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BODY IMAGE CHARACTERISTICS OF LATE PREGNANCY AND CHANGES OBSERVED AT THE POSTNATAL PERIOD

by Richard L. Karmel

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CURRICULUM STUDIORUM

Richard Lee Karmel was born December 28, 1940 in Philadelphia, Pennsylvania, U.S.A. He received the Bachelor of Arts degree in Psychology from Pennsylvania State University in June 1962, and the Master of Education degree in School Psychology from Temple University, Philadelphia, Pennsylvania in June 1964.

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INTRODUCTION

The concept of body image was proposed by Schilder in a 1950 publication. Taken to mean the mental picture which we form of our body, it has passed swiftly into the psychiatric literature and, in a sense, typically is used to exemplify "disturbance" as opposed to "normality".

One often hears of body image disturbances and, as such, fails to be cognizant of the role of body image formation and status during the course of normal growth and development, be it physical or psychological.

While there has been some effort in recent years to present a more balanced approach toward body image study, there still remains much to be learned with regard to mind-body relationships, particularly among persons passing through one of the many developmental milestones in life.

The role of somatic factors on body image, as a function of biological maturation or as the result of specialized sex-role behavior, e.g. reproduction, is a topic which has received only minimal attention. Since normal physical maturation occurs slowly over time, one cannot readily attempt to elicit body image information without permitting considerable time to pass. On the other hand, pregnancy confines itself to a specific, relatively brief time span, and involves a great deal of somatic and psychological activity. When taking into account the postnatal period as well, one senses that the pregnancy-postnatal experience

produces a multiplicity of body image reactions.

The commonality of the biological features of the pregnancy-postnatal experience provide an opportunity to study and understand body image in relation to normal, progressive somatic change. This represents the purpose of this study, to obtain adequate information regarding body image status at a significant point in pregnancy and to assess change following parturition.

The presentation of the study proceeds as follows: Initially, the literature on somatic aspects of body image change is surveyed. A more detailed review of the psychology of pregnancy and relevant body image studies follows.

In Chapter II, the experimental design is presented including a description of subjects, instrumentation, procedure, and statistical treatment of the specific hypotheses under investigation.

Chapter III provides a detailed examination of results for all body image variables, comparing findings to each null hypothesis. Brief comments on each result is offered.

Chapter IV consists of a detailed summary and analysis of the results, examining findings in relation to expected outcomes, previous research data, and ways of interpreting the present results. A statistical analysis of inter-test results is presented in the form of a correlation matrix, and this data is evaluated and interpreted. Finally, comments are made regarding future research endeavors.

CHAPTER I

REVIEW OF THE LITERATURE

The study of the relationship between body image and somatic or bodily activity has generally been confined to disease, illness, or physical trauma. For example, Head (1920), who first spoke of a body "schema", demonstrated how neurological impairment may result in disturbances of body-part awareness (localization), spatial orientation, and coordinated motor activity. This was followed by reports on the "phantom limb" whereby a missing (amputated) body part continued to be experienced as present.

Schilder (1950), who enlarged on the concept of body image developing both a psychological and sociological basis for body-related ideas and attitudes, similarly focused on neurological disease sequelae when discussing the physiological basis of body image formation. In other words, there was an absence of information and clarification on the more general relationship between bodily processes and body image formation although a rather comprehensive body image psychology was formulated.

The impact of Schilder's work has been considerable leading to subsequent reports of body image status in relation to bodily change, most often in response to a disease process or the result of surgical procedures (Druss et al, 1972; Orbach & Tallent, 1965). Recent advances in cosmetic surgery (Druss,

1973) and organ transplant (Castelnuovo-Tedesco, 1973; Muslin, 1971) have also provided additional evidence for the significance of body image status in relation to bodily change, though under rather specialized conditions where the authors depict the more aberrant phenomena. Consequently, it is difficult to judge the extent to which the effects of serious illness and radical body change on body image formation can be generalized to the population at large or form the basis for a more comprehensive body image psychology.

