38.26$, $p < .001$. The mean response times for each picture type were significantly different from each other type; $M_{sexual} = 3,499$ ms, $M_{non-sexual} = 2,632$ ms, and $M_{neutral} = 2,145$ ms. This responding pattern demonstrated a sexual content induced delay in all participants regardless of gender. However, the Levene's test for homogeneity of variance showed the sexual picture responses to be heterogeneous, $F(1, 143) = 10.04$, $p < .001$. Closer investigation of this data showed that there were five participants whose response times for this task had exceeded 10,000 ms.. It appears that they forgot to press the mouse key to indicate whether they had seen that picture before or not. Three of the subjects were categorized as average libido, one low, and the other high libido. All were males. A further analysis omitting these slightly aberrant times was run, and the results were essentially the same. The data were homogeneous for this latter analysis. However, since the

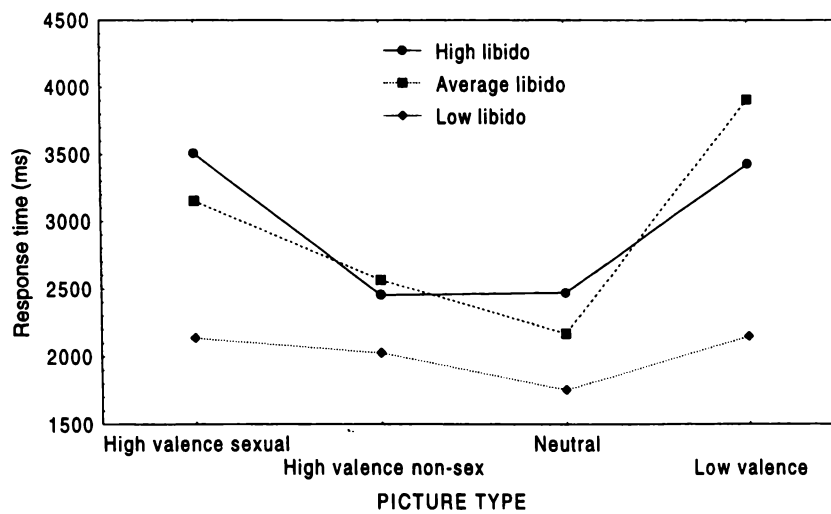
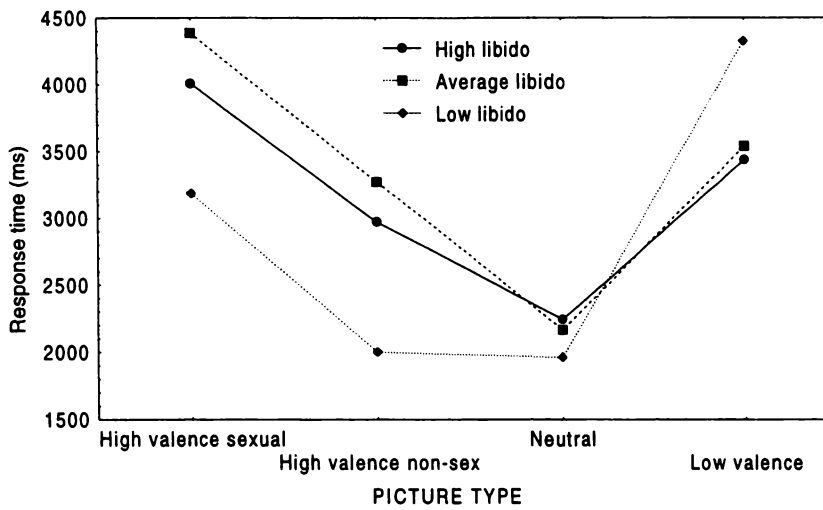
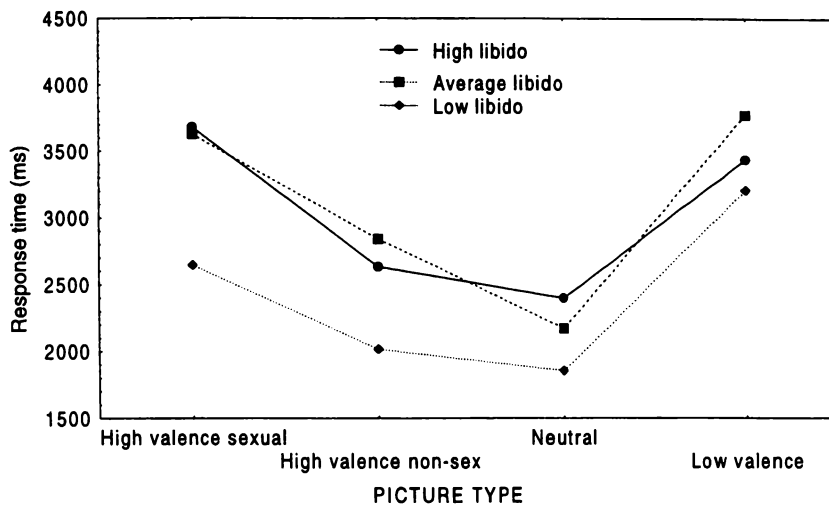


Figure 6.9. Responses to picture types by libido group; top = all participants, middle = males only, bottom = females only.

results were similar for both analyses it was decided to accept the original finding, with the understanding that the heterogeneity of the responses to the sexual pictures was due to these few odd latencies.

There was also a significant interaction effect from the gender by response to the three picture type analysis, $F(2, 286) = 4.96, p < .01$. This is depicted in Figure 6.10. The male response to sexual stimuli differs more markedly from that of the females than does both genders' responses to the neutral pictures, resulting in the statistically significant interaction.

Overall, this demonstration of sexual content induced delay is more robust for males than females, in contrast to the expression of the phenomenon in semantic protocols.

A further investigation as to whether the phenomenon of sexual content induced delay is affected by sexual desire grouping variables was carried out via a three-way ANCOVA. In this analysis desire grouping and gender were the between group variables, and the three picture types were the within group variables; age was treated as a covariate. The analysis showed no effect of gender, but a significant main effect of sexual desire grouping, $F(2, 135) = 3.38, p < .05$, and a significant main effect of picture type, $F(2, 272) = 28.60, p < .001$. There was also a significant interaction between gender and picture type, $F(2, 272) = 3.78, p < .05$. The depiction of this interaction is very similar to Figure 6.10. The effect of sexual desire grouping in interaction with picture type was not statistically significant, but demonstrated once again how people whose self-report sexual desire scores are lower than others do respond in a different fashion to various stimuli. Figure 6.11 shows this interaction. The low libido group responded quicker than the other groups to all types of pictures.

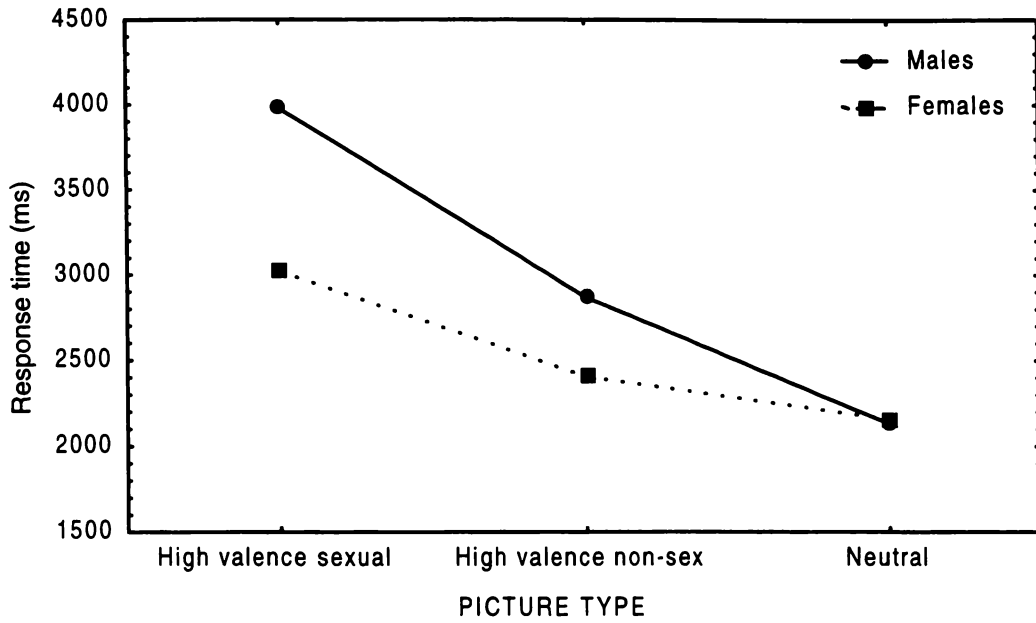


Figure 6.10. Sexual content induced delay as expressed by gender.

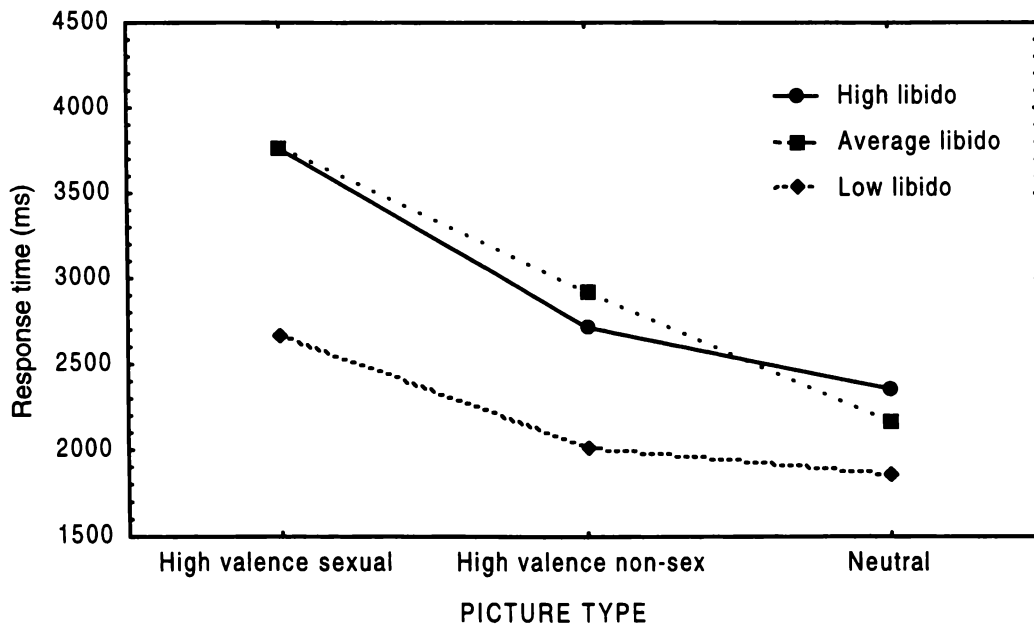


Figure 6.11. Sexual content induced delay as expressed by libido grouping.

Picture viewing times. Once participants had made the speeded decision about whether they had seen the picture before or not, they could view the picture for as long as they wished. The time span during which each picture was left on the computer screen was recorded for each participant. Because other analyses were performed with correct responses only and outliers removed, analysis of viewing times was based on this same data set. The mean viewing time per picture recorded by participants was 22,951 ms ($n = 8,359$, $SD = 10,832$). Mean viewing times for each picture group are summarised in Table G3, Appendix G. Figure 6.10 shows how the mean viewing times varied by gender and picture type. As can be seen in Figure 6.12 participants viewed the unpleasant pictures ($M = 24,503$ ms) for longer than the other types ($M = 22,756$ to $22,918$ ms). Lang *et al.* (1993), also found that viewing duration for unpleasant pictures was greater than for neutral pictures. They also found high valence pictures were viewed longer than neutral pictures. However, they did not differentiate between types of high valence pictures as has been done here. The present study showed how viewing of high valence picture types varies when they are differentiated--see Figure 6.12.

A two-way ANCOVA with respect to gender was performed on the viewing times for the high valence sexual and non-sexual pictures. The effect of gender on viewing time with age as a covariate was not significant, but the effect of picture type was, $F(1, 144) = 4.38$, $p < .05$. The difference between viewing times for sexual ($M = 22,119$ ms) and non-sexual ($M = 23,333$ ms) high valence pictures was significant; that is, participants looked at the non-sexual pictures for significantly longer.

A graph depicting differences in viewing time by each libido group suggested the low libido participants spent less time looking at the slides--see

Figure 6.13. A further two-way ANCOVA with desire level grouping as the between group factor, all viewing times as dependent variables, and age as a covariate produced no statistically significant interaction result. There was no effect of libido group, but a significant effect of picture type, $F(3, 417) = 4.27, p < .01$. Post hoc analysis confirmed that participants viewed the unpleasant pictures significantly longer than the sexual ($M = 22,634$ ms), and the neutral pictures (22,744 ms).

Picture rating times. The time taken by each participant to rate each picture was recorded by the computer. A summary of mean times for each picture group appears in Table G4, Appendix G. Analyses of the mean times taken showed no effect of gender, or desire grouping.

Times taken to rate pictures increased with age. As can be seen in Figure 6.14, the oldest group took significantly longer to rate high valence sexual pictures than other participants. There was no difference in times to rate high valence non-sexual pictures. For the neutral and low valence pictures the oldest participants took significantly longer than the two youngest groups to rate the pictures. A 2-way ANOVA confirmed that there was a significant difference between age groups with respect to time taken to do picture rating, $F(3, 141) = 1.89, p < .001$. There was also a significant difference between types of pictures with respect to time taken to do the ratings, $F(3, 423) = 21.98, p < .001$. And there was a significant interaction between picture type and age group with respect to time taken to rate pictures, $F(9, 423) = 2.12; p < .05$.

Interest ratings for pictures. Participants recorded an interest rating between 1 *not at all interesting* and 29 *very interesting* for each picture viewed. The ratings for each gender group are summarised in Table 6.5. Males recorded a

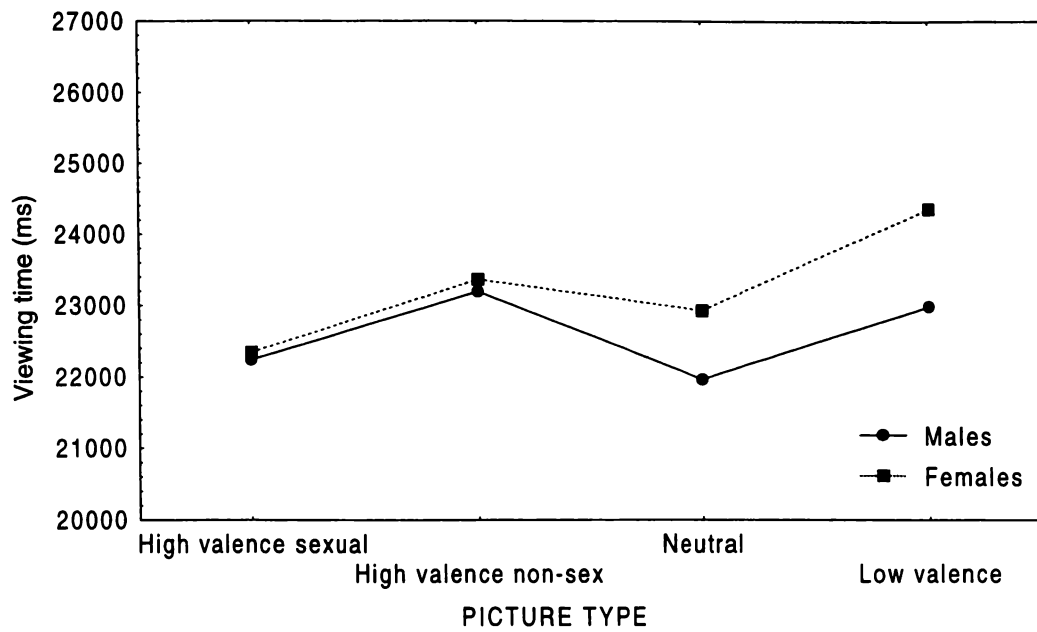


Figure 6.12. Mean viewing times by gender and picture type.

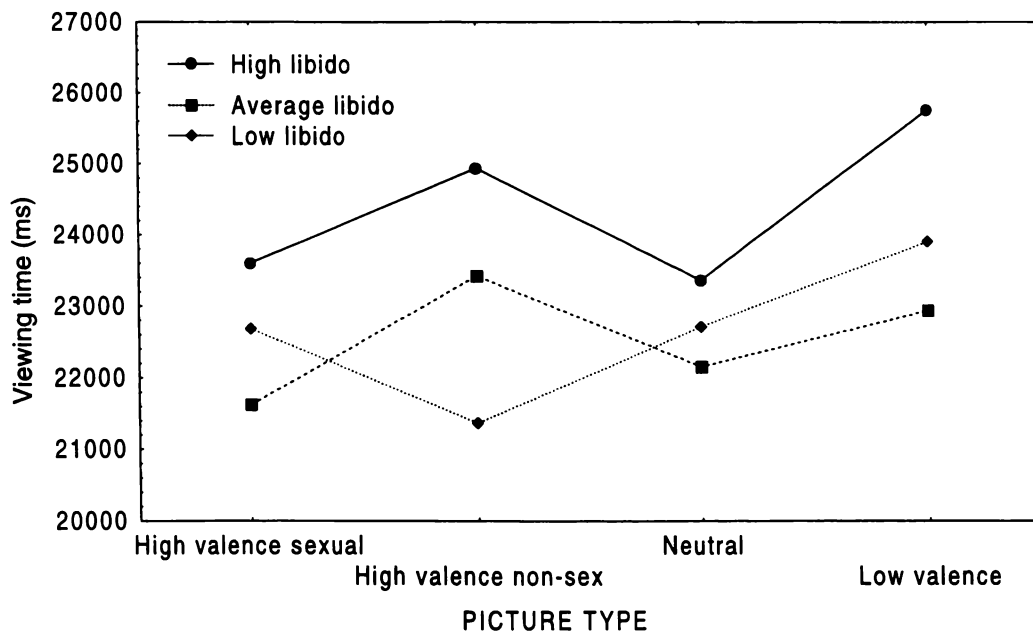


Figure 6.13. Mean viewing times by libido group and picture type.

Table 6.5

Participant's Interest Ratings Recorded by Gender

Picture type	Mean interest ratings
High valence sexual content (<i>n</i> = 147)	Males 18.6 (<i>SD</i> = 3.1) Females 17.5 (<i>SD</i> = 3.8)
High valence - no sexual content (<i>n</i> = 146)	Males 18.3 (<i>SD</i> = 3.2) Females 16.1 (<i>SD</i> = 3.9)
Neutral (<i>n</i> = 145)	Males 8.6 (<i>SD</i> = 3.8) Females 8.4 (<i>SD</i> = 3.5)
Low valence – unpleasant (<i>n</i> = 145)	Males 17.4 (<i>SD</i> = 5.5) Females 19.0 (<i>SD</i> = 6.1)

higher interest rating for the high valence non-sexual pictures than the females. A one-way ANOVA showed that this was a significant difference, $F(1, 144) = 13.27, p < .001$. There were no significant gender differences for the other types of pictures.

There was no significant effect of age group on the interest ratings recorded by participants.

Figure 6.15 illustrates the relationships between sexual desire groupings and interest ratings for the various picture types. This interaction was significant, $F(6, 417) = 2.77, p < .05$. A one-way ANOVA confirmed that the effect of sexual desire group on mean interest ratings for picture types was significant for the sexual pictures, $F(2, 141) = 3.22, p < .05$, and the neutral pictures, $F(2, 139) = 6.05, p < .01$. Post hoc testing showed that, for the sexual content pictures, the low libido group reported a significantly lower mean interest rating ($M = 16.8$) than participants in the

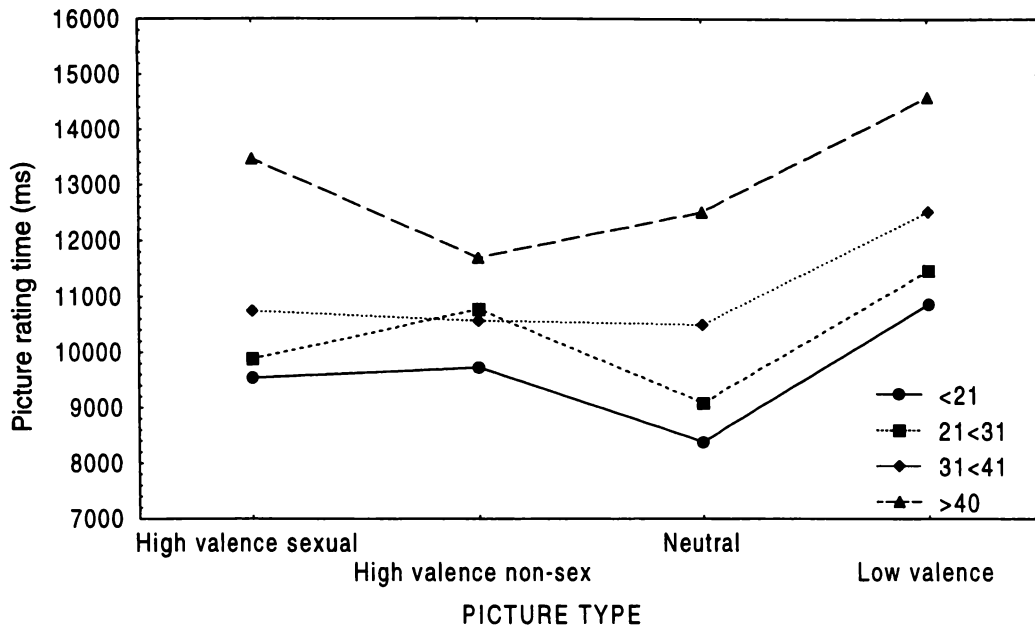


Figure 6.14. Mean rating times for each picture type by age group.

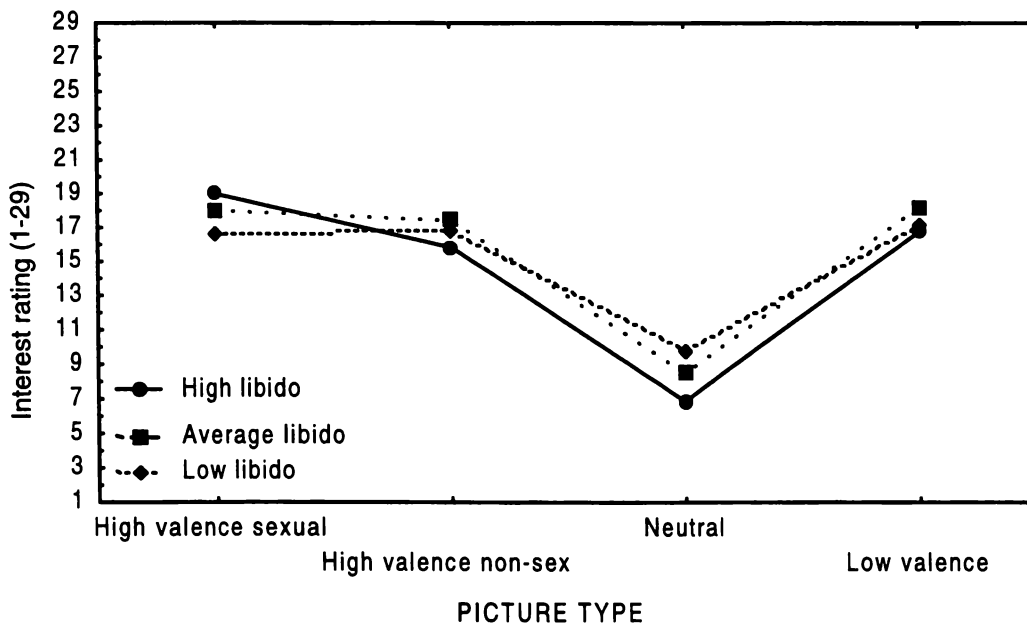


Figure 6.15. Interaction between libido groups and interest ratings for picture types.

high libido group ($M = 19.0$). For the neutral pictures the low libido group recorded a significantly higher mean rating ($M = 9.7$) than the high libido participants ($M = 6.9$).

These findings also confirm the hypothesis that those with low self-report libido will respond differently to stimuli of a sexual nature, than those with high libido levels.

Categorizing pictures by 'feeling'. The participants were asked to assign an adjective or 'feeling' category to each picture viewed. The frequency of ratings given each group of pictures with respect to feeling was recorded and appears in Table 6.6. The high valence sexual pictures were most frequently labelled *happy* or *neutral* as were the high valence non-sexual pictures, but fewer of the latter type were labelled *happy* than the sexual pictures. The neutral pictures attracted the *sad* and *disgusted* labels most often, while the low valence unpleasant pictures were most frequently

Table 6.6

Frequency of Adjective Assignment to Picture Type--expressed as percentages

Picture type	1#	2#	3#	4#	5#	6#	7#
High valence sexual content	<1%	1%	34%	1%	56%	2%	6%
High valence non-sexual content	<1%	<1%	37%	9%	48%	1%	5%
Neutral content	10%	24%	5%	11%	<1%	46%	3%
Low valence unpleasant content	<1%	<1%	83%	2%	8%	6%	2%

Note. # 1 = angry; 2 = disgusted; 3 = neutral; 4 = fearful; 5 = happy; 6 = sad; 7 = surprised.

labelled as *neutral* when participants were asked to assign a feeling to them.

The way people label stimuli is of interest in this context, particularly if one makes a comparison between two sets of stimuli that are deemed to have equivalent affective valence ratings. Therefore, further examination of the frequencies of adjective assignment was carried out for the high valence sexual and high valence non-sexual pictures. The aim was to ascertain whether there were differences in picture labelling by people in the high, average or low libido groups. Table 6.7 shows how the three libido groups labelled the sexual and non-sexual pictures.

Table 6.7

Frequency of Labelling of Sexual and Non-sexual Pictures by Libido Group.

Picture type	Libido category	1#	2#	3#	4#	5#	6#	7#
High valence sexual	Male – high	-	-	36%	<1%	62%	<1%	1%
	Male – mid	<1%	<1%	38%	<1%	58%	1.3%	2%
	Male – low	<1%	-	33%	<1%	54%	2%	10%
	Female – high	<1%	<1%	29%	<1%	63%	<1%	6%
	Female – mid	<1%	<1%	33%	<1%	54%	3%	7%
	Female - low	<1%	3%	41%	3%	43%	2%	7%
High valence non-sexual	Male – high	<1%	-	49%	4%	45%	-	<1%
	Male – mid	-	<1%	38%	4%	52%	<1%	5%
	Male – low	<1%	1%	30%	8%	53%	-	7%
	Female – high	<1%	<1%	41%	9%	43%	1%	5%
	Female – mid	1%	<1%	35%	10%	47%	1%	5%
	Female - low	<1%	1%	34%	13%	46%	2%	3%

Note. # 1 = angry; 2 = disgusted; 3 = neutral; 4 = fearful; 5 = happy; 6 = sad; 7 = surprised.

From this table it can be seen that a greater proportion of low libido female's labels for the sexual pictures were *neutral* than for the other libido groups. Fewer of the low libido people labelled the sexual pictures with the adjective *happy* than did average or high libido people. But, when labelling the non-sexual pictures more of the low libido group assigned *happy* to pictures than the high or average group people. Three per cent of the low libido women's labels referred to the sexual pictures as *fearful*, whereas less than one per cent of any other groups saw these pictures this way. In addition a further three per cent of this group's labels referred to the sexual pictures as *disgusting*. Another feature of this labelling process was the choice of *surprised* by low libido participants for sexual pictures. This happened more often for these pictures than for the non-sexual ones.

Looking at the high libido group's responses, both males and females labelled sexual pictures as *happy* more frequently than they did the non-sexual pictures. Ninety-eight per cent of the high libido males responses were either *happy* or *neutral* for the sexual pictures. Other libido groups were more likely to use differing adjectives. In summary then those with low libido were less likely to assign *happy* adjectives to pictures of a sexual nature, but more likely to do so for non-sexual pictures than other participants.

Because there were a significant number of the sexual pictures labelled *neutral* rather than *happy*, these pictures were examined more closely to see if there were apparent sub-divisions within the sexual type. Those pictures that were clearly erotic in nature, with figures depicted nude, were most numerous (66% of sexual stimuli), but there was also a group of pictures in which people were partially clothed

(romantic/sexual = 18% of sexual type), and another group in which people were fully clothed--this latter group might usefully be termed romantic (17% of sexual type). Analysis of the mean ratings given to these separated groups showed that affective valence or pleasure ratings for the erotic group were the highest ($M = 6.76$) while arousal ratings for these pictures were also highest ($M = 6.01$). Ratings for the romantic/sexual type were valence = 6.48, and arousal = 4.70 out of a possible 9. Ratings for the romantic type were valence = 6.47 and arousal = 4.62. Dominance ratings were highest for the romantic type ($M = 6.80$), next highest for the romantic/sexual type ($M = 6.76$) and lowest for the erotic pictures ($M = 6.52$).

Cross-tabulation of picture type, by gender and libido group established that the erotic sexual pictures were more often given the *neutral* labelling by low libido males (19%) and females (26%). However these sexual pictures were also given *neutral* labels by 20% of average libido and 16% of high libido males and 18% of average and 16% of high libido females.

Picture rating data. Once the participants had recorded a response for the picture recognition task, they were asked to rate each picture using the same rating screen (SAM) as had been used in the first part of the protocol. Ratings were collected for all pictures at this point, but some were being viewed for a second time. A comparison between ratings for the picture types seen in the first part of the experiment, and ratings given the same picture types when they were viewed in the second part of the experiment was made. There were differences between the mean ratings for valence, arousal, and dominance of the various picture types given on the first viewing, and those given on the second occasion. In order to ascertain whether

these differences were statistically significant, and whether independent variables such as gender and libido group were contributing to the differences, three-way ANCOVA analyses with age as a covariate, were carried out. Table 6.8 summarizes these results.

The ratings for the sexual pictures were significantly different on the second occasion for valence, $F(1, 138) = 4.23, p < .05$, arousal, $F(1, 138) = 28.25, p < .001$, and dominance, $F(1, 138) = 22.45, p < .001$. There was also a main effect of libido group for these pictures, $F(2, 137) = 7.59, p < .001$. Those recording high self-report libido increased their valence ratings for these pictures ($M_1 = 7.07, M_2 = 7.13$), but all other participants recorded ratings that trended toward the mean for the possible range (1 to 9). The mean arousal rating for first the first part of the experiment was 5.82 and the mean for the second was 5.45. The mean dominance rating was 6.30 in the first task and 6.65 in the second; this indicates a greater sense of control or dominance felt on second viewing of this kind of picture.

The analysis of the non-sexual pictures showed no main effect of gender, libido group or occasion. There was significant interaction between gender and occasion that was the result of males increasing their valence rating for these pictures from first ($M = 6.6$) to second ($M = 6.7$) occasion, while females reported lower ratings on the second occasion ($M = 6.4$) than they did initially ($M = 6.7$). The main effect of occasion for the arousal ratings of these pictures, and the significant interaction between gender and occasion, were due to the females rating these pictures significantly lower than the males did ($M_{male\ first\ time} = 5.23, M_{male\ second\ time} = 5.20; M_{female\ first\ time} = 5.74, M_{female\ second\ time} = 4.94$).

Table 6.8

Main Effects of Gender, Libido Group, and Occasion on Ratings by Picture Type.

