SEX-GUILT AND THE EFFECTS OF A SUBLIMINAL SEX-RELATED STIMULUS ON THE LIBIDINAL CONTENT OF FICTIONAL NARRATIVES

THESIS

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Fictional narratives of 68 female undergraduates classified as either high or low on sex-guilt were rated for libidinal content following subliminal exposure to either a sex-related or a neutral stimulus. Separate dependent measures were obtained for libidinal derivatives bearing either a transparently "close" or a symbolically "distant" relationship to the sex-related stimulus. Subjects in the sex-related stimulus condition expressed significantly fewer close libidinal derivatives than subjects in the neutral condition. High sex-guilt subjects' distant derivative production revealed a near-significant trend toward repression in the neutral condition, but the greatest amount of expression in the sex-related condition. Type of defenses employed are discussed as a function of subliminally perceived stimulus threat.
TABLE OF CONTENTS

LIST OF TABLES. ........................................... v

Chapter

I. INTRODUCTION ......................................... 1

Subliminal Psychodynamic Activation
The Communicative Approach to Psychotherapy
  A rationale for encoded communication
  The absence of derivative meaning
  Vehicles of derivative meaning
  Two types of derivative expression
Fiction as the Derivative Expression of Recent
  Unconscious Perceptions
  Fiction as dream

A Survey of the Empirical Literature

The Poetzl Phenomenon and the Allers and Teler Phenomenon
Methodological Improvements and Validation of the Poetzl and Allers and Teler Phenomenon
Criticism of the Poetzl and the Allers and Teler Phenomenon
Influence Without Discrimination
The Unintentional Influence of Marginal Stimuli on Conscious Experience and Behavior
  "Masking" studies: The effects of subliminal stimuli on concurrent conscious impressions
  The differential effects of subliminal and supraliminal suggestion on verbal behavior
  Effects of marginal stimuli on story-like products
Controversy and Criticism Regarding Subliminal Perception
  The partial cues hypothesis
  Definition of awareness
  Criticism of awareness indicators
  Verbal discrimination as an indicator of awareness
  Failure to replicate and subliminal psychodynamic activation
Methodological Considerations
Priming
Control stimuli
Use of a discrimination task
Double-blind controls
Response measures
Individual differences
Stimuli factors: The effect of drive-related marginal stimuli

Statement of Purpose

Sex-Guilt and Responsiveness to a Subliminally Presented Sexual Stimulus
Specific Hypotheses

II. METHOD. ............................................. 63

Subjects
Instruments and Measures
  Revised Mosher Sex-Guilt Inventory (RMSGI)
  A Manual for Rating Libidinal Content in Fictional Narratives
  Sorting Task
Apparatus
  Stimuli
  Writing materials
  Tachistoscope
  Priming tapes
  Tape recorder
  Timepiece
Procedure

III. RESULTS ........................................... 83

IV. DISCUSSION. ......................................... 95

Inhibition of Close Libidinal Derivatives
Stimulus Threat as Determinant of Derivative Emergence or Inhibition
Two Types of Repression
Type of Derivative as Reflecting Type of Defense Judge’s Sorting Task
Subliminal Perception or Partial Cues?
Recommendations for Future Studies

APPENDICES .............................................. 113

REFERENCES ............................................. 147
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Log-Means and Log-Standard Deviations for Total Libidinal Derivatives</td>
<td>143</td>
</tr>
<tr>
<td>2. Log-Means and Log-Standard Deviations for Close Libidinal Derivatives</td>
<td>144</td>
</tr>
<tr>
<td>4. Means and Standard Deviations for Index of Communicative Style (Distant Minus Close)</td>
<td>146</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

The hallmark of psychoanalytic theory is its emphasis on unconscious determinants of behavior, affect, cognition, and communication. Contemporary developments in psychoanalysis include an increased focus on the "interaction between internal variables and interpersonal experiences in the external world" (Baker, 1985, p. 24). This concern with environmental and interpersonal factors has been accompanied by an expanded interest in conscious experience and its relationship to unconscious processes (Shevrin & Dickman, 1980; Baker, 1985).

Evidence for unconscious determinants of behavior and experience originated in the clinical observations of Freud and his followers. Brenner (1973) underscores the impossibility of observing unconscious processes directly. What can be observed, he says, are derivatives. The term "derivative" originated with Freud (1900). It refers to "manifest content that simultaneously expresses a disguised latent meaning. The term is used to imply that the manifest content is derived from the latent raw (dangerous) image" (Langs, 1985, p. 9).
Despite numerous examples of clinically-generated evidence supporting unconscious processes, psychoanalytic theory has been criticized for its reliance on anecdotal evidence (Masling, 1983). As a consequence, its scientific integrity has been frequently challenged. To put psychoanalytic theory on firmer scientific ground, its causal, dynamic hypotheses must be subjected to the verification of systematic experimental methods (Silverman, 1976). Thus, questions concerning the effects of unconscious motivational factors on conscious experience and behavior require the manipulation of those same unconscious motivational factors. Obviously, the manipulation of unconscious variables is complicated by the fact that the manipulation itself must not allow such variables to become conscious. Given such limitations, studies employing the use of stimuli presented below the subjects' reported level of awareness have a critical function in the verification and evolution of psychoanalytic thought.

The impetus for the present study is rooted in four general areas of interest: (a) Silverman's (1976, 1983) "subliminal psychodynamic activation" paradigm as a method for testing the causal propositions of psychoanalysis; (b) Langs' (1985) formulation of derivative expressions as encoded or disguised representations of selective unconscious perceptions; (c) the idea that fiction is a derivative vehicle for the expression of recent unconscious
and/or preconscious perception; and (d) an older, classical line of empirical research in the area of subliminal perception concerned with the "indirect" or "unintentional" effects of "marginal" stimuli on conscious experience and behavior. This study tests whether the unconscious perception of a sex-related stimulus influences the libidinal content in subsequently produced fictional narratives. It also determines the extent to which any such effects are mediated by individual differences in sex-guilt.

Subliminal Psychodynamic Activation

During the last two decades, Silverman (1983) developed a method to experimentally test and validate a number of dynamic propositions. He called this experimental paradigm the "subliminal psychodynamic activation method." In essence, the method consists of systematically observing selected behaviors both before and after 4-millisecond tachistoscopic exposures of experimental and control stimuli. As a control against experimenter bias and subject expectancy effects, Silverman has outlined a research strategy which enables both experimenter and subject to remain blind to the stimulus content. The experimental stimuli consist of verbal messages and/or pictures designed to "activate" certain unconscious drives, wishes, fantasies, anxieties, and defenses which the dynamic propositions of psychoanalysis purport to be central motivators of behavior.
The Communicative Approach to Psychotherapy

A fundamental principle of Langs' (1985) "communicative approach" to psychotherapy is that many of the patient's free associations are encoded messages or derivatives which represent, in a disguised way, the patients' selective unconscious perceptions of the therapist and the therapist's interventions.

The interventions of the therapist operate as "stimulus triggers" which mobilize the patient's associations. They include anything the therapist says or does which could provide a stimulus to which the patient responds (Langs, 1985). Two important features of a stimulus trigger include (a) its structure or form and (b) its unconscious meanings and implications. Both aspects are encoded in the patient's derivative expressions.

For example, suppose a therapist takes a brief phone call during a therapeutic session. Shortly following the phone call, the patient complains about being interrupted by a pushy telephone salesman last evening while she was attempting to bake a cake. This particular derivative communication serves as an encoded portrayal of the formal, inherent characteristics of the therapist's intervention--namely the interruption of a creative process by a telephone call. On the other hand, suppose that following the phone call the patient says she never really felt like her parents cared for her as much as they cared for her younger sister.
In this latter instance, the patient does not give an encoded portrayal of any formal or structural aspect of the therapist's intervention. Rather, what is encoded is the meaning or implication of the intervention—namely that the therapist cares more about the caller than the patient.

It is important to reiterate that what is primarily represented are the patient's selective unconscious perceptions of relevant stimuli. Although repressed fantasies and memories may enter into the formation of derivatives, Langs (1985) maintains that patients respond initially by encoding threatening perceptions and only secondarily by encoding fantasies and memories associated with those perceptions.

Unconscious perception involves an interaction between (a) the nature of the stimulus trigger, i.e., its structural and connotative characteristics; and (b) the individual propensities of the perceiver (i.e., emotional disturbance or conflict) which influence his or her selection of unconscious perceptions (Langs, 1985).

A rationale for encoded communication. Freud's (1926) model of symptom formation provides a rationale for why people unconsciously encode certain messages. Freud (1926) posited that unacceptable impulses arising in the id give rise to anxiety. In turn, this anxiety mobilizes a series of coping strategies and defensive operations designed to alleviate the anxiety while allowing some measure of
expression to the impulse seeking discharge. The resulting balance between the expression of an unacceptable impulse and a defense against such expression is called a "compromise formation." Langs (1985) revises Freud’s model by giving equal credence to both external danger situations and internal impulses as a source of anxiety. These external traumatic situations involve "the apprehension of images and experiences that are highly charged and emotionally threatening to the individual; these may be termed raw images" (Langs, 1985, p. 13). This revision of Freud highlights Langs' contention that human communication is an adaptive response to the unconscious implications of external stimuli. Furthermore, Langs maintains that the apprehension of these implications is rooted in the selective unconscious perceptions of the individual.

Compromise formations reflect:
"a form of porous or what is called derivative repression, wherein the underlying raw image (perception and/or fantasy or memory) remains unconscious and outside of the individual's awareness, while gaining access to conscious awareness in some disguised form" (Langs, 1985, p. 14).

Freud (1900) posits four principle mechanisms of transformation and disguise which facilitate derivative repression. These mechanisms are displacement, symbolization, condensation, and secondary-revision.
The absence of derivative meaning. Not all of an individual's associations function as derivatives. Two factors can account for the absence of derivative meaning in an individual's expressions. On the one hand, a lack of derivatives may simply reflect the absence of an external stimulus that mobilizes a particular unconscious constellation. On the other hand, an absence of derivative meaning may reflect "the presence of what may be termed barrier repression, a massive defense that permits no derivative leakage or emergence of encoded expression" (Langs, 1985, p. 14). Through the use of barrier repression, both the threatening raw image and any derivative or transformed representations of it are kept completely out of awareness. Thus, the unconscious meaning and implications of a threatening raw image are not even expressed in a disguised form. The result of barrier repression is the noncommunication and obliteration of unconscious meaning.

Vehicles of derivative meaning. Certain kinds of communicative vehicles operate better than others as sensitive carriers of disguised unconscious meaning (Langs, 1985). Among the best carriers of unconscious meaning are memories, dreams, images, and narratives. Thus, free associations which take on a story-like quality tend to be rich in derivative meaning. Allusions to plays or movies or other creative works within the context of a story-like
narrative often prove to be valuable sources of encoded unconscious meaning. In contrast, rationalizations, intellectualizations, ruminations, or manifest allusions to the therapist and the therapist's interventions usually prove to be poor carriers of derivative meaning. The relative absence of displacement in manifest allusions to the therapist and the therapist's interventions make such communications unlikely carriers of anxiety-provoking unconscious perception. Accurate unconscious perceptions concerning the therapist and therapy are more likely to appear in displaced narratives and images. Thus, it appears the type of response chosen greatly influences the amount of encoded meaning conveyed.

Two types of derivative expressions. An individual's encoded messages consist of both "close" and "distant" derivatives (Langs, 1985). The latent meaning of a close derivative can be readily ascertained. The manifest images and themes of close derivatives bear a high degree of direct correspondence to the raw image they represent. Close derivatives often reflect the simple displacement of an unconscious perception of one situation onto an another similar situation. Distant derivatives, however, are highly disguised representations of a raw image. They are not as easily connected to their stimulus trigger. Distant derivatives are transformed versions of an original raw image. They reflect the "working over" operations of
primary process in the form of symbolization and condensation as well as displacement.

Close derivatives indicate minimal communicative defenses. Distant or highly transformed derivatives reflect more powerful defenses against the communication of unconscious meaning. Thus, distant derivatives are usually associated with higher levels of anxiety.

**Fiction as the Derivative Expression of Recent Unconscious Perceptions**

**Fiction as dream.** The previous discussion suggests that memories, dreams, images, and narratives comprise the most sensitive vehicles of derivative meaning. Communicative psychotherapy asserts that derivative expressions function primarily as disguised representations of salient features of the immediate stimulus field. In attempting to extend these two key notions to communicative phenomena outside the therapeutic context, the present study proposes that the derivatives of fiction may operate as sensitive vehicles of encoded unconscious perception.

A famous writer and teacher of creative fiction, John Gardner (1983), has suggested that a great writer’s authority is rooted in "his trustworthiness as a judge of things . . . his ability to perceive and understand the world around him" (p. 9). Gardner depicts "fiction as dream." Through the use of "moment by moment" concrete images and physical detail drawn from the writer’s careful observation of others
and his own life experience, he "creates for us a kind of dream, a rich and vivid play of the mind . . . . fiction does its work by creating a dream in the reader's mind" (p. 30-31). Freud (1908) explored the relationship between popular stories and daydreams or fantasies. He suggests that both fantasies and stories are activated by an event in the present which "awakens" or "arouses" an earlier memory (usually from childhood) associated with a powerful wish. The derivative expression of that wish reflects "elements of the recent provoking occasion as well as the old memory" (Freud, 1908, p. 151).

A Survey of the Empirical Literature

The major hypothesis of the present study necessitates a review of an older, classical line of empirical research in the area of subliminal perception. This older line of research is concerned with the "indirect" or "unintentional" effects of "marginal stimuli" on conscious experience and behavior. Klein (1959a) describes the basic phenomenon of interest as the

activation or registration of meanings (call these trace systems or schema if you like) by external stimuli which are themselves too weak to capture notice, i.e., the stimuli are 'subliminal' or 'unrecognized' or 'incidental' or 'indifferent.' (p. 7)

It is to these empirical investigations that we now turn.
The Poetzl Phenomenon and the Allers and Teler Phenomenon

In a landmark study, Poetzl (1917) exposed subjects to pictures of landscapes for 1/100 of a second and then asked them to describe and draw what they had seen. Following this, the subjects were asked to take note of any dreams they had that night. The subjects returned the next day and described and drew their dreams. The major finding was the abundant presence of details in the reported dreams and drawings which bore a striking degree of similarity to the previously unreported features of the landscapes. In a footnote to the 1919 edition of "The Interpretation of Dreams," Freud praised Poetzl's work as "an important contribution to the part played by recent material in the construction of dreams . . ." (p. 11). Thus, the Poetzl phenomenon is significant in confirming the role of "day-residues" or "indifferent perceptions" in Freud's theory of dreams.

Allers and Teler (1924) demonstrated that tachistoscopically implanted preconscious perceptions could be recovered in the subject's waking imagery the following day. The most remarkable aspect of this finding was the extent to which previously unnoticed features of the pictures emerged in the subject's subsequent imagery in an almost photographic way. Several subjects were nearly able to completely reconstruct the original stimulus picture. Thus, whereas Poetzl demonstrated the recovery of
preconscious perceptions in dreams, Allers and Teler extended the basic phenomenon to include recovery in images.

Malamud and Linder (1931) conducted a study similar to that of Poetzl (1917) using supraliminially exposed pictures related to the conflict areas of psychoneurotic and schizophrenic patients. Their central finding was that while conflict-related elements were frequently omitted in the subjects' descriptions of the pictures, these omitted elements tended to emerge in some way in the patient's dreams. Malamud (1934) repeated this experiment substituting a verbal passage containing sexual symbolism for the conflict-related pictures. His findings were consistent with the earlier study. Together, these two studies demonstrate the recovery of preconscious and/or repressed perceptions in dreams.

Methodological Improvements and Validation of the Poetzl and the Allers and Teler Phenomenon

Fisher (1954, 1956, 1957, 1959) renewed interest in this line of inquiry with a more systematic series of replications and extension of Poetzl's (1917) original discovery. These studies are notable not only for their results, but also for their methodological improvements over earlier work. Fisher (1954) supported Poetzl's (1917) principle finding that unrecognized registration or what Fisher called "preconscious perceptions" appear with a striking frequency in the manifest content of subsequent
dreams. In his discussion, Fisher (1954) points out that "In many of the experiments, every single detail of the visual structure of the dream could be traced to the visual percepts of the day before" (p. 422).

Thus, Fisher (1954) calls for a slight modification in Freud's theory of dreams which would give greater weight to the role of "preconscious" or "indifferent" perceptions in the overall construction of the dream. Fisher also noted that while certain preconscious perceptions emerged in the dream with an uncanny, almost photographic accuracy, other preconscious perceptions underwent considerable transformation and distortion prior to their emergence in the dream. This observation parallels the distinction Langs (1985) has made between "close" and "distant" derivatives.

Fisher (1956) tested whether the cognitive "working over" of the unconscious wish by the primary process begins in close temporal proximity to tachistoscopic exposure, or whether it occurs only in sleep. Essentially, he replicated the Allers and Teler (1924) study with a number of significant modifications. First, he reduced exposure time to match the exposure time used by Poetzl. Second, he varied the time he allowed to elapse between tachistoscopic exposure and the collection of images. Third, he tested a number of subjects using a blank slide as a control condition.

Fisher's (1956) results demonstrated the emergence of preconscious percepts in subsequent imagery. In separate
control experiments using a blank slide stimulus, subjects drew images which did not correspond to the various elements of the stimulus pictures used in the noncontrol experiments. Fisher (1956) notes that the same type of transformed percepts may appear in both dreams and images. His study also demonstrates that preconscious perceptions may emerge "in consciousness transformed and distorted by all the mechanisms noted within minutes after tachistoscopic exposure" (Fisher, 1956, p. 36). According to Fisher (1956), "conscious images are derived from the fusion of recent memory images of preconscious percepts with past memory images associated with an unconscious wish" (p. 39).

He offers evidence that primary process transformations of preconscious percepts or their memory traces begin at the moment of sensory registration or in close temporal proximity to it.