The concept of body image as defined by Horowitz (1966) suggests that non-disease bodily processes go into body image formation:

> The body image operates as a specialized, internal analogue data-center for information about the body and its environment. It is in constant transactional relationwhip with internal and external perceptions, memories, affects, cognition and actions. It provides economical and specific information concerning the morphology, position, and relationships of the body as well as the structure of the space, objects, and persons that are in some relationship to it (p. 456).

This conceptualization of the body image process suggests that more normalized, non-pathological activities involving the body, both directly and indirectly, may become stimuli or sources of body image construction, i.e. the evolution and forming of body-related images. One need not focus exclusively on disease-related somatic sensations and other concomitants to examine how bodily activity relates to body image change. Conceivably, where a group of subjects are "deeply engaged" in a

body event, experiencing intensified, yet, non-pathological somatic activity, it may be possible to delineate, study and clarify, the body image process.

The purpose of this study is, therefore, to evaluate body image change in a group of subjects undergoing an intense body experience. Toward this end, it is believed that studying the pregnancy-delivery-postnatal experience will provide a valuable opportunity for gaining an appreciation of how pregnant women may differ from non-pregnant women in terms of body image, and how they respond to bodily change subsequent to delivery.

1. The Pregnancy Experience

The psychological experience of pregnancy has received increasing attention and study in recent years (Group Health Association, 1968; Nilsson & Almgren, 1970; Wenner & Cohen, 1968).

In general, these studies are mainly concerned with psychological symptom formation or the extent to which abnormality is manifested and those factors which appear as causative agents. Among psychoanalytic writings, considerable literature is available which highlights the impact of the pregnancy experience on psychic functioning (Anthony & Benedek, 1970; Bibring, 1959; Caplan, 1959; Deutsch, 1945). That there is the potential for significant body image reaction, shared by a great many pregnant women is strongly suggested, though the extent to which and the manner in which such reactions may become manifest

remains to be determined. For example, Deutsch (1945) states:

> The processes of pregnancy are the concern of biology, psychology, and social science ... Conception is followed by a tremendous upheaval in the female organism as a whole ... From these physiologic occurences the psyche receives stimulation and depressing impulses of various kinds ... The organic processes of pregnancy are readily used by the psychic apparatus to give expression to pre-existing emotional tensions; as a result, one can not only observe the influence of somatic processes on the pshyic ones, but, conversely, one can also discover the relation between emotional conflicts and physical symptoms of pregnancy (p. 126).

Psychoanalytic literature emphasizes the all-embracing reactions of pregnancy: somatic and psychological, conscious and unconscious. Nonetheless, attempts at systematically exploring the many dimensions of the pregnancy experience, the interplay of somatic and psychological forces, has only begun to receive attention.

Bibring and co-workers (1961) outlined an extensive research investigation of pregnancy and the early mother-child relationship. They included body image as one of their assessment variables during pregnancy; data to be obtained via a series of clinical interviews and psychological test administrations. Their proposed study was never completed and, thus, a systematic assessment of body image phenomena and change remained to be taken up by other investigators.

Developments in the study of body image during pregnancy and the postnatal period are now described.

2. Body Image and Pregnancy

Body image and pregnancy has been discussed from a variety of vantage points: (1) the bio-psychological nature of pregnancy; (2) psychiatrically investigated obstetrical patients; (3) data obtained from prenatal discussion groups; and (4) data gathered from psychological tests.

In the first category, the work of Benedek (1960) is an outstanding example. Drawing upon a previous investigation of the relationship between the female reproductive cycle and psychic response (Benedek & Rubinstein, 1942), the author explained the interrelationship between biological and psychological components and its influence on body image:

> The symbolic process by which the body image, both as a whole and in its parts, is represented consciously and unconsciously, is subserved by the central nervous system. The gonadal hormones through the central nervous system activate the body image. At the time of ovulation, the whole body image seems to be highly cathected along with the receptive organ, the vagina. ... pregnancy is associated with an immense intensification of the progesterone phase of the cycle (p. 9, 10).