Picture type	Gender	Libido Group	Occasion	Interaction
High valence sexual content	Valence: ns	$F(2, 137) = 7.59, p < .001$	$F(1, 138) = 4.23, p < .05$	ns
	Arousal: ns	ns	$F(1, 138) = 28.25, p < .001$	ns
	Dominance: ns	ns	$F(1, 138) = 22.45, p < .001$	$F(2, 138) = 4.59, p < .05$
High valence non-sexual content	Valence: ns	ns	ns	Gender by occasion $F(1, 137) = 6.1, p < .05$
	Arousal: ns	ns	$F(1, 137) = 9.07, p < .01$	Gender by occasion $F(1, 137) = 7.66, p < .01$
	Dominance: ns	ns	ns	ns
Neutral content	Valence: ns	ns	$F(1, 136) = 13.06, p < .001$	ns
	Arousal: $F(1, 135) = 3.91, p < .05$	ns	$F(1, 136) = 4.24, p < .05$	ns
	Dominance: ns	ns	ns	ns
Low valence unpleasant content	Valence: $F(1, 135) = 6.77, p < .01$	ns	$F(1, 136) = 11.42, p < .001$	ns
	Arousal: $F(1, 135) = 11.19, p < .01$	ns	$F(1, 136) = 12.00, p < .001$	ns
	Dominance: $F(1, 135) = 11.95, p < .001$	ns	$F(1, 136) = 18.74, p < .001$	ns

The neutral pictures analysis showed a main effect of gender with respect to arousal ratings, $F(1, 135) = 3.91, p < .05$, due to males giving these pictures a mean rating of 2.36 while females gave a mean rating of 2.79. There was also a difference in the way these pictures were rated from the first time to the second rating task, $F(1, 136) = 4.24, p < .05$. Mean valence ratings changed from 5.2 on first viewing to 4.9 in the second task. Mean arousal ratings changed from 2.66 to 2.48 when the pictures were rated on the second occasion.

The low valence unpleasant pictures were rated differently by gender for valence, $F(1, 135) = 6.77, p < .01$, arousal, $F(1, 135) = 11.19, p < .01$, and dominance, $F(1, 135) = 11.95, p < .001$ and all three types of rating were significantly different from the first occasion to the second (valence, $F(1, 135) = 11.42, p < .001$, arousal, $F(1, 136) = 12.00, p < .001$, and dominance, $F(1, 136) = 18.74, p < .001$). For the valence ratings, females ($M = 1.7$) rated unpleasant pictures more unpleasant than did males ($M = 2.1$). Overall mean ratings changed from 1.8 on the first rating task to 1.98 in the second task, indicating people were slightly less perturbed by seeing these kind of pictures second time around. Males rated their arousal for the unpleasant pictures ($M = 5.88$) lower than did females ($M = 6.93$). The participants rated their arousal as less acute in the second rating task ($M = 6.25$) than they did in the first task ($M = 6.56$). Dominance ratings were lower for females than males for these unpleasant pictures ($M_{female} = 3.0; M_{male} = 4.12$). When participants saw unpleasant pictures in the second task they gave them a mean rating of 3.74, higher than the 3.37 given in the first task. This indicates they felt more in control of the ideas associated with the content of these pictures during the second task--or had habituated to that content to some extent.

It can be seen from these analyses that there was a degree of habituation to the subject matter from occasion one to occasion two within the experiment, with the exception of the high libido people in response to the high valence sexual pictures. However, these analyses do not isolate those pictures that were being seen for the first time in the second picture rating task from those that had been seen before, so the changes described are possibly attenuated here. Actual ratings given separate pictures as rated on first time viewing in both parts of the experiment are given in Table G1, Appendix G.

Integration of findings. It was found that there were similar response patterns in terms of recognition times in this experiment to those reported by Lang et al. (1993) elsewhere. The longer times taken to process low valence material are as predicted. A comparison of like valence and neutral pictorial stimuli, the sexual, non-sexual and neutral picture types, showed a delay in responding to sexual content for both males and females. The libido groupings also responded differently to the four picture types, with the low libido participants responding more quickly to all picture types, and showing less differentiation in responding according to picture type.

Viewing times were greater for unpleasant or low valence pictures, a finding also reported elsewhere. However, previous studies have not differentiated high valence types of pictures and the significant differences shown in viewing time of sexual versus non-sexual high valence stimuli were noted, with the latter being viewed for longer.

Interest ratings for the four picture groups were significantly different for the libido groups. In particular, the low libido participants rated the sexual pictures lower than did the other libido groups.

The findings with respect to feelings assigned to individual pictures by choosing the most suitable adjective for them confirmed participants' overall attitude towards the picture types, with sexual pictures attracting most *happy* ratings, and *neutral* being used to classify many pictures--a non-committal response.

The effects of gender on ratings was most marked with respect to the unpleasant pictures; females found these more unpleasant, arousing, and felt a lack of control when viewing them.

Picture valence ratings were shown to vary significantly with libido group where the sexual pictures were concerned, but not any other group. Low libido people rated these pictures less pleasant than high libido participants. Arousal ratings were affected by libido group for the sexual pictures, where ratings were higher for higher libido persons, and the neutral pictures, where mean ratings were lower for the higher libido persons.

Semantic Tasks

Semantic decision making. Participants were asked to decide rapidly whether a letter string on the computer screen was a real word or not. The experiment included three practice words and an equal number of real words and non-words formed from the same letters. The real words were of three types, romantic, neutral, and sexual words. The response times for the semantic decisions made by each participant were computer recorded as they worked through the protocol. This word recognition task resulted in analyzable data from 188 persons, or 10,716 decisions. These consisted of 3 practice words, 27 non-words and 27 real words for each person. The number of correct responses was 9,868, or 92.1% of cases. There were 846 incorrect responses, and 2 missing. An

analysis of the incorrect responses showed that there were missing data for 315 cases, and 602 of the responses for the non-words were incorrect. Of the real word errors, 58 were for romantic words, 68 for neutral words and 60 were for sexual words.

Mean correct response times for each type of word varied from 1,097 ($SD = 391$) and 1,023 ($SD = 279$) ms for the practice words and non-words respectively, to 849 ($SD = 160$), 839 ($SD = 153$), and 859 ($SD = 155$) ms for the romantic, neutral and sexual words respectively.

The effect of word order within the experiment was examined to ascertain whether this may have affected the response times. It was found that 5,276 correct responses followed non-words and 4,592 followed real words. A two-way ANOVA of response times with the word types and following status (after a real word or after a non-word) as independent variables was carried out. There was significant main effect of word type, $F(3, 10000) = 272.22, p < .001$, but no effect of following status. Post hoc analysis showed the effect of word type to be due to the difference between response times to words and non-words. A further analysis of responses to real words only, showed a main effect of word type once more, $F(2, 4971) = 5.01, p < .01$, but no effect of following status. There was significant interaction between word type and following status, $F(2, 4971) = 3.23, p < .05$. This was due to the response times of neutral word decisions following real words being shorter than when neutral word decisions followed non-words. There was no such effect on the sexual and romantic words however, and post hoc analysis showed these differences were not significant. In summary then there was little effect of word order on the findings for this lexical decision task.

There is no surprise in the finding that the practice words and non-words resulted in much slower responding than the three types of real words (Balota, 1994). All further analysis was performed on correct responses looking only at the three real word types.

Because some participants reported English as their second language (ESL) in the questionnaire, an ANOVA was performed to see whether their responses were significantly different on this task than those for whom English is their main or most frequently used tongue. The results showed that there were significantly longer response times for the ESL group for sexual words in particular, $F(1, 185) = 8.75, p < .01$, re sexual words. The differences with respect to romantic and neutral words were not statistically significant. Therefore, because responses to sexual words were crucial to the experiment, this group of participants was omitted from further analyses.

While men were slower than women to respond to the romantic and neutral words (850 and 831 ms vs. 832 and 836 ms respectively), they were faster with respect to sexual words than women (848 vs. 854 ms)--see Figure 6.16. A two-way ANCOVA examining responses by gender and word type with age as a covariate was performed to see if these differences in responding to this task were significant. There was no effect of gender but there was a main effect of word type, $F(2, 350) = 5.05, p < .01$. Post hoc analysis (Tukey's HSD) showed responding to neutral words ($M = 833$ ms) was significantly faster than responding to sexual words ($M = 851$ ms).

Examination of the responding by age groups showed differences for each word type. These findings can be seen in Figure 6.17. There was a significant effect of age group, $F(3, 173) = 16.43, p < .001$, and word type, $F(2, 346), = 7.07$,

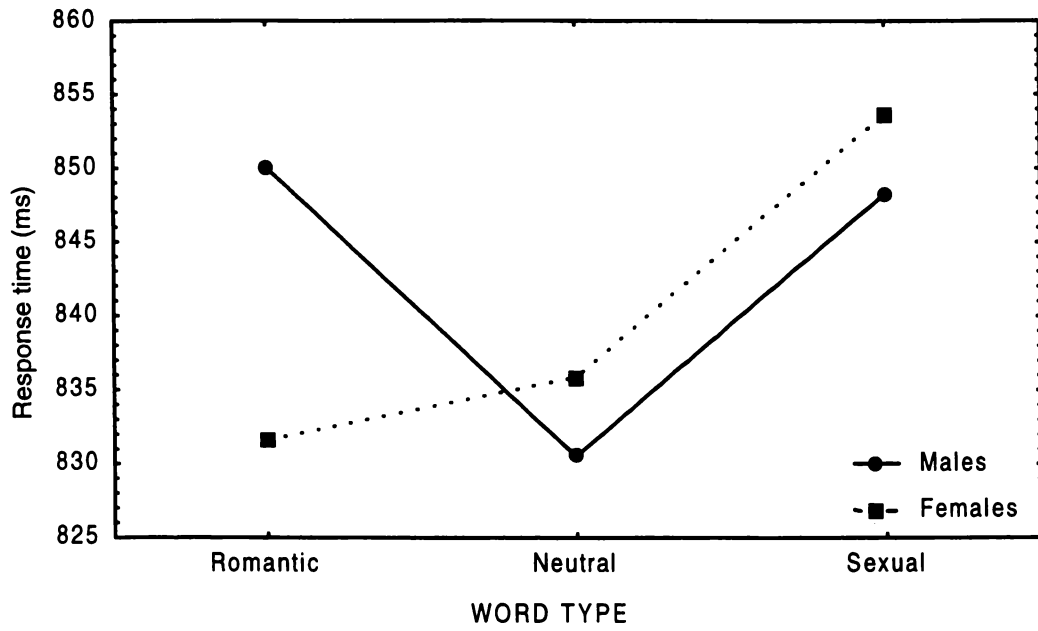


Figure 6.16. Responses to word type by gender.

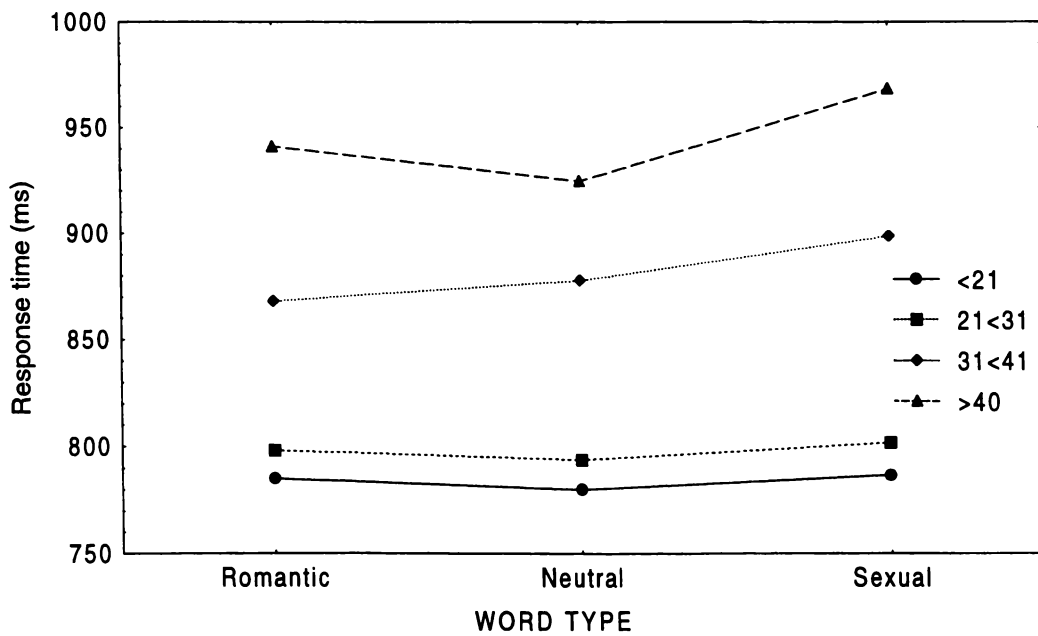


Figure 6.17. Responses to word type by age group.

$p < .001$, when a two-way ANOVA with respect to these variables was performed. The two older age groups responded to words significantly more slowly than the two younger groups ($M = 881$ and 945 ms vs. 784 and 798 ms respectively). The mean response times to each word type varied significantly, with responding to romantic words taking a mean time of 848 ms, neutral words 844 ms, and sexual words 864 ms. In summary, the older participants tended to respond more slowly than younger ones regardless of word type. This would suggest a predominant effect of slower response times due to age rather than word type.

The question of whether the sexual desire groupings showed an effect on semantic decision response times for the different word types was investigated. Figure 6.18 (top) depicts the response times by libido grouping for all participants. The result was tested by ANCOVA, with age as a covariate, and a significant main effect was found for word type, $F(2, 336) = 5.16$, $p < .01$, but not libido group. Responses to romantic words ($M = 847$ ms) took longer than those to neutral words ($M = 841$ ms), but less time than responses to sexual words ($M = 860$ ms). Post hoc analysis showed the responses to neutral and sexual words to be significantly different. The interaction was not significant.

In order to determine which respondents might be contributing to this slower mean responding, a 2-way ANCOVA was performed with each gender group separately; with desire grouping as the independent factor, age as a covariate, and the three word type response times the within subject dependent variables. Figure 6.18 (middle) depicts the males' response patterns. The results showed that for males there was no statistically significant effect of libido code or word type.

The same test for the females showed no significant effect of libido code, but one of word type, $F(2, 206) = 4.21, p < .05$. The interaction was not significant. Post hoc analysis of this finding showed that sexual words ($M = 858$ ms) attracted slower responses than the romantic ($M = 838$ ms) or neutral words ($M = 841$ ms). The interaction was not statistically significant but is shown for comparison purposes in Figure 6.18 (bottom).

Integration of findings. Participants responded at different rates to the three word types, but there was little difference between the genders on overall rates. Age played an important role in response times.

Mean responses to sexual words were slower overall than mean responses to other types of words, a demonstration of sexual content induced delay (SCID) as found by Geer and Bellard (1996). When the responses were examined by gender, the SCID phenomenon was absent for males, but significantly present for females. This finding strengthens that of Geer and Bellard since the stimuli in this study were more closely matched for word length and frequency of usage than in that study.

The effect of libido group on responding was found to be erratic for males. The low libido group responded slowly to romantic words, quickly to neutral words and between the two for the sexual words. This group seemed to account for the slow mean response to romantic words shown by males. Female participants with low libido performed in a more consistent fashion, taking longer than the other two groups to respond to all three word types, and longest to respond to sexual words.

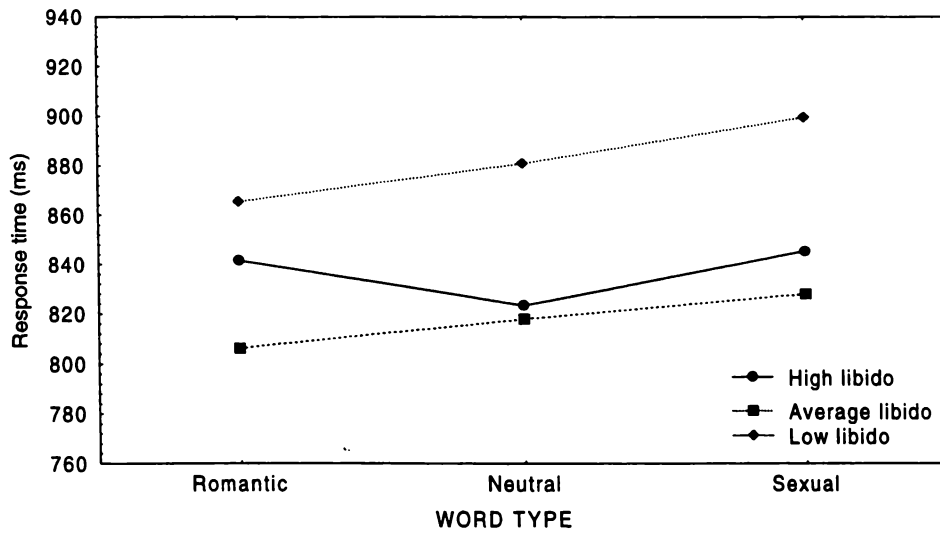
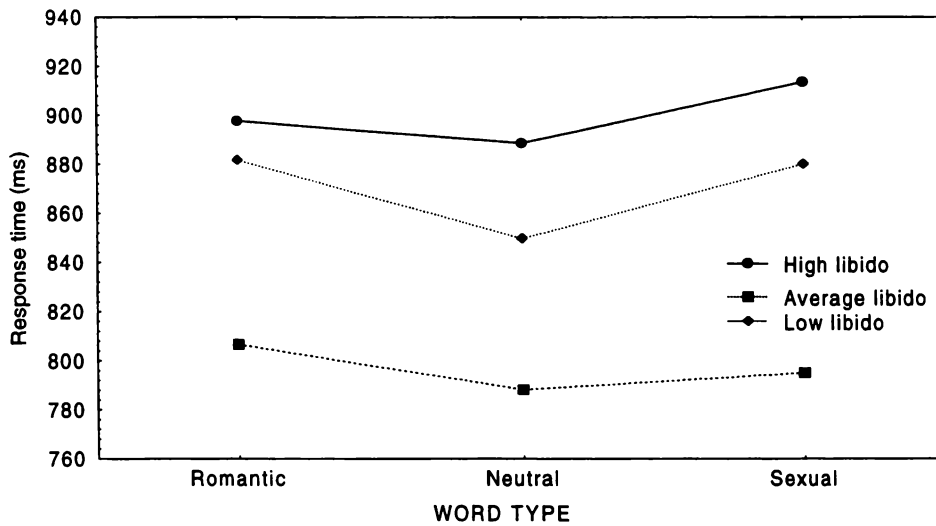
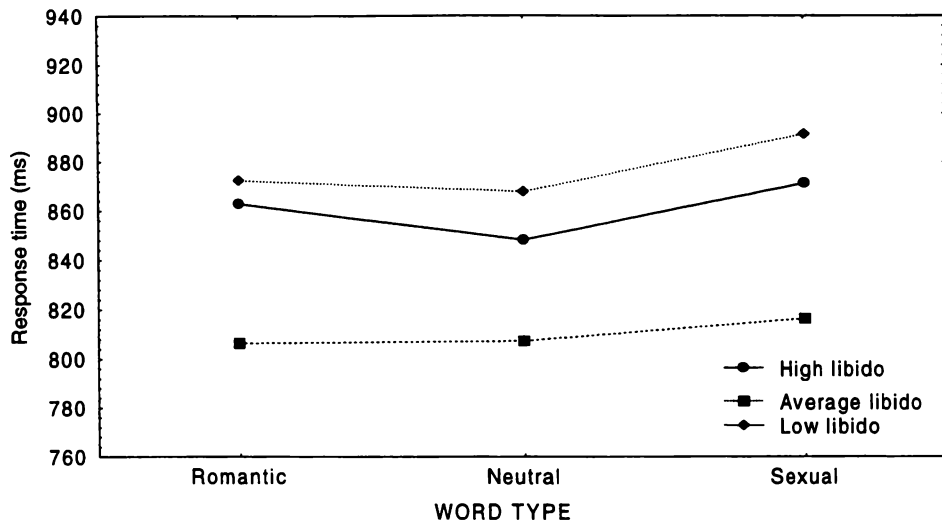


Figure 6.18. Responses to word type by libido group; top = all participants, middle = males only, bottom = females only.

Word rating task. In this task participants were asked to rate each of the words in the study with respect to its familiarity to them (1 to 7, where 7 = *extremely familiar*). They also rated the level of social acceptability they thought the word enjoyed (1 to 5, where 5 = *highly unacceptable*), and the emotionality associated with the word (1 to 5, where 5 = *highly positive*). Analysis was based on the analysable responses made by those for whom English was not a second language. Therefore there were mean ratings for the three word groups completed by 160 participants.

Most participants regarded the words as familiar to them. The mean rating for the romantic words was 6.00 ($SD = 0.9$); 58% of participants rated the romantic words between 6.5 and 7 where 7 was *extremely familiar*. The mean rating for the neutral words was 6.03 ($SD = 0.96$); 50% rated the neutral words between 6.5 and 7. The sexual words were rated as less familiar by participants with the mean rating being 5.89 ($SD = 0.97$); only 44% rated the sexual words between 6.5 and 7 for familiarity.

The mean rating for acceptability of romantic words was 1.68 ($SD = 0.90$); 47% of participants rated these words between 1 and 1.5 where one was *acceptable*. The mean acceptability rating for neutral words was 1.5 ($SD = 0.94$); these words were rated between 1 and 1.5 by 74% of participants. Sexual words were seen as much less socially acceptable with a mean rating of 2.16 ($SD = 0.77$) and only 17% of participants rating them between 1.0 and 1.5.

Emotionality ratings, where 1 was *highly negative* and 5 was *highly positive*, were clustered around the neutral score of 3. The mean score of 3.96 ($SD = 0.50$) for the romantic words was the most positive rating of all the word types; 52% rated the romantic words between 3 and 4. Neutral words were rated between

2.5 and 3 by 76% ($M = 3.02$, $SD = 0.28$). Sexual words were rated slightly negatively with a mean of 2.99 ($SD = 0.43$); they were rated between 2.5 and 3 by 56% of participants.

The distributions of the word rating data were not normal, but all contained sufficient number of subjects for parametric analysis to be a feasible method of assessing trends in responding, since with large sample sizes, sampling distributions of means are normally distributed regardless of the shapes of the distributions of the variables, as shown by the central limit theorem (see for example, Tabachnick & Fidell, 1989, p. 71).

The data were examined for age differences in familiarity ratings for word types. The one-way repeated measures ANOVA showed no effect of age, but significant effect of word type, $F(2, 344) = 4.39$, $p < .05$. Post hoc analysis showed the mean familiarity rating given sexual words ($M = 5.85$) was significantly less than that given romantic ($M = 5.98$) or neutral words ($M = 5.97$).

Gender differences in responding to each word type with respect to each rating task were analysed. A two-way ANCOVA examining gender by word type for familiarity ratings (with age as a covariate) showed that, while there was no significant result for gender or word type alone, there was a significant interaction, $F(2, 348) = 3.59$, $p < .05$. This is illustrated in Figure 6.19. The interaction was due to the female familiarity ratings for the romantic (6.01) and neutral words (6.05) being higher than their ratings for the sexual words (5.84).

An examination of the effect of libido on familiarity ratings showed no significant differences.

The variation in acceptability ratings between genders is shown in Figure 6.20. Both males and females reported romantic and neutral words more

acceptable than sexual words, but males rated sexual words less likely to be social acceptable than did females. A two-way ANCOVA examining gender by word type with respect to acceptability showed no gender effect, but confirmed a word type effect, $F(2, 350) = 78.39, p < .001$, and a significant interaction, $F(2, 350) = 4.99, p < .01$. The mean ratings for each word type were significantly different to those for every other type; romantic mean = 1.67, neutral mean = 1.48, and sexual mean = 2.18. A Levene's test showed the variances for these ratings to be homogeneous. The significant interaction was due to the difference in rating for the sexual words. Whereas males rated romantic ($M = 1.55$) and neutral ($M = 1.40$) words consistently more acceptable than did females ($M = 1.77$ and 1.56 respectively), they rated the sexual words as less socially acceptable ($M = 2.24$) than did their female counterparts ($M = 2.12$).

While there was no significant effect of libido group on acceptability ratings given the word types, there was an interesting pattern of responding. The low libido group consistently rated all types of words as less socially acceptable, with sexual words being rated the least acceptable ($M_{romantic} = 1.77, M_{neutral} = 1.53, M_{sexual} = 2.36$ compared with 1.87, 1.59, and 2.08 respectively for the high libido group, and 1.53, 1.39, and 2.10 for the average libido group).

The mean emotion ratings given the three word groups ranged from 3.91 for the romantic words, to 3.01 for the neutral, and 2.98 for the sexual words, where 1 is a score denoting highly positive emotion, and 5 suggests highly negative emotional content. A two-way ANCOVA analysis of the emotion ratings examining gender by word type, with age as a covariate, was significant for word type, $F(2, 350) = 308.54, p < .001$. Post hoc examination showed the romantic

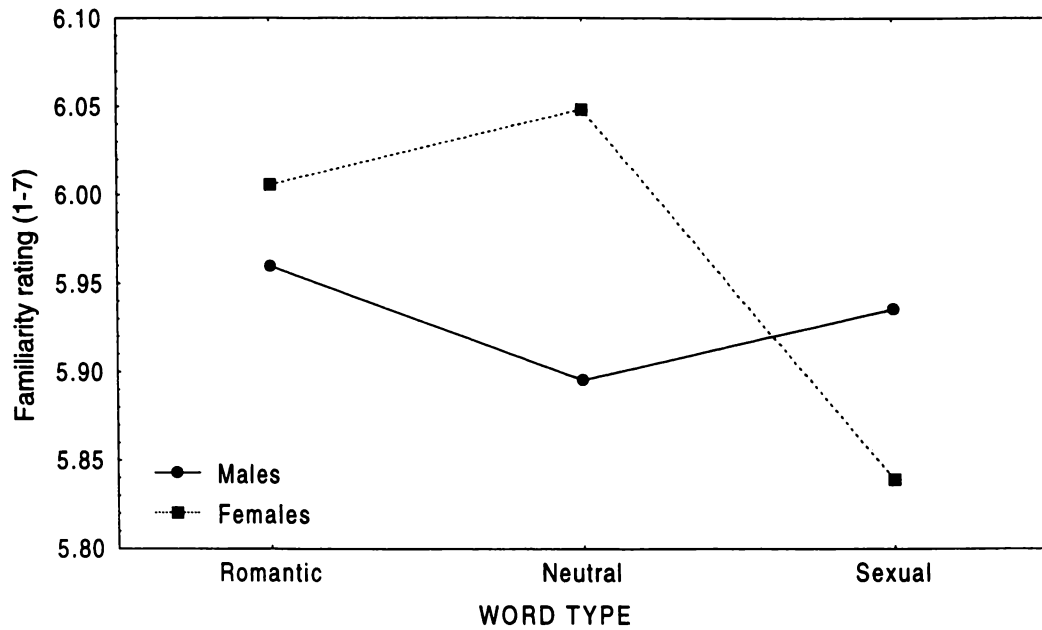


Figure 6.19. Familiarity ratings by gender and word type.

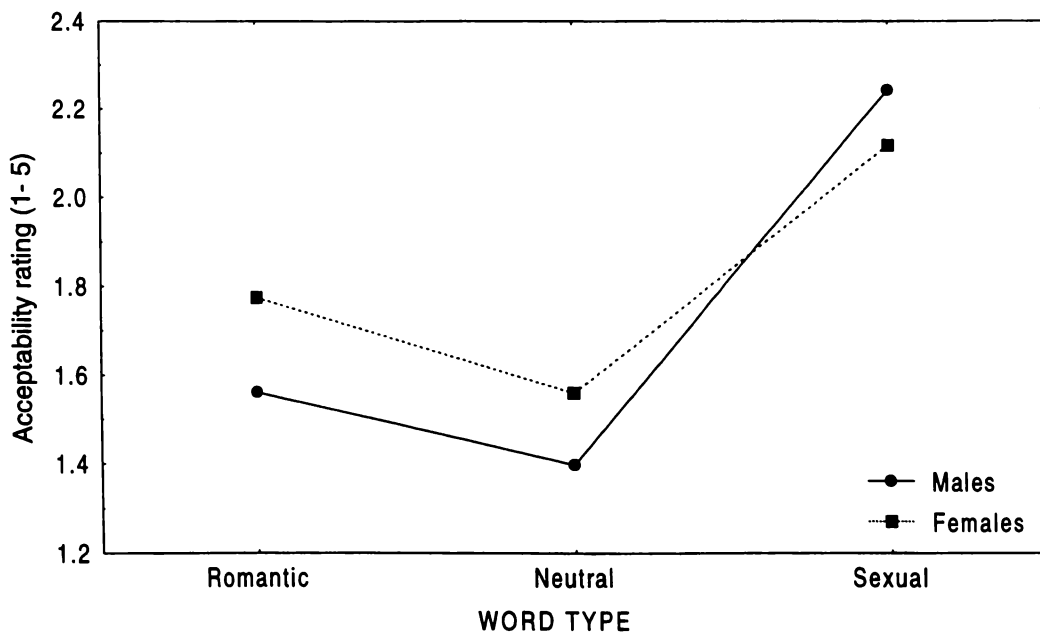


Figure 6.20. Acceptability ratings by gender and word type.

words to be rated as more positively emotional than either the neutral or sexual words.

There was also an interaction effect between emotionality, gender and word type, $F(2, 350) = 3.08, p < .05$. This is illustrated in Figure 6.21. The interaction results from the female ratings for emotionality of the sexual words ($M = 2.95$) being less positive than the male ratings for those words ($M = 3.01$). Female ratings of other word types were more positive than males ($M_{female} = 3.96$ and 3.07 ; $M_{male} = 3.85$ and 2.94 , for romantic and neutral words respectively).

Sexual desire or libido grouping was statistically significant, $F(2, 167) = 4.36, p < .05$, as was the effect of word type, $F(2, 336) = 286.58, p < .001$. The significant finding with respect to sexual desire grouping was a result of the low libido group ($M = 2.86$) rating the sexual words as less emotional than the high libido group ($M = 3.14$) of participants. While the interaction was not significant it is illustrated in Figure 6.22 for the purposes of comparison with the effect of sexual desire grouping on picture rating tasks.

Because the ratings of familiarity, social acceptability and emotionality could all have affected response times to some extent, an analysis of gender and libido group differences in response latencies, with these factors and age as covariates, was carried out. There was significant main effect of word type, $F(2, 320) = 4.65, p < .01$. Tukey's HSD post hoc analysis showed that there was a significantly faster mean response to the neutral words ($M = 842$ ms) than the sexual words ($M = 861$ ms), with the covariation taken into account.

There was no significant main effect of libido group found in this analysis.

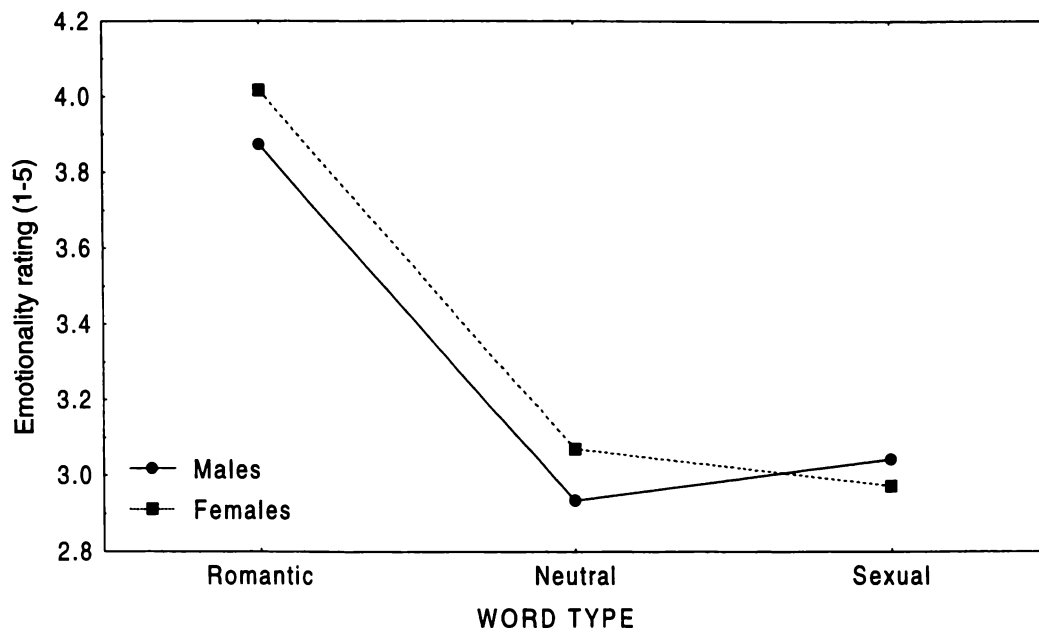


Figure 6.21. Emotionality ratings by gender and word type.