In 1957, Fisher reported a series of combined dream-imagery experiments using techniques similar to those employed by Poetzl (1917) and by Allers and Teler (1924). These experiments are noteworthy in their methodological improvements over previous work. The prior use of a word-association test as a stimulus for the production of images can be criticized on the grounds that the images evoked may be in response to the stimulus words of the test rather than the actual unnoticed percepts of the stimulus picture. Another potential criticism of the Allers and Teler design is the use of a complex picture containing a multiplicity of
different elements. The use of such a complex picture makes it difficult to determine whether a particular percept was derived from the picture or from an outside source bearing a coincidental relationship to the picture. In response to such potential design flaws, Fisher (1957) abandoned the word association test altogether. He replaced it with the use of "free imagery" modeled on the use of "free association" in the psychoanalytic method. Subjects were "simply asked to close their eyes and describe and make drawings of any images that developed" (Fisher, 1957, p. 8). Fisher also used much simpler pictures as stimuli and employed two types of control stimuli. For some subjects, a blank slide preceded their imagery drawings. For others, imagery drawings were collected in the absence of any prior experimental stimuli.

One of the fascinating features of this study was Fisher's (1957) finding that "images that developed during the imagery experiment appeared to be less disguised and 'closer' to the unconscious content than the manifest dream images derived from them" (p. 39). Several of these images were recoverable within minutes of tachistoscopic exposure. The finding suggests primary process mechanisms of disguise and transformation begin shortly after the onset of the briefly exposed stimulus. Apparently, these mechanisms continue to "work over" this recent experience throughout the day and into the night.
Fisher (1957) noted the degree to which the free imagery produced is "derived almost exclusively from the exposed picture" (p. 39). Fisher (1957) describes a process in which the preconscious percepts from the exposed picture seem to "hold the imagery process in a vise and mold the form in which recent or remote memory scenes are incorporated into the image" (p. 39). Also of note, is the fact that some of the imagery produced appears to have been derived from the incidental registration of various environmental features comprising the entire experimental context. For example, voyeuristic themes in connection with the use of the tachistoscope are particularly common.

Fisher (1957) asserts that the stimulus pictures were both preconsciously "perceived" and "apperceived." By "apperceived," he means "their meaning is unconsciously cognized and this meaning may determine the content of subsequent images" (p. 40). Thus, subsequent imagery may organize around both apperceived meaning and the perceived structural features of preconscious stimuli. Such a finding is consistent with Langs' (1985) notion that derivatives encode and represent both structural and connotative aspects of pertinent stimuli.

Continuing methodological improvements can be found in a study by Fisher and Paul (1959) which in many ways represents a culmination of Fisher's earlier work. The primary value of earlier work was in demonstrating the basic
reality of the Poetzl and the Allers and Teler phenomenon in certain cases. Two important changes in their 1959 design include (a) the use of two subliminal stimuli which differed substantially from one another in both their formal and conceptual properties; and (b) the development of an objective method for scoring the images which allowed the direct comparison of images collected from subjects under different experimental conditions.

Fisher and Paul (1959) reasoned that the basic phenomenon could be more firmly established if systematic differences in a subject's images could be observed between the pre-exposure control condition and the post-exposure experimental condition. Furthermore, if images following exposure to stimulus A differed substantially from images following exposure to stimulus B, the effect would be on even sounder scientific footing.

For the experimental stimuli, Fisher and Paul (1959) chose a line drawing of a Rubin double-profile with figure ground properties and a line drawing of a clock. As a means of objectively scoring the data, they developed an exhaustive checklist describing those features of the Rubin double-profile which distinguish it from the picture of the clock. This enabled the evaluation of each set of images in terms of its degree of correspondence to the Rubin double-profile. Thus, a high score on this checklist indicates a high degree of correspondence between
the images and the Rubin double-profile. Fisher and Paul had a set of judges who were blind to the experimental conditions apply the checklist. Interrater reliability for the independent judges in terms of percentage agreement was .72. Fisher and Paul (1959) found that checklist scores of images following tachistoscopic exposure to the Rubin double-profile were significantly higher than the checklist scores of images preceded by no tachistoscopic stimulation. Average checklist scores of images following tachistoscopic exposure to the clock were lower than both the scores for control images following no tachistoscopic exposure and images following exposure to the Rubin double-profile.

A follow-up study by Paul and Fisher (1959) employing a number of design modifications confirmed the earlier findings. Methodological changes included keeping the experimenter blind as to the experimental condition and the use of a blank slide control session in addition to a no exposure control session. A "reverie-like" atmosphere was used to facilitate the emergence of unrecognized stimulus features in subsequent imagery and dreams. Recognition threshold measures and a discrimination task were employed as an assurance that the stimuli registered outside of awareness.

Luborksy and Shevrin (1956) also found evidence for the Poetzl and the Allers and Teler phenomenon. They found substantial recovery of tachistoscopically implanted preconscious perceptions in both dreams and free imagery.
Some of the most complete recoveries were found in the free imagery condition.

Shevrin and Luborsky (1958) developed a measure of "preconscious recall" for use in experiments similar to those conducted by Poetzl, Allers and Teller, and Fisher. Their measure depends upon a comparison between repeated attempts at "intentional recall" of items "conceptually similar" to the marginal stimulus and the spontaneous recovery or "unintentional recall" of such conceptual similarities in dreams and images. They demonstrated that dreams and images are better vehicles for the recovery of preconscious perceptions than intentional recall.

Conversely, intentional recall proved to be superior to dreams and images in the recall of conscious perceptions.

Criticism of the Poetzl and the Allers and Teller Phenomenon

Johnson and Eriksen (1961) criticized much of the earlier work on the Poetzl and the Allers and Teller phenomenon, including Shevrin and Luborsky's (1958) study. They pointed out that the lack of a no exposure control condition in several studies prevents an accurate "estimation of the chance level at which various kinds of objects appear in dreams and images of Ss who have not been exposed to the picture" (p. 497). They argued that so-called "preconscious perceptions" or "preconscious recall" in dreams and images may simply reflect a high base rate of spontaneously occurring objects which bear a conceptual
similarity to features of the stimulus picture. Johnson and Eriksen (1961) incorporated a no exposure control and a second experimental stimulus into Shevrin and Luborsky's (1958) basic research design. With these modifications in technique, they reported no support for the subsequent recovery of unconscious or preconscious perceptions in such indirect measures as daydreams or images. Johnson and Eriksen's (1961) study underscores the importance of a no treatment control and a second experimental stimulus in attempts to investigate the influence of preconsciously registered percepts on subsequent measures of conscious experience.

Influence Without Discrimination

Klein (1959a) cited studies (Bricker & Champanis, 1953; Goldberg & Fiss, 1959) which suggested "a successful discrimination experience is not possible unless the subject has some conscious grasp of a portion of the stimulus he is trying to discriminate" (p. 296). However, the contention that discrimination without at least partial awareness is not possible does not mean stimuli registered outside of awareness do not have any influence on cognition and behavior. Thought and action may be influenced by subliminal stimuli even though a subject may be unable to discriminate such stimuli above chance (Goldberg & Fiss, 1959). In a typical discrimination task, two or more subliminal stimuli are presented a predetermined number of
times in random order. Subjects are subsequently asked to
guess what they were shown from a number of options arranged
in a forced choice or multiple choice format. The failure
to discriminate a stimulus better than chance serves as
practical assurance that it is not in part consciously perceived.

Evidence that subliminal stimuli may influence cognition
despite the subject's inability to discriminate such stimuli
is provided by two experiments conducted by Fiss, Goldberg,
and Klein (1963). The first study involved the
tachistoscopic exposure of a double profile and a clock at a
speed below each subject's pre-determined threshold for the
partial recognition of equivalent geometric forms.
Following such exposure, each subject described and drew any
images which arose during a period of free imagery. The
drawings were compared against checklists of the major
features of each stimulus. The drawings were also sorted by
judges asked to assign each drawing to a probable stimulus
condition. Double profile (DP) checklist scores of images
following the DP stimulus were significantly higher than DP
checklist scores of images following the clock (CL)
stimulus. Images following the CL stimulus were
significantly higher on the CL checklist than on the DP
checklist. Nevertheless, subjects were unable to
discriminate the double profile stimulus from the clock
stimulus better than chance when a check of discriminability
was conducted. Fiss, Goldberg, and Klein (1963) concluded that this "first experiment suggested but did not conclusively demonstrate that a non-discriminable stimulus can influence imagery . . . " (p. 37).

Fiss, Goldberg, and Klein (1963) conducted a second study utilizing a larger sample and more rigorous controls. Modeled on Paul and Fisher's (1959) study, the second experiment utilized a double profile stimulus and a blank control stimulus. Subjects drew and described images following exposure and all drawings were subjected to a checklist and sorting analysis. Both the checklist and sorting techniques demonstrated a significant difference between imagery evoked by the double profile and by the blank card. Despite such differences, subjects were unable to identify the stimuli above chance during a forced-choice discrimination task. The subject's failure to discriminate the stimuli under the same exposure conditions as the experiment proper served as evidence that the stimuli were subliminal. Each subject's partial recognition threshold was subsequently determined by gradually increasing the illumination intensity until the subjects could correctly identify the stimuli on the basis of "some minimal yet definite partial cue" (Fiss et al., 1963, p. 33). All of the subjects' partial recognition thresholds were at illumination levels well above those used in the experimental
and the discrimination task. On the basis of such experimental observations, Fiss et al. (1963) concluded "that a low stimulus too faint to be discriminated or even partially perceived could nevertheless exert marked and objectively measurable effects on another mark of conscious experience—imagery" (p. 43).

**The Unintentional Influence of Marginal Stimuli on Conscious Experience and Behavior**

Of particular interest to the present study are those investigations which evaluate the effects of a marginal stimulus of one kind or another on ongoing conscious experience. Relevant studies include those which utilize some form of an indirect response measure to evaluate the impact of a marginal stimulus. The previous discussion concerned the effects of marginal stimuli on dreams and imagery; the following examines the effects of marginal stimuli on other cognitive products.

"Masking" studies: The effects of subliminal stimuli on concurrent conscious impressions. Klein, Spence, Holt, and Gourevitch (1958) utilized a "masking technique" to determine the effects of differential subliminal stimuli on impressions of a consciously perceived, sexually ambiguous human figure. In "masking" studies, a briefly presented A stimulus is immediately followed by a longer, supraliminal exposure to a second B stimulus. The B stimulus serves to "mask" or obliterate any conscious perception of the A stimulus even when the A stimulus is presented for a
duration which would allow it to be consciously perceived if it was not immediately followed by the B stimulus. This rapid succession of stimulus exposures allows the A stimulus to function as a subliminal stimulus.

In the Klein et al. (1958) study, exposure to various subliminal stimuli immediately preceded a temporally contiguous supraliminal exposure to sexually ambiguous figures. For their experimental subliminal stimuli, Klein et al. (1958) used line drawings of (a) male genitals; (b) female genitals; (c) a male symbol; and (d) a female symbol. The subjects consisted of male medical students. The central hypothesis was that impressions of supraliminal human figures would incorporate attributes associated with the temporally contiguous subliminal pictures. A secondary consideration was whether or not subjects would be differentially influenced by subliminal exposure to realistic as opposed to symbolic sexual pictures. Verbal descriptions using a personality checklist and drawings of the supraliminal human figures served as the dependent variables.

Contrary to expectation, group effects demonstrating the incorporation of attributes associated with the male and female subliminal genitals (A-stimulus) were nonsignificant for both drawings and the adjective check list ratings of the human figures (B-stimulus). However, consistent
idiosyncratic effects for certain **individuals** were manifest in the genital condition. While some subjects incorporated attributes of the subliminal genitals into their impressions of the human figure, other subjects showed a tendency to exclude those attributes. Furthermore, the propensity to **incorporate** or **exclude** attributes of the subliminal genitals was consistent within subjects. Subjects who incorporated attributes of the female genital into their impressions, did the same with the male genital. Conversely, subjects who excluded attributes of the female genital also excluded attributes of the male genital in their impressions. Moreover, the consistent tendency **within subjects** to incorporate or exclude features associated with the subliminal stimuli proved to be significant for the adjective checklist. In addition, subjects who incorporated attributes of the male genital in their checklist ratings also drew more masculine drawings.

In a post hoc analysis of their results, Klein et al. (1958) suggest the "inclination to condense or contrast the A and B stimuli may be a personality variable" (p. 263). Their findings indicate "condensation or contrast-formation" may interact with a subject’s self image and sexual identity. Subjects who later described themselves in terms of feminine attributes made masculine drawings of stimulus B when it was presented immediately after the subliminal female genital. Conversely, subjects describing themselves
in terms of masculine attributes made more feminine drawings in the female genital condition. Klein et al. (1958) suggested that a more feminine self-image in males may be associated with conflicts in the area of sexual adjustment. They argued such conflicts may become manifest as a defense against incorporating feminine attributes in drawings of stimulus B when stimulus B is immediately preceded by the female genital.

Analysis of the effects of symbolic sexual stimuli was complicated by evidence that the female symbol chosen did not unambiguously represent femininity. Impressions based on the adjective checklist showed no consistent significant main effects in the sexual symbol condition. However, post hoc analysis revealed a significant positive correlation between subjects' masculine self-image and their tendency to incorporate attributes of the female symbol into their checklist ratings. In accordance with expectation, the group of subjects exposed to the male symbol produced significantly more masculine drawings than the group exposed to the female symbol. These results were independent of the subjects' self-image in terms of masculine or feminine characteristics. This study is important in demonstrating that a subliminally registered stimulus may influence concurrent conscious experience and that this experience may be mediated by personality differences.
A study similar to that of Klein et al (1958), Smith, Spence, and Klein (1959) substituted words for pictures as their subliminal stimuli. They were concerned that the results of the Klein, Spence, Holt, and Gourevitch (1958) investigation could not confidently be attributed to the impact of differential subliminal meanings inasmuch as the subliminal stimuli used were considerably different in both meaning and contour. As a control for the possible effects of differential contour, Smith, Spence, and Klein (1959) used the words ANGRY and HAPPY as their "masked" stimuli. By using stimuli which differed considerably in meaning but only slightly in contour, they were able to isolate the influence of subliminally perceived meaning on conscious thought. The subliminal stimuli were exposed for as little as 4 milliseconds, followed by a consciously perceptible drawing of a neutral expressionless face. Subjects descriptions of the face were differentially influenced by the subliminal stimuli. Descriptions were more pleasant when the face was paired with the word HAPPY than when the same face was paired with the word ANGRY. This study provides evidence for the influence of the meaning of subliminally registered stimuli on concurrent conscious perceptual experience.

Eagle (1959) tested the differential effects of subliminal pictures depicting either a clearly aggressive or a benevolent theme on males' and females' impressions of a
contiguously presented supraliminal stimulus. Ascending recognition thresholds for the A stimuli under "masking" conditions were utilized in an effort to establish the relationship between the magnitude of the effects and recognition thresholds. Such an evaluation enabled Eagle to test an important implication of the "partial cue hypothesis" often invoked to explain subliminal phenomena. This hypothesis attributes any influence of the A stimuli on the subjects' impression of the B figure to the subjects' conscious perception of certain partial cues from the A stimulus. In accordance with this hypothesis, the magnitude of any effects could be expected to vary as a function of recognition thresholds. One would expect the largest effects for subjects with the lowest recognition threshold, as they would be more likely to benefit from any partial cues than subjects with higher thresholds.

Eagle's (1959) results indicated that impressions of the neutral B figure were differentially influenced by the aggressive and benevolent A stimuli as measured by trait list ratings and drawings. A significant correlation between recognition thresholds and the magnitude of the effect was found only for males. Contrary to the partial cue hypothesis, males demonstrating the largest effects tended to have the highest recognition thresholds. Thus, Eagle demonstrated that a drive-related stimulus too faint
to be consciously discriminated can nevertheless influence conscious cognitive behavior. Eagle (1959) interpreted the positive relationship between recognition thresholds and effect size for males in accordance with psychoanalytic propositions concerning the role of attention cathexis in determining the effects or general fate of sensory stimulation. Stimuli associated with low quantities of attention cathexis (i.e., received in a state of low awareness) are thought to have greater mobility. Mobility refers to the ease with which an idea or image is subject to primary process transformation. Mobility facilitates the degree to which one idea or image can merge with or be assimilated into another. Eagle concluded that given the fact of nonconscious registration, the "lower the quantity of attention cathexis, the greater the degree of assimilation between A stimulus and B figure" (Eagle, 1959, p. 598).

The differential effects of subliminal and supraliminal suggestion on verbal behavior. Zuckerman (1960) tested the effects of subliminal and supraliminal suggestion on verbal productivity. His dependent measure was simply the number of words written to describe TAT pictures presented tachistoscopically under three experimental conditions. Each TAT picture was presented 10 times at increasing levels of exposure. Overlapping the TAT pictures were .02 second subliminal exposures of either the suggestion WRITE MORE,
DON'T WRITE, or a blank control card. For subjects in the control group, the blank card was superimposed on all three TAT cards shown (Conditions I, II, and III). For subjects in the experimental group, the blank card was superimposed on the first TAT card shown (Condition I), the suggestion "WRITE MORE" was superimposed on the second TAT card (Condition II), and the suggestion "DON'T WRITE" was superimposed on the third TAT card shown (Condition III). Subjects in the control group showed a steady rise in productivity going from Conditions I to III. Subjects in the experimental group showed an increase in productivity going from Condition I to Condition II (WRITE MORE) and a decrease in productivity going from Condition II to Condition III (DON'T WRITE). In comparing difference scores between conditions for the experimental and control groups, Zuckerman found a significant difference between groups going from Condition II to Condition III. The findings suggest that the subliminal stimulus DON'T WRITE significantly reduced subjects' productivity in describing what they had just seen. In speculating on why the DON'T WRITE stimulus resulted in significant group differences while the WRITE MORE stimulus did not, Zuckerman suggests that the DON'T WRITE stimulus appears to counteract a practice effect as evidenced by the control group's steady increase in productivity going from Condition I to III.
Such an explanation appears reasonable in light of the data, although no rationale is given for why the DON'T WRITE stimulus would have such an effect.