The findings of Benedek and Rubinstein (1942) indicate that there are body image reactions in relation to the ovulatory cycle, which might be accentuated following conception. Thus, it seems likely that all pregnant women share the potential for

new body image experience, i.e. mental representations, both conscious and unconscious, about the shape, appearance, position, and contents of the body (Horowitz, 1970). To that extent, we may hypothesize that pregnancy might lead to body image change; in other words, that pregnant women will demonstrate, as a group, different body image status when compared with non-pregnant women.

A second type of discussion pertaining to body image and pregnancy concerns those obstetrical patients experiencing marked psychological (and sometimes physical) stress. A psychoanalytic case presentation by Fox (1958) is an excellent example:

> The first few interviews indicated her intense concern with her body image. ... She dreamed of her body as a Steuben glass vase with a small flaw. ... she perceived the inside of the body as a primarily oral cavity. ... Her narcissistic preoccupation with her body image heightened the significance to her of the somatic alterations during pregnancy resulted in her perception of delivery as a multilating separation (p. 346, 357).

That there may be highly idiosyncratic body image response to pregnancy is underscored by Lerner et al (1967):

> The normal pregnant woman for the most part accepts and even enjoys the changes in bodily configuration that pregnancy brings. However, there are women who prefer a pregnant body because of meanings they have attached to it which are peripheral or even antithetical to the realistic biological and social significance of pregnancy (p. 295).

The authors explain how, in particular, the "swelling of the abdomen" may represent another body part or focus attention

away from body parts deemed less worthy in a psychological sense. General body integrity and a new sense of adequacy may result as body fullness increases.

Psychoanalytic case studies are important from the standpoint of demonstrating the extent to which individualized body image response to pregnancy may become manifest. The first example suggested a form of body image disturbance while the latter suggested that bodily change during pregnancy may actually improve relatively poor pre-pregnant body image status. Thus, it is probable that the bodily changes accompanying pregnancy produce a variety of body image reactions, normal and abnormal or atypical. However, with the exception of cases requiring psychiatric assessment and intervention, the question may be raised: Is marked variability to be found among non-psychiatric samples of pregnant women?

In this context, this study will examine interrelationships among several body image measures, and describe the variance within each.

In terms of gathering normative body image data, the interview-group discussion approach has proven to be of value. Offering their impression of interview material obtained from 22 pregnant women, Loesch and Greenberg (1962) state that "concern over bodily changes and fear of multilation or death during delivery" was a prominent theme.

Focusing on data collected from tape-recorded interviews with ten couples, both individually and jointly, Deutscher

(1969) describes how during the first trimester there is "awareness and response by the woman to her bodily changes..." In addition, the author reports that "men responded to the bodily changes in their wives with alarm". With the onset of fetal response and activity, both husband and wife "tune in" on cues arising from the fecund body. As gestation progresses, both partners become increasingly more preoccupied with bodily events accompanying pregnancy. During the third trimester, Deutscher (1970) states that "the woman's bodily strangeness and clumsiness are disorienting to her and disturbing to her spouse. Most of the women reported increased preoccupation and reverie". And finally, after delivery, "there was further necessary accomodation to the new body image of 'having the milk come in'".

Based upon weekly group meetings with normal pregnant women at a prenatal clinic, Colman and Colman (1971) provide an excellent discussion on the pregnancy and postnatal experience. They begin by pointing out:

> Shifts in body image, secretions of hormones, and the maze of changing environmental supports and cultural expectations are inevitably mirrored in the psyche, in the mental life of the pregnant woman. The psychological changes that take place after conception might best be thought of as an latered state of consciousness, for the inner world of the pregnant woman changes (p. 6).

Referring to the symbolic quality of new body image reactions, they state:

> Women are less likely to describe themselves as looking like blimps than like whales or ripe watermelons. That is, they identify with swollen objects that bear life rather than with those that are merely round and empty (p. 17).

Offering a sequential presentation of possible body image themes and reactions, the first trimester is marked by an increased orientation over "real" and imagined somatic changes:

> ... there may be strange fantasies and dreams about the unknown, unseen, and unfelt organism growing inside her body. ... although her figure has changed ever so slightly, to some women, these changes may seem huge. She may feel fat and ugly ... (p. 35).