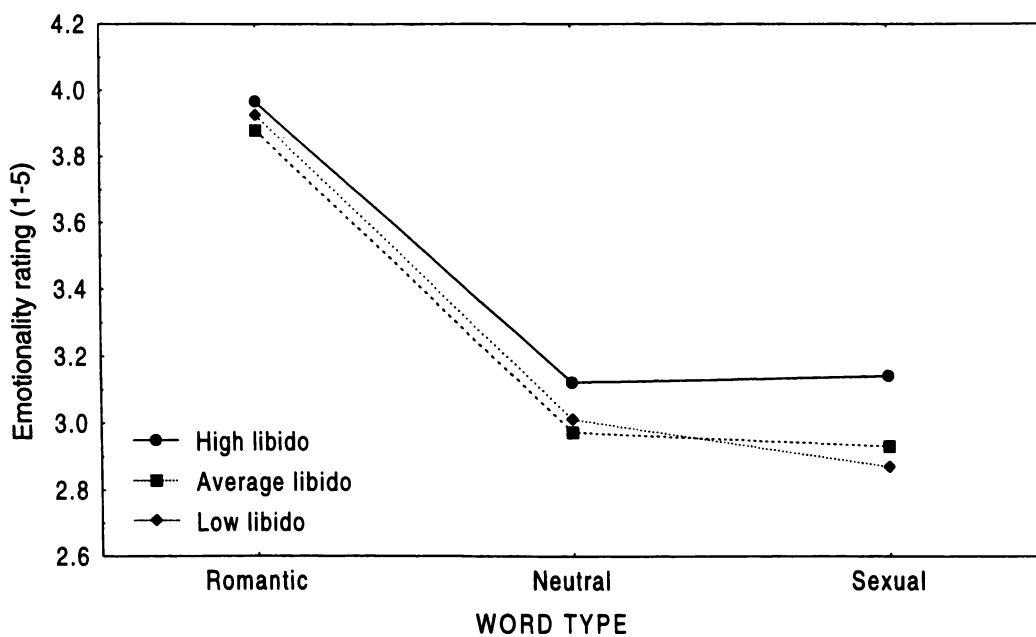


Figure 6.22. Effect of sexual desire grouping and word type on emotionality ratings.

Integration of Study Components

Relationship between Clinical Differences and Experimental Tasks

Gender. While there were differences in valence, arousal and dominance ratings given pictures by males and females, these were only significant with respect to the arousal ratings for the high valence non-sexual pictures, and all three of the ratings for the low valence unpleasant group of pictures.

Subjects differed significantly in reaction times during the picture recognition task to the high valence sexual pictures, and to the low valence unpleasant pictures. Males showed greater processing times overall than females, and demonstrated greater differentiation in terms of types of picture. Females were significantly faster than men to recognise sexual pictures that they had seen before.

Sexual content induced delay was demonstrated in the picture task when like-valence stimuli were compared. In other words, both men and women took longer to process sexual content than non-sexual or neutral pictures.

Ethnicity. The effect of ethnicity on responding to picture ratings tasks was assessed via ANOVA and found to be significant for ratings of the high valence sexual pictures only. The valence rating ANOVA result was $F(4, 184) = 2.63, p < .05$. The mean valence scores given by each group were as follows: *Maori* = 6.0 ($n = 14$) *Pakeha/European* = 6.8 ($n = 148$), *Mixed ethnicity* = 6.7 ($n = 19$), *Pacific Islander* = 7.8 ($n = 2$), and *Other* = 6.3 ($n = 10$). Levene's test of homogeneity of variance was not significant, nor was a post hoc Tukey's Spjotvoll/Stoline test.

For the arousal ratings of the sexual pictures there was also a significant result, $F(4, 184) = 2.80, p < .05$. The mean arousal ratings given by each group were as follows: *Maori* = 4.7 ($n = 14$) *Pakeha/European* = 5.9 ($n = 148$), *Mixed ethnicity* = 5.8 ($n = 19$), *Pacific Islander* = 5.2 ($n = 2$), and *Other* = 6.4 ($n = 10$). Levene's test of homogeneity of variance was significant, $F(4, 184) = 2.43, p < .05$, but a post hoc Tukey's Spjotvoll/Stoline test was not. Because neither of the post hoc tests for the valence and arousal ratings were of significance, and the majority of participants were in one ethnic group, it was decided to keep all the ethnic groups in the analysis.

Religion. The religion that participants recorded they were brought up in as a child was found to have a significant relationship with arousal ratings for the high valence non-sexual pictures only, $F(4, 184) = 2.69, p < .05$. Levene's test was not significant. Post hoc analysis showed no significant differences between groups suggesting the influence was not important. The finding with respect to current religious affiliation was negative, which again suggests that religion of childhood was a coincidental influence on picture ratings.

Relationship status. While the current relationship variable impacted on the arousal ratings for sexual pictures, $F(5, 182) = 3.07, p < .05$, and the valence ratings for unpleasant pictures significantly, $F(5, 182) = 2.45, p < .05$, the post hoc findings were not significant for either.

Sexual preference. There was no statistically significant interaction between sexual preference and picture ratings in this experiment. There was a significant relationship between sexual preference and word task response times for the romantic word type, $F(4, 172) = 2.47, p < .05$. However post hoc analysis by Tukey's Spjotvoll/Stoline test was not significant. Levene's test was not

significant. It was therefore decided that this was a spurious finding, and that overall, sexual preference had little bearing on this project.

Sexual experience. Those with a greater number of sexual relationships rated the valence of the sexual pictures in the second part of the experiment higher than others, $F(2, 143) = 3.11, p < .05$. Those who had never had a sexual relationship rated these pictures 6.19, those with one sexual partner only, 6.46, and those with two or more sexual partners rated their valence levels at 6.77 out of 9. However a post hoc test was not significant.

There also appeared to be an influence of sexual experiences on the arousal ratings of the non-sexual pictures in the second part of the study, $F(2, 142) = 3.35, p < .05$. The arousal ratings of non-sexual pictures dropped with increased sexual experience in terms of partner numbers; those with no sexual partner recorded 5.81, those with one only rated 5.55, and those with more than one sexual partner gave the non-sexual pictures a 5.01 rating for arousal levels. Again, a post hoc test was not significant. It is probable that the significant ANOVA findings occurred because age and sexual experience were significantly correlated in this sample ($r = .20, p < .05$).

Affect measures. The effects of levels of positive and negative affect on picture ratings were tested by a series of one-way ANOVAS with respect to each measure.

The differences associated with the positive affect scores on ratings of the sexual pictures are depicted in Figure 6.23. There was a significant effect of positive affect on valence ratings for the high valence sexual content pictures, $F(2, 185) = 7.15, p < .001$. Those with low positive affect scores rated the sexual

pictures less pleasant ($M = 6.25$) than the other two groups ($M = 6.83$ for high positive affect and $M = 6.87$ for average positive affect).

Positive affect influenced the arousal ratings for this type of picture also, $F(2, 185) = 4.77, p < .01$. Those with low positive affect scores gave significantly lower arousal ratings ($M = 5.32$) than those in the high positive affect group ($M = 6.09$). There was no effect of positive affect on dominance ratings for this picture type.

Level of positive affect affected ratings given for valence, $F(2, 185) = 3.71, p < .05$, and arousal, $F(2, 185) = 3.38, p < .05$, with respect to the high valence non-sexual pictures--see Figure 6.24. In both cases the low level positive affect participants rated the pictures significantly lower than the high positive affect people ($M_{low} = 6.48$ and 5.17 vs. $M_{high} = 6.95$ and 5.83 for valence and arousal respectively). There were no differences with respect to dominance ratings for this type of picture.

Positive affect had no effect on the way people rated the neutral and unpleasant pictures with respect to valence, arousal, and dominance.

The negative affect scores from the PANAS did not have any significant effects on the valence ratings given pictures by participants. There were significant findings with respect to the arousal and dominance ratings for some picture types. The high valence sexual pictures were rated for arousal differently by those with low negative affect ($M = 5.33$) compared to those with high negative affect ($M = 6.06$), $F(2, 185) = 4.13, p < .05$. Dominance ratings were also significantly different for these pictures, $F(2, 185) = 6.63, p < .01$. Those with low negative affect gave a mean rating of 6.7 while those with high negative affect rated their feeling of dominance on viewing these pictures 5.72. This would

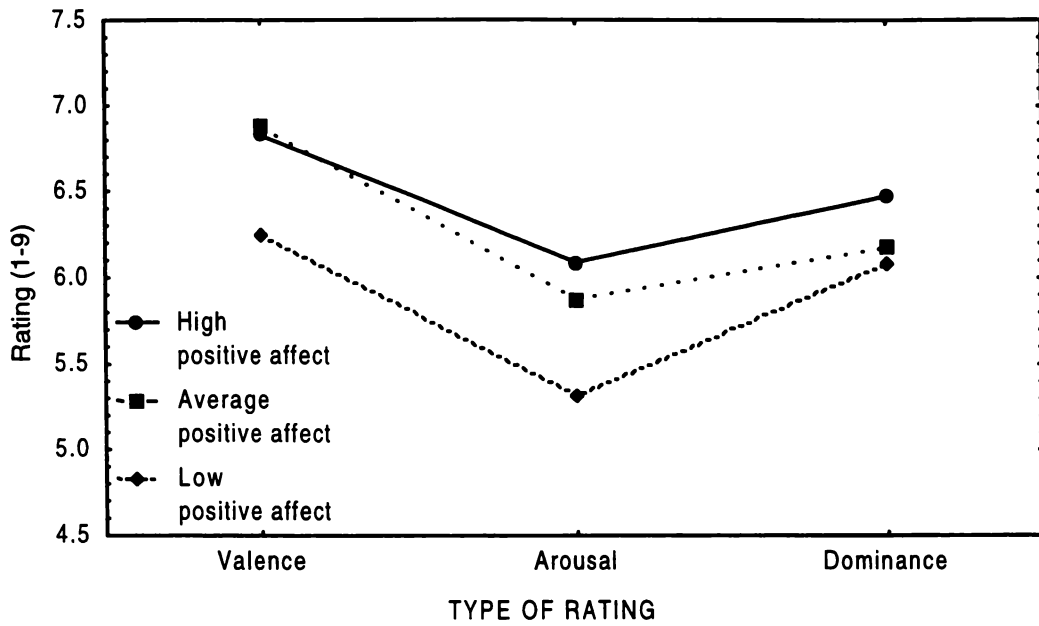


Figure 6.23. The effect of positive affect on valence, arousal, and dominance ratings of high valence sexual pictures.

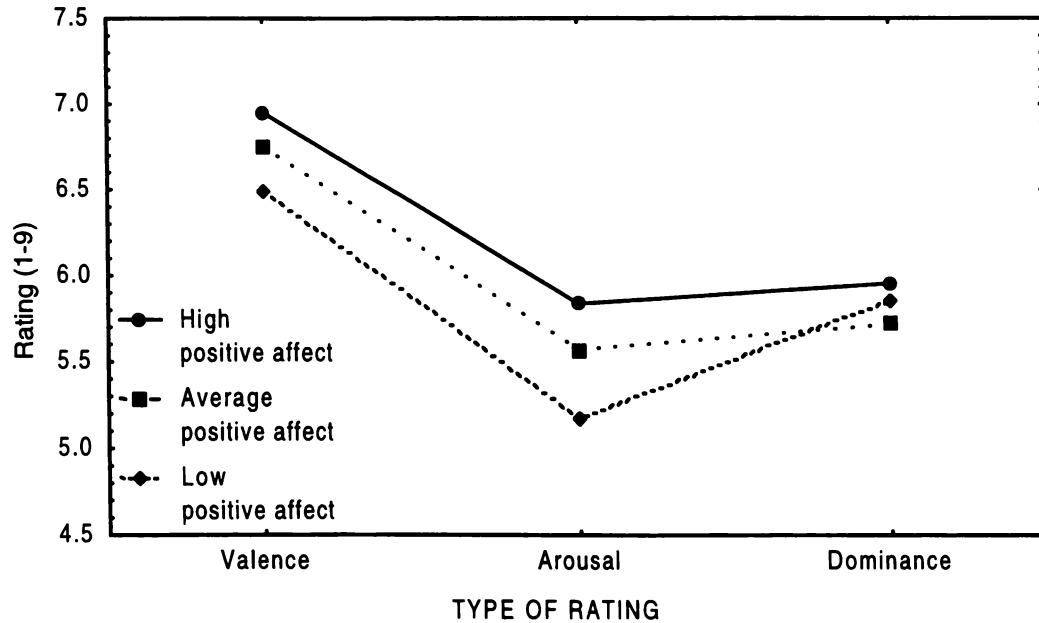


Figure 6.24. The effect of positive affect on valence, arousal, and dominance ratings on high valence, non-sexual pictures.

accord with the latter group feeling less dominant than the low negative affect people.

The arousal ratings for non-sexual pictures were significantly different, $F(2, 185) = 4.63, p < .05$. Those with low negative affect rated these pictures lower in arousal ($M = 5.05$) than those with high negative affect ($M = 5.98$). Dominance ratings for the non-sexual pictures did not differ according to negative affect scores.

Neither the valence nor arousal ratings of the neutral pictures varied, but the dominance ratings were significantly different, $F(2, 185) = 3.22, p < .05$. However post hoc analysis showed that the variation in rating from 7.19 for low negative affect, to 7.67 for high negative affect, was not significant.

For the unpleasant pictures the ratings of arousal were significantly affected by negative affect levels, $F(2, 185) = 3.50, p < .05$. Post hoc analysis showed that the average negative affect group gave lower mean arousal ratings ($M = 6.45$) than the high ($M = 7.38$) negative affect group for the unpleasant pictures.

There was no significant effect of positive or negative affect on picture recognition response times.

The effect of positive and negative affect on picture viewing times was investigated and was not significant.

Neither positive nor negative affect was shown to have an effect on time taken to rate the pictures.

Positive affect was shown to have a significant effect on the interest ratings for the sexual content pictures, but not any other group, $F(2, 144) = 4.34, p < .05$. The variation can be seen in Figure 6.25. Post hoc analysis showed that people with high positive affect levels recorded significantly higher interest

ratings ($M = 19.1$) for these pictures than did those in the low positive affect group ($M = 16.8$).

A test for the effect of negative affect on interest ratings for pictures was significant for the high valence non-sexual picture group, $F(2, 143) = 3.42, p < .05$. Post hoc analysis showed that the high negative affect group rated these pictures more interesting ($M = 18.0$) than did the low-level negative affect group ($M = 15.95$).

When the second series of pictures were rated, positive affect was found to be less likely to have an impact on ratings given. However, there were still significant differences found for the valence, $F(2, 143) = 3.77, p < .05$, and arousal ratings, $F(2, 143) = 7.04, p < .001$, given to the sexual group of pictures. Post hoc examination showed that high and low positive affect groups were significantly different in their ratings of the sexual pictures; valence means were 6.85 and 6.29 respectively, and arousal means 6.13 and 5.04 respectively.

Positive affect also had an effect on the arousal ratings relating to the neutral pictures, $F(2, 141) = 4.99, p < .01$. While the mean ratings varied from 2.23 to 2.86 these differences were not statistically significant on post hoc examination.

Negative affect levels affected the arousal ratings given for the sexual pictures, $F(2, 143) = 5.63, p < .01$, and the unpleasant pictures significantly, $F(2, 141) = 4.21, p < .05$. Tukey's HSD post hoc analysis showed that the high and low level negative affect groups differed significantly in their arousal ratings ($M = 5.97$ and 5.08 respectively) for the sexual pictures. The significant differences in ratings of the unpleasant pictures were found to be those of the high and average level negative affect groups ($M = 7.23$ and 6.13 respectively).

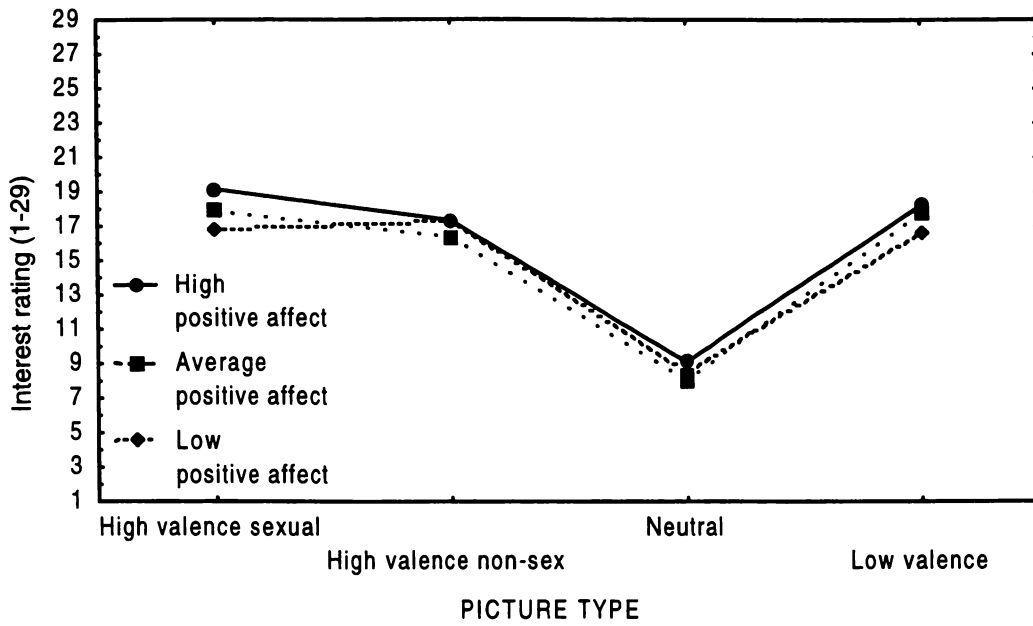


Figure 6.25. The effect of positive affect on interest ratings of picture types.

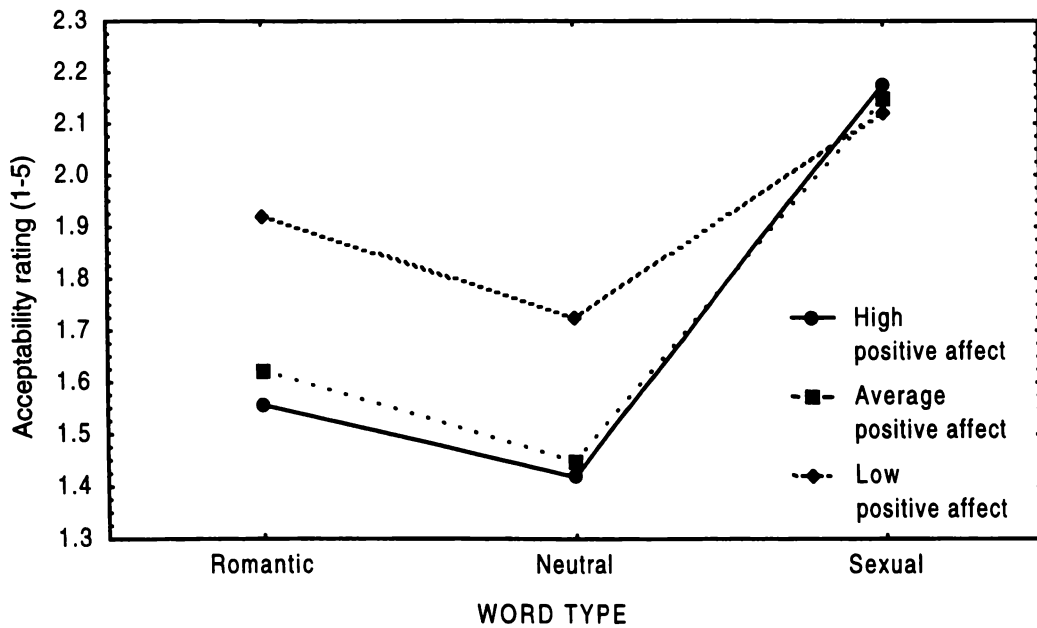


Figure 6.26. The effect of positive affect on acceptability ratings of word types.

Testing with respect to positive and negative affect levels showed there was no significant effect of these variables on the semantic decision task.

Word ratings for familiarity were not affected by positive affect levels.

Acceptability ratings, while not significantly affected by the positive affect rating were found to significantly interact with them. This interaction is shown in Figure 6.26.

There was no effect of positive affect grouping on ratings of word emotionality.

The negative affect grouping did not affect how people rated words for familiarity, or acceptability, but there was a significant interaction between the ratings given by people in different negative affect groups with respect to acceptability, $F(4, 326) = 2.98, p < .05$. This interaction appears in Figure 6.27. The emotionality ratings were not significantly affected by negative affect.

Sexual anxiety measure. The three groupings based on scores from the sexual anxiety measure were used to ascertain what effects sexual anxiety might have on the picture and word tasks. There was an effect on aspects of the picture-rating task.

The effect of sexual anxiety on the ratings for sexual pictures is shown in Figure 6.28. For the sexual pictures, valence ratings were significantly different according to anxiety group, $F(2, 185) = 7.15, p < .001$. Those with low levels of sexual anxiety rated these pictures as significantly more pleasant ($M = 7.02$) than those with high anxiety levels ($M = 6.31$).

Arousal ratings were unaffected by anxiety, but dominance ratings were significantly different, $F(2, 185) = 8.37, p < .001$. Low anxiety participants ($M = 6.8$) differed from both average ($M = 6.1$) and high anxiety persons ($M = 5.7$) in

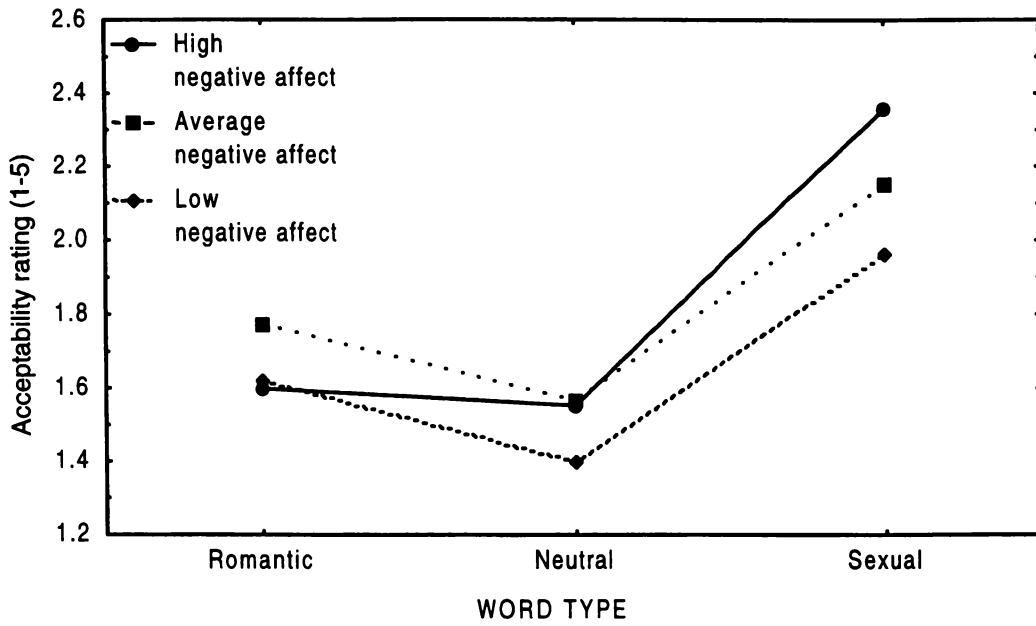


Figure 6.27. The effect of negative affect on acceptability ratings of word types.

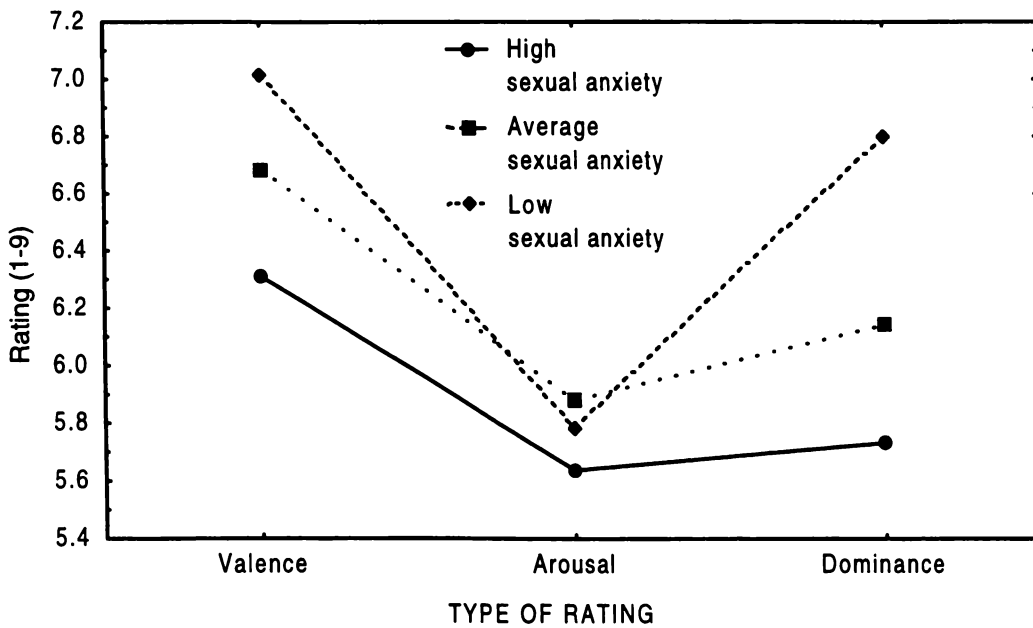


Figure 6.28. The effect of sexual anxiety levels on valence, arousal and dominance ratings for high valence sexual pictures.

their dominance ratings for the sexual pictures, that is, those with less sexual anxiety felt more in control when confronted with sexual images.

The ratings of other pictures were not affected by sexual anxiety grouping with the exception of the dominance rating for the unpleasant pictures, $F(2, 185) = 3.69, p < .05$. Post hoc analysis showed that those with low sexual anxiety rated their sense of dominance higher for these pictures ($M = 3.7$) than did the average and high sexual anxiety groups ($M = 3.0$ and 2.8 respectively).

Time taken to respond to the four types of picture was not affected by sexual anxiety, nor was the mean time that participants viewed each picture type.

There was no difference in the time highly anxious people took to carry out ratings compared to lower anxiety persons.

There were no significant differences in interest ratings or feelings assigned to pictures with respect to anxiety levels.

There was a significant effect of sexual anxiety on valence ratings for the various picture types in the second part of the experiment, $F(2, 141) = 4.49, p < .05$. There was also a significant effect of picture type on valence ratings, as reported earlier, and a significant interaction between these two effects, $F(6, 426) = 2.24, p < .05$, which is depicted in Figure 6.29. As can be seen from the graph, valence ratings for picture types varied greatly, with the effect of sexual anxiety being seen for the low anxiety people in their ratings of sexual ($M = 7.0$) and unpleasant ($M = 2.2$) pictures. In these cases their ratings were higher than other groups who recorded valence means of 6.48 and 6.52 for the sexual pictures and 1.58 and 1.88 for the unpleasant pictures. Sexual anxiety was not shown to affect arousal ratings for the various picture types but there was a significant effect on dominance ratings, $F(6, 426) = 2.24, p < .05$. Those with lower sexual anxiety

rated their sense of control more highly than others across the four picture types--see Figure 6.30.

The effect of sexual anxiety on the lexical decision task was not significant, but the interaction between sexual anxiety and the three word types was of interest. This interaction is depicted in Figure 6.31. The most anxious participants were slowest to respond and took longest to respond to sexual words.

There was no significant effect of sexual anxiety on the familiarity ratings given the three groups of words. There was a significant effect on the acceptability of words though, $F(2, 348) = 73.95, p < .001$. There was also a significant interaction between word type and sexual anxiety levels, $F(4, 348) = 4.81, p < .001$. This is shown in Figure 6.32. The low anxiety group rated the romantic words less socially acceptable than the other groups, and rated the sexual words as more socially acceptable than the other groups.

Sexual anxiety and levels of sexual desire. The self-report measure findings support a relationship between high sexual anxiety and low levels of sexual desire. Six of the eighteen males, and nineteen of the thirty-one females in this study recording high levels of sexual anxiety also recorded low levels of sexual desire. It was therefore decided that there was value in determining the effect of this combination of clinical characteristics on the ratings given the various picture types by those with high sexual desire / low anxiety and those with low sexual desire / high sexual anxiety.

For the sexual content pictures, a 2-way MANOVA showed that ratings for the affective valence or pleasure scale by those with high sexual anxiety and low libido ($M = 6.1$) were significantly different to those with low anxiety and

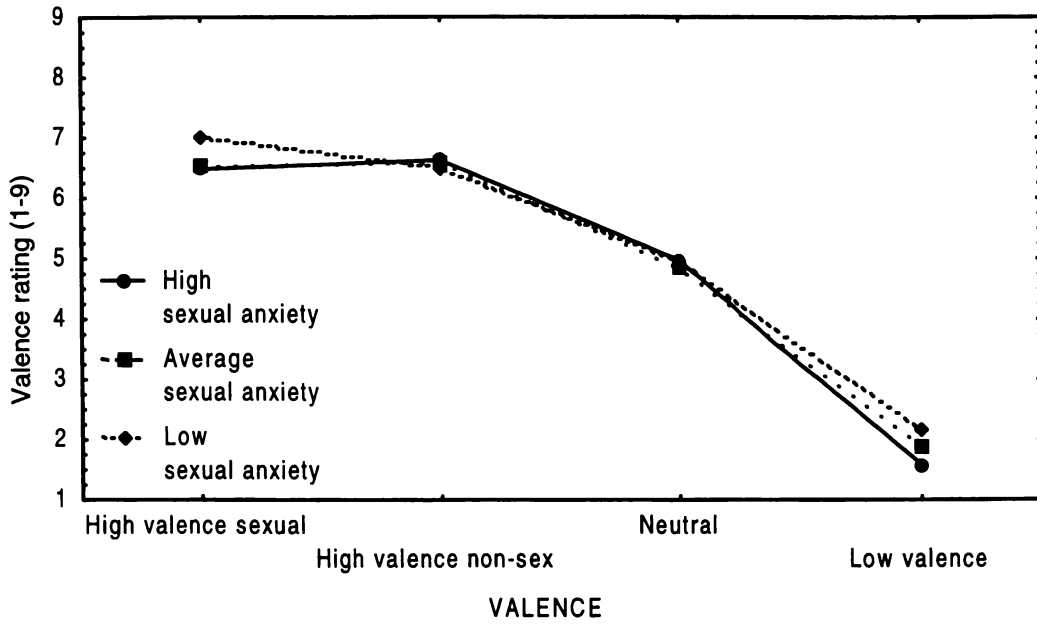


Figure 6.29. The effect of sexual anxiety levels on valence ratings by picture type.