A second experiment featured what was assumed to be supraliminal .5 second exposures of the same suggestive stimuli. Contrary to expectation, 10 of the 18 subjects in the .5 second condition did not report seeing the suggestions. Their performance was consistent with that of subjects in the .02 second subliminal condition. As a group, the eight subjects who reported seeing the .5 second suggestion did not differ significantly from the control group. A closer analysis revealed that they responded in a dichotomous fashion to the suggestion DON'T WRITE. Some conformed strongly with the suggestion while others responded in a countersuggestive way. A post hoc attempt to relate such different response styles to personality differences on the Edwards Personal Preference Scale yielded nonsignificant results. Nevertheless, this experiment demonstrates the differential impact of subliminal and supraliminal suggestions on a conscious cognitive task.

Effects of marginal stimuli or story-like products. Goldstein and Barthol (1960) tested the effects of incidental stimulation on fantasy. They predicted the emotional tone of subject's fantasy responses would reflect the emotional tone of incidental stimulation. TAT slides were presented supraliminially while exposures of incidental
stimuli were repetitively overlaid on the TAT slides at one second intervals. Subjects were randomly divided into three groups. The incidental stimuli for the groups consisted of either positively toned words, negatively toned words, or a nonsense (control) symbol resembling a word when projected rapidly. All stories were rated for emotional tone by judges blind to the experimental condition.

The results of their initial investigation were not significant. The data did, however reveal that the "TAT cards were clearly not ambiguous stimuli and tended to elicit stories of a characteristic emotional tone" (p. 87). A second study was conducted using the same procedures with one notable exception. In the second study, the ambiguity of the TAT slides was increased by presenting them out of focus. The second study revealed significant differences in emotional tone consistent with the incidental stimuli. The emotional impact attributed to the differential "pull" of the various TAT slides remained stronger than the impact of the incidental stimuli. Barthol and Goldstein (1960) interpreted their results in accordance with "an information decoding model in which perceptual cues of differing intensities are used by S in an ambiguous situation" (p. 26). The less ambiguous the situation, the less likely it is that peripheral or incidental features of the stimulus complex will shape the response. As the ambiguity of the
situation increases, the likelihood that incidental stimuli will influence the response also increases.

Pine (1960) found qualitative differences between the effects of relevant focal stimuli and irrelevant incidental stimuli on subsequently produced stories. Subjects told two baseline control stories in the absence of any experimental stimulation. Following this they were asked to read a short passage several times for comprehension while a different passage was simultaneously played on a tape recorder in the next room disguised as irrelevant noise from someone working next door. One of the passages was about cows and the other passage was about a steel hook. The cow passage conveyed a number of oral-passive connotations while the hook passage reflected phallic-aggressive connotations and themes. Half of the subjects received the cow passage as the incidental stimulus while reading about the hook. The other half received the hook passage as incidental while reading about cows.

Following exposure to the experimental stimuli, all of the subjects were asked to make up two additional stories. Analysis of the stories revealed significant differences in the type of interpersonal relationships depicted, according to condition. When rated along a "receiving-intruding" continuum, the relationships in the post-stories were significantly more receiving for the cow-incidental group and significantly more intruding for the hook-incidental
group than the pre-stories for the same subjects. Difference scores between pre and post-stories also revealed a significant difference between groups for interpersonal relationships along a "receiving-intruding" continuum. Difference scores for the cow-incidental group were more toward the receiving end of the spectrum while those of the hook incidental group were more toward the intruding end. In addition, an analysis of the relationships in the stories along a "positive-negative" continuum revealed a significant difference between the pre- and post-stories of both groups. The cow-incidental group reflected change toward more positive relationships while the hook-incidental group reflected change toward more negative relationships. Also, in accordance with expectation, the use of children in the cow-incidental post-stories was significantly greater than the use of children in the hook-incidental post-stories. Conversely, the use of adults in post-stories was significantly greater for the hook-incidental group as compared to the cow-incidental group.

Incidental stimuli were found to emerge in the stories in more transformed ways than focal stimuli. In addition, raters blind to the experimental conditions were able to pair up the stories with the incidental stimuli at a rate exceeding chance.
In a related follow-up study using essentially the same design, Pine (1961) assessed the differential impact of an explicit oral dependent drive stimulus versus a relatively neutral stimulus on subsequent stories. Both stimuli consisted of short passages. The oral dependent passage emphasized every man's dependence upon his mother as a source of nourishment, warmth, and security. The relatively neutral passage described the various industries and technologies which comprise a modern economy. The neutral stimulus produced no significant effects in either the incidental or focal conditions. When the oral dependent drive stimulus was presented focally, stories showed a significant increase in direct derivatives of the oral dependent stimulus. When it was presented as the incidental stimulus, it had a significant inhibiting effect on direct and indirect derivatives related to oral dependent themes.

Pine (1961) speculates that an explicit drive-related stimulus may prove to be more threatening than a more disguised symbolic drive-related stimulus. He suggests incidental stimuli are more likely to be subject to the primary process pleasure principle than focally presented stimuli. Pine (1961) suggests that an incidentally presented drive stimulus which is "disagreeable" to the subject may be excluded from derivative thought processes "in accord with the pleasure principle that guides the primary process stream of thought" (p. 488). Pine's
explanation implicitly assumes that either the majority of his male subjects found the oral dependent stimulus to be "disagreeable" or else they were well-defended against its pleasurable yet threatening implications.

The present study employs a sexual stimulus with college undergraduates. It is anticipated that individual differences in sex-guilt will predict differential propensities to unconsciously experience the sexual stimulus as threatening or relatively pleasurable. Such individual differences are expected to affect the amount of libidinal derivatives subjects incorporate into their fictional narratives immediately following exposure to the sexual stimulus.

Controversy and Criticism Regarding Subliminal Perception

Subliminal perception is experimentally defined as a discrepancy between registration indicators and awareness indicators (Dixon, 1981). In other words, the data must demonstrate that a given stimulus has determined or influenced some form of response under conditions in which it is reasonable to assume that no portion of the stimulus was within the subject's awareness. Studies in subliminal perception have generated considerable controversy and criticism. Although, complete discussion of the controversy surrounding subliminal phenomena is beyond the scope of the
The present study, issues relevant to the present design will be discussed.

The partial cues hypothesis. One of the major controversies concerns whether or not the stimuli used in such studies are actually subliminal--i.e., registered outside of awareness. Proponents of the "partial cues" hypothesis (e.g., Bricker & Champanis, 1985; Guthrie & Wiener, 1966; Voor, 1956; Wiener & Schiller, 1960) argue that the results of many so-called subliminal studies are more parsimoniously explained by attributing the effects to the conscious perception of partial or fragmentary stimulus cues.

Obviously, the value of such an explanation depends upon the quality of evidence that cues from a given stimulus are at least partially registered in consciousness. Inferring subliminal perception to explain experimental results is subject to the criticism of partial cues advocates when either (1) the conscious perception of partial cues can be demonstrated, or (2) when inadequate precautions were taken to rule out the possible presence of consciously perceived partial cues.

Much of the controversy between partial cues advocates and proponents of subliminal perception would appear to center around the issue of who properly assumes the burden of proof. Weiner and Schiller (1960) suggested the burden of proof concerning the presence or absence of supraliminal
cues is the joint responsibility of both detractors and proponents of subliminal perception. Detractors attributing effects to supraliminal cues have a responsibility to demonstrate the presence of such cues. On the other hand, proponents of subliminal perception have a responsibility to "rule out, as carefully as possible, any plausible supraliminal cues, when trying to demonstrate subliminal processes" (p. 126). In clarifying their position, Weiner and Schiller (1960) point out the impossibility of demonstrating that no supraliminal cues are present. At best, one can rule out the reasonable likelihood that supraliminal cues account for the experimental effects. In addition, the demonstration of supraliminal effects does not rule out the possibility that subliminal processes are simultaneously operative. However, if the experimental findings are entirely explainable in terms supraliminal cues demonstrated to be present, then the inferred presence of subliminal processes becomes superfluous.

Sound methodology in subliminal perception studies requires an adequate test for the presence or apparent absence of supraliminal partial cues. The adequacy of any such test, however, depends upon the definition of awareness which is selected.

Definition of awareness. A number of options are available in selecting an operational definition of
awareness. One approach is to define awareness as the ability to correctly identify a stimulus when no clues or options other than the stimulus itself are provided to facilitate such identification. For example, suppose a subject is presented with a low level picture of a school bus and asked to describe what he saw. If he responds by saying, "It's a school bus" or "It's a bus," then we can be certain the subject is aware of the stimulus. Difficulties arise in establishing criteria for whether or not less precise descriptions constitute a correct identification. If a subject responds to a picture of a school bus by saying, "It's a truck," would this be a correct identification or not? Failure to completely and correctly identify a stimulus does not rule out the possibility that the subject perceived sufficient cues to make a partial identification. Responses to a picture of a school bus such as "a roadside diner" or "something long with windows" would probably not be considered correct identifications. Such responses do, however, suggest that the subject is aware of certain salient features of the stimulus. Evaluating free verbal descriptions for evidence of partial cues requires some means of scoring responses against a criterion for what constitutes a partial cue (Goldberg & Fiss, 1959; Eriksen, 1960).

One of the most widely used indicators of awareness in subliminal research has been the subjective phenomenal
verbal report as to the presence or absence of the stimulus. Two of the more common categories of response are, "Yes, I see it" and "No, I don't see it." The phenomenal verbal report results in lower thresholds for awareness than correct identification. A subject who is unable to correctly identify a stimulus may nevertheless report seeing the stimulus as present.

In most subliminal studies using phenomenal verbal report to indicate awareness, stimuli are generally presented well below the lowest level at which subjects report seeing the stimulus as present. Sometimes, each subject's individual phenomenal threshold is determined before the experiment proper using stimuli other than those which are later employed in the experiment. Stimulus levels for the actual experiment are then reduced for each subject to a level which is well below their individual phenomenal threshold. In other studies, the stimulus levels for the experiment are the same for all subjects. In such instances, the stimulus levels are set at a level presumed to be subliminal for all subjects based upon previous research. The present study uses 4 msec. exposures for all subjects based upon numerous studies in the area of the subliminal psychodynamic activation (Silverman, 1983). Goldiamond (1958) noted that the majority of subliminal studies use some measure of accuracy such as the ability to correctly discriminate the stimulus from a list of
alternatives as a way of indicating the stimulus has "registered." For example, in a typical "discrimination without awareness" design, subjects are exposed to stimuli at speeds or intensities below their phenomenal threshold. Subjects are later asked to guess what they were shown from a number of options arranged in a forced-choice or multiple choice format. The ability to correctly guess what they were shown above chance is construed as an indicator that "discrimination without awareness" has occurred. The assurance that the stimuli were outside of awareness is often derived from the subject's report that they did not actually see the stimulus. As a further indication of the subliminal status of the stimuli, subjects are frequently asked to rate the degree of confidence they have in their guesses. Only guesses for which the subject expressed "no confidence" are used in the determination of whether or not they were nevertheless able to guess correctly beyond chance.

Criticism of awareness indicators. Eriksen (1959) criticized the practice of relying on subjective judgments of "no confidence" in guesses as a criterion of awareness. He argued that such a procedure insures we have "as many different criteria of awareness as we have experimental subjects" (p. 204). Eriksen (1960) also criticized what he felt was the all too common experimental practice of simply
making a general statement that questioning of the subjects revealed they were unaware of the nature of the stimulus. Such practices were especially common in the early studies of subliminal phenomena. Eriksen (1960) pointed out that such a general statement does not adequately address the differential impact of various questioning procedures on the subject's propensity to report their level of awareness.

Dixon (1981) noted that using correct identification and free verbal description of a stimulus as awareness indicators involves the problem of response inhibition. This is particularly pronounced when the stimulus to be identified or described is either emotionally threatening or potentially embarrassing. In such cases, subjects may actually recognize a given stimulus, but voluntarily suppress an accurate description of what they saw. Response inhibition may also result when subjects require greater certainty before reporting a threatening or embarrassing stimulus than they would require for reporting a more neutral stimulus. Furthermore, Eriksen (1960) discussed the difficulty of developing a sound means of scoring verbal descriptions for the presence of partial recognition of the stimulus.

Goldiamond (1958) suggested "a negative response bias" may result in a spuriously high threshold for awareness when using subjective phenomenal reports as an awareness indicator. A negative response bias is the tendency to
report "No, I don't see it," when a subject is in fact aware of the stimulus. The negative response bias argument suggests that when subjects are in doubt as to whether or not they perceive a stimulus, they have a tendency to say "No." Dixon (1981) interpreted Goldiamond's (1958) position as suggesting that subjects "prefer to appear insensitive rather than hallucinated" (p. 186). Goldiamond (1958) contended that partial awareness concealed by negative response bias offers a more parsimonious account for purported subliminal effects.

Dixon (1981) challenged Goldiamond's (1958) contention on two grounds. First, he argued that such a position assumes that a majority of subjects mislead the experimenter concerning the nature of their perceptual experience, thus casting doubt on all perceptual experiments which use self-report as a dependent variable. Second, Dixon (1981) questioned whether such an explanation is really more parsimonious in explaining certain phenomena than inferring subliminal perceptual processes. Dixon (1981) noted that subjective phenomenal verbal reports of awareness have been criticized for not differentiating between sensory and response effects. Responding to a stimulus has traditionally been conceptualized as a two step process. First, the stimulus must be sensed. Second, a decision must be made by the subject as to whether or not to report what
was sensed. Thus, we cannot be certain a stimulus was not perceived on the basis of a phenomenal verbal report. All we know for sure is that it was not reported as perceived.

The criterion to report or not report a given stimulus is a function of both the stimulus intensity and the expected consequences of reporting or failing to report (Swets, Tanner, & Birdsall, 1955; 1961; Tanner & Swets, 1954). Lichlider (1959) notes that "the subject's obligation is not to give an accurate account of his sensory state but to maximize his pay-off" (p. 188). Critics of subliminal perception argue that the failure of subjects to respond to the awareness indicator is attributable to reasons other than that subjects lack of awareness of the stimulus. Such an explanation would seem to necessitate the assumption that subjects benefit in some way by reporting no awareness of a stimulus which nevertheless exerts an impact on a registration indicator. It would seem reasonable then, that those who put forth such a view be obliged to demonstrate how subjects stand to benefit by denying having perceived a stimulus of which they are aware.

Verbal discrimination as an indicator of awareness. Blackwell (1953) advocated the use of forced-choice verbal discriminations as an awareness indicator instead of subjective phenomenal reports as to the presence or absence of a stimulus. He found that forced-choice discriminations yielded lower awareness thresholds and were less subject to the
confounding influence of variables unrelated to stimulus detection. For example, subjective phenomenal reports were more influenced by secondary variables such as consequences of response and serial effects due to the order of stimulus presentation. Subjective phenomenal reports have no right or wrong answer. They are therefore more subject to response biases associated with decision processes than forced-choice discrimination tasks which emphasize the accuracy or correctness of a response.

In an attempt to come up with a more stringent and more operational definition of awareness, Eriksen (1960) also suggested the use of the verbal discrimination task itself as an indicator of awareness. Subjects who verbally discriminate stimuli beyond chance, i.e., correctly guess the identity of a stimulus from a number of options, are deemed to have at least some partial awareness of such stimuli. The adoption of this criterion, of course, makes the phenomenon of verbal discrimination without awareness a logical impossibility. What was formerly taken as an indicator of registration now becomes an indicator of awareness.

From an empirical standpoint, the question arises as to whether or not Eriksen is justified in equating awareness with verbal discrimination. Several investigations have offered evidence that a successful discrimination requires
that the subject has at least some partial awareness of the stimulus he is attempting to discriminate (Bricker & Champanis, 1953; Murdock, 1954; Voor, 1956; Boardman, 1957; Goldberg & Fiss, 1959). For example, the Goldberg and Fiss (1959) study tests whether verbal discrimination as an indication that a stimulus has registered is possible when subjects have no partial awareness of the stimulus. In addition to having subjects guess the identity of the stimuli shown (registration indicator), all subjects were asked to report exactly what they saw and whether they saw anything or not (awareness indicator). Such a procedure overcomes the criticisms of Eriksen (1956) and Goldiamond (1958) that restricting subjects to two or three categories in reporting their subjective experience may not allow them to verbalize all of the information they used in making a discrimination. Asking subjects to describe exactly what they see gives them full access to the entire English language in describing their subjective perceptual experience. Such a procedure is more likely to reveal any partial cues which they may have used in making discrimination.

Goldberg and Fiss (1959) defined a "partial cue" as a "report of having seen a definite portion of the stimulus, such as a straight line, a curved line or an angle. Reports of blurred lines or shapes were not counted as partial recognitions" (p. 245). The results of Goldberg and Fiss'
study demonstrated that subjects were able to discriminate better than chance only when guesses based on no information and partial information were included in the analysis. When guesses based on partial cues were excluded from the analysis, subjects were unable to discriminate better than chance. The investigators concluded that successful discrimination requires partial awareness.

Evidence that successful discrimination requires partial awareness provides advocates of the partial cues hypothesis with a rationale for criticizing the use of a verbal discrimination task as an indicator of registration awareness. To quiet such criticism, Silverman (1983) adopted the use of a verbal discrimination task as a reasonably rigorous, operationally defensible index of awareness. The failure of subjects to guess the stimuli above chance using a forced-choice format provides substantial evidence that subjects have no partial awareness of the experimental stimuli. Such stimuli are deemed to be subliminal because they are not discriminable above chance. The discrimination task may actually be an overly stringent indicator of awareness. We ordinarily think of awareness as involving more than simply being able to "guess" what we have seen beyond chance. Nevertheless, it has become a regular feature of the subliminal psychodynamic activation
method as a means of ruling out the presence of partial cues.

The use of a discrimination task as an awareness indicator necessitates the use of an alternative measure as an indicator of registration without awareness. Non-veridical response measures tapping the unintentional influence of subliminal stimuli (as defined by failure to discriminate) provide such an alternative. Langs' (1985) contention that memories, dreams, images, and narratives are especially sensitive to unconscious stimuli suggests that such phenomena may be sensitive registration indicators for subliminal experimentation.