Possible discrepancies between the realities of bodily change and mental conceptualizations about these changes, sometimes observed during the first trimester, appear to be much more numerous and varying amidst the third trimester:

> In the last trimester, a woman's body image is almost discontinuous with her usual physical state. Even for multipara, the abdomen may seem to swell beyond her previous memories. One primipara said she spent hours in front of the mirror staring at her profile in stark disbelief. ... Husbands, too have strong feelings about their wives' new bodies. Some are proud watching their wives move "in their new awkward way," laden with the proof of their masculinity. Others may be repelled by the larger-than-life proportions of the swollen breasts and bellies (p. 54).

Thus, body image, involving internal and external perceptions, may be influenced by reactions to one's own bodily

changes as well as those reactions communicated from the social environment. This formulation fits closely with the body image theoretical model first introduced by Schilder (1950).

To summarize, a great deal of useful information, both descriptive and theoretical, has been obtained via individual, couple, and group interview techniques. That changes in body image accompany pregnancy is supported by clinical interview techniques. That there may be individualized body image reaction is also indicated.

Body image data gathered from clinical interviews lends support to the hypothesis that pregnancy brings about body image change. Colman and Colman (1971) suggest that body image reactions may vary at each stage of the pregnancy. They do not indicate whether women manifesting reactions at the first trimester continue to display body image phenomena at successive trimesters. Consequently, it is not known whether body image change is continuous and progressive among pregnant women.

Since most authors underscore the body image manifestations of the third trimester, suggesting its rather ubiquitous nature, it would seem appropriate to evaluate body image among pregnant women at that point in time in the sense of obtaining a baseline measure.

From a methodological standpoint, an approach to body image study which is not dependent upon individual or group determined reports would also appear fruitful. Variation in assessment procedures, nuances within the interviewer-interviewee

relationship, and lack of codification reduces the extent to which findings may be compared and replicated. Thus, another purpose of the present study is to achieve a more systematic assessment of body image status during pregnancy, considering as well the postnatal period.

A fourth approach to the study of body image and pregnancy consists of assessment using psychological tests. In comparison to psychoanalytic writings, psychiatric case studies, and interview data, body image evaluation by way of psychological tests has been employed only marginally, few studies specifically focusing on body image.

For example, the study by Wenner and Cohen (1968) utilized psychological testing in their intensive investigation of emotional status during pregnancy and the post-partum period.

Citing Rorschach findings for 28 women the authors report:

> Examing the content, we find that responses with some primiarily unhealthy content were seen in seven women at the seventh month of pregnancy and in three women postnatally. ... The concern with body damage is obvicus in these few women, but was not seen in the majority (p. 27).

The psychologists participating in the study followed a traditional method of Rorschach codification, i.e. comparing pregnant women for determinants, and, consequently, concluded:

> With full awareness of the difficulty of comparing the Rorschach on test-retest in a quantitative way or even

> in content, efforts to note shifts on the more significant Rorschach variables indicated that there were no significant differences in the group as a whole between the women at 7 months of pregnancy and 3 to 5 months post partum. The predictable sorts of changes suggested by other studies were not found in ours. The conclusion is suggested that the personality is so fixed that pregnancy in itself is not apt to effect significant shifts in personality structure in a short period. Reactions to pregnancy are so individual that no generalized prediction can be made. ... Evidently the Rorschach either taps such set personality patterns or else it is not sensitive in a quantitative and obvious way to the changes of pregnancy (p. 28, 30).

These comments indicate that (a) the traditional Rorschach scoring method may not adequately assess personality attributes during pregnancy and the postpartum, or (b) the investigators did not make adequate use of the Rorschach system, or (c) that personality changes do not occur between pregnancy and the postnatal period, that is, changes observable for a sample of pregnant women.