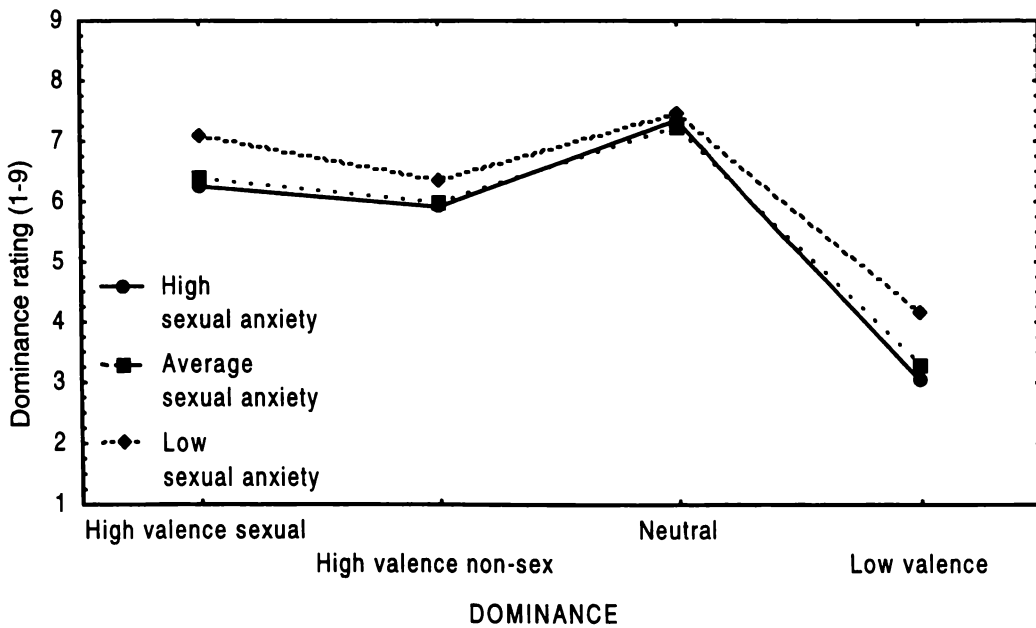


Figure 6.30. The effect of sexual anxiety levels on dominance ratings by picture types.

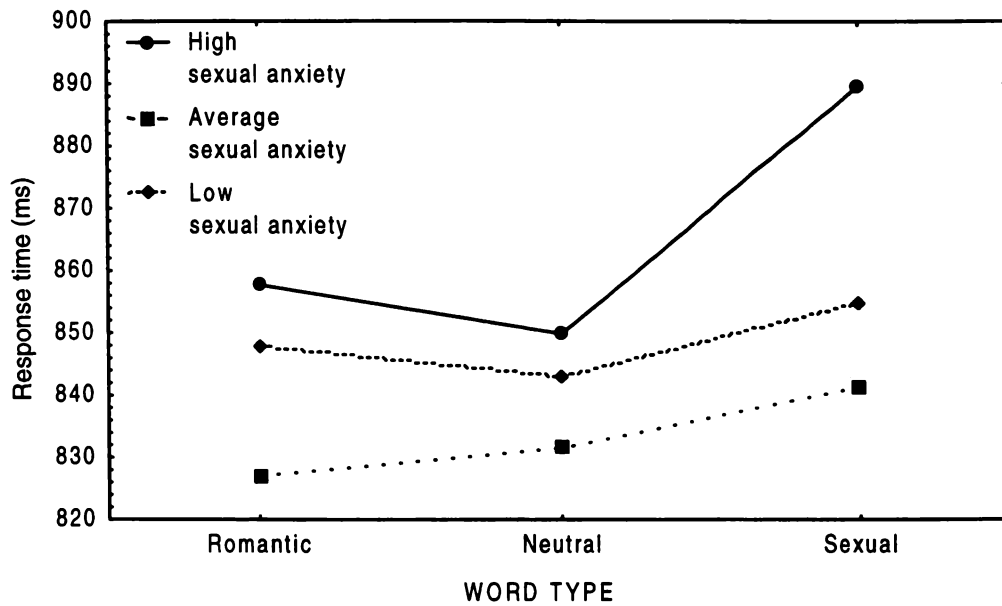


Figure 6.31. The effect of sexual anxiety levels on responses to word types.

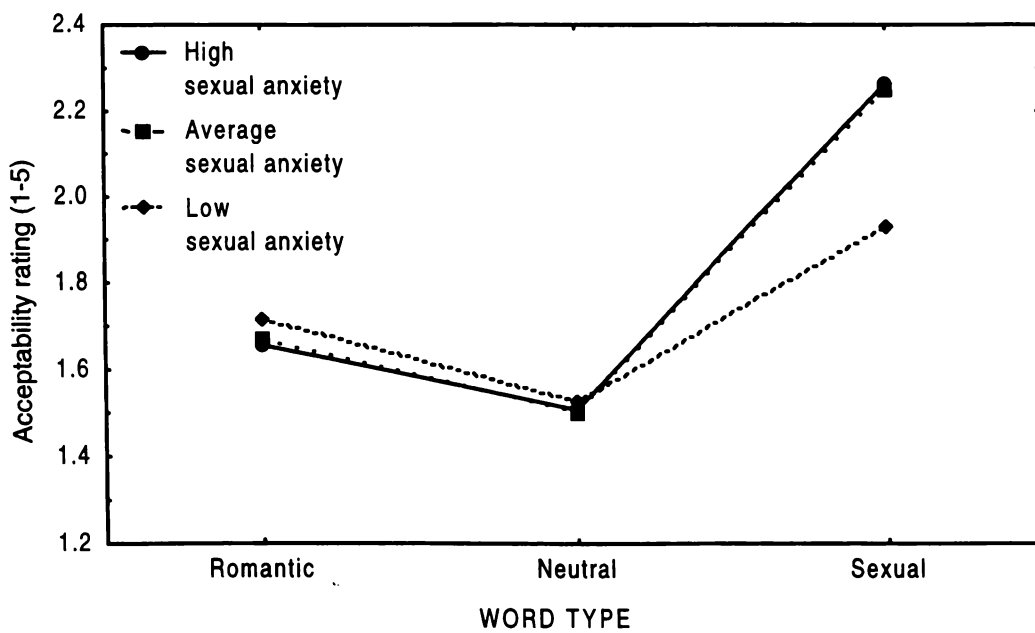


Figure 6.32. The effect of sexual anxiety levels on acceptability word ratings.

high sexual desire ($M = 7.1$), or low anxiety and average sexual desire levels ($M = 7.0$), Wilks's Lambda (12, 452) = .861, $p < .05$.

There were no significant interaction effects between sexual anxiety levels and sexual desire levels with respect to ratings on the high valence non-sexual, or the neutral pictures. For the low valence unpleasant pictures there was a main effect of sexual anxiety levels, Wilks's Lambda (6, 342) = .849, $p < .001$, and an interaction between sexual anxiety levels and sexual desire levels, Wilks's Lambda (12, 452) = .883, $p < .05$. Those with low anxiety and low sexual desire ($n = 5$) rated their sense of control or dominance for these pictures at a much higher level ($M = 6.0$) than those with high anxiety and low or average libido ($M = 2.6$ and 2.4 respectively) and those with average anxiety levels and average libido levels ($M = 2.6$).

Mood Awareness Scale. One-way ANOVA assessing the effect of mood awareness levels on other self-report measures showed a significant effect on sexual desire as measured by the Hurlbert Index of Sexual Desire, $F(2, 184) = 4.40$, $p < .05$. Post hoc analysis by Tukey's Spjotvoll/Stoline HSD test showed those with low mood awareness had HISD levels significantly lower ($M = 63.2$) than those with high mood awareness levels ($M = 71.5$). There were no significant effects of mood awareness on word tasks or the picture rating and recognition aspects of the protocol.

Body-Esteem Scale. There were no significant effects of body-esteem levels found with respect to the picture rating and recognition tasks. In addition there were no significant effects of the body-esteem levels within the word experiment.

Summary of effects of clinical parameters on experimental task performance. Table 6.9 summarises how the self-report measures and word and picture tasks correlate. As mentioned above, the sexual anxiety levels had the most consistent effect on all aspects of this study. There were also libido level effects for some parameters, particularly those involving responses to stimuli of a sexual nature.

Discriminant function analysis. One further way to ascertain the interaction between the information processing aspects of this project, and the clinical measure of sexual desire is to perform a discriminant function analysis. This procedure is capable of describing a predictive model based on the data collected. The model can be generated with half of the cases in the experiment, and tested for predictive capability using the other half of the data.

The first analysis selected clinical parameters and the data from the first picture rating task. The forward step-wise analysis using cases 1 to 99 ($n = 60$) generated a model including 11 variables from the selection in the following order: sexual anxiety score, arousal for low valence pictures, arousal for neutral pictures, mood monitoring, valence for sexual pictures, age, mood labelling, dominance ratings for sexual pictures, dominance ratings for non-sexual pictures, valence rating for non-sexual pictures, and arousal ratings for the non-sexual pictures. The Wilks' lambda for this model was .356, $F(22, 94) = 2.89$, $p < .001$. This classified 68.4% of the high libido cases in the selection, 43.2% of the average libido group and 52.0 % of the low libido participants an overall correct classification of 51.1% of this sub-sample. When this model was tested using

Table 6.9

Correlation Between Self-Report Measures and Behavioural Tasks in Cues Study

Variable	1	2	3	4	5	6	7	8	9
Word decision times									
Romantic	.03	.01	.07	-.08	.02	-.10	.09	.03	-.00
Neutral	.05	-.03	.07	-.21*	-.01	-.13	.04	-.03	-.10
Sexual	-.03	-.01	.11	-.18*	.03	-.15	.04	-.04	-.11
Word acceptability									
Romantic	-.22**	.07	.05	-.02	-.05	-.19*	-.16	-.21*	-.08
Neutral	-.19*	.13	.08	-.04	-.05	-.17*	-.09	-.16	-.09
Sexual	-.10	.20*	.23**	-.05	-.13	-.16	.02	-.10	-.14
Word emotionality									
Romantic	.18*	-.07	.11	.09	.07	.05	-.14	-.00	-.02
Neutral	.13	-.16	-.06	.01	.04	-.02	-.01	-.01	.06
Sexual	.16	-.19	-.31	.14	.16	.20*	.07	.20*	.21*
Sexual pictures									
Valence	.13	.00	-.26**	.21*	-.02	.16	.10	.20*	-.02
Arousal	.22**	.20*	.05	.11	-.04	.06	-.04	.03	.05
Dominance	-.26**	-.26**	-.31***	-.04	.06	.05	.06	.07	.12
Non-sexual pictures									
Valence	.10	-.11	.18*	.07	.01	-.04	-.06	-.06	.15
Arousal	.17*	.18*	-.16	.05	-.08	-.08	-.18*	-.16	.16
Dominance	-.04	-.17	.06	-.02	.06	.06	.06	.06	.19*
Neutral pictures									
Valence	-.03	.05	.06	-.13	-.03	-.04	.13	.04	.05
Arousal	.04	.14	.18*	-.19*	.13	-.18*	-.13	-.19*	.12
Dominance	.00	-.21*	-.00	-.08	-.04	-.01	-.08	-.06	-.12
Unpleasant pictures									
Valence	-.04	-.15	-.29***	.09	.01	.17	.11	.15	.15
Arousal	.15	.08	.02	.03	.15	-.05	-.05	-.05	-.02
Dominance	-.01	-.16	-.31***	-.00	.07	.13	.17*	.16	.18*
Picture response time									
Sexual	.13	-.03	.05	.16	.04	.17	.22*	.25**	.20*
Non-sexual	.11	-.12	-.03	.16	.17	.10	.14	.15	.13
Neutral	.03	-.09	-.02	.05	.15	.09	.12	.14	.10
Unpleasant	.00	-.12	-.13	-.00	.06	.09	.14	.14	.13
Picture viewing time									
Sexual	.10	-.18*	.04	-.00	.03	-.05	.11	.05	.17*
Non-sexual	.13	-.15	-.03	.12	.11	.06	.20*	.14	.18*
Neutral	.03	-.10	.09	-.07	.05	-.07	.07	.01	.11
Unpleasant	.04	-.21*	-.02	-.05	.05	-.07	.13	.06	.09
Picture interest rating									
Sexual	.28***	.08	-.11	.23**	-.04	.18*	.22*	.27***	.11
Non-sexual	.02	.18*	.13	.13	.03	.04	.00	.03	.17*
Neutral	.01	.05	.06	-.27**	-.05	-.15	-.08	-.14	.05
Unpleasant	.03	-.21*	-.04	.01	.12	-.01	-.20*	-.13	.02

Note. 1 = Positive scale, 2 = Negative scale, Positive and Negative Affect Schedule; 3 = Sex Anxiety Scale; 4 = Hurlbert Index of Sexual Desire; 5 = Mood Awareness Scale; 6 = Dyadic scale, 7 = Solitary scale, 8 = Total score, Sexual Desire Inventory-2; 9 = Body-Esteem Scale.

cases 100 to 193 ($n = 73$) the Wilks' lambda was .319, $F(22, 120) = 4.2$, $p < .001$. The model generated correct classification of 84.6% of high libido cases, 76.1% of average libido cases and 63.6% of the low libido cases, an overall correct classification of 75.5% of cases.

A further analysis using data from the clinical measures and the second picture tasks was carried out. For this analysis the ratings, response times, interest ratings and viewing times for the sexual and non-sexual high valence pictures were used. Generating the model with cases 1 to 99 ($n = 64$) 10 variables were included in the following order: physical condition sub-scale from the Body-Esteem measure, valence of sexual pictures, age, viewing time of the non-sexual pictures, dominance ratings for the sexual pictures, positive PANAS scores, sexual anxiety scores, interest levels for non-sexual pictures, arousal levels for non-sexual pictures, and viewing times for the sexual pictures. The Wilks' lambda for this model was .434, $F(20, 104) = 2.697$, $p < .001$. The model correctly classified 57% of high libido cases, 97% of the average libido cases, 64% of the low libido cases, an overall correct classification rate of 81%.

Checking the model using cases 100 to 193 ($n = 76$) resulted in a 13-step analysis with a Wilks' lambda of .304, $F(26, 122) = 3.82$, $p < .001$. The variables entered in this analysis were sexual anxiety, mood monitoring, mood labelling, age, valence ratings for sexual pictures, gender, response times for the sexual pictures, negative PANAS scores, arousal ratings for the sexual pictures, arousal ratings for the non-sexual pictures, dominance ratings for the non-sexual pictures, dominance ratings for the sexual pictures, and interest ratings for the sexual pictures in that order. There were 78% of high libido cases, 86% of average libido cases, and 82% of low libido cases correctly classified in this test of the model, an

overall correct classification of 83% of cases. That the variables selected vary within the model suggests further refinement of this process would make the predictions more robust and consistent with more diverse samples. However, it is worth-while noting that both iterative processes included the affective valence ratings of the sexual pictures, the dominance ratings for those pictures, age, sexual anxiety levels and the arousal to non-sexual pictures as variables contributing significantly to the model. These analyses demonstrate that information-processing tasks relevant to the process being assessed could be utilised as an adjunct to self-report assessment measures.

Relationship between Picture Tasks and Word Tasks

For the whole sample, responses to pictorial cues revealed greater differentiation between stimulus classes (high valence sexual, high valence non-sexual, neutral and low valence unpleasant pictures) than did responses to semantic cues (romantic, neutral and sexual words).

Those reporting low levels of sexual desire tended to show greater response latencies with respect to words. However the reverse effect was found with pictures, with low libido subjects responding more rapidly to all types of pictures in a memory recognition task.

A significant correlation ($r = -.18$) was found between the Hurlbert Index of Sexual Desire and responding to sexual words, but not pictures. The Sexual Desire Inventory was positively correlated with responding to sexual pictures ($r = .25$), but not words. There was no correlation between responding on the word and pictorial tasks.

The findings as outlined above will be discussed in the next section.

CHAPTER 7

Discussion

The research described here was conducted to investigate factors involved in the construct of sexual desire, to elucidate clinical correlates of the levels of sexual desire as reported using self-report measures, and examine the nature of responding to sexual and non-sexual cues within a laboratory setting. The first of these aims, the correlation of self-report material carried out in all three studies in this series yielded an understanding of the relative significance of several clinical measures as correlates of sexual desire. The second demonstrated differences in responding to pictorial and semantic cues by people self-defined as high, average, or low in sexual desire. The innovative combination of these two approaches has enhanced understanding of the ways sexual desire is demonstrated by individuals, and may have implications for treatment approaches.

Self-Report Data

Clinical qualities with respect to sexual desire ratings. The literature relating to sexual dysfunction, particularly with respect to arousal, has demonstrated the connections between mood, for example anger, anxiety and sexual functioning. Depression, characterized by lack of positive affect has also been associated with decreased sexual desire. There have been suggestions too, that awareness of one's current mood may influence behaviour. The clinical findings from the three studies in this series show interesting correlation between measures of affect, sexual anxiety, mood awareness, body esteem and sexual desire. However, the relationship between clinical measures does not accord with

clinical intuition as often as might be expected. There are a number of associations that are worthy of note.

If a lack of positive affect is one aspect of clinical depression, which is associated with lower sexual desire, one might expect measures of positive affect to correlate with measures of sexual desire. The first study in this series did find such a relationship, but the finding was not replicated in the second study. Since both these studies involved around fifty subjects it may be that the small samples involved explain the lack of replication. However, the third study surveying a much larger sample again failed to find a significant relationship between positive affect, as measure by the PANAS, and the two sexual desire measures employed in the test battery. One might expect the lack of positive affect not to result in correlation with lower sexual desire if the measure was not sensitive enough to clinical levels of depression. However, since positive affect and pleasant events, social and interpersonal satisfaction are related, it seems logical to expect a relationship between the higher levels of positive affect and higher levels of sexual desire. Yet, the statistical correlation does not support this reasoning. Mean levels of sexual desire were slightly lower in those with lower positive affect, but none of the comparisons was statistically significant. Participants in all three studies offered 'mood' as one of the factors they thought affects sexual desire, but the scales quantifying important aspects of mood failed to show relationship to measures of sexual desire. There is the possibility that examination of these factors in a clinical population would yield more extreme results. It is also important to note that depression is characterized by altered levels of negative affect as well as lower levels of positive affect.

The relationships found with respect to negative affect were slightly more consistent with expectations, although the demonstration that low negative affect and low sexual desire are related was confined to two of the three studies. In the second study there was a negative correlation of negative mood and sexual desire levels, and in the larger third study negative affect correlated negatively with autoerotic desire, that is the wish to behave sexually alone. These results suggest sexual desire is lower in those with higher negative affect levels. One of the features of the data sets relating to negative affect within these studies, is the leptokurtic nature of the distributions in all three studies. The narrow range of responding to the negative aspects of the PANAS may have contributed to the lack of significant differences with respect to desire levels. Again, this procedure may yield more differentiated results when used with a population clinically diagnosed with low levels of desire.

Neither affect measure seems to be as important as theory might suggest in these studies. Subdivision of participants into groups defined as demonstrating low positive affect and high negative affect did not result in a consistent relationship with low sexual desire. However, affect is reliably related to sexual anxiety, which in turn is shown to be related to levels of sexual desire in all three studies. It is possible that affect may function as a moderating variable in terms of its effect on sexual desire. This concept is supported by the relationships between positive and negative affect and the behavioural tasks carried out during the Cues Study.

Positive affect was associated with higher ratings for valence and arousal of the high valence sexual and non-sexual pictures. Interest levels in the sexual pictures were higher among those with higher positive affect, which demonstrates

the association of positive affect with pleasant events and social interactions as explained above. Negative affect was not associated with differences in levels of pleasure (valence) recorded for any of the pictures types, but arousal levels in response to the non-sexual pictures were higher in those with high negative affect. This finding may be a reflection of elevated anxiety levels in participants, since anxiety is characterized by higher levels of arousal, and some of the high valence non-sexual pictures depicted scenes that might generate anxiety in some (e.g., cliff diving, and white water rafting). The participants recording higher levels of negative affect rated the non-sexual pictures more interesting than those with lower negative affect. Their ratings of sexual pictures were not significantly different to those of the other participants though.

The studies in the present project sought information from participants regarding their levels of anxiety about specific sexual topics, because this measure seemed more likely to be related to whether or not an individual was anxious or fearful of ideas associated with sexuality. Such fears or anxieties seem intuitively related to whether that individual might experience higher or lower levels of sexual desire.

Self-report data from all three studies suggest the importance of anxiety about sexual topics in the expression of lower levels of sexual desire. The first study showed a strong negative correlation ($p < .001$) between sexual anxiety and levels of sexual desire. This finding was replicated in the second experiment ($p < .01$), and confirmed with both measures of sexual desire in the third study ($p < .001$). The multiple regression analyses performed in these studies further support the importance of the relationship between sexual anxiety and sexual desire levels. The discriminant function analysis of clinical measures and picture ratings

included sexual anxiety as the first factor in the forward step-wise generation of an eleven-step model. The broader analysis including other tasks in the protocol also included the sexual anxiety scores as significant to the second model--in this case as the seventh variable in a ten-step model.

The sexual anxiety measure is a forced choice instrument and therefore does not quantify specific reasons for high sexual anxiety and thence low sexual desire. However, these findings indicate an important aspect of any treatment for this disorder--that is dealing with fears and anxieties related to sexuality. One third of the males and almost two-thirds of the females in the Cues Study who recorded high sexual anxiety levels also recorded low sexual desire levels. This finding fits with clinical anecdote, which suggest that education and anxiety reduction techniques help with any sexual dysfunction; here we have empirical evidence suggesting the importance of this approach for desire problems.

Further consolidation of the evidence relating to the relevance of task performance to clinical measures is the finding that sexual anxiety levels did not affect arousal ratings of pictures but did the pleasure and dominance ratings. Those with low levels of anxiety rated sexual pictures as significantly more pleasant than high anxiety participants. They also reported higher control or dominance ratings than high anxiety people when confronted with sexual images. Low anxiety people saw sexual words as more acceptable than did other participants. These inter-relationships demonstrate how task performance can lead to a clearer understanding of the factors affecting a particular aspect of functioning. They also demonstrate a way of operationalising the separate nature of desire as a phase or aspect of sexual functioning. Pleasure or valence ratings

given sexual material can be lower for those with low sexual desire, but their arousal ratings might be no different to those of other people.

The self-report measures included a measure of mood awareness, a scale designed to quantify the extent to which a person notices variation in their current mood. This scale measures two factors, mood monitoring associated with negative affectivity, and mood labelling which is associated with positive affectivity. The measure was included to elucidate the relationship between these factors and interest in sexual activity.

In the Clinical Measures Study mood awareness was found to be related to levels of sexual anxiety, with the labelling sub-scale more strongly correlated than the monitoring sub-scale. However, the correlation direction was negative in all three (total and two sub-scales) calculations, indicating increased awareness with decreased anxiety. These findings are somewhat contrary to those from other published studies.

In the Picture Rating Calibration Study there were no significant relationships found between mood awareness and any of the other self-report measures. This too, is somewhat at variance with the authors' thesis that mood awareness and other aspects of functioning should be related.

In the Cues Study the mood awareness total and the mood monitoring sub-scale correlated positively with both sexual desire measures. This finding, together with the relative strength of the association between mood monitoring (MM) and sexual desire measures (MM & HISD $r^2 = .04$, MM & SDI-2 $r^2 = .05$) compared to the non-significant relationship with mood labelling is somewhat puzzling. The measure's authors suggest increased monitoring would be associated with decreased personal interactions, and the relationship between

labelling and extraversion should be a positive one (Swinkels & Guiliano, 1995). Their suggestions lead to the expectation that mood monitoring would be related to lower sexual desire and mood labelling to higher sexual desire, but the data do not support these hypotheses. Instead the findings support the alternative explanation that those who are more likely to notice variation in their mood are more likely to report increased sexual desire levels. This suggestion warrants trial by replication in further studies.

Further results with respect to the experimental tasks showed that mood awareness levels had no significant effects on any of the tasks in this part of the project. One explanation for these findings may be that since the two dimensions of affect do not relate in a coherent manner within these samples it would not be expected that this measure of awareness of affect would relate either. However, it is also apparent that effect sizes within the information processing aspects of the protocol were not large with respect to any variation between groups decided by self-report measures.

Comparisons of New Zealand data with findings from other studies.

New Zealand scores on some of the clinical measures utilized were similar to those from USA. New Zealand scores for the PANAS, for example, ranged between 29.2 and 30.2 for the positive scale while the American mean for that scale was 29.7. The negative scale scores over the three New Zealand studies varied from 12.8 to 14.9 while American mean score was given as 14.8. The American PANAS figures date from Watson, Clark, and Tellegen's (1988) study using this measure with introductory psychology students in the 80s.

Scores for the Sexual Anxiety Inventory (SAI) were comparable also, New Zealand means for males ranging from 37.5 to 38.4 while the American mean for

males was 32.4, slightly lower than the present study. For New Zealand females the means scored were slightly lower than in the USA, ranging from 40.9 to 45.6 while the mean American score was 47.0. The dates when these scores were generated may explain these differences. It would seem the males in the USA sample in 1980 demonstrated less sexual anxiety than the 1996-8 New Zealand males. The females in the 1980 American sample reported more sexual anxiety than the New Zealand 1996-8 sample. Overall means for the two national samples showed a lesser level of anxiety about sex topics locally at this point in time than Janda and O'Grady reported in USA in 1980. Historical and social factors could account for these differences.

However, for the sexual desire instruments there was a greater level of disparity. For the Hurlbert Index of Sexual Desire (HISD) means for the females in the New Zealand studies ranged from 60.2 to 63 and means for males from 68.3 to 74.2. In the only publication giving mean data from the USA, the heterosexual females studied (with no reported psychosocial problems) scored a mean of 55.6, while the homosexual sample of women yielded a score of 43.9. Both of these mean scores are somewhat different from the levels exhibited by New Zealand samples. Further investigation of this discrepancy in levels, by means of selecting an age related sample of heterosexual women of Pakeha/European ethnic background from the New Zealand study group, allowed comparison of two groups in which the mean ages were closely matched (New Zealand mean age = 27.3 years; American mean age = 26.4 years). This comparison still yielded a mean HISD score of 63.3 ($SD = 12.8$) for the New Zealand group, somewhat higher than the when 55.6 mean of the American women.

Furthermore, a comparison of New Zealand results with those from Spector, Carey and Steinberg's (1996) Canadian study using the Sexual Desire Inventory-2 demonstrated an even greater difference. Their study reported mean scores for the two sub-scales in the instrument for each gender separately. The male Dyadic scale mean in the Canadian study was 24.3 ($SD = 4.7$) while New Zealand males recorded a mean of 45.4 ($SD = 9.2$) in the Picture Rating Calibration Study and 46.2 ($SD = 7.4$) in the Cues Study. For the Solitary sub-scale the Canadian males' mean was 7.0 ($SD = 6.2$) while the New Zealand scores ranged from 16.6 ($SD = 10.2$) in the Picture Rating Calibration Study to 10.9 ($SD = 6.4$) in the Cues Study. The females' scores were also at variance with those of the Canadians; the Canadian female mean Dyadic score was 22.9 ($SD = 5.8$), while these New Zealand studies recorded means of 37.2 ($SD = 10.3$) and 38.8 ($SD = 10.5$). For the Solitary sub-scale the Canadian female mean was 2.8 ($SD = 4.6$), while the New Zealand samples means were 11.5 ($SD = 8.8$) and 7.4 ($SD = 6.2$) for the Picture Rating Calibration Study and the Cues Study respectively. There are a number of possibilities to explain these differences, two of which might be variations in age and sexual experience in the samples studied.

If a selection, from the Cues Study, of those between the ages given for the Canadian sample (18 to 40 years) is examined, the mean Dyadic scores are 47.5 ($SD = 4.8$) and 39.7 ($SD = 9.3$) for the New Zealand male and female participants respectively, compared to the Canadian means of 24.3 and 22.9 for males and females respectively. However the mean age for this selection from the NZ sample ($M = 24.2$, $SD = 6.1$) is still greater than that of the Canadian sample.

When a sub-selection of the New Zealand sample was generated so that those with more than one sexual relationship were omitted, the mean age of the

New Zealand sample ($M = 20.7$, $SD = 4.5$) then matched that of the Canadian more closely ($M = 20.8$, $SD = 2.7$). In this sub-group the NZ males reported a mean Dyadic scale score of 48.6 ($SD = 5.0$), and a Solitary score of 10.8 ($SD = 6.2$). The females in the sub-sample generated a mean Dyadic scale score of 36.4 ($SD = 11.8$) and a Solitary scale score of 4.6 ($SD = 5.0$). Unfortunately, this sub-sample was not large ($n = 31$), which illustrates the degree to which the New Zealand sample reported more sexual relationships at this age, than the Canadian sample. It is feasible that results from a larger sample of New Zealanders might generate figures that are not so discrepant with those from Spector's (1996) study, but the current data suggest there is a higher level of self-report with respect to sexual desire from New Zealand samples.

It is known that those in ongoing sexual relationships score more highly on the dyadic scale in particular (Personal communication, Spector, 8 July, 1997), so this may be part of the explanation for these findings. The publication of further data from overseas samples whose participants are within sexual relationships may shed light on the reasons for these differences in reported levels.

A further aspect of the present investigation of factors involved in sexual desire is the information processing approach, which in past studies has yielded more consistent findings across cultures.

Responding to Pictorial and Semantic Cues Data

Those aspects of the Cues Study specifically employing information processing techniques were the timed recognition task with pictorial stimuli, and the lexical decision task with semantic stimuli. Each of these tasks produced findings of interest, but the results were somewhat less informative than hoped with respect to variation in self-reported sexual desire. Responding to pictorial

stimuli demonstrated that sexual stimuli were processed more slowly than other types of stimuli. There were significant gender differences in this task too, males taking longer to respond to all except the neutral pictures.

When responding to sexual stimuli was compared to responding to neutral and similar valence non-sexual stimuli, participants took longer to record their responses to the sexual pictures. When this performance was examined with respect to sexual desire levels it was found that those in the low libido group responded more quickly than others. This finding was, however, the only information processing task on which there was a significant difference between participants with low and higher levels of sexual desire.

Participants who completed the lexical decision task also responded differently to stimuli of a sexual nature, taking significantly longer to respond to sexual than to neutral words. However, there was no differentiation by libido group on this task.

The performance of these information processing tasks resulted, in the pictorial tasks, in a wide range of timed responses, and in the semantic protocol, in a small range of responses, neither of which contributed to a wholly conclusive picture of how low sexual desire might affect response behaviours in a laboratory situation. The concurrent aspects of the experiment that did result in findings of a more conclusive nature were the picture-rating tasks, the interest ratings, and the feeling categories assigned to the slides within the experiment. These findings are further examined in the following section.

Overall findings

One way to synthesize the important findings from the Cues Study is to examine the results generated by the different sexual desire groups.

High libido group responses. Those reporting high sexual desire on the self-report instruments tended to have higher positive affect, lower levels of negative affect, significantly lower sexual anxiety levels and reported a greater frequency of sexual desire through the Sexual Desire Questionnaire (Beck, 1991). The mood monitoring of this higher libido group was significantly greater than that of the low libido people and their scores on the sex attitude sub-scale of the Body-Esteem measure were significantly higher than those of the other participants. The total scores on that measure were also significantly higher for these participants than the low libido group. These self-report measures give an overall perception of this group of people as functioning positively, demonstrating little sexual anxiety and being aware of their feelings. The experimental tasks gave a means of examining how these attributes affected their responding to cues of varying kinds in their environment.

When the picture rating responses are examined, the high libido people found the sexual content pictures significantly more pleasant and arousing than those in the low libido group. None of the ratings for the other picture types were differentiated by sexual desire groupings. The high libido participants also increased their ratings with respect to the sexual stimuli when viewing them for a second time; that is, this group was slower to habituate to the sexual subject matter than others. It is possible this finding demonstrates the hedonic contingency processing principles described by Wegener, et al. (1993), although they discussed this principle with reference to the influence of positive mood on

message scrutiny--and as already stated, this study did not find any effect of positive mood on responding. Nevertheless, the principle may be connected with increased scrutiny of sexual pictures by high libido participants.