Failure to replicate and subliminal psychodynamic activation. The present study employs a number of methodological features of Silverman's (1983) subliminal psychodynamic activation method. Two recent reviews by Silverman (1980, 1983) summarize over two decades of research using the subliminal psychodynamic activation method. Silverman (1983) reported the method has been effective in demonstrating the validity of a number of specific psychodynamic relationships between particular unconscious motives and certain specified behaviors. Silverman (1983) used a forced-choice discrimination task as a regular feature of his method to rule out the possibility that subliminal effects were mediated by partial awareness. A "box score" analysis of over 50 studies shows that the
number of studies yielding results clearly supportive of the basic phenomenon outweighed those clearly non-supportive by a ratio of 4:1 (Silverman, 1983). When studies conducted under Silverman's supervision or in his laboratory are excluded, the ratio of clearly supportive to non-supportive studies is over 3:1. Considering the fact that all psychological studies lack perfect power as a result of sampling and measurement error as well as imperfect control over extraneous variables, Silverman's box score ratios provide impressive evidence for the reality of subliminal effects.

Silverman (1983) limited his box score analysis to published articles and doctoral dissertations. Silverman's knowledge of unpublished studies which were not dissertations was wholly dependent upon whether or not the investigators informed him of their findings. Consequently, such studies were excluded from the analysis to rule out a selectivity bias based upon the experimenter's propensity to report unpublished findings.

The principal controversy regarding subliminal psychodynamic activation centers on failures to replicate (Allen & Condon, 1982; Condon & Allen, 1980; Emmelkamp & Straatman; 1976; Heilbrun, 1980, 1982; Oliver & Burkham, 1982). Critics of the method would appear to be hard pressed to account for the large number of studies
demonstrating positive effects. Failures to replicate, however, are frequently cited as evidence that such effects are not robust (Heilbrun, 1980). The fact that positive effects are more common in the laboratories of avowed proponents of the method suggests the possibility that subtle forms of experimental bias may be influencing the results, but the use of double blind controls would appear to rule out the more common forms of subject expectancies and experimental bias (Silverman, 1983).

Dixon (1981) noted a similar pattern for subliminal research as a whole, whereby the belief system of the experimenter appears to influence the results. He indicated that the literature as a whole suggests that maximum effects are obtained when subjects are in a relaxed, passive, nonselectively attentive mode of consciousness. Dixon (1981) states it is relatively easy to interfere with subliminal effects. He speculates that problems with replication across laboratories may reflect largely non-specific minor deviations which affect the subject's general state of receptivity rather than the specific information he receives (Dixon, 1981).

Silverman (1982) suggested failures to replicate may be attributed to individual differences in the motivation of the subjects sampled, personality differences between subjects sampled, or differences in the effectiveness of defenses. In other words, he suggests that individual
differences in responsiveness to the subliminal stimuli may account for certain failures to replicate. Heilbrun (1982) argued that failures to replicate are more reasonably attributable to problems with the method rather than the population used for the study.

Silverman (1982) also believed that variance due to a number of secondary variables such as visual registration variables might account for negative findings. For example, Silverman, Ross, Adler, and Lustig (1978) have emphasized the importance of proper illumination levels in using the subliminal psychodynamic activation method. Silverman (1982) cited a need for continued research to tease out those secondary variables which may prove relevant to the demonstration of subliminal effects.

Much of the controversy surrounding subliminal psychodynamic activation would appear to center around interpreting the meaning of the positive to negative results ratios. Proponents attempt to explain away failures to replicate as due to uncontrolled or unreported secondary variables which have been shown to influence the effects in other studies. Individual differences and subtle differences in procedure have also been suggested as explanations for failures to replicate. Critics contend such post hoc speculations represent overgeneralized attempts to preserve the questionable validity of a fragile
phenomenon. Critics have generally been unsuccessful, however, in accounting for the large number of studies using the method which have obtained positive effects.

Methodological Considerations

**Priming.** Some (Golland, 1966; Gordon & Spence, 1964; Silverman, 1965; Silverman & Spiro, 1967; Spence & Gordon, 1967) have argued that the emergence of subliminal stimulus-related features in subsequent indirect responses is facilitated by activating stimulus-related content prior to subliminal stimulation. Gordon and Spence (1964) "primed" some of their subjects for oral ideas by reading them a passage about food before subliminally exposing them to the stimulus word CHEESE. A control group was read a neutral passage, prior to subliminal stimulation. Results indicated a significant increase in cheese-associates only for those subjects who had been previously primed for oral ideas. Silverman and Spiro (1967) cited subsequent studies which attest to the importance of priming in facilitating a direct subliminal effect (Silverman, 1965; Golland, 1966; Spence & Gordon, 1967). If all subjects receive the same priming material, then any significant differences may be attributed to differences between the subliminal stimuli which follow such priming.

**Control stimuli.** Two types of control stimuli help ensure the scientific integrity of work in this area. Baseline measures using either a no exposure or blank slide
control help rule out the possibility of artifactual results due to a high base rate of coincidental responses corresponding with the experimental stimulus (Fisher, 1957; Johnson & Eriksen, 1961; Pine, 1960, 1961). Fisher's (1957) observation that subjects represent implications of the entire experimental context (e.g., voyeuristic themes associated with looking into the tachistoscope) suggests that a blank slide control may be preferable to a no exposure control in establishing meaningful baselines. The use of a simple experimental stimulus and a simple neutral control stimulus which are similar in structure but differ in meaning facilitates the attribution of any differences to the connotative properties of the experimental stimulus (Fisher, 1957; Smith, Spence, & Klein, 1957). A structurally similar neutral control stimulus also provides a separate basis for comparison, in addition to that of the blank slide control.

A blank slide control stimulus provides a meaningful baseline against which change within subjects can be evaluated. A neutral control stimulus which is structurally similar but connotatively dissimilar to the experimental stimulus allows for a between groups comparison of change scores from baseline. In a between groups analysis, the blank slide condition serves as a covariate. Subjects receiving either the experimental stimulus or the neutral
control stimulus for their second exposure can be compared after adjusting for any initial between group differences on the covariate.

**Use of a discrimination task.** The use of a "discrimination task" at the end of the experiment is important in controlling for the possibility that any significant results are attributable to the receipt of conscious "partial cues" (Silverman & Spiro, 1967). In a discrimination task, experimental and control stimuli are presented under the experimental conditions to familiarize the subjects with the stimuli. Subjects are given a label or name for each stimulus so they can identify it when it is exposed again during the discrimination task. Following this, the experimental and control stimuli are presented randomly under the same conditions as they were in the experiment proper. The subject's task is not to recognize the stimuli, but simply tell them apart at a level above chance. The rationale behind such a control procedure is that if subjects actually are picking up partial cues above the level of awareness, a better than chance discrimination should be made. Several studies demonstrating subliminal effects have used a discrimination task to show that almost all of their subjects were unable to discriminate above chance. A partial cues explanation for the results of these studies is further weakened by the observation that the subjects who were able to discriminate the stimuli above
chance were least affected by the experimental stimulus (Spence & Holland, 1962; Fiss, Goldberg, & Klein, 1963; Silverman & Silverman, 1964). Silverman (1983) adopted the discrimination task as a regular control feature for the partial cues explanation of subliminal results. This rigorous criterion of awareness was selected in order to quiet critics who might argue that subliminal effects are mediated by partial awareness of the experimental stimuli.

Double-blind controls. Procedures which keep both the experimenter and subject blind to the stimulus conditions augment the internal validity of the design. Such procedures help control for experimenter bias and subject expectancy effects.

Response measures. The use of an open-ended, non-veridical response measure helps the experimenter capture the "unintentional influence" of stimuli presented below awareness (i.e., as defined by an inability to discriminate better than chance). Such non-veridical response measures have no right or wrong answer. Subjects are not forced to make an accurate discrimination. Rather, they can respond freely to the stimuli. It is these open-ended, free responses which are subjected to analysis in accordance with pre-determined criteria. Study after study attests to the sensitivity of such measures in demonstrating subliminal effects (i.e., Poetzl, 1917; Allers & Teler, 1924; Fisher,
1954, 1956, 1957; Fisher & Paul, 1959; Luborsky & Shevrin, 1956; Shevrin & Luborsky, 1958; Fiss, Goldberg, & Klein, 1963; Klein, Spence, Holt, & Gourevitch, 1958; Smith, Spence & Klein, 1959; Eagle, 1959; Goldstein & Barthol, 1960; Pine, 1960). In addition, non-veridical response measures provide no differential consequences to the subject based on the responses given. Such a situation helps insure that differential responses are a reflection of the stimulus conditions rather than response biases designed to maximize the expected rewards of a given response.

**Individual differences.** The unintentional influence of marginal stimuli on conscious experience and behavior has been shown to interact with subject variables (e.g., Klein, Spence, Holt, Gourevitch, 1958; Smith, Spence, & Klein, 1959; Silverman & Silverman, 1964). Factorial designs provide a means of teasing out these important interactions. The present study evaluates the extent to which individual differences in sex-guilt mediate the effects of a subliminal sex-related stimulus.

**Stimuli factors:** The effects of drive-related marginal stimuli. Klein (1959a) has discussed a number of studies employing what he calls "marginal" stimuli. He uses the term "marginal" to refer to stimuli which "are 'subliminal' or 'unrecognized' or 'incidental' or 'indifferent'" (Klein, 1959a, p. 7). The various effects of drive-related
marginal stimuli on subsequent conscious activity are not entirely clear.

Pine (1961) found an inhibiting effect for an oral dependent stimulus on subsequent story content. Silverman and Silverman (1964), however, found an overall increase in heterosexual drive expression on Rorschach responses when males were subliminally exposed to a nude female torso as opposed to a neutral stimulus. The main effect, however, appears to have been carried by subjects who were relatively uninhibited about the prospect of being exposed to a picture of a nude female. Subjects evidencing greater inhibition in response to such exposure showed a smaller increase in heterosexual drive expression and an actual decrease in certain forms of stimulus-related imagery.

In examining the TAT stories of college students when no subliminal manipulations were present, Holt (1978) observed that sexual motives were more prominent "in the stories of subjects who had the strongest interest in sex in overt behavior, who felt that sexual expression was quite acceptable . . . " (p. 41). Subjects demonstrating greater superego controls in their overt behavior evidenced fewer sexual motives in their stories.

It appears the effects of a drive-related marginal stimulus on subsequent conscious activity may be related to individual differences in the balance between cathexis and countercathexis for a particular drive. Klein and Holt
suggest that marginal stimuli exert their effect by activating various "schemata." These schemata consist of various memory traces which are conceptually, affectively, and symbolically related to the activating stimulus. The activation of drive-related images which are threatening to an individual might be expected to mobilize various defensive maneuvers such as repression. The use of "barrier repression" (Langs, 1985) may prevent any representation of the activating stimulus or its associates in consciousness. "Derivative repression" (Langs, 1985), however, may allow some degree of conscious representation of the activating stimulus and its associates in a disguised form. To the extent that the drive-related images activated by a stimulus are not particularly threatening, one might anticipate a greater emergence of stimulus-related derivatives in subsequent conscious activity. Thus, it appears investigations into the unintentional influence of a drive-related stimulus presented outside the range of ordinary awareness may be enhanced by differentiating subjects along a relevant personality dimension. Relevant personality dimensions include, for example, those traits which predict a subject’s propensity toward either repressing or expressing the threatening implications of a drive-related stimulus.
Statement of Purpose

The current investigation evaluated the unintentional influence of a subliminal stimulus on conscious experience and behavior. It attempted to extend Langs' (1985) understanding of communicative processes in psychotherapy to communicative phenomena occurring outside the therapeutic context. In particular, the present study examined the effects of a subliminal sex-related stimulus on the libidinal content of subsequently produced fictional narratives. A second purpose was to determine the degree to which any such effects are mediated by individual differences in sex-guilt. A third purpose was to assess the degree to which individuals unintentionally convey more about the nature of their subliminal perceptual experience through derivative communication than they intentionally convey through manifest description.

Sex-Guilt and Responsiveness to a Subliminally-Presented Sexual Stimulus

It is conceivable that individual differences in sex-guilt might prove to be a useful predictor of subjects' responsiveness to a subliminally-presented sexual stimulus. High sex-guilt subjects should experience more anxiety and guilt than their low sex-guilt peers immediately following exposure to a subliminal sex-related stimulus. Subjects who experience high degrees of sex-guilt may be especially prone to the use of barrier repression in response to sexual
stimuli. These subjects could be expected to completely repress any sexual implications of such stimuli from achieving derivative representation in consciousness. Consequently, their communications following subliminal stimulation would likely contain fewer libidinal derivatives than the communications of low sex-guilt subjects. Furthermore, the libidinal derivatives of high sex-guilt subjects which do achieve conscious expression are likely to be more highly disguised representations of their stimulus trigger than the libidinal derivatives of low sex-guilt subjects.

**Specific Hypotheses**

All subjects initially wrote fictional narratives following exposure to a subliminal blank control stimulus. This procedure established baseline control measures for all subjects under the non-specific conditions of the experiment proper. The following specific hypotheses pertain to mean libidinal derivative frequencies following subliminal exposure to either a sex-related or a neutral control stimulus after adjusting for baseline differences, if any:

1) **Main effect**—Subjects in the sex-related stimulus condition would express significantly more distant and more close libidinal derivatives than subjects in the neutral control stimulus condition.

2) **Interaction effect**—Low sex-guilt subjects in the sex-related condition would express significantly more...
close libidinal derivatives than all other groups (i.e.,
high sex-guilt/sex-related stimulus; high sex-guilt/neutral
control stimulus; and low sex-guilt/neutral control
stimulus).

All subjects wrote fictional narratives following
subliminal exposure to a blank card control stimulus and
either a sex-related or a neutral control stimulus. They
also provided a written description of each stimulus they
were shown immediately following subliminal exposure.
Judges were provided with a pair of fictional narratives
and a pair of written stimulus descriptions from each
subject. The judges had access to the stimulus
pictures shown to each subject. They did not, however,
know which fictional narrative and which stimulus
description was associated with each of the two stimulus
conditions. Their task was to match each pair of
fictional narratives and stimulus descriptions from each
subject with the corresponding stimulus picture under which
it was written (i.e., blank card vs. sex stimulus; blank
card vs. neutral control stimulus).

The following specific hypotheses pertain to the
results of the judges sorting task:

3) Judges would correctly match the stories of
subjects in the sex-related condition to either the blank
card or sex-related stimulus at a level exceeding chance.
4) Judges would be unable to correctly match the stories of subjects in the neutral control condition to either the blank card or neutral control stimulus at a level exceeding chance.

5) Judges would be unable to correctly match the direct stimulus descriptions of subjects in the sex-related condition to either the blank card on sex-related stimulus at a level exceeding chance.

6) Judges would be unable to correctly match the stimulus descriptions of subjects in the neutral control condition to either the blank card or neutral control stimulus at a level exceeding chance.
Chapter II
METHOD

Subjects

Subjects consisted of 68 female undergraduates at the University of North Texas who volunteered for the experiment in exchange for extra credit in their psychology courses.

Instruments and Measures

Revised Mosher Sex Guilt Inventory (RMSGI). The Mosher Sex Guilt Inventory is comprised of three separate subscales: Sex-Guilt, Hostility-Guilt, and Morality-Conscience. Multitrait-multimethod matrix analyses have provided evidence for each subscale's convergent and discriminant validity (Mosher, 1966; 1968). These analyses have also differentiated sex-guilt from anxiety and social desirability.

Sex-guilt is conceived as a script or acquired personality predisposition which predicts and controls the manner in which an individual is likely to interpret and respond to sexually relevant situations. The personality predisposition of sex-guilt is particularly "relevant in situations where temptation to violate moral standards is present" (Mosher, 1968, p. 695). Individuals scoring high on sex-guilt inhibit the expression of sexual behaviors and wishes in the face of temptation. Moreover, in the event internalized standards are transgressed, people with a high
degree of sex-guilt "are expected to experience the feeling of guilt, to confess, or to punish themselves, or to make restitution" (Mosher, 1968, p. 695).

Over the last 25 years, the range of sex-guilt scores has been truncated as means have dropped (Mosher & O'Grady, 1979b). In an effort to increase the range of response, eliminate complaints about the forced-choice format, and provide a single measure for both males and females, Mosher recently developed a Revised Mosher Guilt Inventory. The Sex-Guilt subscale of this inventory consists of 50 items.

Subjects respond to items on a seven-point scale where 0 means NOT AT ALL TRUE OF (FOR) ME, and 6 means EXTREMELY TRUE OF (FOR) ME. Items are arranged in a limited comparison format consisting of two different completions to a given stem. The pairing of two different completions per stem helps facilitate the assignment of relative degrees of TRUENESS by providing a direct comparison for each rating. Subjects rate both completions on TRUENESS for them. Answer keys are provided for each subscale and scores are summed by reversing the non-guilty alternatives.

Correlations between each item and its own subscale range from .32 to .62 with a median of .46. Ninety percent of the items were significantly more highly correlated with their own subscale than with other subscales or the total inventory, indicating discriminant validity between subscales.
Inasmuch as the Revised Mosher Sex-Guilt Inventory is relatively new, reliabilities have yet to be firmly established. Split-half reliability, generally falls in the .80 to .90 range. Additional work is currently under way and a published account of these efforts is soon to appear in Yarber, W. L., and Davis C. M. (Eds.), *Sexuality related measures: A compendium.* In past research with the older forms of the Mosher Sex-Guilt Inventory, split-half coefficients have averaged around .90 (Mosher, 1966; 1968; Mosher & Vonderheide, 1985).

Mosher (1979) reviewed approximately 100 studies that consistently supported the construct validity of the Mosher Guilt Inventories. Early studies showed a significant positive correlation between sex-guilt and negative affect, but no significant correlation between sex-guilt and subjective sexual arousal during exposure to erotic stimuli (Mosher, 1971, 1973; Mosher & Greenberg, 1969). However, as the psychometric properties of subjective sexual arousal measures improved, consistent negative correlations between sex-guilt and sexual arousal were found (Mosher & Abrahamson, 1977; Mosher & O'Grady, 1979a, 1979b; Mosher & White, 1980). These subsequent studies confirmed the positive relationship between sex-guilt and the experience of positive affect during exposure to erotic stimuli. Recent research has continued to support the construct validity of the inventory as a valid measure of sex-guilt as an acquired
personality predisposition (Green & Mosher, 1985; Kelley, 1985; Mosher & Vonderheide, 1985). A copy of the inventory is in Appendix A.