Results from the picture recognition task did not enable any differentiation between the various libido groups. The response times, the amount of delay in responding due to sexual content, and the viewing times for sexual slides all lacked statistically significant differences. This may reflect the contingencies attendant on the activity. Each of the groups would be receiving the same overall benefit from processing the information--completion of the protocol in return for course credit or a small reward. The findings suggest that in the laboratory situation the contingencies specific to the sexual aspect of the task were not so important as to differentiate the groups, a situation that could be different in a real life situation.

Interest ratings given by the high libido group were significantly higher than the ratings given by low libido participants for the sexual content pictures and significantly lower for the neutral content pictures. More of the high libido participants (62%) gave *happy* as the most appropriate adjective, when confronted with a sexual content picture, than the other groups (56% and 49% for average and low libido respectively).

Responses to the lexical decision task by the various libido groups were somewhat similar to the picture recognition task in not differing to statistically significant levels. Like the picture recognition task, this lexical decision protocol did not show information processing tasks to be a useful way of differentiating between libido groups.

On the word rating tasks, the high libido group had a tendency to rate all word types as more familiar to them than other people did, rated all word types as more emotional than others did, and rated sexual words as more acceptable than did the average and low libido groups. However only the ratings of the emotional content of the various word types were significantly different from those given by other groups.

In summary then, the high sexual desire group was more positive in their responses to sexual content in the picture recognition tasks. They were also more inclined to rate sexual words as more emotionally positive than other participants. The reasons for such findings may reside in the positive affect levels found in this group. Past research has suggested that those with a high level of positive affect are more likely to exhibit diffuse attention to tasks set them than those with low positive affect (Mackie & Worth, 1989, cited in Martin et al., 1993). Such a suggestion might potentially account for the slower responding to both the picture recognition and semantic decision tasks that this group demonstrated. However this explanation was not borne out in the present study; neither the picture recognition tasks nor the semantic tasks were directly affected by levels of positive affect.

However, as mentioned above, the information processing aspects of the experiment resulted in a great deal of individual variation within the responses to the various types of stimuli. Thus, a comparison of responding between those familiar with computers in a laboratory situation, and those less familiar may be more influenced by the methodology than the factors under consideration. Participants in this study varied considerably in their familiarity with computers; for example, some had never used a computer previously, while others were much

more familiar with the technology and adept at responding quickly. To some extent these variations are controlled in the analysis by the within subject comparisons, and these tend to be more conclusive than the between group findings. Overall, the more important findings demonstrating between group differences are those demonstrating the greater interest in sexual stimuli, and the positive responding to those stimuli by this group of participants in comparison to the participants in the other libido groups.

Low sexual desire group responses. While the people designated as having low desire in this study were not clinically diagnosed, the suggestion that they would be similar in responding to those who present with a low desire disorder was implicit in this investigation. The findings relating to the low desire group bear some resemblance to the reports of functional variation of those with erectile dysfunction in studies by Barlow (1986).

In men with erectile dysfunction their anxiety acts to decrease arousal in sexual situations, they tend to be more erotophobic and react negatively to sexual stimuli. They also focus on their own performance more than the stimuli presented to them (Barlow,1986). In the present studies it was found that people with low libido ratings and high anxiety levels found the sexual pictures less pleasant ($M = 6.1, SD = 1.1$), and less arousing ($M = 5.2, SD = 1.8$) than those with high libido and low anxiety ($M_{Valence} = 7.1, SD = 1.0; M_{Arousal} = 6.0, SD = 1.4$). The low libido, high anxiety people also recorded a lower mean rating for the dominance or control aspect of the rating task ($M = 5.3, SD = 1.4$) for the sexual pictures than those in the high libido, low anxiety group ($M = 6.5, SD = 1.3$). While these ratings are not the same as the indices utilized by Barlow

(1986), they do indicate similar tendencies for potentially dysfunctional persons to enjoy the sexual content pictures less than functional persons.

The parallel can be extended further to the Body-Esteem scale differences between these two groups as a measure indicative of a positive self-evaluation. Scores recorded on this measure reflect a lower self-evaluation in the low libido, high anxiety group ($M = 95.9$, $SD = 12.0$) than the high libido, low anxiety group ($M = 106.8$, $SD = 16.4$).

As mentioned above, the information processing task results did not reliably differentiate the libido groups. The low libido participants tended to be slower overall at the lexical decision task, suggesting less attention being given the task at hand. However, during the picture recognition task the attention of these participants seems to have been more focussed than that of the other people in the experiment. The faster responses given to all types of pictures demonstrated quicker recognition of the pictorial stimuli. While these responding differences did not reach statistical significance levels, the trend in the picture recognition task at least, may be similar to the hyper-vigilant responses to their phobic topics so often demonstrated by people with phobic difficulties. It is important to note though, that there was still a longer time taken to respond to sexual pictures than other positive valence images. It would also seem logical to expect some consistency between responses to sexual stimuli in the two modalities. While the differences between groups were not conclusive, the responses to the various types of stimuli within modalities were significantly different.

Discrepancies in responding to the different modalities. Although the two speeded responses involved in the experiment were similar, they did involve different cognitive processing. The pictorial task required a decision about

whether the subject recognized the picture on the screen. The participants did not know the nature of the question they would be asked about the pictures in this stage of the experiment. They did know that they would see two series of pictures, be asked a question about the pictures, and have to give each picture a rating for affective valence, arousal, and dominance or control. The process of focussing on the individual pictures in order to carry out the first rating task could be described as one that would assist recognition when an explicit memory task was required later in the experiment. This interactive context demanded attentional focus, which necessitated some degree of identification with the content of the pictures. This would be expected to influence the way the participant encoded the stimulus. The word task, on the other hand, was a test of implicit memory.

The terms explicit memory and implicit memory have been used by Graf and Schacter (1985). Implicit memory is revealed when previous experiences facilitate performance of a task that does not require specific recall of those experiences. Explicit memory, on the other hand, is revealed when performance on a task requires conscious recollection of previous experiences. The two terms are descriptive of the psychological experience during task performance, rather than indicative of different memory systems. This is the same understanding as that in which they are employed in the present context.

There have been numerous discussions of the reasons for dissociations between implicit and explicit testing of memory (see for example Schacter, 1987). One of the more prevalent would be the difference between episodic memory and semantic memory systems. The first is held to account for explicit remembering of recent events, such as the previous sighting of a picture as required in the present experiment. The semantic memory system is seen as

responsible for performance on tasks such as lexical decision making, which requires participants to make use of previously acquired knowledge of words. Activation of such knowledge, is though, a temporary and thus quickly accessed response, whereas use of the processing mechanisms required to recognize recently seen pictures takes longer.

However, the difference in time taken to complete the respective tasks is not really the issue here. The important questions are: (1) why does one group of people (those with low self-report libido) respond more quickly with respect to a picture recognition task than others (see Figure 6.7)? and (2) why are the word tasks are completed more slowly by that same group of people in comparison to the others (see Figure 6.15)?

One part of the answer would appear to be associated with the influence of sexual anxiety on self-report libido levels. Previous studies of those with various types of anxiety conditions have demonstrated a hyper-vigilance to those topics salient to their distress (see for example, Hamm, Cuthbert, Globisch, & Vaitl, 1997). In the present studies the importance of sexual anxiety in the expression of low desire levels has been demonstrated alongside the rapid performance of the picture recognition task by the same people. This is suggestive of an anxiety-driven approach to processing the pictorial stimuli as rapidly as possible. However, there is still the complication within this finding that these supposedly sexually anxious people still took longer to process sexual pictures than other types (see Figure 6.9). One would have expected a sexually anxious response to be more rapid than responses to other types of pictures within that part of the experiment.

Extending the sexual anxiety argument to the word protocol allows for anxiety interfering with fast performance on the implicit task, and does give an explanation for the low libido people completing this task more slowly than others (see Figure 6.16). This could also account for the slower responding to sexual words, by this group, that was seen in this experiment.

One possible adjunctive explanation for these findings within subjects is the assertion that sexual material is processed differently than other stimuli. This belief has been supported by Geer's research in this area especially that which suggests a delay occurs when we process material of a sexual nature (see for example, Geer & Bellard, 1996, and Geer & Melton, 1997). The data from the present study support the idea of this delay, and reinforce the suggestion through the pictorial task--but not the semantic protocol. The picture recognition aspect of the experiment was more robust with respect to gender differences than the Geer paradigm; both males and females exhibited delay in responding to sexual content in the pictorial modality, whereas only females show such a delay in Geer's semantic protocol. The more rigorous controlling for the confounds of word length and frequency in the present version of Geer and Bellard's (1996) protocol led to findings that raised questions as to the existence of Sexual content Induced Delay as defined by those authors. While the response times were longer for sexual words, the differences between word types were so small that they did not reach statistical significance.

The presence of a delay in responding to sexual matter might be expected to be either minimized or exaggerated in those whose sexual interest is lower than others. However, there is no evidence that the delays induced by processing of sexual content are consistently different for those with high or low libido levels.

A further possibility is that the samples surveyed in the present studies might represent a higher level of sexual anxiety than is found in the wider population. There was a general decrease in sexual anxiety with advancing age in these samples and the findings may reflect the greater numbers of young participants. This would further support the need to try the techniques used here with a population that has presented with sexual desire difficulties. As Donahey and Carroll (1993) have indicated, women typically present with such problems during their thirties, while men present around the age of fifty.

However, it is also apparent from findings generated by the two sexual desire scales that the measures assay different aspects of the wider phenomenon we call sexual desire, namely the behavioural and the cognitive aspects. They also make no differentiation as to whether a low sexual desire scale score might indicate hypoactive sexual desire or sexual aversion disorder. This latter condition could be present in the population sampled in the present studies, particularly with the strong relationships found with sexual anxiety levels, but the scales are not capable of differentiating between the participants with one or other of these problems.

The present studies have established the veracity of the assumptions made in clinical lore with respect to sexual desire problems, that is, people with lower levels of sexual interest do respond differently to sexual cues than those with high libido. However, in doing so by way of a protocol utilizing stimuli and tasks from more than one modality, the findings have appeared to contradict each other. In terms of explaining the condition of low sexual desire the faster reactions of people in this category to sexual pictures, and their slower responses to sexual words still beg the question as to an information processing model for the

disorder. However, interesting though they may be, these findings do not have sufficient statistical strength to inform such a model. Other aspects of the protocol show more promise in enhancing our understanding of sexual desire.

The questionnaire and rating aspects of the study show that those with low sexual interest consistently record responses consistent with this, whether asked queries of an obvious nature as on a questionnaire, or through ratings of pictures they have seen, or words they are asked to categorize. These findings tend to support a aversive, albeit mildly so, attitude to sexuality in those in the low desire group, and fit with the Schover and LoPiccolo (1982) view of the desire disorders as part of a continuum. Future clarification of whether those with sexual aversion as defined by *DSM-IV* (which Ponticas (1992) has argued, is quite different in its manifestation) would yield results parallel to those found here, or produce a different pattern of responding, would be of interest. Such investigation would be enhanced by the application of neurophysiological techniques such as those employed by Childress (see Concar, 1998) in determining whether aversion and desire do indeed exist as aspects of a continuum.

However the present studies tell us something of how the existing measures of sexual desire function, how they relate to other parameters clinicians have suggested influence sexual desire, and how they also relate to behavioural laboratory tasks designed to operationalise the concept of sexual desire. The relationship between reduced sexual desire and increased sexual anxiety is apparent, as is that of diminished sexual interest and a low level of body esteem. Aspects of mood awareness, specifically the monitoring of one's mood appear to be related to sexual interest also.

These factors elicited by self-report measure also have relationship to the tasks performed in this protocol. The ratings of sexual material were clearly influenced by sexual interest levels, as were the word ratings given semantic stimuli in the project. The processing tasks, however, yielded more equivocal results, but suggest that further investigation of these techniques with a population bearing a clinical diagnosis of sexual desire disorder might be of interest. However, the strengths of the present study suggest that the rating processes and investigation of the inter-relationships from the self-report measures, as carried out here with a volunteer population, hold more promise for further understanding of this quality we call sexual desire.

What we now understand from these studies is that, if low sexual desire and sexual aversion are on the same continuum, then those with low levels of desire should find sexual stimuli somewhat aversive. Their responses in situations when confronted with such stimuli should be recorded as less appreciative and appetitive than those of persons with higher levels of desire. This was the case where the pleasure ratings, interest levels and adjective assignment tasks related to the pictorial stimuli were concerned. These variations were found not to be affected by mood as elicited from the PANAS, but highly affected by sexual anxiety levels as recorded using the Sex Anxiety Inventory self-report measures. It may be informative to assay the effect of a mood induction procedure on self-report of sexual desire and sexual anxiety in order to further understand these findings. If, however, Ponticas' assertion that those with sexual aversion exhibit the same drive as others, but an approach-avoidance mechanism operates for these people, then responding to aspects of the present protocol should be significantly at variance from those a low sexual desire disorder.

The further study of those with high sexual desire with respect to their patterns of appetitive appreciation of sexual stimuli might establish how robust their relative lack of habituation to such stimuli might be. This too, could yield enhanced understanding of how different persons generate and maintain sexual desire.

The present series of studies has shown that information processing tasks can be applied in a pictorial protocol as well as semantic protocols, but fail to differentiate between people of varying sexual desire levels. Other aspects of the studies suggest future research might more productively concentrate on exploration of the emotional parameters surrounding sexual desire using the pictorial rating processes in conjunction with manipulations to further understanding of this phenomenon we call sexual desire.

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APPENDICES

Appendix A

American Psychiatric Association Criteria for Sexual Desire Disorders

DSM-III (1978) definition. This manual was the first to include sexual desire disorder as a diagnosis and described the criteria for the diagnosis thus:

302.71 Inhibited Sexual Desire

A. Persistent and pervasive inhibition of sexual desire. The judgement of inhibition is made by the clinician's taking into account factors that affect sexual desire such as age, sex, health, intensity and frequency of sexual desire, and the context of the individual's life. In actual practice this diagnosis will rarely be made unless the lack of desire is a source of distress to either the individual or his or her partner. Frequently this category will be used in conjunction with one or more of the other Psychosexual Dysfunction categories.

B. The disturbance is not caused exclusively by organic factors (e.g., physical disorder or medication) and is not due to another Axis I disorder. (p. 278-279)

DSM-III-R (1987). This manual described two sexual desire disorders, Hypoactive Sexual Desire Disorder, and Sexual Aversion Disorder.

302.71 Hypoactive Sexual Desire Disorder

A. Persistent or recurrently deficient or absent sexual fantasies and desire for sexual activity. The judgement of deficiency or absence is made by the clinician, taking into account factors that affect sexual functioning, such as age, sex, and the context of the person's life.

B. Occurrence not exclusively during the course of another Axis I disorder (other than a Sexual Dysfunction), such as Major Depression.

302.79 Sexual Aversion Disorder

- A. *Persistent or recurrent extreme aversion to, and avoidance of, all or almost all, genital sexual contact with a sexual partner.*
- B. *Occurrence not exclusively during the course of another Axis I disorder (other than a Sexual Dysfunction), such as Obsessive Compulsive Disorder or Major Depression. (p. 293)*

DSM-IV (1994). This most recent manual has retained the definition of two sexual desire disorders, requires a clinical significance criterion to be met, and specification of contextual aspects of both conditions.

302.71 Hypoactive Sexual Desire Disorder

- A. *Persistent or recurrently deficient (or absent) sexual fantasies and desire for sexual activity. The judgement of deficiency or absence is made by the clinician, taking into account factors that affect sexual functioning, such as age, and the context of the person's life.*
- B. *The disturbance causes marked distress or interpersonal difficulty.*
- C. *The sexual dysfunction is not better accounted for by another Axis I disorder (except another Sexual Dysfunction) and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.*

Specify type:

Lifelong Type

Acquired Type

Specify type:

Generalized Type

Situational Type

Specify type:

Due to Psychological Factors

Due to Combined Factors (p. 498)

302.79 Sexual Aversion Disorder

- A. *Persistent or recurrent extreme aversion to, and avoidance of, all (or almost all) genital sexual contact with a sexual partner.*
- B. *The disturbance causes marked distress or interpersonal difficulty.*
- C. *The sexual dysfunction is not better accounted for by another Axis I disorder (except another Sexual Dysfunction).*

Specify type:

Lifelong Type

Acquired Type

Specify type:

Generalized Type

Situational Type

Specify type:

Due to Psychological Factors

Due to Combined Factors (p. 500)

Appendix B

Advertisement Placed on Psychology Department Research Notice-Board to Recruit Participants for Study

Research in Sexuality

This study is part of a series looking at aspects of sexual desire.

The tasks involved are all pen and paper, i.e., written answers or ticking boxes etc.

All forms are completely anonymous and filed separately from consent forms and course credit forms.

The entire procedure will take less than an hour and you will work privately once the process has been explained to you.

The forms are largely based on prior USA studies but instead of taking one measure alone, I am looking at how these measures compare, and the different information each collects.

Results will be analysed over the break and a short summary will be available early next year.

The experimental schedule times are below.

Helen Conaglen.

Advertisement Placed on Psychology Department Research Notice-board to Recruit Participants for Clinical Measures Study

Last chance for course
credits!!

Research in Sexuality

1-1½ hrs of your time

Totally anonymous

Pen/paper questionnaires
collecting New Zealand data
to compare with
USA student experience.

See schedule on Experiment Board in
Psychology Department.

Dates from October 1 to October 18.

Procedure for Experiment as Explained to Participants

Research in Sexuality

Procedure outline

All forms are in the order you are to complete them in. The first thing you do after this explanation is sign the consent form. Then complete the first stage. After you have done that, bring me those pages and I will give you the second stage to complete and the course credit form. Once you have completed the experiment forms bring them to me in the envelope provided with the course credit on top. I will put your stage I with stage II and file them until all the subjects have done the experiment - this further adds to the anonymity because there will be up to 50 student's forms collected.

We all come from different backgrounds and cultural, social and religious experiences. We have different values. Some aspects of the scales in stage II ask about sexual topics you have not thought much about or find difficult or cannot answer. I would ask that in the interests of the overall project you do as much as you can of every scale. Leave what you absolutely cannot do. If you find the experiment so difficult you want to leave, no-one will mind - and you will not lose your course credit. The credit is given for showing up and being prepared to participate. We cannot take it away for lack of answers.

But bear in mind that research is serious and can have long-term implications so be as honest as possible. Remember these scales have been done by other students before you.

It would also be useful if you would not discuss the content of the project with other students who will complete the questionnaire, at least until after October 18. The data will be analysed over the summer and a brief summary of resultput on the notice-board next semester.

Any questions?

Procedure:

- **Sign consent form**
- **Complete Stage I**
- **Give pages to experimenter and collect Stage II**
- **Complete Stage II and course credit page**
- **Put questionnaire in envelope, leaving course credit outside on top, and hand forms to experimenter.**
- **If you want to discuss any aspect of study, its content, conduct, other aspects feel free to do so with me at the end of the process.**
- **Thank you for taking the time to come.**

Helen Conaglen.

Consent Form Used in the Clinical Measures Study**CONSENT FORM: Researchers copy (please return in the envelope provided)****Name of research project: Research in Sexuality: Questionnaires****Name of principal researcher: Helen Conaglen**

I have received an information sheet about this study or the research has been explained to me. I have had a chance to ask any questions and discuss my participation. Any questions have been answered to my satisfaction.

I agree to participate in this research project. I understand that I may withdraw at any time.

Signature: _____**Printed Name:** _____**Date:** _____

✕ _____

CONSENT FORM: Participants copy (please keep for yourself)**Name of research project: Research in Sexuality: Questionnaires****Name of principal researcher: Helen Conaglen**

I have received an information sheet about this study or the research has been explained to me. I have had a chance to ask any questions and discuss my participation. Any questions have been answered to my satisfaction.

I agree to participate in this research project. I understand that I may withdraw at any time.

Signature: _____**Printed Name:** _____**Date:** _____

Questionnaire Used in Clinical Measures Study

Stage I: Perceptions of Sexual Desire

Several overseas studies have looked at aspects of sexual desire and definitions have been sought from different population samples. The first section of this study seeks your definition and some demographic material.

Please work your way through the following sheets, return them to the research assistant, and collect the next stage of the study.

Please complete the following:

1. Are you male or female? [tick one]

- Male
 Female

2. How old are you? [in years and months eg: 21 yrs 0 mths; 18 yrs 3 mths]

3. What cultural / ethnic group do you identify with? [tick one]

- Maori
 Pakeha / European
 Mixed ethnicity
 Pacific Islander
 Other [please detail] _____

4. What religion were you brought up in? [tick one]

- Anglican
 Presbyterian
 Roman Catholic
 Other [please detail] _____
 None

5. What is your current religious affiliation? [tick one]

- Anglican
 Presbyterian
 Roman Catholic
 Other [please detail] _____
 None.

6. How would you describe your current relationship status? [tick one]

- In sexual relationships with several individuals.
- In a sexual relationship with one person only.
- In long term sexual relationship with one person only.
- In de facto relationship.
- Married.
- Uninvolved sexually at present time.

7. Please indicate your sexual preference: [tick one]

- Prefer same sex partner /s.
- Prefer partner /s of opposite sex.
- Prefer partners of both sexes.
- Prefer to have no partners.
- Do not know.

8. Please indicate which of the following best applies to you: [tick one]

- I have never had a sexual relationship.
- I have had one sexual partner only.
- I have had two or more sexual relationships.

9. Please answer as completely as possible the following question: [Please write in an essay-type format.]**What is sexual desire?**

_____ [PTO if necessary]

Stage II: Experiencing Sexual Desire

Several overseas studies have looked at aspects of sexual desire and data have been sought from different population samples. This section of this study asks for information about your moods and desire experiences.

Please work your way through the following sheets in the order they have been given to you. Remember that it is important that you are as honest as possible in your responses.

When you have finished, place all completed sheets in the envelope provided, complete the course requirement form and return both to the researcher. The questionnaires are anonymous and the credit papers will be separated from the envelopes on collection so this remains the case.

Please complete the following:

The PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

- | | |
|--------------------|------------------|
| _____ interested | _____ irritable |
| _____ distressed | _____ alert |
| _____ excited | _____ ashamed |
| _____ upset | _____ inspired |
| _____ strong | _____ nervous |
| _____ guilty | _____ determined |
| _____ scared | _____ attentive |
| _____ hostile | _____ jittery |
| _____ enthusiastic | _____ active |
| _____ proud | _____ afraid |

Sexual Desire Questionnaire (Beck, Bozman & Qualtrough, 1991)

Please complete the following:

Remember that all the findings from this questionnaire are anonymous - but that it is important that you are as honest as possible in your responses..

1. How often do you experience sexual desire? [tick one]

- Never
- Several times per year
- Once per month.
- Several times per month.
- Once per week
- Several times per week
- Once per day
- Several times per day

2. Have you ever been involved in sexual activity when you did not experience a high level of sexual desire? [tick one]

- Yes
- No

3. How often do you experience sexual desire without accompanying sexual behaviour (eg. without masturbation or without intercourse)? [tick one]

- Always
- Sometimes
- Occasionally
- Seldom
- Never

4. Which of the following most accurately reflects your level of sexual desire?

- Sexual dreams
- Sexual fantasy
- Day dream
- Intercourse
- Masturbation
- Non-intercourse sexual contact
- Genital arousal (e.g. erection or vaginal lubrication)

5. Do you feel that the amount of sexual desire you experience is easily affected by the events happening in your life ?

- Yes
- No

Which events?

6. Which type of stimulation has the greatest effect on increasing your level of sexual desire? (Choose only one)

- Visual
- Auditory (sounds)
- Touch
- Olfactory (smell)
- Emotional

7. Has the recent increase in media publicity about sexually communicable diseases changed your desire for sexual activity with other persons? (eg. Herpes, AIDS)

- Yes No

8. Do you feel that it is necessary to love someone before you could feel sexual desire toward them?

- Yes No

9. How can you tell that you have an increased desire for sex?

10. What other things do you feel affect your desire for sex?

Feelings About Sex Topics Inventory (Janda & O'Grady, 1980)

Please tick the box which best describes your feelings about the statement in each case.

1. **Extramarital sex**
 - is OK if everyone agrees.
 - * can break up families.
2. **Sex**
 - * can cause as much anxiety as pleasure.
 - on the whole is good and enjoyable.
3. **Masturbation**
 - * causes me to worry.
 - can be a useful substitute.
4. **After having sexual thoughts**
 - * I feel jittery.
 - I feel aroused.
5. **When I engage in petting**
 - * I feel scared at first.
 - I thoroughly enjoy it.
7. **Oral sex**
 - would arouse me.
 - * would terrify me.
8. **I feel nervous**
 - * about initiating sexual relations.
 - about nothing when it comes to members of the opposite sex.
9. **When I meet someone I'm attracted to**
 - I get to know him or her.
 - * I feel nervous.
10. **When I was younger**
 - I was looking forward to having sex.
 - * I felt nervous about the idea of having sex.
11. **When others flirt with me**
 - * I don't know what to do.
 - I flirt back.
12. **Group sex**
 - * would scare me to death.
 - might be interesting.
13. **If in the future I committed adultery**
 - *• I would probably get caught.
 - I wouldn't feel bad about it.
14. **I would**
 - * feel too nervous to tell a dirty joke in mixed company.
 - tell a dirty joke if it were funny.
15. **Dirty jokes**
 - * make me feel uncomfortable.
 - often make me laugh.
16. **When I awake from sexual dreams**
 - I feel pleasant and relaxed.
 - * I feel tense.
17. **When I have sexual desires**
 - * I worry about what I should do.
 - I do something to satisfy them.
18. **If in the future I committed adultery**
 - it would be nobody's business but my own.
 - * I would worry about my spouse finding out.
6. **Initiating sexual relationships**
 - * is a very stressful experience.
 - causes me no problem at all.
19. **Buying a pornographic book**
 - wouldn't bother me.
 - * would make me nervous.
20. **Casual sex**
 - is better than no sex at all.
 - * can hurt many people.
21. **Extramarital sex**
 - is sometimes necessary.
 - * can damage someone's career.
22. **Sexual advances**
 - * leave me feeling tense.
 - are welcomed.
23. **When I have sexual relations**
 - I feel satisfied.
 - * I worry about being discovered.
24. **When talking about sex in mixed company**
 - * I feel nervous.
 - I sometimes get excited.
25. **If I were to flirt with someone**
 - * I would worry about his or her reaction.
 - I would enjoy it.

Hurlbert Index of Sexual Desire (Apt & Hurlbert, 1992)

This index consists of a series of statements about desire (or libido). Please read each statement and then use the number from the scale below that most closely represents your experience of that statement.

Remember that all the findings from this questionnaire are anonymous - but that it is important that you are as honest as possible in your responses..

0	1	2	3	4
all of the time	most of the time	some of the time	rarely	never

- a. ____ Just thinking about having sex with my partner excites me.
- b. ____ I try to avoid situations that will encourage my partner to want sex.
- c. ____ I daydream about sex.
- d. ____ It is difficult for me to get in a sexual mood.
- e. ____ I desire more sex than my partner does.
- f. ____ It is hard for me to get in the mood for sex.
- g. ____ I look forward to having sex with my partner.
- h. ____ I have a huge appetite for sex.
- i. ____ I enjoy using sexual fantasy during sex with my partner.
- j. ____ It is easy for me to get in the mood for sex.
- k. ____ My desire for sex should be stronger.
- l. ____ I enjoy thinking about sex.
- m. ____ I desire sex.
- n. ____ It is easy for me to go weeks without having sex with my partner.
- o. ____ My motivation to engage in sex with my partner is low.
- p. ____ I feel I want sex less than most people.
- q. ____ It is easy for me to create sexual fantasies in my mind.
- r. ____ I have a strong sex desire.
- s. ____ I enjoy thinking about having sex with my partner.
- t. ____ My desire for sex with my partner is strong.
- u. ____ I feel that sex is not an important aspect of the relationship I share with my partner.
- v. ____ I think my energy level for sex with my partner is too low.
- w. ____ It is hard for me to get in the mood for sex.
- x. ____ I lack the desire necessary to pursue sex with my partner.
- y. ____ I try to avoid having sex with my partner.

Please complete the following:

The MAS

This scale consists of a series of statements intended to detect awareness of mood states. Please apply the scale number that best reflects your situation to each item.

Remember that all the findings from this questionnaire are anonymous - but that it is important that you are as honest as possible in your responses.

1	2	3	4	5	6
disagree very much	disagree	mildly disagree	mildly agree	agree	agree very much

- A. ____ I have a hard time labelling my feelings.
- B. ____ I'm usually 'tuned in' to my emotions.
- C. ____ I find myself thinking about my mood during the day.
- D. ____ I am sensitive to changes in my mood.
- E. ____ I have trouble explaining my feelings.
- F. ____ On my way home from work or school, I find myself evaluating my mood.
- G. ____ Right now I know what kind of mood I'm in.
- H. ____ I often evaluate my mood.
- I. ____ I'm never really sure what I'm feeling.
- J. ____ I don't pay much attention to my moods.

Please complete the following:

Remember that all the findings from this questionnaire are anonymous - but that it is important that you are as honest as possible in your responses.

The Sexual Signaling Behaviors Inventory (Jesser, 1978)

When you think your partner may be persuaded to have sex though s/he has not yet become aware of your desire what do you usually do? Tick all items that apply in left hand spaces.

In the right hand spaces tick those behaviours you would like your partner to use with you.

	Self		Partner
A.		Ask directly	
B.		Use some code words with which (s)he is familiar	
C.		Use more eye contact	
D.		Use touching	
E.		Change appearance or clothing	
F.		Remove clothing	
G.		Change tone of voice	
H.		Make indirect talk about sex	
I.		Do more favours for the other	
J.		Set mood atmosphere (music, lighting etc.)	
K.		Share a drink	
L.		Tease	
M.		Look at sex material (magazines, videos etc)	
N.		Play games such as chase or light 'roughhousing'	
O.		Make compliments ('I love you,' 'You're nice')	
P.		Use some force	
Q.		Use 'suggestive' body movements or postures	
R.		Allow hands to wander	
S.		Lie down	
T.		Other (<i>describe below</i>)	

Please complete the following: -THIS IS THE LAST ONE!!

Responding to Sexual Signalling Behaviours

If your partner used the behaviours listed below and you FELT NO DESIRE for sex how would you usually respond? Put the most appropriate score beside each behaviour.

1	2	3	4	5
Very negatively	Negatively	Neutrally -or ignore him/her	Positively	Very positively

Behaviour	
Asked directly	
Used some code words with which you are familiar	
Used more eye contact	
Used touching	
Changed appearance or clothing	
Removed clothing	
Changed tone of voice	
Made indirect conversation about sex	
Did more favours for you	
Set mood atmosphere (music, lighting etc.)	
Shared a drink with you	
Teased you	
Looked at sex material (magazines, videos etc)	
Played games such as chase or light 'roughhousing'	
Made compliments ('I love you,' 'You're nice')	
Used some force	
Used 'suggestive' body movements or postures	
Allowed hands to wander	
Lay down	
Other (<i>describe below</i>)	

Appendix C

Data Summaries from Clinical Measures Study

Table C1

Data from the Sexual Signaling Behaviors Inventory

This inventory was prefaced with the following instructions.

“When you think your partner may be persuaded to have sex though s/he has not yet become aware of your desire what do you usually do? Tick all items that apply in left hand spaces.

In the right hand spaces tick those behaviours you would like your partner to use with you.”

The responses were endorsed in the following manner.