A Manual for Rating Libidinal Content in Fictional Narratives. The rating system to be described was developed as a means of objectively scoring the subject's fictional narratives for libidinal content. The term "libidinal content" is used in the psychoanalytic sense to refer to representations in the narrative material which give expression to the sexual drive or its ideational derivatives. Two types of derivative expressions were rated - "close" and "distant."

Close derivatives include images, themes, and representations which are relatively direct transformations of a latent libidinal image or impulse. They often reflect the simple displacement or "neutralization" (Hartmann, 1955) of libidinal drives into a more socially acceptable form of expression. Despite such minor transformation, these derivatives maintain a clearly libidinal nature which is easily recognizable. For example, images of kissing, hugging, caressing, or hand-holding in an intimate context are close libidinal derivatives. Similarly, explicit references to certain relationships and roles strongly imply a degree of libidinal attachment between the parties. Such references are considered close libidinal derivatives. For example, references to marriage, dating, or engagement, including
such terms as "husband," "wife," "fiancée," "boyfriend," and "girlfriend" are considered close libidinal derivatives. These particular role relations almost invariably involve interactions which would receive a close libidinal derivative rating. Although references to divorce strongly imply previous intimate contact, they function as images of interpersonal separation rather than interpersonal merger. Consequently, such references are not rated as close libidinal derivatives in and of themselves.

Distant derivatives, on the other hand, may not be as readily discernible in the manifest content of the fictional narratives. They include more highly disguised representations of a latent libidinal image or impulse. Distant derivatives include manifest representations which give symbolic expression to a libidinal image or impulse. For example, the plucking of a flower, the planting of a flag on the shores of Argentina, and the insertion of a box of cigars into a shopping bag all reflect images and actions which are analogous or symbolic of the sexual act. Despite such symbolic connections, none of these images in and of itself manifestly communicates a libidinal meaning. Such meaning must be inferred from the manifest content and is not readily discernible without resort to such inferential processes. Although not patently libidinal in their manifest content, the afore-mentioned expressions would all qualify as distant derivatives of a libidinal image or impulse.
Narrative material which does not reflect the presence of either close or distant libidinal derivatives receives no rating. For example, the following passage would receive no rating: "Although she was old, she was very beautiful. A person could tell that despite all of her wrinkles, she had been very attractive when she was younger." The terms "beautiful" and "attractive" are insufficient to warrant any rating as a libidinal derivative.

The rating system employed in this study is concerned with quantifying the presence of libidinal derivatives. Frequency counts for both close and distant libidinal derivatives are totaled for each complete narrative. These "libidinal content" scores provide the basis for comparing fictional narratives written under different experimental conditions. Other examples and further details concerning the units of analysis and the criteria for rating or not rating a given derivative as well as distinguishing between close and distant derivatives can be found in Appendix B. Two doctoral students in clinical psychology rated all of the fictional narratives for libidinal content. Interrater reliability in terms of percentage agreement is reported in the results.

**Sorting Task.** Two advanced doctoral students in clinical psychology served as judges for the sorting task. They were furnished with a pair of fictional narratives and a pair of written descriptions of the experimental stimuli.
from each subject. The judges were blind to the stimulus condition associated with each story or description. The judges did, however, have access to the stimulus pictures which were shown to each subject. The judges attempted to match each pair of stories and descriptions from each subject to the corresponding stimulus condition under which it was written (i.e., blank card vs. sex stimulus, blank card vs. neutral control stimulus). This procedure resulted in either a correct or an incorrect match for each subject's stories and descriptions. This task was designed to determine if judges could discriminate between the stimulus conditions above chance based upon their reading of the stories and descriptions.

Apparatus

Stimuli. Two different pictorial stimuli and a blank white card control stimulus were used in the experiment. The pictorial stimuli consisted of silhouette figures (black on white) which are approximately 7 x 7 cm at their widest expanse. The neutral control stimulus featured a silhouette drawing of a clothed man working at a keyboard of a small computer. The experimental sex-related stimulus consisted of a silhouette drawing of a naked man and a woman engaging in sexual intercourse. The man is lying on his back propped up on his elbow. The outline of his head and face closely resemble that of the man working on the computer. The woman is depicted as sitting atop and astride the man, with her
right hand resting on the left side of his head (see Appendix C).

**Writing materials.** Blank paper and a writing utensil were provided for each subject to construct her fictional narratives as well as describe what they saw during tachistoscopic stimulation.

**Tachistoscope.** A 3-field Gerbrands tachistoscope (Model T-3A) with a 4-channel timer (Model 300-4T), and a logic interface (Model G1159) were utilized throughout the experiment to precisely regulate the conditions of stimulus exposure. Only two fields of the tachistoscope were necessitated by the experimental design.

**Priming tapes.** Two sets of priming passages on a single cassette tape were used in the experiment. Each set of priming passages featured a short neutral passage immediately followed by a short sexually suggestive passage. Duplications of the priming cassette were available for backup purposes in the event of tape failure (see Appendix D). The particular priming passages chosen were successfully utilized in a previous study by Antell and Goldberger (1978).

**Tape recorder.** The priming tapes were played on a Panasonic tape recorder (Model RQ-2736).

**Timepiece.** A small clock located on the subject's writing table enabled all subjects to know approximately how much time they had left to complete their fictional
narratives, regardless of whether or not they wore a watch. The official time was kept separately by the experimenter. All subjects were allowed 12 minutes to complete each fictional narrative.

Procedure

Subjects were recruited from undergraduate courses in psychology. At the time they were recruited, subjects were told that the study was "concerned with the effects of faint or indistinct perceptual experiences on a written task." In addition, all subjects were informed that they would be asked to complete a short questionnaire concerning sexual attitudes and behavior.

When the subjects arrived for their scheduled session, they were greeted by the experimenter and escorted into the research room. The subjects were seated and their informed consent to participate in the experiment was obtained (Appendix E). Following this, each subject completed a short subject information sheet. The sheet consisted of identifying information and minimal demographic data (Appendix F). Each subject was informed that they would be assigned a subject number as a means of insuring the confidentiality of their responses. Each subject was then questioned concerning any visual deficits. Subjects requiring corrective lenses were asked to wear their corrective lenses during the tachistoscopic stimulation. If subjects indicated they needed corrective lenses for accurate
vision, but their corrective lenses were unavailable, they were rescheduled for a later date and asked to wear their corrective lenses at that time.

The experimenter then administered the Revised Mosher Sex-Guilt Inventory. Following completion of the inventory, each subject was given the following introduction to the tachistoscope:

This equipment is called a tachistoscope, and will be used in the experiment. It can regulate precisely the amount of time a picture or message can be flashed and seen. In this experiment, we will be flashing pictures at a speed of 4 one-thousandths of a second, a speed at which you will probably be aware only of a brief flash or flicker of light. The picture may register in your mind, however, and after all of the subjects have completed the experiment, you will have an opportunity to find out about the content of the stimuli you were shown (Silverman, Ross, Adler, & Lustig, 1978).

Following this explanation, each subject was instructed as follows:

I am going to play you two short passages on this tape recorder. I want you to listen carefully to each passage, because sometime later in the experiment you may be asked some questions about what you have heard. The audio passages functioned as "priming" material prior to tachistoscope stimulation. One passage was a relatively
neutral "buffer" passage designed to disguise the nature of the priming procedure. The second passage involved a number of sexually suggestive themes and images. All subjects, regardless of tachistoscopic condition, heard a relatively neutral passage followed by a sexually suggestive passage prior to each tachistoscopic stimulation. The purpose of the sexually suggestive passage was to "prime" or "activate" various schema in the subjects which are relevant to the subliminal sex-related stimulus. Previous research has suggested that the chances of demonstrating subliminal effects for a drive-related stimulus may be enhanced by insuring that the stimulus-related content is active in the subject prior to subliminal stimulation (Silverman, 1965; 1983; Golland, 1966; Spence & Gordon, 1967). It was also expected that the priming tapes would help mobilize individual differences in sex-guilt as well as provide an experimental set which was tolerant of the expression of sexual derivatives.

The present experiment utilized two sets of priming passages. These passages have already been described in the Apparatus section of this paper and a verbatim transcript of the passages can be found in Appendix D. Set A consists of a neutral passage immediately followed by a sexually suggestive passage. Set B consists of a different neutral passage immediately followed by a different sexually suggestive passage. Both sexually suggestive passages
contain similar thematic content. The order of presentation of each set was counterbalanced across all subjects. Thus, half of the subjects in all conditions received set "A" preceding exposure to the blank card and set "B" preceding exposure to either the sexual or neutral control stimulus. For the other half of the subjects, the order of the priming sets was reversed.

After each subject listened to a set of two priming passages, the tape recorder was shut off and the subject was instructed as follows:

Now, I would like you to put your eyes against the eyepiece here, and focus on the center part of the screen. Do you see a blank white field? (Wait for the subject to respond affirmatively and proceed.) Good. That's fine. I'm going to give you a few seconds to allow your eyes to adjust to the light of the blank white field. Just keep focusing on the center part of the screen. In a few seconds, I will say "Ready-get set" and then I will press a button. When I press the button, we'll begin a series of 4 flashes at 5 second intervals. Simply focus on the center part of the screen. (Allow 4 seconds.) "Ready-get set."

The experimenter then pushed a button initiating a series of tachistoscopic exposures.

Throughout the experiment, all stimuli were presented in four 4-msec exposures at 5 second intervals. The
tachistoscope was set up so that the blank field goes off each time a stimulus card was exposed for 4 msec. The experimenters were kept blind to the stimulus conditions throughout the experiment by having someone other than the experimenter place the stimuli into coded envelopes designated as "A," "B," "C," and "D." The tachistoscope was set up so that the experimenters could transfer the stimuli from the envelopes to the tachistoscope and back again without ever seeing the stimuli. The experimenters simply followed a predetermined schedule which told him what stimuli a given subject is to receive (e.g., subject no. 7: 1st exposure - "B"; 2nd exposure "A"). Every few days the stimuli were reassigned to different coded envelopes without informing the experimenters. The experimenters simply followed a schedule which insured that all subjects received the appropriate stimuli. The illumination level for the blank field was set at 6 footlamberts. Illumination levels for all stimuli including the blank control card were set at 1.5 footlamberts. The illumination of the experimental room was slightly higher than the illumination level of the blank field (approximately 9 footlamberts). Silverman, Ross, Adler, and Lustig (1978) have underscored the importance of proper illumination in demonstrating subliminal effects. The illumination levels selected were based on an examination of Silverman et al. (1978) and a personal communication with Joel Weinberger dated August 1, 1987 at the suggestion of Doris K. Silverman.
All subjects were exposed to a blank control card during their initial tachistoscopic stimulation. The purpose of this exposure was to provide a baseline measure of the kind of fictional narratives each subject naturally produced in the absence of a drive-related subliminal stimulus, but within the context of this particular experimental paradigm.

Following four tachistoscopic exposures, the experimenter said:

"O.K., fine. Now write down what you just saw."

The experimenter allowed subjects up to two minutes to describe what they saw. When they were done, the experimenter instructed them as follows:

If you didn't see anything in particular, rather than simply write 'nothing,' try to describe what you actually saw as best you can, such as a 'flash', a 'flash of light' or anything else you might have seen.

A tablet of paper and a pencil were placed before each subject to facilitate the immediate recording of his or her response. The experimenter continued with the following imagery instructions:

O.K. now, I would like you to simply close your eyes and relax. Let you mind wander freely. As your mind wanders freely, let your mind's eye "see" whatever images come to mind. Do not try to "force" any images into consciousness. Simply, allow yourself to fully experience, as if they were real, whatever vivid images
spontaneously appear. Take a minute or so to image freely in this fashion. (Allow 1 minute). O.K., open your eyes and have a seat at this table over here.

The experimenter seated the subject at a writing table which faced a blank white wall. The experimenter handed the subject an index card bearing the typed instructions for the story writing task. The experimenter said:

Please read along with me while I describe what I would like you to do.

The experimenter read the story writing instructions out loud from a duplicate while the subject read along silently.

Write a paragraph or short passage that might appear in a piece of fiction about any event you choose. Think of this as a short excerpt from a larger work of fiction. Don't worry about what to write. Just go with whatever comes to mind, naturally. See if you can immediately engage the reader in your writing by virtue of your own personal style of expression. Allow yourself the freedom to play, to be spontaneous, and simply shape whatever images come to mind into a coherent, expressive piece of writing. As means of getting started, it may be helpful to incorporate some of the images which you just experienced. You will have 12 minutes to complete the exercise.
If the subject finished early, the experimenter simply advised the subject to, "Go ahead and keep writing on your story until I tell you to stop." After 10 minutes and 30 seconds had elapsed, the experimenter said:

Go ahead and take about a minute and a half to complete your passage.

If the subject finished during this period, the experimenter simply allowed the subject to sit quietly until the full 12 minutes expired. Then the experimenter asked the subject to:

Please stop writing and turn your paper over. (The experimenter collected the subject's story.)

Following this, all subjects were given a three minute "buffer" period before repeating the procedures outlined above under either the sex-related or neutral stimulus conditions. All subjects were advised to:

Go ahead and take the next 3 minutes or so to quietly relax. You may stand and stretch if you wish or simply remain seated, but please do not leave the room.

The experimenter allowed 3 minutes to elapse. During this buffer period, the experimenter wrote a code number on the subject's story and recorded the same code number onto a card which identified the subject, whether or not it is his first or second story, the date, the first sentence of the story, and the code number of the stimulus envelope for the stimulus which was exposed. Recording such information on a separate card enabled raters to remain blind to the
experimental conditions under which the story was written.

After three minutes elapsed, the experimenter asked the subject to:

Please take a seat in front of the eyepiece to the tachistoscope, just like you did before.

The experimenter repeated all of the procedures outlined above beginning with the instructions for the priming tape:

I am going to play you two short passages on this tape recorder . . . etc. (In receiving the fiction writing instructions for a second time, the subject was requested not to continue her previous passage, but to create a passage which was different from the first one.)

During the second half of the experimental procedure, two notable changes were made. First, each subject listened to a different set of priming passages from the ones she heard prior to subliminal stimulation. Although the specific content of the second set of passages was different from the set the subjects heard before, the passages were thematically similar to the previous set in that they consisted of a neutral "buffer" passage followed by a sexually suggestive passage. Also, during the second subliminal exposure, each subject received either a sexual stimulus picture of a man and a woman having intercourse or a relatively neutral control picture which depicted a man typing on a small computer. All subjects were randomly
assigned to either the sex-related or neutral control condition.

As an added control feature, all stimuli were inserted into the tachistoscope from coded envelopes in such a way that both the subject and the experimenter were blind to stimulus content. The appropriate stimuli are loaded into coded envelopes each day by someone other than the experimenter according to a randomized schedule. With the exception of different priming passages, different subliminal stimuli, and a slight modification in the fiction writing instructions requesting the subject to create a passage which was different from the first one, all procedures were carried out exactly as before.

After the subjects completed their second fictional passage following subliminal exposure to either the sex-related or neutral control stimulus, the experimenter asked them to sit in front of the tachistoscope for a discrimination task. The subject received the following instructions:

I have two cards here, one a blank, and one with a drawing on it. I am going to show you each card 6 times at very rapid exposures. However, instead of first exposing one card for 6 trials and then the other, I will mix up the presentations. Thus, the only way you will know which of the two cards is being shown will be by what you see. Sometimes the card you see
will be the same as the card immediately preceding it and sometimes it will be different. Your task is to tell me after each exposure which of the cards you think was shown—the blank card or the one with something on it. All you need to say is "blank" or "something." If you're not sure, try to discriminate as best you can, even if this means guessing. As an incentive for you to discriminate as well as possible, a $5.00 bonus will be given to the subject who does best at this task. Remember, there will be 12 trials in which the two cards will be presented in mixed up order. Sometimes the blank card will be shown and sometimes the card with something drawn on it. All you have to do is to determine at each exposure whether the "blank" or the "something" card has been shown (Silverman & Silverman, 1964). Do you understand the nature of the task you are being asked to do? (If "yes," the experimenter proceeded with discrimination task; if "no," the experimenter repeated instructions.) The discrimination task is administered using the same illumination and exposure speeds as used in the experiment proper. For the "something" card, subjects received the same stimulus card they received prior to their second fictional narrative, i.e., either the sex-related or neutral control stimulus. Each flash was preceded by the words "Ready-get set."
Following administration of the discrimination task, each subject was thanked for his or her participation and informed that when the experiment was completed, a public notice of a debriefing session would be posted in the Psychology Department. All subjects were invited to attend. During the debriefing session, the purpose of the study was explained and subjects had an opportunity to see the various stimuli used.
CHAPTER III

RESULTS

The interrater reliability in terms of percentage agreement was .81 for close libidinal derivatives and .75 for distant libidinal derivatives. An "agreement" between the raters occurred when the same derivative image or expression was given the same rating by each rater. In addition, interrater reliability in terms of percentage agreement was .88 for the situation in which both raters agreed there were no close or distant libidinal derivatives in an entire fictional narrative.

Separate $t$-tests for experimenter effects were performed for each dependent variable. All such tests yielded non-significant results ($t(66) = .40, p > .05$ for posttest total libidinal derivatives; $t(66) = -.26, p > .05$ for pretest total libidinal derivatives; $t(66) = .78, p > .05$ for posttest close libidinal derivatives; $t(66) = .04, p > .05$ for posttest distant libidinal derivatives; $t(66) = .48, p > .05$ for pretest close libidinal derivatives; $t(66) = -.93, p > .05$ for pretest distant libidinal derivatives).

Separate $t$-tests for the effect of the order of priming tapes (A-B or B-A) were performed for each dependent variable. Subjects receiving the B set of priming tapes during pretest and the A set during posttest expressed
significantly more posttest total libidinal derivatives than subjects who received the A set of tapes during pre-test and the B set during posttest, \( t(66) = -2.14, p < .05 \). For all other dependent variables, the effects of the order of priming tapes was nonsignificant.

A 2 x 2 factorial between-groups analysis of variance was performed on the number of total libidinal derivatives (logarithmically transformed) expressed in fictional narratives following subliminal exposure to the experimental stimuli. The score for total libidinal derivatives was computed by simply adding each subject's close and distant libidinal derivatives together. The logarithmic transformation was performed to correct for positive skewness and the initial presence of "serious" outliers as defined as Tukey (1977) and Hildebrand (1986). The transformation proved effective in correcting both problems and subsequent evaluations of the assumptions of normality and homogeneity of variance were satisfactory. The independent variables consisted of two levels of sex-guilt (low or high) and two levels of subliminal stimulation (neutral or sex-related). The analysis featured equal-cell samples with 17 subjects per cell, resulting in a total \( N = 68 \). Although a total of 78 subjects were run, 10 were excluded from the analysis because they demonstrated an ability to discriminate between tachistoscopic exposure to a blank white card and either the sex-related or the neutral
stimulus at a level exceeding chance ($p < .05$). The results of the discrimination task were evaluated using a two-tailed binomial test. Subjects included in all subsequent analyses were unable to make such a discrimination at a level exceeding chance.

The log-means and log-standard deviations for each experimental cell are depicted in Table 1. The analysis of variance revealed no significant main effect for either sex-guilt, $F(1, 64) = 1.12, p > .05$, or subliminal stimulation, $F(1, 64) = .17, p > .05$. In addition, no significant interaction was found, $F(1, 64) = 1.17, p > .05$.

Although a baseline premeasure for the log of total libidinal derivatives was available, it was not used as a covariate in the above analysis. A regression analysis for the within cells error term between the log of total libidinal derivatives on the baseline premeasure and posttest dependent variable revealed the baseline premeasure provided no significant adjustment for initial differences, $t = 1.55, p > .05$. Consequently, its usefulness as a covariate was offset by the loss of power which would result from losing an additional degree of freedom.

Rather than using the baseline premeasure as a covariate, it was subjected to a separate $2 \times 2$ factorial between-groups analysis of variance. The purpose of this analysis was to assess the effectiveness of randomization as a control against initial differences in total libidinal
derivatives expressed in pretest fictional narratives. For all subjects in all four experimental conditions, the pretest fictional narratives were written following tachistoscopic stimulation with a blank white card. Thus, in analyzing the results of the baseline pretest, subjects were classified into four equal-size cells according to two levels of sex guilt (low or high) and two levels of subliminal stimulation (neutral-control or sex-related) which they received subsequent to the pre-test but immediately prior to the posttest. Following logarithmic transformation, evaluations of the assumptions of normality and homogeneity of variance were satisfactory. The log-means and log-standard deviations for each experimental cell of the baseline pretest are depicted in Table 1 (Appendix G).

The analysis of variance on the log of the total number of libidinal derivatives expressed in baseline fictional narratives revealed no significant main effect for either sex-guilt $F(1,64) = 1.22, p > .05$, or subsequent subliminal stimulation, $F(1,64) = .13, p > .05$. Furthermore, no significant interaction was found, $F(1,64) = .16, p > .05$.

In addition, two separate $2 \times 2$ factorial between-groups univariate analyses of variance were performed on the logarithmic-transformation of posttest frequencies for close and distant libidinal derivatives. Once again, the independent variables for both of these tests consisted of two levels of sex-guilt (low or high) and two levels of
subliminal stimulation (neutral-control or sex-related). As before, the analyses featured equal-cell sample sizes with 17 subjects per cell, resulting in a total \( N = 68 \).

Univariate analyses of variance for each dependent variable (close and distant libidinal derivatives) were evaluated in lieu of an omnibus multivariate analysis of variance because Bartlett's test for sphericity revealed the dependent variables were not significantly associated with each other, \( p > .05 \) (Norusis, 1985).

As before, the logarithmic transformation was performed to adjust for positive skewness and the presence of "serious" outliers as defined by Hildebrand (1986) and Tukey (1977). Box-plots (Tukey, 1977) depicting the distribution of each dependent variable were examined following the log transformation. This examination revealed the presence of three serious outliers among the scores for the log of close libidinal derivatives and four serious outliers for the log of distant derivatives. Barnett and Lewis (1984) have reviewed the problem of outliers and discussed the value of procedures "designed to draw valid inferences about the population from which (the bulk of) a random sample has been obtained, and which will not be seriously distorted by the presence of outliers" (p. 27). Such procedures provide for robust inference by "placing less importance on extreme values than on other sample members" (Barnett & Lewis, 1984, p. 29). Accordingly, the
serious outliers identified from an examination of the SPSS-generated box-plots were Winsorized by replacing their values with the values of their nearest non-extreme neighbors within the same experimental cell (Barnett & Lewis, 1984). This procedure strikes an important statistical compromise in allowing such values to retain an influence on the sample in terms of their directionality from the mean without according them undue influence on parameters of the sample by virtue of their extremity.

After logarithmic transformation and Winsorization of serious outliers, the distributions for both close and distant libidinal derivatives remained somewhat positively skewed (skew = 1.082 for the log of close derivatives; skew = .688 for the log of distant derivatives). However, Kirk (1982) reports that when sample cells have equal \( n \), the \( F \)-test is robust to violations of the assumption of normality. Cochran's \( C \) was used to test for homogeneity of variance. For close libidinal derivatives, Cochran's \( C \) was significant at the \( p = .016 \) level, indicating a modest violation of the assumption of homogeneity of variance. For distant libidinal derivatives, Cochran's \( C \) was not significant, \( p > .05 \), thereby indicating no violation of this assumption. Tabachnick and Fidell (1983) report that Cochran's \( C \) is an overly conservative test and Kirk (1982) reports that when sample cells have equal \( n \), the \( F \)-test is robust with respect to modest violations of homogeneity of variance. Thus, the
assumptions of normality and homogeneity of variance were deemed to be adequately satisfied for purposes of this study.

The log-means and log-standard deviations of close libidinal derivatives for each experimental cell are depicted in Table 2 (Appendix G). The analysis of variance for the logarithm of close libidinal derivatives revealed a nonsignificant main effect for sex-guilt, $F(1, 64) = 1.523$, $p > .05$. The main effect for subliminal stimulation, however, was statistically significant, $F(1,64) = 4.670$, $p < .05$. Subjects receiving a sex-related subliminal stimulus produced significantly fewer close libidinal derivatives than subjects receiving a neutral-control stimulus. The interaction between subliminal stimulation and sex-guilt was not statistically significant, $F(1,64) = .375$, $p > .05$.

The log-means and log-standard deviations for distant libidinal derivatives in each experimental cell are depicted in Table 3 (Appendix G). The analysis of variance for the logarithm of distant libidinal derivatives revealed no statistically significant main effect for either sex-guilt, $F(1,64) = .204$, $p > .05$, or subliminal stimulation, $F(1,64) = 2.652$, $p > .05$. The interaction between subliminal stimulation and sex-guilt approached, but did not reach statistical significance, $F(1,64) = 3.018$, $p = .09$.

As was the case in the analysis of variance for total libidinal derivatives, baseline premeasures for both close
and distant libidinal derivatives were available, but were not used as covariates. Regression analyses for the within cells error term between each baseline premeasure (close and distant) and its corresponding posttest dependent measure (close and distant) revealed that neither baseline premeasure provided a significant adjustment for initial differences on either of the dependent variables ($t = 1.813, p > .05$ between close derivative pretest and close derivative posttest; $t = 1.078, p > .05$ between distant derivative pretest and distant derivative posttest). The lack of significance of these tests means their usefulness as baseline covariates would be offset by the loss of power due to fewer degrees of freedom.

Rather than using baseline premeasures of the log of close and/or distant derivatives as covariates, they were each subjected to separate 2 x 2 factorial between-groups univariate analyses of variance. Again, the purpose of this analysis was to assess the effectiveness of randomization as a control against initial differences between groups prior to subliminal stimulation.

In analyzing the baseline pretest for both the log of close and distant libidinal derivatives, subjects were classified into four cells of 17 subjects each according to two levels of sex-guilt (low or high) and two levels of subliminal stimulation (neutral-control or sex-related) which they received subsequent to the pretest but
immediately prior to the posttest. Following logarithmic transformation, evaluations of homogeneity of variance and normality were satisfactory for both close and distant libidinal derivatives.

The log-means and log-standard deviations for close libidinal derivatives on the baseline pretest are depicted in Table 2 (Appendix G).

The analysis of variance on the log of close libidinal derivatives expressed in baseline fictional narratives revealed no statistically significant main effects for sex-guilt, \( F(1,64) = .001, p > .05 \), or subliminal stimulation, \( F(1,64) = .022, p > .05 \). Furthermore, no significant interaction was found, \( F(1,64) = .909, p > .05 \).

The log-means and log-standard deviations for distant libidinal derivatives expressed in the baseline fictional narratives are depicted in Table 3 (Appendix G).

The analysis of variance on the log of distant libidinal derivatives expressed in baseline fictional narratives revealed a main effect for sex-guilt which approached, but which did not reach statistical significance, \( F(1,64) = 3.606, p = .06 \). High sex-guilt subjects expressed fewer distant libidinal derivatives than low sex-guilt subjects. The main effect for subliminal stimulation was non-significant, \( F(1,64) = .005, p > .05 \), and the interaction between sex-guilt and subliminal stimulation was also nonsignificant, \( F(1,64) = .579, p > .05 \).
To obtain an index of preference for indirect versus direct derivative expression, each subject's close derivatives were subtracted from their distant derivatives for each story. Thus, a large positive number reflects a preference for indirect (distant) derivative expression, and conversely, a large negative number reflects a preference for direct (close) derivative expression.

A 2 x 2 (sex-guilt x subliminal stimulus) factorial between-groups analysis of variance as performed on this index of communicative style for fictional narratives following subliminal exposure to either a sex-related or neutral stimulus. The main effect for sex-guilt was nonsignificant, $F(1,64) = 1.06, p > .05$, as was the interaction between sex-guilt and subliminal stimulation, $F(1,64) = .40, p > .05$. The main effect for subliminal stimulation, however, was marginally significant, $F(1,64) = 3.88, p = .05$. Subjects in the sex-related condition showed a more indirect or distant style of derivative expression than those in the neutral condition. An analysis of variance on this index of communicative style was performed for baseline stories following exposure to a blank white card. The results revealed that the main effect for sex-guilt and subliminal stimulation was nonsignificant. The interaction between sex-guilt and subliminal stimulation was also nonsignificant. Means and standard deviations are presented in Table 4 (Appendix G).
The results of the judges' sorting tasks were evaluated using binomial tests to determine if the judges could correctly match stories or stimulus descriptions with the subliminal stimulus presented immediately prior to the story or description at a level exceeding chance. The results are as follows:

1) Both judges were incorrect more than half of the time when attempting to match the stories of subjects in the sex-related condition to either the blank white card or the sex-related stimulus. Judge 1 correctly matched 14 out of 34 pairs of stories (41.18%) and Judge 2 correctly matched 12 out of 34 pairs of stories (35.29%). Judge 1's tendency to err was non-significant ($P > .05$) and Judge 2's tendency to err approached, but did not reach significance ($P = \ldots$). Both judges were in agreement in 28 out of 34 of their decisions. Their interrater reliability in terms of percentage agreement was 82.34 percent. An agreement between the judges occurred when they both matched the same story with the same stimulus.

2) Both judges correctly matched 17 out of 34 (50%) pairs of stories by subjects in the neutral-control condition with either the blank white card or computer stimulus. Thus, whether considered individually or together, both judges matched the stories at exactly the
level of chance ($p > .05$). Percentage agreement was 67.64 percent.

3) Both judges were correct more than half of the time when attempting to match the stimulus descriptions written by subjects in the sex-related condition with either the blank white card or the sex-related stimulus. Judge 1 correctly matched 25 out of 34 (75.53%) pairs of descriptions and Judge 2 was correct on 24 out of 34 (70.59%) of their judgments. Both judges were able to correctly match the descriptions at a level exceeding chance ($p = .006$ for Judge 1; $p = .016$ for Judge 2). When both judges' decisions were considered together instead of separately, they correctly matched 49 out of 64 (72.06%) of the descriptions. Their combined judgment was significantly above chance ($p < .0004$). Percentage agreement was 73.53%.

4) Both judges correctly matched more than half of the stimulus descriptions written by subjects in the neutral-control condition to either the blank white card or the computer stimulus. Judge 1 correctly matched 21 out of 34 (61.67%) pairs of descriptions and Judge 2 correctly matched 20 out of 34 (58.82%) pairs of descriptions. Both judges' tendency to correctly match the descriptions proved to be nonsignificant ($p > .05$). When their judgments were combined, they correctly matched 41 out of 68 pairs of descriptions. Their combined judgment approached, but did not reach significance ($p = .09$). Percentage agreement was 64.71 percent.
CHAPTER IV

DISCUSSION

The present study provides evidence for a subliminal perception effect. However, contrary to expectation, subjects in the sex-related stimulus condition expressed significantly fewer close libidinal derivatives than subjects in the neutral condition. Close derivative means were, as expected, lower for the highest sex-guilt subjects in both the sex-related and neutral conditions. The main effect for sex-guilt, however, was nonsignificant. In anticipating both a direct subliminal effect for the sex-related stimulus and the mediating influence of sex-guilt, it was hypothesized that low sex-guilt subjects in the sex-related stimulus condition would express more close derivatives than any other group. Contrary to expectation, there was no significant interaction between subliminal stimulation and sex-guilt for close derivatives.

With respect to distant derivatives, the results revealed a nonsignificant trend ($p = .09$) toward an interaction between sex-guilt and subliminal stimulation. In terms of group means, high sex-guilt subjects exposed to a sex-related stimulus expressed the fewest close derivatives and the greatest number of distant derivatives. Such a finding may suggest that high sex-guilt subjects exposed
to a threatening unconscious stimulus are the most likely to encode and represent its threatening implications in a highly disguised way, but the least likely to do so in a relatively direct and undisguised way.

Further evidence for a subliminal perception effect is provided by the marginally significant ($p = .05$) main effect for subliminal stimulation on the index of communicative style (distant minus close derivatives). Subjects exposed to a sex-related as opposed to a neutral subliminal stimulus showed a more distant style of derivative expression.

Taken together, these findings present a picture in which exposure to the sex-related stimulus resulted in inhibition of close derivatives for subjects regardless of their level of sex-guilt. In addition, for high sex-guilt subjects, subliminal sexual stimulation may lead to close derivative repression, with a corresponding increased pressure toward distant derivative expression. Although the results were not in accordance with prediction, they were, nevertheless, consistent with the presence of a subliminal perception effect.

**Inhibition of Close Libidinal Derivatives**

The inhibition of close libidinal derivatives in response to a sex-related stimulus supports Pine's (1961) finding of derivative inhibition in response to a drive-related stimulus rather than the more commonly reported derivative enhancement effect (e.g., Fisher, 1954, 1956,
Pine's (1961) finding of derivative inhibition in response to a relatively explicit oral-dependent incidental stimulus was also contrary to expectation. In an earlier study, Pine (1960) reported that a less explicit drive-related incidental stimulus led to emergent derivatives that represented connotative and symbolic features of the incidental stimulus rather than its more concrete and literal aspects. In explaining why a relatively explicit drive stimulus led to derivative inhibition whereas a less explicit drive stimulus led to the emergence of derivatives, Pine (1961) argued that the more explicit stimulus may be experienced as more threatening. Presumably, the increased threat value of an explicit drive stimulus may lead to defensive operations which inhibit its derivative expression. In the present experiment, the repression of close derivatives associated with exposure to the sexual stimulus is perhaps most parsimoniously attributed to the explicit nature of the stimulus itself. There is no evidence that the stimulus effect was confounded with the order of priming tapes because the order of priming tapes was equally counterbalanced for subjects in both the sex-related and neutral condition. Furthermore, the main effect for order of priming tapes was nonsignificant.
Stimulus Threat as Determinant of Derivative Emergence or Inhibition

Psychoanalytic accounts of derivative emergence in response to marginal or subliminal stimuli implicitly assume that a drive provides a force which seeks expression in consciousness (Klein & Holt, 1960). Aspects of incidental stimuli which resonate with unconscious fantasies and their underlying drives are therefore likely to reemerge in consciousness provided their reemergence does not give rise to excess anxiety.

As early as 1900, Freud observed that the manifest content of the dream was frequently composed from various "indifferent perceptions" or "day-residue" experienced by the person earlier in the day. These "indifferent perceptions" were often affectively neutral, but functioned in the dreams to symbolically represent the more emotionally-charged latent content comprised of unconscious drives, wishes, and fantasies. Thus, the day-residue which is incorporated into the manifest dream can be expected to bear some similarity or symbolic connection to a latent drive, but not so much similarity as to be immediately apparent to the conscious mind. In essence, the reemergence of day-residue in the manifest dream may be facilitated when the day-residue is remotely associated with a latent drive or when the day-residue constitutes a relatively "neutralized" (and hence anxiety-free) expression of the
latent drive. The commonly reported direct subliminal effect has generally occurred with the use of relatively neutral stimuli such as pictures of landscapes or simple drawings which are not explicitly drive-related (e.g., Poetzl, 1917; Allers & Teler, 1924; Fisher, 1954, 1956, 1957; Fisher & Paul, 1959; Luborsky & Shevrin, 1956; Shevrin & Luborsky, 1958; Fiss, Goldberg, & Klein, 1963). Apparently, these relatively neutral stimuli may serve as "screens" or "covers" for the disguised representation of a latent drive with which they are symbolically associated. For example, emergent themes of "twoness" in response to a Rubin double profile (Fisher, 1959; Fiss, Goldberg, & Klein, 1963) may derive their impetus from symbiotic fantasies and their underlying drive toward libidinal attachment or merger. In addition, the faces of the Rubin double profile could be construed as kissing. The reemergence of face to face representations may be derivatives of underlying libidinal drives.