	Self			Results for n=61 sample	Partner		
	All	M	F		All	M	F
A.	24	6	18	Ask directly	28	7	21
B.	23	7	16	Use some code words with which (s)he is familiar	24	8	16
C.	43	11	32	Use more eye contact	40	10	30
D.	58	15	43	Use touching	50	14	36
E.	14	2	12	Change appearance or clothing	17	9	8
F.	30	7	23	Remove clothing	30	10	20
G.	22	7	15	Change tone of voice	22	7	15
H.	28	11	17	Make indirect talk about sex	30	11	19
I.	19	7	12	Do more favours for the other	22	7	15
J.	32	13	19	Set mood atmosphere (music, lighting etc.)	41	11	30
K.	17	8	9	Share a drink	17	6	11
L.	49	12	37	Tease	44	12	32
M.	11	5	6	Look at sex material (magazines, videos etc)	13	5	8
N.	19	7	12	Play games such as chase or light ‘roughhousing’	24	6	18
O.	45	14	31	Make compliments (‘I love you,’ ‘You’re nice’)	48	14	34
P.	4	1	3	Use some force	17	5	12
Q.	42	8	34	Use ‘suggestive’ body movements or postures	37	10	27
R.	52	13	39	Allow hands to wander	50	12	38
S.	38	10	28	Lie down	27	8	19
T.	5	2	3	Other (<i>describe below</i>)	3	0	3

Table C2

Data from the Responding to Sexual Signaling Behaviours Checklist

This inventory was prefaced with the following directions:

“If your partner used the behaviours listed below and you FELT NO DESIRE for sex how would you usually respond? Put the most appropriate score beside each behaviour.”

Endorsements were made in the following way:

1: Very negatively

2: Negatively

3: Neutrally or ignore him/her

4: Positively

5: Very positively

Behaviour	Endorsement (see above)				
	1	2	3	4	5
Asked directly	4	18	16	7	2
Used some code words with which you are familiar	0	13	23	9	2
Used more eye contact	0	3	24	18	2
Used touching	0	7	8	23	9
Changed appearance or clothing	1	9	21	13	3
Removed clothing	3	14	4	15	11
Changed tone of voice	1	7	22	16	1
Made indirect conversation about sex	0	9	24	13	1
Did more favours for you	2	6	17	15	7
Set mood atmosphere (music, lighting etc.)	0	4	14	19	10
Shared a drink with you	0	4	25	14	4
Teased you	0	14	6	18	9
Looked at sex material (magazines, videos etc)	13	15	7	7	5
Played games such as chase or light ‘roughhousing’	5	11	10	19	2
Made compliments (‘I love you,’ ‘You’re nice’)	0	2	10	21	14
Used some force	22	6	10	6	3
Used suggestive body movements or postures	1	7	18	17	4
Allowed hands to wander	1	8	6	22	10
Lay down	2	6	20	13	6
Other (<i>describe below</i>)	-	-	-	-	-

Appendix D

Advertisement for Study

Research in Sexuality: Questionnaires and rating slide stimuli

This experiment gives you the opportunity to contribute to a series of studies that investigate aspects of sexuality. The tasks you will complete are from studies done in the United States with students there. What we want to know is how results from here compare with those from there. These data are necessary for later stages of the project.

You will complete some questionnaires and look at some slides. You will be asked to rate those slides according to how they affect you while you look at them. The whole procedure should take up to 1 hour. This will entitle you to 1% additional credit towards whichever 100 level psychology course you nominate.

If you wish to help please put your name in a time-slot below. Please put that time slot in your diary too as there will be only 1 student per time-slot. If you have to change your plans please ring me on extension 8040 and let me know.

Helen Conaglen.

Wednesday, 16th April. 9.00am _____

11.00am _____

and so on.

Procedure for Picture Rating Calibration Study

Research in Sexuality: Questionnaires and rating slide stimuli

Procedure outline

All forms are in the order you are to complete them in. The first thing you do after this explanation is sign the consent form. Then complete the first stage. After you have done that bring me those pages and I will show you how the second stage is to be carried out. While viewing the slides you rate each on its own page in the booklet. At the end of the slide show you complete the course credit form. Once you have completed the experiment forms bring them to me with the course credit on top. I will put your stage I with stage II and file them until all the subjects have done the experiment - this further adds to the anonymity because there will be up to 50 student's forms collected.

We all come from different backgrounds and cultural, social and religious experiences. We have different values. Some aspects of the scales in stage I ask about sexual topics you have not thought much about, or find difficult or cannot answer. I would ask that in the interests of the overall project you do as much as you can of every scale. Leave what you absolutely cannot do. If you find the experiment so difficult you want to leave, no-one will mind - and you will not lose your course credit. The credit is given for showing up and being prepared to participate. We cannot take it away for lack of answers.

The slides in stage 2 have all been rated by students in the USA, but we need NZ means for these pictures. As with the questionnaires, some may not be easy for you to work on, but we would ask that you persevere if at all possible. Should you experience any on-going difficulties as a result of these experimental procedures remember that student counselling services are available to deal with problems students may experience in any sphere of their lives.

Bear in mind that research is serious and can have long-term implications so be as honest as possible. Remember these scales have been done by other students before you.

It would also be useful if you would not discuss the content of the project with other students who will complete the questionnaire, at least until after June 1.

Any questions?

Procedure:

- **Sign consent form**
- **Complete Stage I**
- **Give pages to experimenter and you will be told how to carry out Stage II**
- **Complete Stage II and course credit page**
- **Hand forms to experimenter, with the course credit on the top**
- **If you want to discuss any aspect of study, its content, conduct, other aspects feel free to do so with me at the end of the process**
- **Thank you for taking the time to come**

Helen Conaglen.

Additional Questionnaires Used in the Picture Rating Calibration Study

Sexual Desire Inventory-2 (Spector, Carey, & Steinberg, 1996).

This questionnaire asks about your level of sexual desire. By desire, we mean INTEREST IN or WISH FOR SEXUAL ACTIVITY. For each item, please circle the number that best shows your thoughts and feelings. Your answers will be private and anonymous.

1. During the past month, how often would you have liked to engage in sexual activity with a partner (for example, touching each other's genitals, giving or receiving oral stimulation, intercourse, etc)?

- | | |
|-------------------------|-------------------------|
| 0) Not at all | 4) Twice a week |
| 1) Once a month | 5) 3 to 4 times a week |
| 2) Once every two weeks | 6) Once a day |
| 3) Once a week | 7) More than once a day |

2. During the past month, how often have you had sexual thoughts involving a partner?

- | | |
|--------------------------|----------------------------|
| 0) Not at all | 4) 3 to 4 times a week |
| 1) Once or twice a month | 5) Once a day |
| 2) Once a week | 6) A couple of times a day |
| 3) Twice a week | 7) Many times a day |

3. When you have sexual thoughts, how strong is your desire to engage in sexual behaviour with a partner?

- | | | | | | | | | |
|-----------|---|---|---|---------------|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| No Desire | | | | Strong Desire | | | | |

4. When you first see an attractive person, how strong is your sexual desire?

- | | | | | | | | | |
|-----------|---|---|---|---------------|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| No Desire | | | | Strong Desire | | | | |

5. When you spend time with an attractive person (for example, at work or school), how strong is your sexual desire?

- | | | | | | | | | |
|-----------|---|---|---|---------------|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| No Desire | | | | Strong Desire | | | | |

6. When you are in romantic situations (such as a candle lit dinner, a walk on the beach, etc), how strong is your sexual desire?

- | | | | | | | | | |
|-----------|---|---|---|---------------|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| No Desire | | | | Strong Desire | | | | |

7. How strong is your desire to engage in sexual activity with a partner?

0 1 2 3 4 5 6 7 8

No Desire

Strong Desire

8. How important is it for you to fulfil your sexual desire through activity with a partner?

0 1 2 3 4 5 6 7 8

Not At All Important

Extremely Important

9. Compared to other people of your age and sex, how would you rate your desire to behave sexually with a partner?

0 1 2 3 4 5 6 7 8

Much Less Desire

Much More Desire

10. During the last month, how often would you have liked to behave sexually by yourself (for example, masturbating, touching your genitals etc)?

0) Not at all

1) Once a month

2) Once every two weeks

3) Once a week

4) Twice a week

5) 3 to 4 times a week

6) Once a day

7) More than once a day

11. How strong is your desire to engage in sexual behaviour by yourself?

0 1 2 3 4 5 6 7 8

No Desire

Strong Desire

12. How important is it for you to fulfil your desires to behave sexually by yourself?

0 1 2 3 4 5 6 7 8

Not At All Important

Extremely Important

13. Compared to other people of your age and sex, how would you rate your desire to behave sexually by yourself?

0 1 2 3 4 5 6 7 8

Much Less Desire

Much More Desire

14. How long could you go comfortably without having sexual activity of some kind?

0) Forever

1) A year or two

2) Several months

3) A month

4) A few weeks

5) A week

6) A few days

7) One day

8) Less than one day

The Body-Esteem Scale (Franzoi & Shields, 1984).

Please complete the following:

Remember that all the findings from this questionnaire are anonymous - but that it is important that you are as honest as possible in your responses.

Please choose the number from the range below that best describes how you feel about each item below, eg Item 1 body scent 4.

	1	2	3	4	5
Have strong negative feelings					Have strong positive feelings
1 ____ body scent					17 ____ body build
2 ____ nose					18 ____ buttocks
3 ____ lips					19 ____ hips
4 ____ ears					20 ____ legs
5 ____ chin					21 ____ figure or physique
6 ____ chest or breasts					22 ____ appearance of stomach
7 ____ appearance of eyes					23 ____ weight
8 ____ cheeks/cheekbones					24 ____ physical stamina
9 ____ sex drive					25 ____ reflexes
10 ____ sex organs					26 ____ muscular strength
11 ____ sex activities					27 ____ energy level
12 ____ body hair					28 ____ biceps
13 ____ face					29 ____ physical coordination
14 ____ appetite					30 ____ health
15 ____ waist					31 ____ physical condition
16 ____ thighs					

Thank you for your time and effort in completing these pages.

Please return questionnaire in the envelope provided. You will then be shown how to complete the final part of the study.

Instructions for Slide Rating Procedure

Information for Participants

Rating slide stimuli

- Thank you for coming today. I appreciate your participation in this experiment. In this study we are interested in how people respond to pictures that represent a lot of different events that occur in life. You will be looking at a computer slide show consisting of different pictures, and you will be rating each picture in terms of how it made you feel while viewing it. There are no right or wrong answers, so simply respond as honestly as you can.
- If you look at page A in the practice booklet you will see 3 sets of 5 figures, each arranged along a continuum. We call this set of figures SAM, and you will be using these figures to rate how you felt while viewing each picture. You will use one page – make all three ratings – for **each** picture that you observe. SAM shows three different kinds of feelings:
 - Happy vs. Unhappy,
 - Excited vs. Calm, and
 - Controlled vs. In-control.
- You can see that each SAM figure ranges along a scale from low to high. The top line SAM is the happy-unhappy scale, which ranges from a smile to a frown. At one extreme of the happy vs. Unhappy scale you feel happy, pleased, satisfied, contented, hopeful. If you felt completely **happy** while viewing the picture, you can indicate this by placing an “X” over the figure at the left - like this. [Show Demo 1 SAM]
- The other end of the scale is when you felt completely unhappy, annoyed, unsatisfied, melancholic, despaired, bored. You can indicate feeling completely **unhappy** by placing an “X” on the figure at the right, like this. [Show Demo 2 SAM]
- The figure also allows you to describe intermediate feelings of pleasure, by placing an “X” over any of the other pictures. If you feel completely neutral, neither happy nor sad, place an “X” over the figure in the middle. If, in your judgement, your feeling of pleasure or displeasure falls **between** two of the pictures, then place an “X” between the figures, like this. [Show Demo 3 SAM] This permits you to make more finely grained ratings of how you feel in reaction to the pictures.
- The excited vs. Calm dimension is the second type of feeling displayed in the middle line on the page. At one extreme of the scale you felt stimulated, excited, frenzied, jittery, wide-awake, aroused. If you felt completely **aroused** while viewing the picture, place an “X” over the figure at the left end of the row, like this [Show Demo 4 SAM]

- On the other hand, at the other end of the scale, you felt completely relaxed, calm, sluggish, dull, sleepy, unaroused. You can indicate you felt completely **calm** by placing an “X” over the figure at the right of the row, like this. [Show Demo 5 SAM]
- As with the happy-unhappy scale you can represent intermediate levels by placing an “X” over any of the other figures. If you are not at all excited nor at all calm, place an “X” over the figure in the middle of the row. Again, if you wish to make a more finely tuned rating of how excited or calm you feel, place an “X” **between** the pictures, like this. [Show Demo 6 SAM]
- The last scale of feeling that you will rate is the dimension of controlled vs. in-control. At one end of the scale you have feelings characterised as completely controlled, influenced, cared-for, awed, submissive, guided. Please indicate feeling **controlled** by placing an “X” over the figure at the left, like this. [Show Demo 7 SAM]
- At the other extreme of this scale, you felt completely controlling, influential, in control, important, dominant, autonomous. You can indicate that you felt **dominant** by placing an “X” over the figure at the right of the row, like this. [Show Demo 8 SAM] Note that when the figure is large, you feel important and influential, and that it will be very small when you feel controlled and guided.
- If you feel neither in control nor controlled you should make an “X” over the middle picture. Remember you can also represent your feelings between these endpoints. Either place an “X” over any of the intermediate figures, or **between** them – like this [Show Demo 9 SAM]
- Some of the pictures may prompt emotional experiences; others may seem relatively neutral. Your rating of each picture should reflect your immediate personal experience, and no more. Please rate each one **AS YOU ACTUALLY FELT WHILE YOU WATCHED THE PICTURE.**
- Our procedure is as follows:
 - Before the first picture a slide tells you it will be rated on Page A of your booklet. Open the correct page.
 - The picture will only be displayed for a few seconds. It is important that you watch the screen when the pictures to be rated are being shown. Please view the picture for the **entire** time it is on and make your ratings immediately **after** the picture is removed. There will be a computer generated ‘camera click’ sound as the picture moves off.
 - After each picture a slide will ask you to “rate the slide you have just seen; use page “A” of your booklet” - or Page 5 as the case may be. Take time to record your emotional experience of the picture in the booklet. It is very important not to dwell on your ratings of the pictures, since there will not be much time. If for

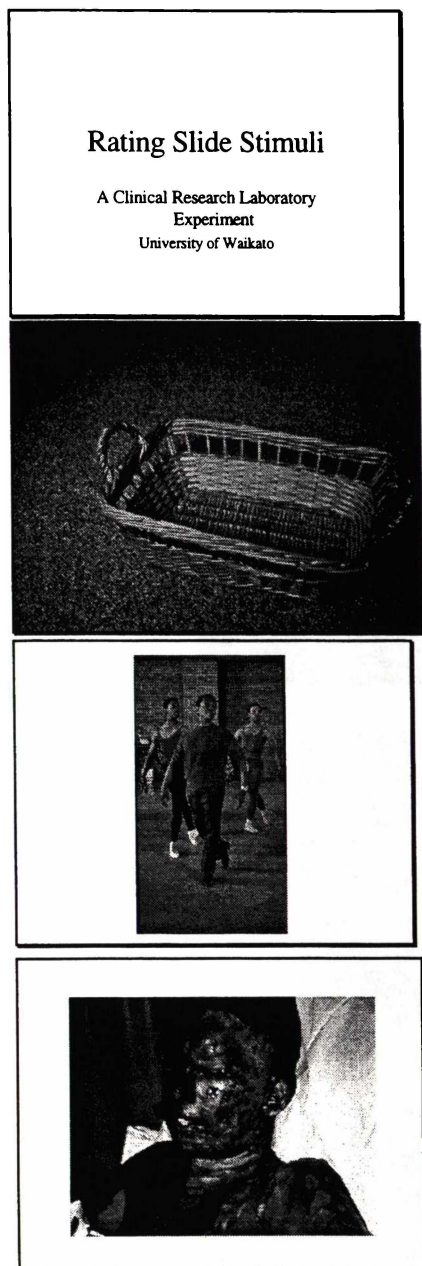
some reason, you should **miss** viewing any picture, please leave that ratings page **blank**. Remember: Your ratings page number must **always** have the same number as the picture.

- Before we begin the stimuli ratings, here are some examples of the kinds of pictures you will be viewing and rating. Right now, take your practice sheets booklet and rate the following pictures. This is just to help you get a feel for how the ratings are done. [Show Anchor Show]

- Are there any questions before we begin the ratings task?
 - A few reminders:
 - View the picture for the entire time it is on the screen.
 - Match the sheet you use to the slide number given on the rating screen.
 - Make your ratings on all three dimensions as quickly as possible and get ready for the next picture. The sounds will help you to look up at the right time.
 - It is important we have information from you on all of these pictures. There are no right and wrong answers; so rate every picture on all three dimensions.

- At the end: Thank you for completing this task. Please do not discuss the experiment with anyone until after the end of semester, since this might affect our results.

Screens Seen by Participants During the Practice for the Picture Rating Study



Rating Slide Stimuli

A Clinical Research Laboratory
Experiment
University of Waikato

Rating Slide Stimuli

- After this slide there are several pictures. You will be able to view each for six seconds.
- When the picture disappears rate the slide according to your personal reaction to it.
- Use SAM sheet A for that picture.
- When the next picture appears look at that for 6 seconds. Rate that picture on the next SAM sheet when the picture disappears.

Rating Slide Stimuli

- Rate the slide you have just seen.
- We are interested in your personal reaction to the picture.
- Use SAM sheet A in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Rating Slide Stimuli

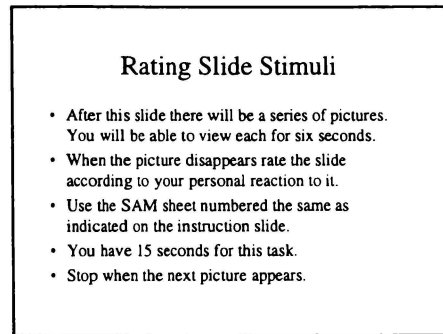
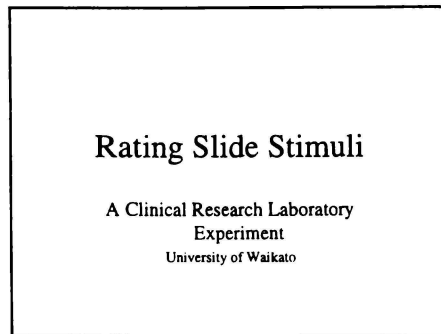
- Rate the slide you have just seen.
- We are interested in your personal reaction to the picture.
- Use SAM sheet B in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Rating Slide Stimuli

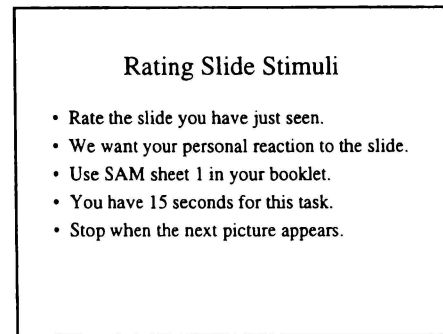
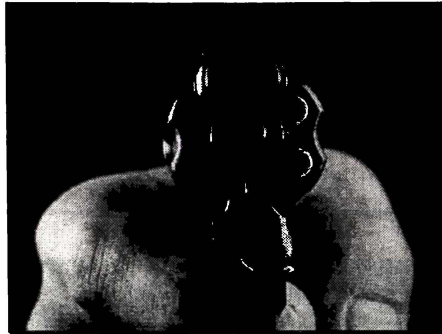
- Rate the slide you have just seen.
- We are interested in your personal reaction to the picture.
- Use SAM sheet C in your booklet.
- You have 15 seconds for this task.
- This is the end of this practice session.

Slide Selection from International Affective Picture Scale as Used in Picture Calibration Study

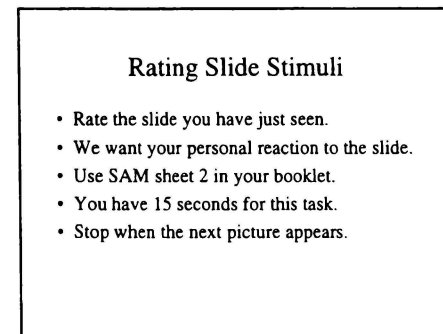
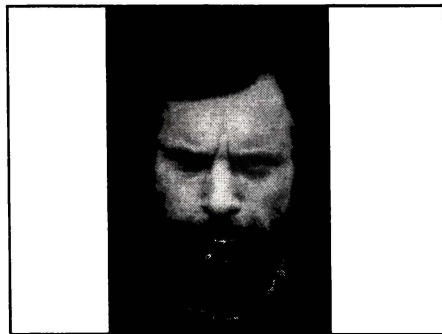
Slide 1 on
left
Slide 2 on
right



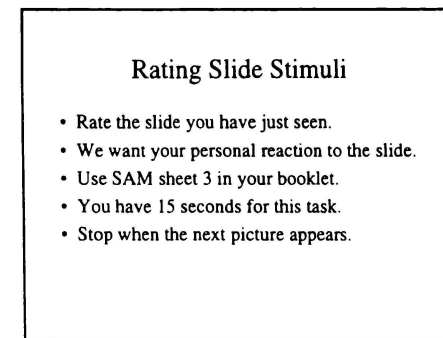
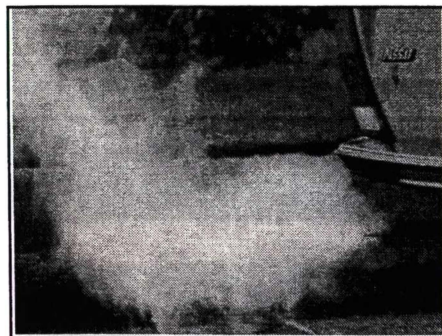
Slide 3 on
left [6230]
Slide 4 on
right



Slide 5 on
left [2110]
Slide 6 on
right



Slide 7 on
left [9090]
Slide 8 on
right



Slide 9 on
left [3010]
Slide 10 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 4 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 11 on
left [4310]
Slide 12 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 5 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 13 on
left [5000]
Slide 14 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 6 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 15 on
left [2200]
Slide 16 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 7 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

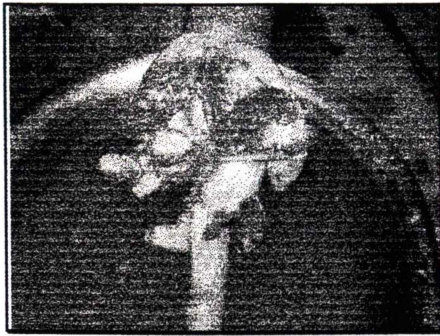
Slide 17 on
left [7000]
Slide 18 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 8 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

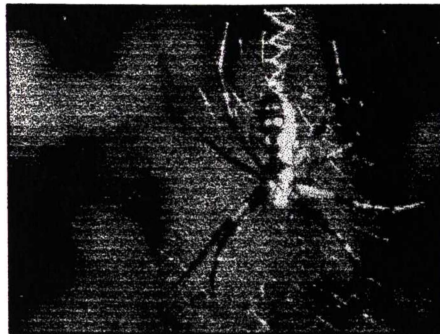
Slide 19 on
left [3150]
Slide 20 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 9 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 21 on
left [1240]
Slide 22 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 10 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 23 on
left [4520;
in female
shows
only]
Slide 24 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 11 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 25 on
left [2500]
Slide 26 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 12 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

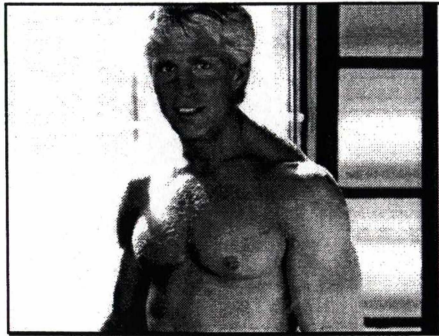
Slide 27 on
left [1090]
Slide 28 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 13 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

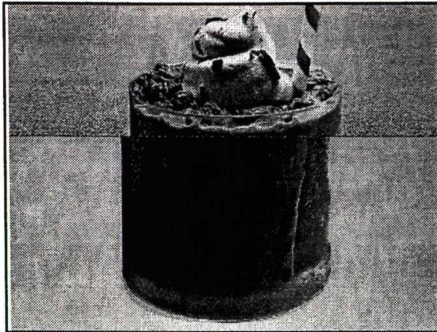
Slide 29 on
left [4500]
Slide 30 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 14 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

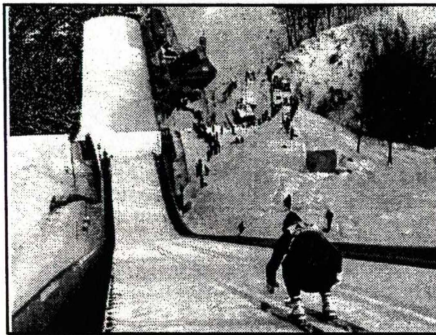
Slide 31 on
left [7270]
Slide 32 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 15 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 33 on
left [8030]
Slide 34 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 16 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 35 on
left [9160]
Slide 36 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 17 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

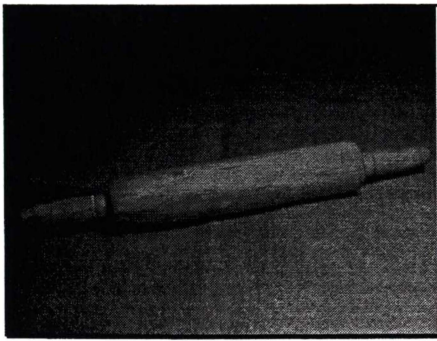
Slide 37 on
left [5600]
Slide 38 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 18 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 39 on
left [7000]
Slide 40 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 19 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

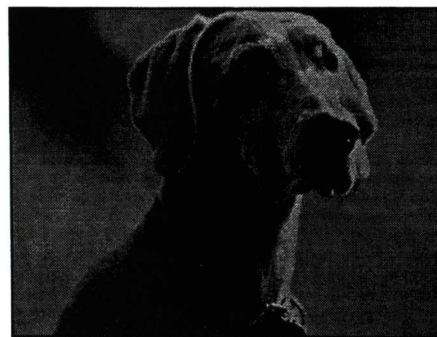
Slide 41 on
left [2040]
Slide 42 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 20 in your booklet.
- You have 15 seconds for this task.
- Stop when the next picture appears.

Slide 43 on
left [1500]
Slide 44 on
right



Rating Slide Stimuli

- Rate the slide you have just seen.
- We want your personal reaction to the slide.
- Use SAM sheet 21 in your booklet.
- You have 15 seconds for this task.
- Stop when the next slide appears.

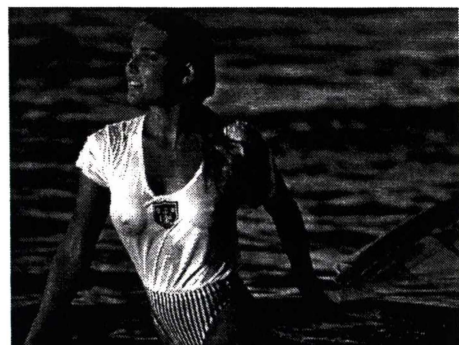
Slide 45

Rating Slide Stimuli

- That was the final slide in this series.
- Thank you for rating these pictures.
- Please hand your booklet to the researcher now.
- You will then be given your course credit form. Check that the correct course is indicated, and that it has been signed.
- Thank you once again.

This slide selection is one of the arrangements for Female participants. For Male participants there were two other slides as shown below – see Chapter 3 for details.

Left slide is
IAPS 4180.
Right slide
is IAPS
4220.



Appendix E

List of IAPS Slides Used in Picture Rating Calibration Study with Mean Valence, Arousal and Dominance Ratings for All Subjects, Females Only and Males Only; NZ findings Compared with American Data.