When a more drive-related subliminal stimulus is used in conjunction with such free response measures as impressions, drawings, stories, and Rorschach responses, the effects are less straightforward (Klein, Spence, Holt, & Gourevitch, 1958; Pine, 1960, 1961; Silverman & Silverman, 1964). Drive-related stimuli can be expected to activate both powerful drives seeking expression and various defenses against such expression. Thus, their impact is likely to be
a function of their explicitness and the individual propensities of the perceiver toward either the repression or expression of drive-related material.

Two previous studies have tested the influence of a subliminal sexual stimulus on subsequent free response measures (Klein, Spence, Holt, & Gourevitch, 1958; Silverman & Silverman, 1964). Klein et al. (1958) hypothesized that impressions of supraliminal human figures would incorporate attributes directly associated with a temporally contiguous subliminal drawings of male or female genitalia. Contrary to expectation, group effects were nonsignificant. Klein et al. (1958) did, however, observe that subjects consistently incorporated attributes into their impressions while other subjects consistently excluded the same attributes. They suggested the tendency to incorporate or exclude subliminal stimuli may be a personality variable, and they offered evidence which suggested that incorporators tended to be better adjusted than excluders with respect to their own self-image and sexual identity.

Silverman and Silverman (1964) found an overall increase in heterosexual drive expression on Rorschach responses following subliminal exposure to a nude female torso as opposed to a neutral stimulus. They observed that the main effect was carried by subjects who were relatively uninhibited about observing a picture of a nude female. More inhibited subjects showed smaller increases of
heterosexual drive expression and some decrease in certain forms of stimulus-related imagery.

In contrast, this experiment used a stimulus depicting the act of sexual intercourse. One might speculate that the sexual stimulus of this study is more likely to activate memories and/or fantasies of the primal scene or other "forbidden" encounters than Silverman and Silverman's (1964) stimulus. In any event, the results of this study suggest the sex-related stimulus was unconsciously perceived as threatening enough for subjects to repress the expression of close libidinal derivatives.

Two Types of Repression

Langs (1985) has discussed two major types of repression for dealing with the threatening implications of both internal impulses and external stimuli. He contends that a relative absence of derivatives in any form in the face of a threatening stimulus reflects barrier repression, "a massive defense that permits no derivative leakage or emergence of encoded expression" (Langs, 1985, p. 14). As an alternative to barrier repression, Langs (1985) has described a more porous derivative repression, in which the underlying raw image remains outside of the individual's awareness.

Type of Derivative as Reflecting Type of Defense

The predominant use of displacement is associated with the expression of close derivatives which bear a relatively
direct link to their stimulus trigger. The use of symbolization and condensation is more closely associated with the expression of distant as opposed to close derivatives. Distant derivatives are more disguised and are therefore less easily connected to their stimulus trigger (Langs, 1985).

In the present experiment, exposure to an explicit sex-related subliminal stimulus resulted in significant repression of close libidinal derivatives. This suggests that displacement alone may have been inadequate as a defense against the threatening implications of the sex-related stimulus. The prediction of increased close derivatives in response to a subliminal sexual stimulus assumed subjects would primarily displace rather than repress the threatening implications of the stimulus. The results suggest the sexual stimulus was more threatening to the subjects than was anticipated by the researchers. There is some evidence which suggests that high sex-guilt subjects may have utilized displacement in conjunction with symbolization and condensation to represent connotative features of the anxiety arousing stimulus in a highly disguised (distant) way. Such an inference requires considerable caution inasmuch as the trend toward an interaction between sex-guilt and subliminal stimulation on distant derivatives did not reach statistical significance ($p = .22$). Note, however, that close derivative repression
and distant derivative expression by high sex-guilt subjects is consistent with Langs (1985) notion of "derivative repression."

Such a finding suggests that high sex-guilt subjects exposed to a threatening subliminal stimulus may in some sense be compelled to represent the implications of that stimulus through highly disguised distant libidinal derivatives whereas low sex-guilt subjects are not. This lends support to Langs (1985) contention that individuals unconsciously represent those selected features of the immediate stimulus field which are most relevant to understanding the unconscious roots of their emotional disturbance or conflict. Presumably, high sex-guilt subjects would be more emotionally disturbed or conflicted by subliminal exposure to a sexual stimulus than low sex-guilt subjects. The high sex-guilt subjects' greater need for insight into the unconscious roots of their conflict may necessitate expression while the greater anxiety associated with such conflict may require expression in a highly disguised form.

Judges' Sorting Task

The hypothesis that the judges would be able to correctly match subjects' stories with either the blank white card or the sex-related stimulus was not supported. Contrary to expectation, when their decisions were combined, judges erred at a rate which achieved marginal statistical
significance (p = .05). Consistent with their training in decoding derivative expressions, both judges matched the more libidinally charged stories with the sex-related stimulus. Because of the inhibition of close derivatives after sexual stimulation, this led to error.

The present results supported the hypothesis that the judges would be unable to correctly match stories written in response to either a blank white card or a computer stimulus, thereby supporting the contention that the computer stimulus was dynamically neutral.

Immediately following subliminal stimulation, subjects were asked to write down what they had just seen. The hypothesis that the judges would be unable to correctly match subjects' stimulus descriptions to either the blank white card or the computer stimulus was supported.

Contrary to expectation, the hypothesis that the judges would be unable to correctly match subjects' stimulus descriptions to either the blank white card or the sex-related stimulus was not supported. Both judges were able to correctly match descriptions with either the blank white card or the sex-related stimulus at a level which exceeded chance. None of the subjects, however, correctly identified the sex-related stimulus. Discussions with the judges after they completed the sorting task revealed the judges relied heavily on descriptive cues such as content
versus no content, or references to something dark as opposed to light in making their decisions.

The fact that descriptions in response to a sex-related stimulus could be correctly matched with their stimulus trigger while descriptions in response to a neutral stimulus could not, suggests that structural features of a brief stimulus are more likely to achieve representation if the stimulus has dynamic significance with the perceiver. Such a conclusion, however, may be unwarranted because the sex-related stimulus has approximately 18% more black surface area than the neutral stimulus. The greater inclusion of dark features in the descriptions of the sexual as opposed to the neutral stimulus may reflect either the dynamic significance of the sexual stimulus or its greater amount of dark area. It is possible that descriptions featuring dark content may actually be derivatives reflecting the "dark" implications of the sexual stimulus or condensations representing both structural and connotative aspects of the stimulus in a single image.

No subject made any reference to sexual material. Only two out of 34 subjects made any reference to human features. The description bearing the greatest correspondence to the sexual stimulus was "a vision of a face in the forth (sic) one" (meaning the fourth exposure or flash). The only other description of the sexual stimulus which remotely resembled human content was "a body moving or descending down through
what faintly looked like some grass and a tree with just branches and no leaves." The reference to "body" as a stimulus-congruent response would appear to be spoiled by the inclusion of so many stimulus-irrelevant objects.

The most common responses to the four consecutive subliminal exposures involved some reference to "flashes," "flickers," or "blinks." Descriptions of the sexual stimulus were more likely to refer to its being "darker" than descriptions of the blank white card. Other descriptions include references to the following: "color", "movement", "gray", "small particles like static on a T.V.", "column-like shapes", "a trigger", "a rectangle", "square-shaped", "something vertical", "a streak of black", "quick moving dancing lines", "a faint blob", "a diagonal fuzzy pulsing gray line beat four 4 times", "four vague flashes that went out like a stone dropped in a pond but much faster-in the middle of the screen", and a white screen with a "moving light" which reminded the subject "of the wall catching the shadows of police car lights."

Subliminal Perception or Partial Cues?

The most viable alternative to a subliminal perception effect is that subjects responded to partial conscious cues from the sex-related stimulus. The lack of correspondence between subjects' stimulus descriptions and the sex-related stimulus, however suggests that a partial cues explanation is not tenable. Subjects' descriptions of the sexual
stimulus give no indication they were able to construct a stimulus-congruent perception from fragmentary conscious cues neither were they able to form accurate fragmentary perceptions. The notion that subjects may have partially recognized the sexual stimulus but failed to report such partial recognition draws no support from their actual descriptions. If embarrassment over reporting sexual content was a consideration, subjects could still be expected to include more non-sexual human content in their descriptions than they did. Furthermore, previous exposure to the sex guilt inventory and the sexually explicit priming tapes would likely create an expectancy that the stimulus featured sexual content as well as a permissive atmosphere for reporting such content.

To the extent subjects may have received some partial conscious cues, it would appear they were extremely fragmentary and most probably limited to the perception of something "darker" in the sexual stimulus than in the blank white card. The partial conscious perception of something "darker" could hardly account for the inhibition of close derivatives associated with subliminal exposure to the sex-related stimulus.

Further evidence against a partial cues explanation is the fact that subjects included in the analysis were all unable to discriminate beyond chance between the blank white card and the sex-related stimulus during the discrimination
task. This is particularly damaging to a partial cues explanation when one considers that the discrimination task involved 12 consecutive trials of four exposures each to the stimuli. Such repeated exposure would be expected to lower subjects' recognition thresholds. Furthermore, subjects were provided a monetary incentive for accuracy during the discrimination task.

In conclusion, a partial cues explanation does not appear to adequately account for the results. The discrimination task provides evidence that no partial conscious cues were available. Although the sorting task suggests certain features of the sexual stimulus may have been in awareness during the subject's stimulus descriptions, any such cues are clearly not definitive of the stimulus itself. It is possible that the process of description itself brought fragmentary material to conscious awareness in a way that the unarticulated sensory experience could not (Brenner, 1973).

Recommendations for Future Studies

Future studies might want to include a neutral stimulus, a threatening sexual stimulus (e.g., a depiction of sexual intercourse), and a more neutralized, less threatening libidinal stimulus (e.g., a depiction of heterosexual kissing). If the threat value of the stimulus is the determining factor affecting incorporation or repression of stimulus related features, we might expect
increased expression of close libidinal derivatives following exposure to the nonthreatening libidinal stimulus and decreased expression of close derivatives following exposure to the more threatening stimulus. Subsequent studies should utilize stimuli with equal amounts of black surface area.

Post experimental discussion by the raters using the libidinal content rating scale revealed a consensus that, in general, the fictional narratives were not particularly well-written when compared to the quality of writing by a small sample of subjects in the pilot study. The pilot subjects consisted primarily of juniors and seniors with good academic credentials whereas the subject pool for the present study consisted primarily of freshman and sophomores. On average, the pilot subjects were older, and one might presume they had a wider range of life experiences and sexual experience to draw on in the construction of their fictional narratives. It was the impression of both raters that the pilot subjects employed richer imagery and a more proficient use of metaphor in their stories than the experimental subjects of this study. In addition, their grammar and syntax were generally superior which suggests they were more comfortable communicating their ideas in a written form.

Future studies testing the effects of subliminal stimuli on written narratives might benefit by drawing their
subject sample from a population which is more skilled in the use of written language than the subjects of this study. If the study of fiction per se is not a primary concern, then having subjects free associate orally might result in stronger effects.

Although there were no significant main effects or interaction effects associated with sex-guilt, the near-significant interaction between sex-guilt and subliminal stimulation for distant derivatives and the overall pattern of means suggests sex-guilt holds promise as a mediating variable in subliminal studies featuring a sex-related stimulus. The present study utilized a median-split to differentiate high versus low sex-guilt subjects. Future studies might benefit from pre-testing a large number of subjects for sex-guilt and then only including the upper and lower quartiles for experimentation and analysis. The present study used sexual priming tapes in accordance with the recommendations of Silverman (1983). It is unclear what the results might have been in the absence of priming. It is thought that priming tapes help mobilize a stimulus-congruent unconscious constellation and that prior mobilization may be necessary with normal, well-defended individuals. Alternatively, it could be argued that priming may create a consciously experienced "pull" for certain kinds of derivatives that diminishes the differential impact of subliminal stimuli. The matter can only be resolved
empirically, and the entire field of subliminal research could benefit greatly from a series of studies identifying the impact of priming in various circumstances.

Finally, future studies should consider the question of how much time should be allowed for subjects to respond following subliminal exposure. Differential frequencies in subjects' derivative expressions can only unfold over time inasmuch as all subjects begin at zero. Response measures which consist of frequency counts often result in a positively skewed distribution if enough time is not allowed for subjects to generate a more normal distribution. The present study featured positively skewed response distributions which required logarithmic transformation prior to analysis. Theoretically, in studies testing the impact of stimuli on the frequency of a certain response, there is some "optimal time period" for responding which will yield the greatest effects. If the time for responding is too short, treatment groups will be insufficiently differentiated due to a lack of opportunity to differentially respond. If too much time is provided, treatment groups will be insufficiently differentiated because they will once again begin to "behave alike" as the influence of the stimulus wears off. In the absence of empirical evidence, selection of an optimal time frame for responding is a bit of a guessing game. The results of the present experiment, however, suggest that increasing the
time allowed for responding might allow treatment groups a greater opportunity to differentiate themselves and thereby lead to more powerful effects.
APPENDIX A

REVISED MOSHER SEX-GUILT INVENTORY
Revised Mosher Sex-Guilt Inventory

This inventory consists of 50 items arranged in pairs of responses written by college students in response to a sentence completion stem such as "When I have sexual dreams . . . ". You are to respond to each item as honestly as you can by rating your response on a 7-point scale from 0, which means NOT AT ALL TRUE OF (FOR) ME to 6, which means EXTREMELY TRUE OF (FOR) ME. Ratings of 1 to 5 represent ratings of agreement-disagreement that are intermediate between the extreme anchors of NOT AT ALL TRUE and EXTREMELY TRUE for you. The items are arranged in pairs of two to permit you to compare the intensity of TRUENESS for you. This limited comparison is often useful since people frequently agree with only one item in a pair. In some instances, it may be the case that both items or neither item is true for you, but you will usually be able to distinguish between items in a pair by using different ratings from the 7-point range for each item.

Rate each of the 50 items from 0 to 6 as you keep in mind the value of comparing items within each pairs.
Appendix A--Continued

<table>
<thead>
<tr>
<th>NOT AT ALL TRUE OF (FOR) ME</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>EXTREMELY TRUE OF (FOR) ME</th>
</tr>
</thead>
</table>

RATING

'"DIRTY" JOKES IN MIXED COMPANY . . .

_____ 1. do not bother me.

_____ 2. are something that makes me very uncomfortable.

MASTURBATION . . .

_____ 3. is wrong and will ruin you.

_____ 4. helps one feel eased and relaxed.

SEX RELATIONS BEFORE MARRIAGE . . .

_____ 5. should be permitted.

_____ 6. are wrong and immoral.

SEX RELATIONS BEFORE MARRIAGE . . .

_____ 7. ruin many a happy couple.

_____ 8. are good in my opinion.

UNUSUAL SEX PRACTICES . . . .

_____ 9. might be interesting.

_____10. don't interest me.

WHEN I HAVE SEXUAL DREAMS . . .

_____11. I sometimes wake up feeling excited.

_____12. I try to forget them.

Subject No. ____________
Appendix A--Continued

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"DIRTY" JOKES IN MIXED COMPANY . . .

13. are in bad taste.
14. can be funny depending on the company.

PETTING . . .

15. I am sorry to say is becoming an accepted practice.
16. is an expression of affection which is satisfying.

UNUSUAL SEX PRACTICES . . .

17. are not so unusual.
18. don't interest me.

SEX . . .

19. is good and enjoyable.
20. should be saved for wedlock and childbearing.

"DIRTY" JOKES IN MIXED COMPANY . . .

21. are coarse to say the least.
22. are lots of fun.

WHEN I HAVE SEXUAL DESIRES . . .

23. I enjoy it like all healthy human beings.
24. I fight them for I must have complete control of my body.

UNUSUAL SEX PRACTICES . . .

25. are unwise and lead only to trouble.
26. are all in how you look at it.  

Subject No.____________
### Appendix A--Continued

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**UNUSUAL SEX PRACTICES . . .**

___27. are O.K. as long as they're heterosexual.

___28. usually aren't pleasurable because you have preconceived feelings about their being wrong.

**SEX RELATIONS BEFORE MARRIAGE . . .**

___29. in my opinion, should not be practiced.

___30. are practiced too much to be wrong.

**AS A CHILD, SEX PLAY . . .**

___31. is immature and ridiculous.

___32. was indulged in.

**UNUSUAL SEX PRACTICES . . .**

___33. are dangerous to one's health and mental condition.

___34. are the business of those who carry them out and no one else's.

**WHEN I HAVE SEXUAL DESIRES . . .**

___35. I attempt to repress them.

___36. they are quite strong.

**PETTING . . .**

___37. is not a good practice until after marriage.

___38. is justified with love.

Subject No.____________
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**Appendix A--Continued**

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<td>_____44. is a form of self destruction.</td>
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<td>_____46. are alright if both partners agree.</td>
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<table>
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<td>_____48. I was being used not loved.</td>
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<table>
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<td>_____49. is all right.</td>
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<td>_____50. should not be practiced.</td>
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APPENDIX E

MANUAL FOR RATING LIBIDINAL CONTENT IN FICTIONAL NARRATIVES
Manual for Rating Libidinal Content in Fictional Narratives

Purpose
To provide a means of objectively scoring the libidinal content of fictional narratives.

Libidinal Content
The term "libidinal content" is used in the psychoanalytic sense to refer to representations in the fictional narratives which give expression to the sexual drive or its ideational derivatives.

Types of Libidinal Derivatives

Close Libidinal Derivatives are representations of a latent libidinal image or impulse. Although they may be displaced or neutralized expressions of a raw latent image or impulse, close libidinal derivatives are clearly libidinal in nature (e.g., kissing, hugging, caressing, and/or hand holding in an intimate context). Similarly, explicit references to certain relationships and roles strongly imply a degree of libidinal attachment between the parties. Such references are considered close libidinal derivatives. For example, references to marriage, dating, or engagement, including such terms as "husband," "wife," "fiancée," "boyfriend," and "girlfriend" are considered close libidinal derivatives. These particular role relations almost invariably involve interactions which would receive a close libidinal derivative rating. Although
references to divorce strongly imply previous intimate contact, they function as images of interpersonal separation rather than interpersonal merger. Consequently, such references are not rated as close libidinal derivatives in and of themselves. In sum, close libidinal derivatives include the following:

1) libidinal actions, thoughts, intentions, and/or references to "love" which could be construed as having an inherently erotic rather than a strictly platonic meaning;

2) References to certain roles which strongly imply a degree of erotic attachment between the parties (rated only once for the initial reference);

3) Relatively clear-cut allusions to interpersonal attraction (visual or otherwise) or feelings of an erotic nature. Also an emphasis on nakedness, near-nakedness, or skin in an erotic context; and

4) Other representations which are clearly libidinal in nature.