Slide number	Topic		Valence (SD)	Arousal (SD)	Dominance (SD)
1090	Snake	US	All: 3.70 (1.90)	5.88 (2.15)	3.82 (2.27)
			Female: 3.29 (1.91)	5.94 (2.25)	3.44 (2.22)
			Male: 4.17 (1.79)	5.85 (2.07)	4.27 (2.27)
		NZ	All: 3.92 (1.88)	6.16 (2.19)	3.80 (1.91)
			3.69 (1.92)	6.31 (2.30)	3.51 (1.84)
			4.47 (1.73)	5.80 (1.93)	4.47 (1.96)
1240	Spider	US	4.22 (1.94)	4.92(2.17)	4.95 (2.17)
			3.72 (1.96)	5.03 (2.08)	4.28 (1.96)
			4.70 (1.81)	4.83 (2.26)	5.60 (2.31)
		NZ	4.94 (2.38)	5.04 (2.41)	4.94 (2.53)
			4.74 (2.51)	5.47 (2.33)	4.57 (2.58)
			5.40 (2.03)	4.07 (2.37)	5.80 (2.24)
1500	Dog	US	7.24 (1.88)	4.12 (2.50)	6.97 (2.50)
			7.72 (1.70)	4.15 (2.46)	6.90 (1.71)
			6.77 (1.95)	4.08 (2.58)	7.05 (1.62)
		NZ	7.47 (1.89)	4.65 (2.12)	6.41 (2.07)
			7.47 (1.96)	5.09 (2.07)	6.21 (2.28)
			7.47 (1.81)	3.67 (1.95)	6.87 (1.46)
2040	Happy baby	US	8.17 (1.60)	4.64 (2.54)	7.33 (2.54)
			8.62 (0.85)	5.10 (2.67)	7.59 (1.83)
			7.63 (2.01)	4.33 (2.19)	7.35 (2.16)
		NZ	7.76 (1.52)	5.00 (2.18)	6.42 (2.37)
			7.71 (1.64)	5.43 (2.08)	6.34 (2.67)
			7.87 (1.25)	4.00 (2.14)	6.60 (1.55)
2110	Angry adult	US	3.71 (1.82)	4.53 (2.25)	4.66 (2.25)
			3.37 (1.94)	5.32 (2.33)	3.87 (2.12)
			3.98 (1.64)	4.03 (2.19)	5.52 (2.16)
		NZ	3.32 (1.71)	5.22 (2.13)	4.52 (2.16)
			2.86 (1.40)	5.82 (1.98)	4.29 (2.01)
			4.40 (1.92)	3.87 (1.88)	5.07 (2.46)
2200	Neutral adult	US	4.79 (1.38)	3.18 (2.17)	5.44 (2.17)
			4.95 (1.56)	4.03 (2.22)	4.90 (2.10)
			4.64 (1.18)	2.33 (1.78)	5.97 (1.98)
		NZ	5.50 (1.47)	4.70 (1.76)	5.80 (1.47)
			5.69 (1.60)	5.20 (1.57)	5.83 (1.46)
			5.07 (1.03)	3.53 (1.68)	5.73 (1.53)

Slide number	Topic		Valence (SD)	Arousal (SD)	Dominance (SD)
2500	Man	US	6.16 (1.54)	3.61 (1.91)	5.57 (1.57)
			2.74 (1.51)	4.06 (1.77)	4.44 (2.08)
			5.83 (1.56)	3.66 (1.96)	5.56 (1.64)
		NZ	6.49 (1.71)	3.43 (1.65)	5.86 (2.26)
			6.49 (1.87)	3.51 (1.65)	6.00 (2.46)
			6.50 (1.29)	3.21 (1.67)	5.50 (1.70)
3010	Mutilation	US	1.71 (1.19)	7.16 (2.24)	2.88 (2.41)
			1.29 (0.82)	7.44 (2.21)	2.67 (2.45)
			2.20 (1.36)	6.83 (2.26)	3.12 (2.36)
		NZ	1.62 (1.03)	6.36 (2.27)	3.68 (2.41)
			1.37 (0.81)	6.86 (2.12)	3.23 (2.40)
			2.20 (1.26)	5.20 (2.27)	4.73 (2.15)
3100*	Burn victim	US	1.60 (1.07)	6.49 (2.23)	3.00 (2.16)
			1.35 (0.96)	7.02 (2.02)	3.00 (2.33)
			1.88 (1.14)	5.88 (2.34)	3.00 (1.96)
		NZ	1.88 (1.15)	5.54 (2.53)	3.64 (2.25)
			1.60 (1.01)	5.97 (2.44)	3.71 (2.46)
			2.53 (1.25)	4.53 (2.53)	3.47 (1.73)
3150	Finger	US	2.26 (1.57)	6.55 (2.20)	3.39 (2.15)
			1.98 (1.54)	6.94 (2.07)	3.27 (2.26)
			2.59 (1.56)	6.10 (2.29)	3.54 (2.03)
		NZ	1.84 (1.17)	6.54 (2.33)	4.08 (2.28)
			1.46 (0.89)	6.80 (2.30)	3.91 (2.38)
			2.73 (1.28)	5.93 (2.37)	4.47 (2.07)
4100*	Male dancers	US	6.11 (1.66)	4.39 (1.75)	5.93 (1.71)
			6.70 (1.73)	4.50 (1.98)	6.14 (1.85)
			5.39 (1.26)	4.25 (1.43)	5.67 (1.49)
		NZ	6.29 (1.71)	4.68 (1.88)	5.81 (1.94)
			6.44 (1.86)	5.20 (1.49)	5.64 (2.12)
			5.93 (1.28)	3.47 (2.17)	6.20 (1.47)
4180 ¹	Female nude	US	6.21 (2.57)	5.54 (2.89)	5.44 (2.89)
			4.21 (1.84)	3.62 (2.36)	4.46 (1.62)
			8.21 (1.34)	7.43 (1.97)	6.41 (2.54)
		NZ	Males only:		
			7.20 (1.78)	6.60 (2.16)	5.67 (1.95)
4220 ¹	Female erotic	US	8.02 (1.93)	7.17 (2.69)	5.33 (2.12)
			5.29 (1.35)	3.63 (2.23)	4.58 (1.89)
			8.21 (1.34)	7.43 (1.97)	6.41 (2.54)
		NZ	Males only:		
			7.20 (1.61)	6.33 (1.99)	5.33 (1.29)

Slide number	Topic		Valence (SD)	Arousal (SD)	Dominance (SD)
4310	Female nude	US	6.04 (1.94)	5.42 (2.24)	5.77 (1.82)
			4.81 (1.26)	4.23 (1.76)	5.23 (1.79)
			7.56 (1.53)	6.89 (1.87)	6.42 (1.66)
		NZ	5.61 (2.18)	5.33 (2.14)	5.00 (2.14)
			5.00 (2.22)	4.97 (2.18)	4.82 (2.32)
			7.00 (1.31)	6.13 (1.88)	5.40 (1.68)
4500 ²	Male nude	US	5.70 (2.12)	3.68 (2.42)	5.72 (2.42)
			6.90 (2.08)	5.08 (2.10)	5.87 (1.78)
			4.53 (1.40)	2.33 (1.89)	5.57 (2.78)
		NZ	Females only:		
			6.17 (2.36)	5.26 (2.28)	6.14 (1.72)
4520 ²	Male erotic	US	7.04 (1.64)	5.48 (2.27)	5.48 (1.58)
			7.04 (1.40)	5.48 (1.82)	5.63 (1.59)
			4.76 (0.86)	2.68 (1.77)	5.32 (1.57)
		NZ	Females only:		
			7.26 (1.63)	6.66 (1.73)	6.21 (2.13)
5000	Flower	US	7.08 (1.77)	2.67 (1.99)	7.08 (1.99)
			7.59 (1.63)	2.90 (1.92)	6.77 (2.33)
			6.58 (1.77)	2.44 (2.06)	7.38 (1.87)
		NZ	7.24 (1.74)	3.54 (1.80)	6.62 (2.23)
			7.69 (1.60)	3.80 (1.81)	6.54 (2.39)
			6.20 (1.66)	2.93 (1.67)	6.80 (1.86)
5600	Mountains	US	7.57 (1.48)	5.19 (2.70)	4.93 (2.27)
			7.83 (1.28)	4.56 (2.88)	5.06 (2.35)
			7.27 (1.64)	5.93 (2.30)	4.78 (2.20)
		NZ	7.76 (1.53)	5.04 (2.56)	5.60 (2.93)
			7.57 (1.70)	4.63 (2.66)	5.77 (2.86)
			8.20 (0.94)	6.00 (2.10)	5.20 (3.17)
6230	Aimed gun	US	2.37 (1.57)	7.35 (2.01)	2.15 (2.09)
			2.06 (1.59)	7.56 (1.96)	1.98 (2.09)
			2.73 (1.48)	7.10 (2.07)	2.34 (2.13)
		NZ	2.67 (2.01)	6.53 (2.36)	3.04 (2.75)
			2.09 (1.38)	6.89 (2.18)	2.49 (2.58)
			4.14 (2.60)	5.64 (2.65)	4.43 (2.77)
7000	Rolling pin	US	5.00 (0.84)	2.42 (1.79)	6.14 (2.14)
			5.06 (1.10)	2.15 (1.70)	6.02 (2.09)
			4.93 (0.35)	2.73 (1.86)	6.27 (2.21)
		NZ	4.88 (1.64)	3.12 (2.14)	6.04 (2.05)
			4.60 (1.80)	3.09 (2.06)	5.79 (2.17)
			5.53 (0.92)	3.20 (2.40)	6.60 (1.68)

Slide number	Topic		Valence (SD)	Arousal (SD)	Dominance (SD)
7010*	Basket	US	4.94 (1.07)	1.76 (1.48)	6.70 (1.48)
			4.92 (0.48)	1.97 (1.58)	6.13 (2.29)
			4.95 (1.43)	1.55 (1.36)	7.25 (2.31)
		NZ	5.60 (1.16)	3.09 (1.82)	5.78 (2.25)
			5.40 (0.81)	3.12 (1.80)	5.42 (2.25)
			6.07 (1.67)	3.00 (1.92)	6.57 (2.10)
7270	Choco drink	US	7.53 (1.73)	5.76 (2.21)	5.88 (2.40)
			7.77 (1.68)	5.85 (2.11)	5.96 (2.54)
			7.24 (1.76)	5.66 (2.33)	5.78 (2.25)
		NZ	6.98 (2.08)	5.46 (2.39)	6.02 (2.30)
			6.89 (2.26)	5.94 (2.31)	5.80 (2.37)
			7.20 (1.61)	4.33 (2.26)	6.53 (2.10)
8030	Ski jump	US	7.33 (1.76)	7.35 (2.02)	4.70 (2.66)
			7.35 (1.86)	7.38 (1.91)	4.42 (2.62)
			7.29 (1.66)	7.32 (2.16)	5.02 (2.71)
		NZ	6.69 (2.36)	6.84 (2.29)	5.41 (2.38)
			6.32 (2.60)	6.94 (2.32)	5.62 (2.23)
			7.53 (1.46)	6.60 (2.29)	4.93 (2.71)
9090	Exhaust	US	3.69 (1.92)	4.80 (2.23)	4.72 (2.14)
			3.83 (1.49)	3.75 (2.16)	4.56 (1.62)
			3.24 (1.46)	4.22 (2.07)	4.44 (2.21)
		NZ	3.04 (1.55)	4.78 (2.18)	4.59 (2.14)
			2.83 (1.58)	5.03 (2.19)	4.59 (2.16)
			3.53 (1.41)	4.20 (2.11)	4.60 (2.16)
9140	Cow	US	2.19 (1.37)	5.38 (2.19)	3.85 (1.95)
			1.88 (1.26)	5.79 (2.04)	3.67 (1.96)
			2.56 (1.42)	4.90 (2.29)	4.07 (1.94)
		NZ	2.36 (1.41)	5.16 (2.11)	5.06 (2.02)
			1.89 (1.05)	5.74 (2.08)	4.69 (2.03)
			3.47 (1.55)	3.80 (1.52)	5.93 (1.79)
9160	Soldier	US	3.23 (1.64)	5.87 (1.93)	3.80 (2.08)
			2.81 (1.66)	6.04 (1.91)	3.31 (1.93)
			3.19 (1.63)	5.50 (2.18)	4.15 (2.04)
		NZ	3.20 (1.98)	6.06 (1.52)	4.00 (2.33)
			2.91 (1.95)	6.17 (1.48)	3.57 (2.36)
			3.87 (1.96)	5.80 (1.61)	5.00 (2.00)

*Slides used in practice session.

¹ Slides used in male shows only.

² Slides used in female shows only.

Appendix F

Advertisements Used to Recruit Participants for Study

Responding to visual and semantic cues in a laboratory setting

This experiment gives you the opportunity to contribute to a series of studies that investigate aspects of sexuality. **The tasks involved require responses to pictures and words, and the completion of questionnaires.**

- Anyone who wishes to participate is welcome to enrol in this study!
- If you completed one of my studies earlier this year, or last year you can do this one too.
- You don't even have to be a student - staff can be involved if they wish - and the scoring and questionnaires are all anonymous.

You will complete the experiment in a room on your own in the psychology department near K1.04. I will take each participant to the room when they report to K1.04 to do the experiment.

- You will be asked to rate some slides, complete some questionnaires, work through a word recognition task, then there is another series of pictures to respond to. Finally you will be asked to rate some words.

The whole procedure should take about 1½ hours.

- This will entitle you to 2% additional credit towards whichever 100 level psychology course you nominate.
- If you are not in a 100 level psychology course you can have a \$5 petrol voucher as compensation for the effort required in completing the experiment.

If you wish to participate please put your name in a time-slot on the 'Psychology: Research Experiments' board in the corridor on the first floor of K block.

Volunteers wanted!

Male and female volunteers
over 30 years old
(and up to 100!)
are needed to participate in a doctoral
study exploring aspects of sexuality.

The tasks involved in the experiment include:

- completion of a questionnaire
- rated responses to pictures
- short series of ord tasks.

All data are completely anonymous.

- Procedure takes about 90 minutes
- Requires participants to work alone in a room in the psychology department
- Participants will be given a \$5 petrol voucher for their efforts.

If you want to know more,
or book a time slot,
contact Helen Conaglen
on 838 4755,
or e-mail: conaglen@waikato.ac.nz.

Text of Explanation Given to Participants in Study

Information for Participants

Responding to visual and semantic cues in a laboratory setting

The first thing you do after this explanation is sign the consent form.

Then complete the first stage; this will be done directly on the computer.

After you have done that you will complete the questionnaire stage of the project.

Then you will carry out a second computer task - this one with words or letter strings.

The third task is another picture series. This is explained within the computer programme once you have completed the word tasks.

Following this a further word task will be completed.

At the end of the computer tasks you complete the course credit form - or collect your petrol voucher from the researcher.

We all come from different backgrounds and cultural, social and religious experiences. We have different values. Some aspects of the questionnaires ask about sexual topics you have not thought much about or find difficult or cannot answer. I would ask that in the interests of the overall project you do as much as you can of every scale. Leave what you absolutely cannot do. If you find the experiment so difficult you want to leave, no-one will mind.

The slides have all been rated by students in the USA, but we need NZ responses for these pictures. As with the questionnaires, some may not be easy for you to work on, but we would ask that you persevere if at all possible. Some of the words in the task are such that a dictionary or film censor might describe as coarse language; these are necessary to the experiment, but if you would find such terms offensive feel free to either leave the entire experiment or omit that part - just tell the researcher when you get to the second computer task. While we do not predict any

difficulties because of the experiment, you are reminded that Student Counselling Services are available for any student who has problems. Bear in mind that research is serious and can have long-term implications so be as honest as possible. Remember these scales have been done by others before you.

It would also be useful if you would not discuss the content of the project with others who will complete the experiment.

Any questions?

Procedure:

- **Sign consent form**
- **Complete first slide task - rate all slides**
- **Complete questionnaire.**
- **The computer programme will explain the word and letter strings task.**
- **Then you will do second series of slide tasks.**
- **Complete credit page**
- **Hand forms to experimenter, with the course credit on the top**
- **If you want to discuss any aspect of study, its content, conduct, other aspects feel free to do so with me at the end of the process**
- **Thank you for taking the time to come**

Helen Conaglen.

Information Given To Participants About Picture Rating Task

Responding to visual and semantic cues in a laboratory setting: Part 1

- Thank you for coming today. I appreciate your participation in this experiment. In this part of the study we are interested in how people respond to pictures that represent a lot of different events that occur in life. You will be looking at a computer slide show consisting of different pictures, and you will be rating each picture in terms of how it made you feel while viewing it. There are no right or wrong answers, so simply respond as honestly as you can.

- If you look at the sheet in front of you, you will see 3 sets of 5 figures, each arranged along a continuum. We call this set of figures SAM, and you will be using a computer screen depicting these figures to rate how you felt while viewing each picture. You will use one screen – make all three ratings – for *each* picture that you observe. SAM shows three different kinds of feelings:
 - Happy vs. Unhappy,
 - Excited vs. Calm, and
 - Controlled vs. In-control.

- You can see that each SAM figure ranges along a scale from low to high. The top line SAM is the happy-unhappy scale, which ranges from a smile to a frown. At one extreme of the happy vs. Unhappy scale you feel happy, pleased, satisfied, contented, hopeful. If you felt completely *happy* while viewing the picture, you can indicate this by moving the cursor toward the appropriate figure - like this. [Show Demo]

- The other end of the scale is when you felt completely unhappy, annoyed, unsatisfied, melancholic, despaired, bored. You can indicate feeling completely *unhappy* by placing an “X” on the figure at the right, like this. [Show Demo]

- The figure also allows you to describe intermediate feelings of pleasure, by placing an “X” over any of the other pictures. If you feel completely neutral, neither happy nor sad, place the cursor in the middle. If, in your judgement, your feeling of pleasure or displeasure falls *between* two of the pictures, then place the cursor between the figures, like this. [Show Demo] This permits you to make more finely grained ratings of how you feel in reaction to the pictures.

- The excited vs. Calm dimension is the second type of feeling displayed in the middle line on the screen. At one extreme of the scale you felt stimulated, excited, frenzied, jittery, wide-awake, aroused. If you felt completely *aroused* while viewing the picture, place the cursor near the figure at the left end of the row, like this [Show Demo]

- On the other hand, at the other end of the scale, you felt completely relaxed, calm, sluggish, dull, sleepy, unaroused. You can indicate you felt completely **calm** by placing the cursor at the right of the row, like this. [Show Demo]
- As with the happy-unhappy scale you can represent intermediate levels by placing the cursor near any of the other figures. If you are not at all excited nor at all calm, place the cursor near the figure in the middle of the row. Again, if you wish to make a more finely tuned rating of how excited or calm you feel, place the cursor **between** the pictures, like this. [Show Demo]
- The last scale of feeling that you will rate is the dimension of controlled vs. in-control. At one end of the scale you have feelings characterised as completely controlled, influenced, cared-for, awed, submissive, guided. Please indicate feeling **controlled** by placing the cursor near the figure at the left, like this. [Show Demo]
- At the other extreme of this scale, you felt completely controlling, influential, in control, important, dominant, autonomous. You can indicate that you felt **dominant** by placing the cursor near the figure at the right of the row, like this. [Show Demo] Note that when the figure is large, you feel important and influential, and that it will be very small when you feel controlled and guided.
- If you feel neither in control nor controlled you should place the cursor near the middle picture. Remember you can also represent your feelings between these endpoints. Either place the cursor near any of the intermediate figures, or **between** them – like this [Show Demo]
- Some of the pictures may prompt emotional experiences; others may seem relatively neutral. Your rating of each picture should reflect your immediate personal experience, and no more. Please rate each one *AS YOU ACTUALLY FELT WHILE YOU WATCHED THE PICTURE.*
- Our procedure is as follows:
 - Each picture will only be displayed for a few seconds. It is important that you watch the screen when the pictures to be rated are being shown. Please view the picture for the **entire** time it is on and make your ratings immediately **after** the picture is removed.
 - After each picture there will be a computer screen for you to work. You will rate the slide you have just seen. Take time to record your emotional experience of the picture. It is very important not to dwell on your ratings of the pictures, since there will not be much time. If for some reason, you should **miss** viewing any picture, please leave that ratings screen **blank**. Remember: Your rating is for the last picture you viewed.

- Before we begin the stimuli ratings, here are some examples of the kinds of pictures you will be viewing and rating. Right now rate the following pictures. This is just to help you get a feel for how the ratings are done. [Show practice slides]

- Are there any questions before you begin the ratings task?
 - A few reminders:
 - View the picture for the entire time it is on the screen.
 - Make your ratings on all three dimensions as quickly as possible and get ready for the next picture. The computer will change the slides at the right time.
 - It is important we have information from you on all of these pictures. There are no right and wrong answers; so rate every picture on all three dimensions.

Additional Questionnaire Used In Responding to Pictorial and Semantic Cues Study

Marlowe-Crowne Scale.

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.

- | | | |
|---|---|--|
| T | F | 1. Before voting I thoroughly investigate the qualifications of all the candidates. |
| T | F | 2. I never hesitate to go out of my way to help someone in trouble. |
| T | F | 3. It is sometimes hard for me to go on with my work if I am not encouraged. |
| T | F | 4. I have never intensely disliked anyone. |
| T | F | 5. On occasion I have had doubts about my ability to succeed in life. |
| T | F | 6. I sometimes feel resentful when I don't get my way. |
| T | F | 7. I am always careful about my manner of dress. |
| T | F | 8. My table manners at home are as good as when I eat out in a restaurant. |
| T | F | 9. If I could get into a movie without paying and be sure I was not seen, I would probably do it. |
| T | F | 10. On a few occasions, I have given up doing something because I thought too little of my ability. |
| T | F | 11. I like to gossip at times. |
| T | F | 12. There have been times when I felt like rebelling against people in authority even though I knew they were right. |
| T | F | 13. No matter who I'm talking to, I'm always a good listener. |
| T | F | 14. I can remember 'playing sick' to get out of something. |
| T | F | 15. There have been occasions when I took advantage of someone. |
| T | F | 16. I'm always willing to admit it when I make a mistake. |
| T | F | 17. I always try to practice what I preach. |

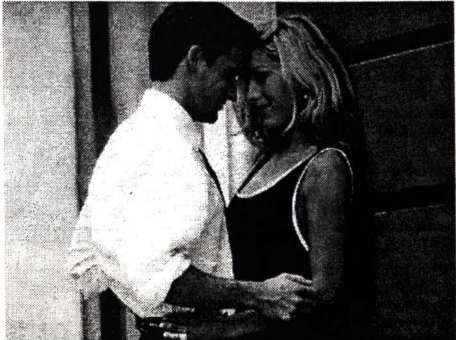





- T F 18. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.
- T F 19. I sometimes try to get even, rather than forgive and forget.
- T F 20. When I don't know something I don't at all mind admitting it.
- T F 21. I am always courteous, even to people who are disagreeable.
- T F 22. At times I have really insisted on having things my own way.
- T F 23. There have been occasions when I felt like smashing things.
- T F 24. I would never think of letting someone else be punished for my wrongdoings.
- T F 25. I never resent being asked to return a favour.
- T F 26. I have never been irked when people expressed ideas very different from my own.
- T F 27. I never make a long trip without checking the safety of my car.
- T F 28. There have been times when I was quite jealous of the good fortune of others.
- T F 29. I have almost never felt the urge to ell someone off.
- T F 30. I am sometimes irritated by people who ask favours of me.
- T F 31. I have never felt that I was punished without cause.
- T F 32. I sometimes think when people have a misfortune they only got what they deserved.
- T F 33. I have never deliberately said something that hurt someone's feelings.


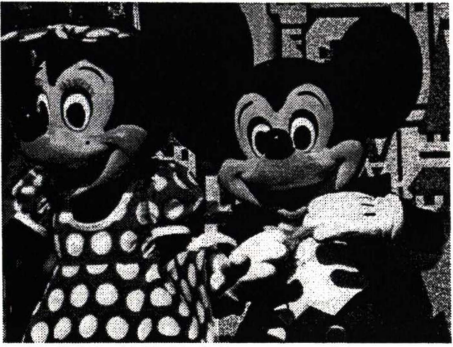

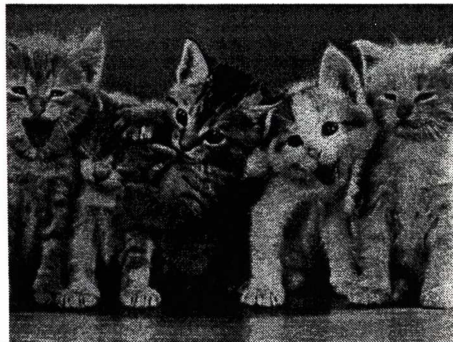


Thank you for your time and effort in completing these pages.

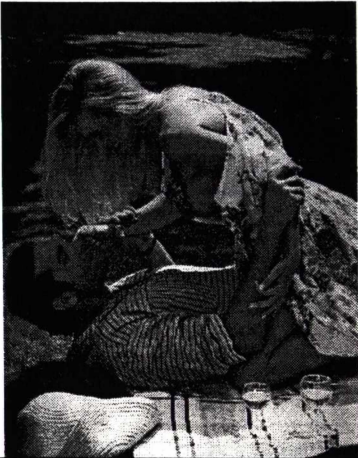
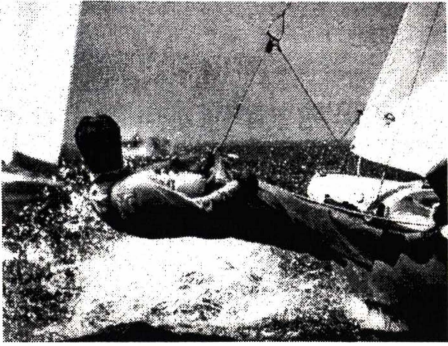
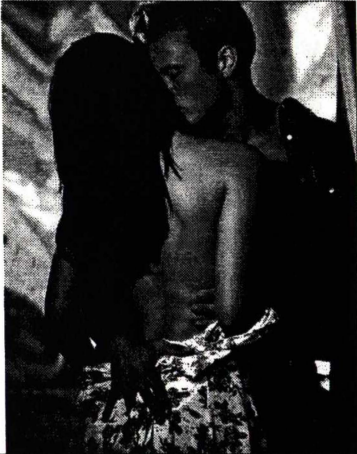



Please return questionnaire to the researcher.

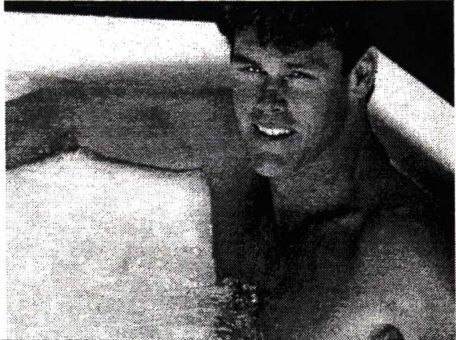

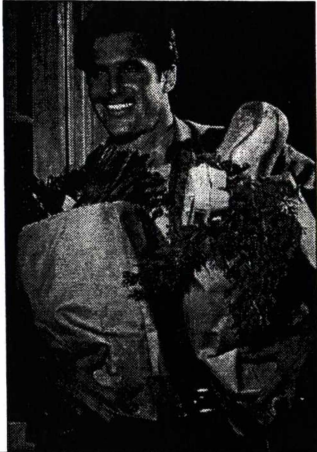
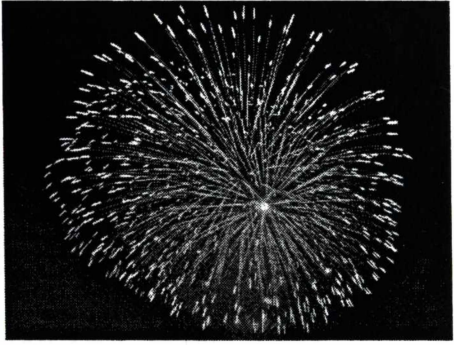
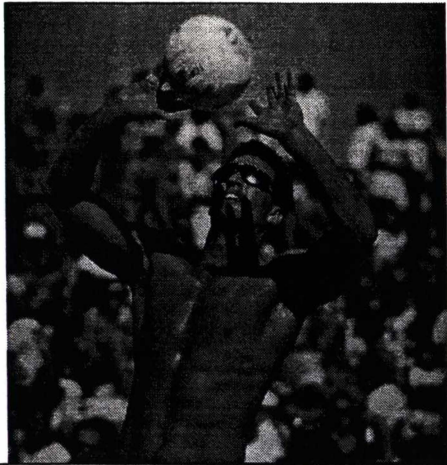

You will then be shown how to complete the next part of the study.

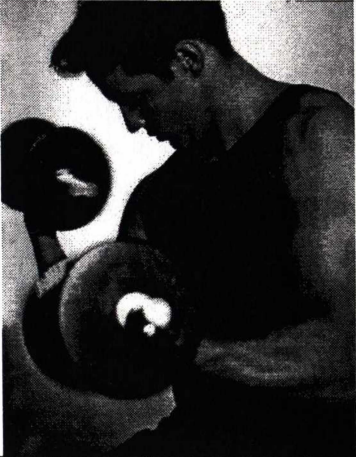





Pictorial Stimuli Used in the Responding to Pictorial and Semantic Cues Study -- Thumbnails of Slides and Ratings


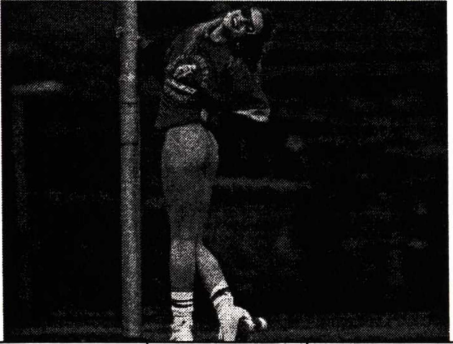

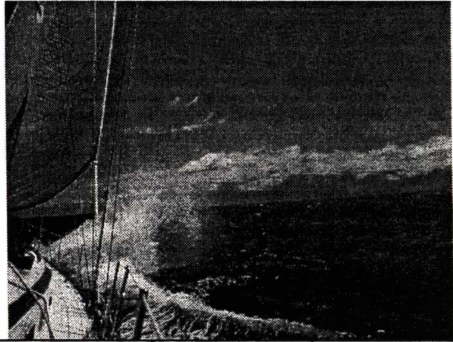

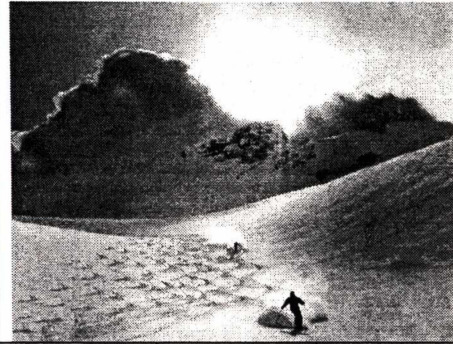

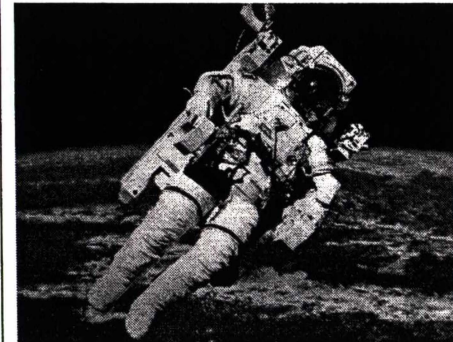
High valence sexual slides				High valence non-sexual slides			
Slide number				Slide number			
4599				5260			
4599	Valence 7.12	Arousal 5.69	Dominant 6.49	5260	Valence 7.34	Arousal 5.71	Dominant 4.54
4641				1710			
4641	7.20	5.43	6.01	1710	8.34	5.41	6.55
4660				8370			
4660	7.40	6.58	5.96	8370	7.77	6.73	5.37

High valence sexual slides				High valence non-sexual slides			
4603				1999			
4603	Valence 7.10	Arousal 4.89	Dominant 6.20	1999	Valence 7.43	Arousal 4.77	Dominant 6.64
4610				1463			
4610	7.29	5.10	5.54	1463	7.45	4.79	6.43
4640				5450			
4640	7.18	5.52	6.03	5450	7.01	5.84	4.98

High valence sexual slides				High valence non-sexual slides			
4607				8080			
4607	Valence 7.03	Arousal 6.34	Dominant 6.14	8080	Valence 7.73	Arousal 6.65	Dominant 5.91
4608				8501			
4608	7.07	6.47	6.25	8501	7.91	6.44	6.05
4680				5700			
4680	7.25	6.02	6.27	5700	7.61	5.68	4.59
Mean	7.18	5.78	6.10		7.62	5.78	5.67
Slides above here are high valence on all three ratings lists; i.e., all participants, male only, female only. Slides following are high valence for female only ratings in American data.							

High valence sexual slides				High valence non-sexual slides			
4510				8034			
4510	Valence 7.00	Arousal 6.05	Dominant 5.80	8034	Valence 7.19	Arousal 6.38	Dominant 6.05
4532				5480			
4532	7.62	5.55	6.62	5480	7.69	5.41	5.71
4533				7410			
4533	7.00	5.89	5.98	7410	7.00	4.84	5.64

High valence sexual slides				High valence non-sexual slides			
4535				8500			
4535	Valence 7.06	Arousal 5.58	Dominant 6.44	8500	Valence 7.16	Arousal 5.52	Dominant 5.83
4700				8120			
4700	7.08	4.10	5.29	8120	7.15	4.60	6.29
Means	7.15	5.43	6.03	Means	7.24	5.35	5.90
Slides following are high valence for male only ratings in American data							
4651				8180			
4651	7.52	6.96	6.56	8180	7.50	6.54	4.83

High valence sexual slides				High valence non-sexual slides			
4652				4150			
4652	Valence 7.92	Arousal 7.25	Dominant 6.90	4150	Valence 7.80	Arousal 6.41	Dominant 6.24
4659				8170			
4659	7.70	7.43	6.29	8170	7.67	6.57	5.41
4664				8190			
4664	7.99	7.72	6.54	8190	8.13	6.41	6.17
4690				5470			
4690	7.42	6.46	6.54	5470	7.38	6.44	4.75

High valence sexual slides				High valence non-sexual slides			
Means	7.71	7.15	6.57	Means	7.70	6.47	5.48
Overall means	7.35	6.12	6.23	Overall means	7.52	5.87	5.68
Part 1 Means	7.33	6.12	6.27	Part 1 Means	7.55	5.99	5.71

Appendix G

Table G1

List of IAPS Slides Used in Cues Study with Mean Valence, Arousal and Dominance Ratings for All Subjects, Females Only, and Males Only; NZ Findings Compared with American Data.