Distant Libidinal Derivatives are transformed or disguised representations of a latent libidinal image or impulse. Distant libidinal derivatives include manifest representations which give symbolic expression to a libidinal image or impulse (e.g., plucking a flower, the planting of a flag on the shore of Argentina, and/or the insertion of a box of cigars into a shopping bag). The coding of one particular manifest image deserves special
mention in light of the specific nature of the sexual stimulus used in this study. Images involving someone who "rides" something which they straddle such as a bicycle or a horse all warrant a rating as a distant libidinal image. Images featuring someone who "rides" something which typically goes up and down such as a roller coaster also warrant a rating as a distant libidinal derivative. References to riding in a car or on a bus would ordinarily receive no rating. The rationale for rating certain riding images as distant libidinal derivatives is that such images would appear to symbolically represent a salient feature of the sexual stimulus--namely the depiction of a woman sitting atop and astride a man. Riding images are to be rated regardless of the sex of the rider.

Psychoanalytic theory and preliminary pilot data suggest two types of expressions which should be scored as distant libidinal derivatives in addition to more obvious symbolic expressions of a latent libidinal image or impulse. First, images involving any kind of interpersonal touching or contact are scored as distant libidinal derivatives (e.g., "he tapped her on the shoulder"). Obviously, if this touching or contact is clearly libidinal in nature, then these expressions would be given a close libidinal derivative rating. Expressions in which one person gives another person a personal article of some kind are given a distant libidinal derivative rating in the same manner as if
the two people had touched (e.g., "she gave him her jewelry and asked him to keep it while she was way"). Gift-giving of a nonpersonal article to another in an erotic content would also be scored as a distant libidinal derivative. Rationale for including such expressions as distant libidinal derivatives is that they represent themes and images of interpersonal merger. It is felt that such themes of interpersonal merger may function as disguised or distant derivatives of sexual contact. An exception to this rule of scoring interpersonal touching as a distant libidinal derivative would be when such expressions are clearly aggressive in nature (e.g., "he busted her in the chops"). Such expressions are not rated as distant libidinal derivatives inasmuch as they would appear to be more closely linked to aggressive images and impulses.

Expressions including images of water, wetness, or some other form of liquid are also scored as distant libidinal derivatives (e.g., "they walked along the beach as the tide rushed in . . . "); "her eyes welled with tears . . . "; "he went down to the swamp to take a look around . . . "). Such expressions are rated as distant libidinal derivatives because representations of various liquids are thought to function as disguised representations of vaginal secretions and/or ejaculatory emissions. Other forms of imagery or action to be scored as distant libidinal derivatives include representations which may be symbolic derivatives of the sex
drive such as symbolic representation of a phallus, a vagina, or sexual contact. Also included are references to nakedness, near-nakedness, or an emphasis on skin in a non-erotic context, and descriptions which are peculiar by virtue of their "sexualized language."

Narrative material which does not reflect the presence of either close or distant libidinal derivatives receives no rating. This rating system is concerned with quantifying the presence rather than the absence of libidinal derivatives. A number of examples will be presented shortly to help provide raters with some useful guidelines.

Units of Analysis and Basic Rules for Rating Libidinal Derivatives

**Units of analysis.** The basic units of expression which are to be rated are various images, themes, and events or action sequences which would appear to be either relatively direct or symbolically disguised representations of a latent libidinal image or impulse. To receive separate ratings, the images, themes and events or action sequences must be clearly differentiated from one another as distinct representations of a libidinal image or impulse. The examples which follow should provide some clarity with respect to the types of expressions which together function as a single derivative unit versus those which may be scored separately. Raters should be alerted to the presence of
different verbs and action sequences as well as different objects of an action. Clearly differentiated images, themes, and events represent separate units of analysis.

**Units of aggregation.** Frequency counts for both close and distant libidinal derivatives are totaled for each complete fictional narrative. These "libidinal content" scores provide the basis for comparing fictional narratives written under different experimental conditions.

**Scoring Rules.** The following general rules are established to guide raters in scoring the fictional narratives for libidinal content:

1) Expressions are rated for the presence of certain images, incidents or allusions representing libidinal content without regard to extent. Thus, for example, "he kissed her and kissed her and kissed her again" would receive the same rating of a single close derivative as the expression "he kissed her once on the forehead." Each expression represents the libidinally motivated act of kissing. Similarly, "he hugged her passionately" receives the same rating of a single close derivative as "he hugged her gently." The expression "they hugged and kissed on the street corner," however would receive a rating of two close derivatives as compared to one for the expression "they hugged on the street corner." Raters should be alert to the presence of different verbs and action sequences which function as separate expressions of libidinal content.
2) Affective states are only rated when they can be directly linked to a libidinal drive. For example, "she was in love" would be rated, but "she was depressed" would not.

3) Negation of libidinal expression is rated exactly the same as a positive libidinal expression. Thus, "they didn’t kiss or anything, they just ate lunch" would receive the same rating as "they kissed on the front porch."

4) Thoughts and wishes are generally rated the same as acts which are carried out. "He wanted to hug her" would receive the exact same rating as "he hugged her" or "he thought about hugging her, but decided against it." This last example illustrates both the principle that a thought is rated the same as an action and the principle that negated actions are rated the same as actions which actually take place.

5) A separate rating for the same basic image or action within a story is made only when the aim of the action changes or when the subject has obviously dropped his or her train of associations connected with the originally rated expression, but then returns to a similar image or action sometime later in the story. For example, "he loved Jane, he really did love her" would receive a rating of one close derivative. "He loved Jane and he loved Burt, and he loved Mary Lou, too" would receive a rating of three close derivatives. Although the same basic feeling of love is repeatedly expressed, each time the aim of that love
is different. If the passage read "He loved Jane" and then switched to a detailed description of a cow pasture only to return to the idea that "he really did love her," then it would receive a rating of two close derivatives. The following rule should be adopted to help raters determine when the same basic image or action has been interrupted by enough intervening unrelated material to warrant a separate rating when it reappears. When at least two complete thoughts or action sequences unrelated to a given derivative intervene between its appearance and reappearance, then its reappearance should be rated as a separate derivative.

6) Ratings should always take into consideration the context in which the expression to be rated is given. This is particularly important in exercising judgment in borderline cases.

7) Raters should adopt a fairly conservative criteria in rating derivatives. If they are approximately equally inclined to rate or not rate a given theme, image, or action, they should elect not to rate it.

Examples of Derivatives and Their Ratings

1) "She never took her jewelry to Mexico, but for some unknown reason, she was wearing a silver earring that he had given her one evening in Texas."
   Rating: One distant derivative
   Rationale: The woman had a personal article given to her by another person. The earring serves as an encoded image of merger with another person. The fact that the earring was given to her one evening gives further evidence that the gift may symbolically represent a sexual encounter, but this qualifier is not necessary for the rating of a distant derivative.

2) "He handed her a book from off the top shelf"
Rating: No rating
Rationale: The book is not a personal article.
Thus, handing her a book does not represent interpersonal merger in a disguised way.

3) "She caught up to him and touched his elbow from behind"
Rating: One distant derivative
Rationale: Interpersonal touching may serve as a disguised representation of sexual contact.

4) "He always believed that love could be found in the strangest of places if you looked at it right."
Rating: One close derivative
Rationale: The reference to "love" is clearly libidinal in nature.

5) "She looked over to Jack’s side of the bed - it was empty"
Rating: One close derivative
Rationale: The reference to Jack’s side of the bed has relatively clear libidinal implications.

6) "Seeing the blossoming buds on the dresser made her smile"
Rating: One distant derivative
Rationale: Blossoming buds can be construed as a disguised or symbolic representation of female genitalia and/or fertility.

7) "She felt the temperature in her body rise when she realized who she was looking at"
Rating: One close derivative
Rationale: The image of feeling hot has relatively transparent erotic or libidinal meaning in this context.

8) "She felt the temperature in her body rise after eating the potato salad"
Rating: No rating
Rationale: The altered context of feeling her temperature rise eliminates any libidinal connections.

9) "He ran to her and embraced her. He shouted, Now, that I’ve got you in my arms again, I’ll love you forever"
Rating: Two close derivatives
Rationale: One for embracing and one for the reference to loving her forever. The reference to "in my arms again" receives no rating because it simply repeats the image of embracing her. However, if the last line had appeared itself it would still warrant two close derivatives - one for having her in his arms and one for promising to
love her.

10) "The elevator doors began to open"
    Rating: One distant derivative
    Rationale: The opening of doors might warrant a
distant derivative rating by virtue of the similarity to
female genitalia. The fact that these doors are for the
elevator simply underscores the likelihood that this image
functions as a libidinal derivative.

11) "But I still love her!"
    Rating: one close derivative
    Rationale: Transparent libidinal content

12) "The gleam in her eyes shimmered with tears which
would not flow, he knew they would not"
    Rating: One distant derivative
    Rationale: Tears and the denial of flow function
as a single distant libidinal derivative based on the rule
to score liquid images and negations of libidinal images.
The tears are what won't flow. Therefore, "tears" and
"flow" receive a single rating rather than separate ratings.
Similarly, the phrase "tears streaming down her cheeks"
would receive a single distant derivative rating because
both "tears" and "streaming" function as a single action
sequence involving liquid imagery.

13) "Just seeing him brought back flooding memories of
those passionate trysts in his dorm room and of nights spent
walking along the beach, holding hands"
    Rating: Two close derivatives
    Two distant derivatives
    Rationale: "Passionate trysts" and "holding
hands" each have relatively transparent libidinal meaning.
"Flooding memories" functions as a liquid image which
warrants a distant derivative rating. Walking along the
beach qualifies as a distant derivative on the same basis.

14) "He promised he would keep in touch that he would
send letters every day. But after the first few months,
they stopped coming."
    Rating: One distant derivative
    Rationale: The sending of letters involves giving
a personal article to another person. As such, it
represents a form of interpersonal merger which is similar
to the act of touching. The phrase "keep in touch" simply
underscores this point.

15) "While waiting for his boarding pass, Charles saw
the outline of a figure across from him that seemed
remarkably familiar"
    Rating: No rating
Rationale: the expression lacks both a direct and/or a disguised libidinal image. It functions as an encoded perception of the tachistoscopic situation, but "the outline of a figure" could refer to either the sex-related or neutral control stimulus.

16) "Then the last call for flight 117 to Brazil was announced"
Rating: No rating
Rationale: Although flying may operate as a derivative means of expressing libidinal content, this image is too weak to warrant a rating. There are no contextual cues which suggest "flight 117" has a libidinal source.

17) "We dated awhile and then married"
Rating: Two close derivatives
Rationale: Both dating and marriage have clear libidinal implications:

18) "He was good at that, making her feel all those feelings she'd tried so hard to forget"
Rating: No rating
Rationale: Her feelings lack the necessary specificity which would establish them as libidinal derivatives. If the context had provided sufficient clues that these feelings were clearly libidinal in nature, then the passage would receive a rating of one close derivative.

19) "All those feelings came flooding in like a river overflowing its banks, and with one kiss all control was gone. The years of forgetting wasted away with one lousy kiss! One kiss that would charge her life forever."
Rating: One distant derivative
One close derivative
Rationale: The image of feelings "flooding in like a river overflowing its banks" functions as a single image or action sequence and warrants a distant derivative rating by virtue of its liquid imagery. The image of a "kiss" has clear libidinal meaning and warrants the rating of a close derivative. Subsequent references to the kiss and kissing do not function as a separate action sequence or image. They only serve to modify the intensity and meaning of the original image and therefore do not warrant a separate rating.

20) "You see, one year after she was married her husband was recruited by the army and forced to go to battle:"
Rating: One close derivative
Rationale: The reference to "marriage" has clear libidinal implications. The reference to "her husband" adds nothing new to the reference to marriage and therefore does
not warrant a separate rating. Either reference by itself would warrant a single close derivative rating.
APPENDIX C

STIMULI
Neutral Control Stimulus

Sex-Related Stimulus
APPENDIX D

PRIMING PASSAGES
Priming Passages

Set A

Neutral Buffer Passage  Mercury, a metallic element is the only common metal that is liquid at room temperatures. It was known to the ancient Chinese and Hindus, and has been found in Egyptian tombs of 1500 B.C. The term "mercurous" was first employed about the sixth century by the alchemists who used the symbol for the planet mercury to represent the metal which was also called "quicksilver." The Latin symbol for mercury, Hg, stands for quicksilver.

Sexual Passage. He walked into the secluded meadow and saw her reclining there. Her eyes met his and beckoned that he come closer. Sensations danced through his body as he realized that the moment he had longed for was here at last. The lovely creature rose from the soft, sweet smelling grass and stood before him. Her well-shaped breasts were half exposed and her smile was warm and inviting. Slowly, she removed the thin covering that separated her body from his. She posed before him, her eyes moving from his strong chest to his dark eyes, his heavy mouth. She heard his breathing quicken. Her beauty overwhelmed him and he could contain his passion no longer. In ecstasy, he reached out for her.
Neutral Buffer Passage. Italian universities are the oldest in the world, and it is claimed by some that their prototypes can be found as long ago as the Platonic academies of classical antiquity. Legal recognition of them, however, did not come until after the so-called Renaissance of the twelfth century when the medieval university had gained such political power that emperors felt it expedient to authorize it. The medieval universities of Italy existed originally as specialized schools. For example, medicine at Salerno and law at Bologna.

Sexual Passage. He came into the room and there she was, stretched out on his bed. He could see the outline of her whole body beneath the sheer nightgown. She turned towards him and her dark hair fell across her breasts. Their eyes met. His heart beat faster and sensations passed through his whole body. Slowly, he sat down on the bed and reached out to caress her silken skin. Her body filled with excitement at his touch. She caught her breath as he moved closer. Desire overwhelmed him as he felt her naked skin.
Informed Consent

Name of Subject:______________________________

There are many things which influence a person's written communication. One important factor, we believe, is the way in which people process faint or indistinct experiences. By experimentally studying this factor in people, we hope to better understand the role of perception in human communication.

If you participate in this study, you will be asked to complete a short questionnaire concerning your sexual attitudes and behaviors. You will also be asked to listen to some brief passages and remember what you have heard, and you will be asked to look at quickly flashed lights which will be brief exposures of pictures. You will be asked to give a brief written description of what you think you saw and engage in some free imagery for a short period of time. In addition, you will be asked to write some short fictional passages after viewing the quickly flashed lights. From past experience with this and other similar procedures, no ill effect on you is expected. Your participation in the experiment will enable you to earn three extra-credit points toward your psychology courses.

You do not have to participate in this study, and if you do agree to participate you can still change your mind at any time and withdraw from the study. Your decision will in no way be held against you. All information will remain
strictly confidential. All data will be identified by an assigned subject number rather than by your name. When the entire study is completed, you will have an opportunity to attend a debriefing session explaining the purpose of the study. A notice of the time and place of the debriefing session will be posted in the Psychology Building well in advance of the meeting. Do you have any questions?

1. I hereby give consent to Rick Thode to perform the experimental procedures described above.

2. I have read a clear explanation and understand the nature of the experimental procedures. I have been informed as to any potential risks or discomforts which might accompany my participation. I have read a clear explanation and understand the benefits to be expected. I understand the procedure is investigational and that I may withdraw my consent to the procedures at any time without penalty. With my understanding of this, having received this information, and satisfactory answers to the questions I have asked, I voluntarily consent to the procedure described above.

Subject's Signature ____________________________ Date ____________

Witness Signature ____________________________ Date ____________

Subject SS# ____________________________ Subject No.______________
APPENDIX F

DEMOGRAPHIC DATA
DEMOGRAPHIC DATA

Subject No. __________________________________________ Age: __________

____ Sex: 1 - Male 2 Female

____ Classification: 1-Freshman 2-Sophomore 3-Junior
     5-Special Student  6-Graduate Student

____ Father's Educational Level (Number of years in school)

____ Mother's Educational Level (Number of years in school)

____ Subject's Educational Level (Number of years in school)

____ Subject's Current Religious Preference:

   1 - Agnostic or Atheist
   2 - Catholic
   3 - Islamic
   4 - Jewish
   5 - Protestant (please specify) ______________________
   6 - Other (please specify) ______________________

____ Subject's Religious Training as a child:

   1 - Agnostic or Atheist
   2 - Catholic
   3 - Islamic
   4 - Jewish
   5 - Protestant
   6 - Other (please specify) ______________________

____ Marital Status: 1 - Single  2 - Married  3 - Divorced

____ Sexual Preference: 1 - Heterosexual  2 - Homosexual
     3 - Bisexual

____ Have you ever been to Europe?  1 - Yes  2 - No

____ Have you ever attended college in Europe?  1 - Yes  2 - No

____ Have you ever attended college in Italy?  1 - Yes  2 - No

____ Have you ever studied chemistry?  1 - Yes  2 - No

____ Do you wear corrective lenses?  1 - Yes  2 - No

____ If you wear corrective lenses, are you wearing them now?
     1 - Yes  2 - No  3 - Not applicable
Table 1

Log-Means and Log-Standard Deviations for Total Libidinal Derivatives

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Table 2

Log-Means and Log-Standard Deviations for Close Libidinal Derivatives

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### Table 4

**Means and Standard Deviations for Index of Communicative Style (Distant Minus Close)**

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<th>Condition</th>
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REFERENCES


Mosher, D. L., & White, R. B. (1980). Effects of committed or casual erotic guided imagery on females' subjective
sexual arousal and emotional response. The Journal of Sex Research, 16, 273-266.


Shevrin, H., & Luborsky, L. (1958). The measurement of preconscious perception in dreams and images: An