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
1463	Kittens B	US	All: 7.45 (1.76)	4.79 (2.19)	6.43 (1.92)
			Female: 7.81 (1.96)	5.11 (2.17)	6.53 (2.11)
			Male: 7.10 (1.47)	4.46 (2.17)	6.33 (1.72)
		NZ	All: 7.36 (1.72)	5.03 (2.27)	7.43 (1.86)
			Female: 7.44 (1.71)	5.34 (2.26)	7.30 (1.96)
			Male: 7.23 (1.74)	4.54 (2.22)	7.65 (1.67)
1710	Puppies B	US	8.34 (1.12)	5.41 (2.34)	6.55 (1.98)
			8.59 (0.99)	5.31 (2.54)	6.50 (2.09)
			8.02 (1.21)	5.53 (2.07)	6.61 (1.86)
		NZ	7.66 (1.40)	5.02 (2.16)	7.44 (1.74)
			7.86 (1.350)	5.53 (2.16)	7.38 (1.77)
			7.35 (1.42)	4.21 (1.92)	7.53 (1.70)
1999	Disney B	US	7.43 (1.47)	4.77 (2.40)	6.64 (1.96)
			7.68 (1.52)	5.02 (2.48)	6.85 (2.00)
			7.17 (1.40)	4.52 (2.31)	6.42 (1.90)
		NZ	6.98 (1.81)	4.31 (2.20)	7.16 (2.01)
			7.26 (1.63)	4.60 (2.26)	7.24 (2.03)
			6.44 (2.01)	3.75 (2.00)	7.02 (1.98)
2840	Chess C	US	4.91 (1.52)	2.43 (1.82)	5.56 (1.93)
			4.90 (1.23)	2.55 (1.76)	5.22 (1.86)
			4.92 (1.79)	2.31 (1.88)	5.90 (1.95)
		NZ	5.25 (1.79)	3.53 (2.07)	6.43 (2.15)
			5.16 (1.80)	3.55 (1.95)	6.30 (2.14)
			5.42 (1.90)	3.50 (2.30)	6.70 (2.16)
3000	Mutilation D	US	1.45 (1.20)	7.26 (2.10)	2.99 (2.10)
			1.21 (0.80)	7.77 (1.66)	2.56 (2.09)
			1.69 (1.47)	6.74 (2.37)	3.41 (2.80)
		NZ	1.59 (1.41)	7.05 (2.30)	2.78 (2.21)
			1.50 (1.02)	7.35 (2.19)	2.41 (2.00)
			1.75 (1.33)	6.47 (2.42)	3.48 (2.44)
3053	Burn victim D	US	1.31 (0.97)	6.91 (2.57)	2.33 (1.94)
			1.15 (0.73)	7.51 (2.29)	2.59 (1.85)
			1.50 (1.16)	6.20 (2.71)	2.69 (2.12)
		NZ	1.71 (1.52)	7.07 (2.18)	2.90 (2.12)
			1.65 (1.50)	7.48 (1.90)	2.57 (1.97)
			1.83 (1.56)	6.28 (2.46)	3.53 (2.51)

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
3060	Mangled face D	US	1.79 (1.56)	7.12 (2.09)	2.97 (2.11)
			1.66 (1.71)	7.34 (2.10)	2.88 (2.26)
			1.94 (1.39)	6.89 (2.08)	3.07 (1.96)
		NZ	1.76 (1.26)	6.80 (2.27)	3.10 (2.18)
			1.67 (1.21)	7.06 (2.27)	2.77 (2.02)
			1.92 (1.34)	6.30 (2.20)	3.73 (2.37)
3080	Mangled face D	US	1.48 (0.95)	7.22 (1.97)	2.85 (2.10)
			1.33 (0.75)	7.61 (1.81)	2.80 (2.21)
			1.63 (1.11)	6.84 (2.06)	2.90 (2.00)
		NZ	1.90 (1.52)	6.78 (2.20)	3.38 (2.30)
			1.72 (1.37)	7.10 (2.10)	2.94 (2.08)
			2.27 (1.72)	6.16 (2.26)	4.23 (2.47)
3102	Burn victim D	US	1.40 (1.14)	6.58 (2.69)	2.18 (1.90)
			1.22 (0.85)	7.15 (2.48)	2.87 (1.66)
			1.62 (1.39)	5.88 (2.79)	2.43 (1.91)
		NZ	1.77 (1.17)	6.66 (2.12)	3.36 (2.26)
			1.65 (1.06)	7.07 (1.99)	2.96 (2.11)
			1.96 (1.32)	6.02 (2.18)	4.00 (2.36)
3100	Burn victim *	US	1.60 (1.07)	6.49 (2.23)	3.00 (2.16)
			1.35 (0.96)	7.02 (2.02)	3.00 (2.33)
			1.88 (1.14)	5.88 (2.34)	3.00 (1.96)
		NZ	No ratings collected		
3120	Body D	US	1.56 (1.09)	6.84 (2.36)	3.32 (2.36)
			1.33 (0.74)	7.49 (1.96)	3.00 (2.28)
			1.80 (1.32)	6.20 (2.55)	3.64 (2.72)
		NZ	2.01 (1.45)	6.52 (2.28)	3.24 (2.16)
			1.90 (1.46)	6.85 (2.19)	2.89 (2.01)
			2.22 (1.41)	5.88 (2.35)	3.92 (2.30)
3130	Body D	US	1.58 (1.24)	6.97 (2.07)	3.46 (2.07)
			1.26 (0.68)	7.39 (1.97)	3.23 (2.27)
			1.90 (1.57)	6.56 (2.11)	3.69 (2.70)
		NZ	2.34 (1.32)	5.96 (2.12)	4.07 (2.40)
			2.12 (1.21)	6.40 (1.98)	3.63 (2.23)
			2.70 (1.43)	5.26 (2.17)	4.79 (2.51)
3170	Baby with tumor D	US	1.46 (1.01)	7.21 (1.99)	2.70 (1.89)
			1.20 (0.57)	7.55 (1.98)	2.27 (1.65)
			1.77 (1.31)	6.79 (1.93)	3.23 (2.04)
		NZ	1.64 (0.97)	6.77 (2.12)	3.34 (2.19)
			1.63 (0.95)	7.27 (1.86)	3.02 (1.99)
			1.67 (1.01)	5.96 (2.28)	3.84 (2.40)

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)		
3350	Infant D	US	1.88 (1.67)	5.72 (2.23)	3.38 (2.36)		
			1.76 (1.72)	5.78 (2.21)	3.28 (2.50)		
			2.00 (1.62)	5.65 (2.27)	3.48 (2.22)		
		NZ	2.61 (1.44)	5.79 (2.12)	4.23 (2.44)		
			2.45 (1.35)	6.30 (1.86)	3.85 (2.25)		
			2.86 (1.54)	4.98 (2.26)	4.84 (2.64)		
4100	Male dancers *	US	6.11 (1.66)	4.39 (1.75)	5.93 (1.71)		
			6.70 (1.73)	4.50 (1.98)	6.14 (1.85)		
			5.39 (1.26)	4.25 (1.43)	5.67 (1.49)		
		NZ	No ratings collected				
			4150	US	6.53 (1.86)	4.86 (2.55)	5.45 (1.81)
					5.36 (1.44)	3.44 (1.98)	4.72 (1.57)
7.80 (1.36)	6.41 (2.18)	6.24 (1.73)					
NZ	5.98 (2.07)	5.11 (2.31)		5.89 (1.97)			
	5.25 (1.87)	4.48 (2.16)		5.80 (2.05)			
	7.39 (1.68)	6.31 (2.14)		6.06 (1.80)			
4510	Male nude A	US	5.51 (2.50)	3.89 (2.86)	5.76 (2.86)		
			7.00 (2.28)	6.05 (2.26)	5.80 (1.84)		
			4.05 (1.72)	1.78 (1.48)	5.72 (2.54)		
		NZ	5.65 (1.79)	4.38 (2.27)	6.21 (2.03)		
			5.89 (1.76)	4.79 (2.09)	6.20 (1.95)		
			5.18 (1.78)	3.62 (2.40)	6.25 (2.18)		
4532	Man A	US	6.40 (1.78)	4.15 (2.44)	6.16 (1.84)		
			7.62 (1.20)	5.55 (2.21)	6.62 (1.79)		
			5.15 (1.36)	2.73 (1.74)	5.69 (1.79)		
		NZ	6.68 (1.94)	4.68 (2.38)	6.60 (2.00)		
			7.27 (1.72)	5.33 (2.33)	6.54 (1.92)		
			5.55 (1.84)	3.45 (1.96)	6.71 (2.16)		
4533	Man A	US	6.22 (2.24)	5.01 (2.47)	5.91 (1.95)		
			7.00 (2.27)	5.89 (2.26)	5.98 (2.13)		
			5.42 (1.92)	4.12 (2.37)	5.85 (1.76)		
		NZ	6.18 (1.50)	4.55 (2.30)	6.48 (2.00)		
			6.43 (1.51)	5.04 (2.28)	6.37 (1.96)		
			5.77 (1.40)	3.77 (2.12)	6.65 (2.07)		
4535	Biceps A	US	6.27 (1.70)	4.95 (2.32)	6.20 (2.08)		
			7.06 (1.58)	5.58 (2.19)	6.44 (1.96)		
			5.36 (1.35)	4.19 (2.24)	6.57 (1.96)		
		NZ	6.32 (1.83)	4.99 (2.30)	6.31 (2.23)		
			6.63 (1.77)	5.36 (2.22)	6.26 (2.11)		
			5.73 (1.83)	4.27 (2.29)	6.41 (2.45)		

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
4599	Couple A	US	7.12 (1.48)	5.69 (1.94)	6.49 (1.79)
			7.23 (1.66)	5.64 (1.96)	6.43 (1.86)
			7.02 (1.28)	5.73 (1.93)	6.54 (1.73)
		NZ	6.80 (1.42)	5.42 (1.87)	6.66 (1.84)
			6.66 (1.48)	5.45 (1.72)	6.60 (1.79)
			7.02 (1.30)	5.37 (2.10)	6.74 (1.91)
4603	Couple A	US	7.10 (1.58)	4.89 (2.26)	6.20 (2.04)
			7.58 (1.51)	5.00 (2.44)	6.03 (1.81)
			6.51 (1.46)	4.76 (2.05)	6.57 (1.74)
		NZ	6.58 (1.74)	4.41 (2.17)	7.03 (1.90)
			6.61 (1.80)	4.47 (2.14)	7.09 (1.89)
			6.52 (1.64)	4.30 (2.24)	6.92 (1.92)
4607	Couple A	US	7.03 (1.84)	6.34 (2.16)	6.14(2.20)
			6.25 (1.94)	5.59 (2.13)	6.00 (2.03)
			7.99 (1.09)	7.19 (1.88)	6.47 (1.94)
		NZ	6.77 (1.76)	6.01 (2.17)	6.05 (2.07)
			6.49 (1.68)	5.72 (2.14)	6.06 (2.05)
			7.31 (1.82)	6.56 (2.14)	6.05 (2.10)
4608	Couple A	US	7.07 (1.66)	6.47 (1.96)	6.25 (1.87)
			6.66 (1.85)	6.14 (2.14)	6.46 (1.88)
			7.55 (1.28)	6.84 (1.63)	6.37 (1.73)
		NZ	6.75 (1.54)	6.01 (1.99)	6.60 (1.82)
			6.79 (1.57)	6.00 (2.02)	6.35 (1.81)
			6.68 (1.50)	6.02 (1.97)	7.00 (1.78)
4610	Couple A	US	7.29 (1.74)	5.10 (2.29)	5.54 (1.95)
			7.79 (1.49)	5.04 (2.49)	5.48 (2.06)
			6.71 (1.85)	5.17 (2.06)	5.61 (1.83)
		NZ	6.26 (1.45)	4.47 (1.86)	6.71 (1.97)
			6.49 (1.53)	4.65 (1.78)	6.68 (2.02)
			5.89 (1.25)	4.18 (1.97)	6.75 (1.91)
4640	Couple A	US	7.18 (1.97)	5.52 (2.28)	6.03 (1.86)
			7.64 (1.85)	5.94 (2.46)	6.20 (2.03)
			6.67 (1.99)	5.07 (1.98)	5.85 (1.66)
		NZ	6.10 (1.81)	4.64 (2.10)	6.46 (2.22)
			6.30 (1.79)	4.93 (2.03)	6.47 (2.24)
			5.70 (1.80)	4.09 (2.14)	6.44 (2.21)
4641	Couple A	US	7.20 (1.59)	5.43 (2.10)	6.01 (1.88)
			7.21 (1.70)	5.33 (2.11)	6.77 (1.48)
			7.16 (1.47)	5.53 (2.10)	6.54 (1.62)
		NZ	6.80 (1.41)	5.16 (1.88)	6.51 (1.89)
			6.85 (1.46)	5.23 (1.93)	6.16 (1.98)
			6.74 (1.33)	5.05 (1.80)	7.07 (1.60)

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
4651	Couple A	US	6.32 (2.18)	6.34 (2.05)	5.80 (2.15)
			5.15 (1.98)	5.71 (1.96)	5.06 (2.08)
			7.52 (1.66)	6.96 (1.95)	6.56 (1.95)
		NZ	6.98 (1.77)	6.57 (1.98)	6.41 (1.99)
			6.77 (1.89)	6.58 (1.93)	6.35 (2.00)
			7.32 (1.51)	6.54 (2.08)	6.49 (1.98)
4652	Couple A	US	6.79 (2.02)	6.62 (2.04)	6.10 (2.22)
			5.65 (2.11)	5.98 (2.20)	5.29 (2.23)
			7.92 (1.06)	7.25 (1.64)	6.90 (1.91)
		NZ	7.11 (1.86)	7.11 (1.90)	6.30 (2.31)
			6.87 (1.95)	7.04 (1.92)	6.16 (2.35)
			7.58 (1.58)	7.23 (1.87)	6.56 (2.24)
4659	Couple A	US	6.87 (1.99)	6.93 (2.07)	5.67 (2.52)
			6.15 (2.01)	6.47 (2.18)	6.61 (1.86)
			7.70 (1.64)	7.43 (1.80)	6.29 (2.22)
		NZ	7.08 (1.95)	6.82 (2.17)	6.28 (2.04)
			6.81 (2.05)	6.65 (2.25)	6.11 (2.08)
			7.61 (1.60)	7.17 (1.98)	6.59 (1.94)
4660	Couple A	US	7.40 (1.36)	6.58 (1.88)	5.96 (1.64)
			7.22 (1.40)	6.31 (1.95)	5.39 (1.66)
			7.63 (1.30)	6.92 (1.74)	6.69 (1.30)
		NZ	6.74 (1.76)	6.15 (2.23)	6.03 (2.09)
			6.66 (1.85)	6.17 (2.23)	5.85 (2.14)
			6.89 (1.58)	6.13 (2.24)	6.39 (1.94)
4664	Couple A	US	6.61 (2.23)	6.72 (2.08)	5.96 (2.19)
			5.42 (2.21)	5.87 (2.17)	6.77 (1.80)
			7.99 (1.25)	7.72 (1.45)	6.54 (1.93)
		NZ	6.95 (1.91)	7.03 (1.90)	6.18 (2.13)
			6.59 (2.05)	7.07 (1.94)	5.70 (2.19)
			7.53 (1.50)	6.96 (1.85)	6.95 (1.79)
4680	Nudes A	US	7.25 (1.83)	6.02 (2.27)	6.27 (2.29)
			6.91 (1.92)	6.07 (2.26)	6.21 (2.25)
			7.73 (1.61)	5.94 (2.30)	6.35 (2.37)
		NZ	7.10 (1.87)	6.82 (2.08)	6.11 (2.07)
			6.92 (1.90)	6.80 (2.07)	5.96 (2.07)
			7.45 (1.79)	6.86 (2.11)	6.42 (2.04)
4690	Nudes A	US	6.83 (1.94)	6.06 (2.21)	6.12 (2.18)
			6.43 (1.84)	5.79 (2.17)	5.83 (2.30)
			7.42 (1.96)	6.46 (2.22)	6.54 (1.92)
		NZ	7.21 (1.75)	6.94 (1.80)	6.23 (1.79)
			6.85 (1.78)	6.85 (1.82)	6.04 (1.72)
			7.79 (1.56)	7.09 (1.79)	6.53 (1.87)

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
4700	Couple A	US	6.91 (1.94)	4.05 (1.90)	5.35 (2.05)
			7.08 (1.87)	4.10 (1.93)	5.29 (2.09)
			6.74 (2.03)	4.00 (1.89)	5.41 (2.02)
		NZ	6.25 (1.49)	4.05 (1.87)	6.99 (1.74)
			6.23 (1.58)	4.22 (1.88)	7.00 (1.72)
			6.28 (1.35)	3.79 (1.82)	6.98 (1.79)
5260	Water falls B	US	7.34 (1.74)	5.71 (2.53)	4.54 (2.56)
			7.20 (1.79)	5.43 (2.55)	4.90 (2.54)
			7.47 (1.71)	6.00 (2.50)	4.18 (2.56)
		NZ	7.02 (1.81)	6.15 (2.18)	4.84 (2.80)
			7.02 (1.64)	5.89 (2.17)	4.83 (2.79)
			7.02 (1.89)	6.28 (2.18)	4.84 (2.82)
5450	Space shuttle B	US	7.01 (1.60)	5.84 (2.40)	4.98 (2.69)
			7.00 (1.46)	5.96 (2.45)	4.66 (2.69)
			7.02 (1.76)	5.72 (2.36)	5.33 (2.69)
		NZ	5.68 (1.44)	4.99 (2.18)	4.97 (2.51)
			5.34 (1.39)	4.82 (2.11)	4.58 (2.43)
			6.23 (1.35)	5.25 (2.29)	5.60 (2.53)
5470	Astronaut B	US	7.35 (1.62)	6.02 (2.26)	4.96 (2.47)
			7.33 (1.44)	5.61 (2.05)	5.16 (2.37)
			7.38 (1.82)	6.44 (2.40)	4.75 (2.57)
		NZ	6.02 (1.57)	4.80 (2.20)	4.94 (2.71)
			5.78 (1.48)	4.65 (2.13)	4.85 (2.67)
			6.40 (1.65)	5.04 (2.32)	5.09 (2.79)
5480	Fireworks B	US	7.53 (1.63)	5.48 (2.35)	5.80 (1.97)
			7.69 (1.45)	5.41 (2.34)	5.71 (1.89)
			7.37 (1.80)	5.55 (2.37)	5.88 (2.06)
		NZ	7.11 (1.67)	5.58 (2.30)	6.18 (2.27)
			7.21 (1.65)	5.76 (2.32)	6.10 (2.32)
			6.91 (1.72)	5.23 (2.24)	6.34 (2.16)
5510	Mushroom C	US	5.15 (1.43)	2.82 (2.18)	6.68 (2.18)
			5.10 (1.35)	2.87 (2.09)	6.08 (1.69)
			5.20 (1.52)	2.78 (2.29)	7.27 (2.15)
		NZ	4.89 (1.26)	2.61 (1.92)	7.29 (1.90)
			4.81 (1.41)	2.77 (1.97)	7.31 (1.91)
			5.02 (0.97)	2.35 (1.82)	7.26 (1.90)
5700	Mountains B	US	7.61 (1.46)	5.68 (2.23)	4.59 (2.68)
			7.54 (1.56)	5.44 (2.38)	4.76 (2.75)
			7.70 (1.36)	5.94 (2.28)	4.41 (2.61)
		NZ	6.59 (1.83)	5.14 (2.29)	5.30 (2.79)
			6.56 (2.00)	5.16 (2.44)	5.44 (2.73)
			6.65 (1.52)	5.09 (2.06)	5.07 (2.88)

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)			
6150	Outlet C	US	5.08 (1.17)	3.22 (2.02)	5.54 (1.69)			
			5.00 (1.21)	2.89 (1.87)	5.55 (1.65)			
			5.17 (1.13)	3.62 (2.13)	5.54 (1.74)			
		NZ	4.70 (1.36)	2.14 (1.72)	7.66 (1.75)			
			4.73 (1.57)	2.27 (1.79)	7.48 (1.77)			
			4.67 (0.93)	1.93 (1.60)	7.92 (1.70)			
7002	Towel C	US	4.97 (0.97)	3.16 (2.00)	6.25 (1.93)			
			5.03 (0.98)	3.28 (2.16)	6.44 (1.90)			
			4.91 (0.97)	2.99 (1.81)	6.29 (1.96)			
		NZ	5.27 (1.57)	2.66 (2.07)	7.79 (1.72)			
			5.19 (1.56)	2.64 (2.02)	7.74 (1.66)			
			5.44 (1.58)	2.70 (2.18)	7.88 (1.86)			
7009	Mug C	US	4.93 (1.00)	3.01 (1.97)	6.33 (1.93)			
			4.89(0.96)	3.26 (1.96)	6.51 (2.10)			
			4.96 (1.05)	2.69 (1.95)	6.51 (2.17)			
		NZ	4.81 (1.42)	2.04 (1.59)	7.78 (1.75)			
			4.86 (1.64)	2.19 (1.73)	7.76 (1.75)			
			4.74 (0.97)	1.81 (1.33)	7.82 (1.77)			
7010	Basket *	US	4.94 (1.07)	1.76 (1.48)	6.70 (1.48)			
			4.92 (0.48)	1.97 (1.58)	6.13 (2.29)			
			4.95 (1.43)	1.55 (1.36)	7.25 (2.31)			
		NZ	No Ratings collected					
			7034	Hammer C	US	4.95 (0.87)	3.06 (1.95)	6.48 (1.86)
						4.91 (0.56)	2.96 (1.97)	6.64 (1.92)
5.00 (1.10)	3.15 (1.93)	6.31 (1.79)						
NZ	4.71 (1.30)	2.66 (2.04)			7.11 (2.10)			
	4.57 (1.36)	2.90 (2.05)			6.93 (2.12)			
	4.93 (1.18)	2.28 (1.98)			7.40 (2.04)			
7035	Mug C	US	4.98 (0.96)	2.66 (1.82)	6.39 (1.94)			
			5.15 (0.84)	2.75 (1.86)	6.75 (1.77)			
			4.81 (1.05)	2.56 (1.80)	6.02 (2.05)			
		NZ	4.93 (1.59)	2.53 (1.99)	7.40 (1.96)			
			4.80 (1.80)	2.70 (2.19)	7.33 (2.02)			
			5.12 (1.17)	2.26 (1.60)	7.51 (1.89)			
7050	Hair dryer C	US	4.93 (0.81)	2.75 (1.80)	5.82 (1.93)			
			5.04 (0.87)	2.90 (1.82)	5.85 (1.74)			
			4.81 (0.71)	2.59 (1.79)	5.78 (2.15)			
		NZ	4.97 (1.33)	2.36 (1.79)	7.75 (1.71)			
			4.93 (1.43)	2.28 (1.68)	7.66 (1.67)			
			5.05 (1.13)	2.52 (2.01)	7.92 (1.78)			

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
7233	Plat C	US	5.09 (1.46)	2.77 (1.92)	6.23 (2.06)
			5.15 (1.66)	2.96 (2.05)	6.69 (1.96)
			5.01 (1.21)	2.51 (1.74)	6.54 (1.88)
		NZ	5.15 (1.72)	2.37 (1.84)	7.51 (2.13)
			5.35 (1.79)	2.62 (1.97)	7.48 (2.18)
			4.77 (1.53)	1.89 (1.47)	7.56 (2.04)
7235	Chair C	US	4.96 (1.18)	2.83 (2.00)	6.53 (2.09)
			5.06 (1.22)	2.94 (2.08)	6.44 (1.88)
			4.85 (1.13)	2.68 (1.90)	6.57 (2.10)
		NZ	5.04 (1.55)	2.32 (1.85)	7.61 (2.00)
			5.06 (1.67)	2.45 (1.88)	7.67 (1.89)
			5.02 (1.30)	2.06 (1.75)	7.50 (2.21)
7410	M&M's B	US	6.91 (1.56)	4.55 (2.24)	5.92 (2.10)
			7.00 (1.63)	4.84 (2.30)	5.64 (2.14)
			6.80 (1.49)	4.24 (2.16)	6.22 (2.04)
		NZ	6.35 (1.65)	4.35 (2.34)	7.27 (2.12)
			6.63 (1.62)	4.97 (2.20)	7.01 (2.27)
			5.91 (1.62)	3.37 (2.22)	7.68 (1.78)
8034	Skier B	US	7.06 (1.53)	6.30 (2.16)	6.26 (2.02)
			7.19 (1.63)	6.38 (2.10)	6.05 (2.05)
			6.90 (1.41)	6.20 (2.24)	6.03 (1.96)
		NZ	6.41 (1.77)	5.49 (2.53)	5.72 (2.18)
			6.50 (1.84)	5.81 (2.55)	5.51 (2.17)
			6.25 (1.64)	5.33 (2.84)	6.13 (2.18)
8080	Sailing B	US	7.73 (1.34)	6.65 (2.20)	5.91 (2.10)
			7.73 (1.43)	6.25 (2.34)	5.56 (2.16)
			7.73 (1.25)	7.12 (1.95)	6.32 (1.97)
		NZ	6.03 (1.63)	5.18 (2.21)	5.62 (2.41)
			6.10 (1.61)	5.42 (2.21)	5.27 (2.30)
			5.91 (1.67)	4.79 (2.16)	6.18 (2.48)
8120	Tennis player B	US	7.09 (1.36)	4.85 (2.13)	6.23 (1.61)
			7.15 (1.40)	4.60 (2.16)	6.29 (1.79)
			7.02 (1.33)	5.15 (2.09)	6.15 (1.41)
		NZ	6.64 (1.55)	4.53 (2.07)	7.25 (1.75)
			6.67 (1.57)	4.56 (2.07)	7.34 (1.76)
			6.60 (1.52)	4.47 (2.10)	7.11 (1.75)
8170	Sail boat B	US	7.63 (1.34)	6.12 (2.30)	5.72 (2.15)
			7.59 (1.24)	5.67 (2.55)	6.04 (2.04)
			7.67 (1.44)	6.57 (1.94)	5.41 (2.23)
		NZ	6.32 (1.61)	4.97 (2.20)	5.76 (2.34)
			6.33 (1.68)	5.10 (2.32)	5.66 (2.28)
			6.32 (1.50)	4.77 (2.01)	5.93 (2.44)

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
8180	Cliff divers B	US	7.12 (1.88)	6.59 (2.12)	4.97 (2.52)
			6.86 (1.94)	6.63 (2.11)	5.06 (2.37)
			7.50 (1.74)	6.54 (2.14)	4.83 (2.75)
		NZ	6.57 (2.09)	6.97 (2.09)	4.25 (2.47)
			6.54 (2.06)	6.98 (2.13)	3.98 (2.36)
			6.63 (2.16)	6.94 (2.01)	4.78 (2.59)
8190	Skiers B	US	8.10 (1.39)	6.28 (2.57)	6.14 (2.74)
			8.08 (1.48)	6.16 (2.57)	6.10 (2.89)
			8.13 (1.29)	6.41 (2.60)	6.17 (2.60)
		NZ	7.25 (1.87)	6.22 (2.11)	5.78 (2.19)
			7.31 (1.85)	6.43 (2.04)	5.65 (2.13)
			7.13 (1.92)	5.83 (2.20)	6.02 (2.30)
8370	Rafting B	US	7.77 (1.29)	6.73 (2.24)	5.37 (2.02)
			7.86 (1.37)	6.98 (2.25)	5.54 (2.04)
			7.67 (1.19)	6.46 (2.22)	5.20 (2.00)
		NZ	7.55 (1.53)	6.88 (1.89)	5.49 (2.19)
			7.60 (1.40)	6.93 (1.93)	5.27 (2.11)
			7.47 (1.76)	6.78 (1.81)	5.92 (2.29)
8500	Gold B	US	6.96 (1.64)	5.60 (2.40)	5.87 (2.14)
			7.16 (1.55)	5.52 (2.28)	5.83 (2.15)
			6.71 (1.74)	5.71 (2.55)	5.92 (2.14)
		NZ	6.47 (1.83)	5.04 (2.45)	5.99 (2.25)
			6.58 (1.79)	5.27 (2.40)	5.86 (2.23)
			6.25 (1.92)	4.59 (2.52)	6.23 (2.29)
8501	Cash B	US	7.91 (1.66)	6.44 (2.29)	6.05 (2.52)
			7.67 (1.97)	6.02 (2.50)	6.49 (2.31)
			8.14 (1.24)	6.86 (2.00)	5.61 (2.67)
		NZ	6.11 (1.69)	4.82 (2.43)	6.22 (2.34)
			6.18 (1.73)	5.02 (2.39)	6.09 (2.37)
			6.00 (1.65)	4.51 (2.49)	6.44 (2.28)
9040	Child D	US	1.67 (1.07)	5.82 (2.15)	3.10 (2.00)
			1.50 (0.97)	6.44 (2.00)	2.96 (1.95)
			1.88 (1.17)	5.10 (2.11)	3.27 (2.07)
		NZ	2.01 (1.22)	6.36 (2.04)	3.49 (2.12)
			1.94 (1.21)	6.60 (1.86)	3.29 (2.03)
			2.13 (1.24)	5.88 (2.28)	3.88 (2.25)
9070	Boy C	US	5.01 (1.89)	3.63 (2.03)	5.67 (1.98)
			5.13 (1.85)	3.73 (1.92)	5.63 (2.03)
			4.88 (1.94)	3.51 (2.17)	5.73 (1.94)
		NZ	5.07 (1.76)	3.98 (2.04)	5.86 (2.17)
			5.07 (1.93)	4.37 (2.09)	5.55 (2.09)
			5.07 (1.45)	3.35 (1.81)	6.35 (2.22)

Slide number	Topic Group		Valence (SD)	Arousal (SD)	Dominance (SD)
9410	Soldier D	US	1.51 (1.15)	7.07 (2.06)	2.81 (1.99)
			1.20 (0.58)	7.54 (1.78)	2.34 (1.69)
			1.96 (1.56)	6.38 (2.26)	3.48 (2.21)
		NZ	1.76 (0.97)	6.89 (2.01)	3.41 (2.36)
			1.59 (0.92)	7.26 (1.81)	3.10 (2.29)
			2.04 (1.00)	6.28 (2.16)	3.89 (2.42)
9570	Dog D	US	1.68 (1.23)	6.14 (2.31)	3.37 (2.23)
			1.47 (1.00)	6.45 (2.19)	3.24 (2.17)
			1.90 (1.40)	5.84 (2.41)	3.49 (2.31)
		NZ	1.96 (1.24)	6.62 (2.17)	3.86 (2.51)
			1.65 (1.03)	7.18 (1.92)	3.35 (2.32)
			2.46 (1.40)	5.74 (2.27)	4.68 (2.61)

Note. *Slides used in practice session.

N.B. Ratings given here are for first viewing of the slide concerned.

Table G2

Mean Response Times by Picture Type and Gender

Group	Picture type	Mean response times (ms)
A (n = 147)	High valence sexual content	Males 4,006.65 (SD = 2,952.39)
		Females 3,019.89 (SD = 1,695.18)
B (n = 146)	High valence - no sexual content	Males 3,215.71 (SD = 3,632.39)
		Females 2,400.51 (SD = 1,423.55)
C (n = 145)	Neutral	Males 2,131.38 (SD = 1,611.97)
		Females 2,158.25 (SD = 1,102.9)
D (n = 145)	Low valence - unpleasant	Males 3,729.62 (SD = 3,996.6)
		Females 3,403.15 (SD = 2,363.64)

Table G3

Mean Viewing Times by Picture Type and Gender

Group	Picture type	Mean viewing times (ms)
A (<i>n</i> = 147)	High valence sexual content	Males 21,895.14 (<i>SD</i> = 7,772.76)
		Females 22,309.71 (<i>SD</i> = 5,256.84)
B (<i>n</i> = 146)	High valence - no sexual content	Males 23,302.83 (<i>SD</i> = 6,724.21)
		Females 23,362.61 (<i>SD</i> = 6,408.76)
C (<i>n</i> = 145)	Neutral	Males 21,962.57 (<i>SD</i> = 7,035.62)
		Females 22,924.10 (<i>SD</i> = 6,040.28)
D (<i>n</i> = 145)	Low valence - unpleasant	Males 22,987.52 (<i>SD</i> = 8,037.29)
		Females 24,361.21 (<i>SD</i> = 5,254.42)

Table G4

Mean Times Taken by Participants to Rate Pictures

Group	Picture type	Mean rating times (ms)
A (<i>n</i> = 147)	High valence sexual content	Males 10,495.35 (<i>SD</i> = 4,322.98)
		Females 11,026.59 (<i>SD</i> = 3,341.75)
B (<i>n</i> = 146)	High valence - no sexual content	Males 10,474.50 (<i>SD</i> = 3,725.49)
		Females 11,020.42 (<i>SD</i> = 3,708.37)
C (<i>n</i> = 145)	Neutral	Males 9,638.53 (<i>SD</i> = 4,688.22)
		Females 10,138.00 (<i>SD</i> = 3,533.13)
D (<i>n</i> = 145)	Low valence - unpleasant	Males 11,657.73 (<i>SD</i> = 4,460.43)
		Females 12,583.58 (<i>SD</i> = 3,111.08)