If this be the case, one would wish to know whether these conclusions equally refer to body image, body image assessment based upon the Rorschach method during pregnancy, and body image changes which may accompany delivery. Is the Rorschach, indeed, applicable for body image study, more specifically pregnancy, and would changes in body image status be found upon postnatal assessment? It would seem necessary that these questions be examined in light of the above comments. A second large-scale study of pregnancy contributes additional critical discussion

on the Rorschach inkblot technique.

A publication by the Group Health Association (Washington, D.C., 1968) includes a report of psychological test findings, noting that as early as the end of the first trimester (3-4 months), Rorschach responses connoting anxiety were revealed by the majority of participants. The point is made: "Many anatomical responses in the group indicate specific preoccupation with the workings of the body, as is to be expected".

It appears that bodily changes occurring in early pregnancy, and concomitant anxieties, are reflected in Rorschach content for most pregnant women. In terms of body-related responses, this study utilized the Rorschach content category "Anatomy" response. However, while seemingly examining for body image, this study, in fact, is quite restrictive focusing exclusively on frequency of response, presence versus absence. Perhaps, it is not surprising that when comparing prenatal versus postnatal Rorschach protocols, a conclusion similar to the previous study is made: "... little significant quantitative change occurred in the majority of psychological records".

On the basis of the two studies referred to, some doubt is cast on the applicability of the Rorschach technique for psychological study of pregnancy and the post partum. At the same time, while critical of the Rorschach, there is indication that bio-psychological aspects of pregnancy may be reflected by inkblot responses on the basis of content analysis.

Thus, despite the authors' reservations, it cannot be concluded that body image data resists expression when confronted with inkblot stimuli. Further study of this issue is required, which leads to a presentation of studies specifically designed to examine the Rorschach technique as a measure of body image in relation to the bodily changes accompanying pregnancy and the postnatal period.

McConnell and Daston (1961) examined the responses of pregnant women to the Rorschach and Osgood Semantic Differential during the eighth and ninth month and three days after delivery. With regard to the Rorschach, body image was assessed by utilizing the content analysis scoring method devised by Fisher and Cleveland (1958).

This scoring system results in two body image indices: Barrier (B) and Penetration (P). The former refers to responses connoting "definiteness" and "firmness"; the latter refers to responses connoting "vulnerability" and "weakness". (This scoring technique will be discribed in further detail under Methodology). With regard to the Semantic Differential, each subject was asked to rate their body on 17 paired adjectives resulting in three factors: Evaluative, Potency, and Activity.

The results for the Semantic Differential indicated "a higher evaluation of the body after delivery" (p. 453). This implied devaluation of the body during late pregnancy. However, the body was seen as more potent before delivery, presumably

consistent with the realities of the pre-delivery period (thrid trimester). Perhaps, of greatest significance is the fact that shifts occurred subsequent to delivery suggesting that attitudes toward the body may change as somatic status varies. The basis for these shifts is not altogether clear, but according to the authors seems related to overall self-esteem and the degree of positive attitude toward pregnancy:

> Women with positive attitudes tended to evaluate their bodies positively during pregnancy but negatively afterwards; whereas women with negative attitudes tended to evaluate their bodies negatively during pregnancy but positively afterwards (p. 454).

What it meant to be pregnant and to end pregnancy seemd to have differing significance. The extent to which actual body experience based upon the realities of bodily change influenced body evaluation is not clear as two shifts occurred, one in each direction.

The results of Rorschach testing provide some clarification regarding the above. Examining test-retest data for 24 subjects, Barrier scores remained consistent following delivery, while in contrast, Penetration scores decreased significantly. In psychological terms this suggests that feelings of vulnerability and emotional disintegration lessen after delivery, presumably because general anxiety and fearfulness are greatly reduced. Comparing Barrier and Penetration indices, it appears that the latter is more sensitive to situational or reactive conditions marked by heightened stress, discomfort, anxiety, and internal

disorganization. This interpretation is consistent with the "crisis theory" of pregnancy proposed by Bibring (1959) and Caplan (1959).

Based upon previous research findings (Fisher & Cleveland, 1958, 1968), it appears that the Barrier index is a measure of ego strength and capacity to adjust under stressful circumstances. Conversely, the Penetration index appears to reflect acute situational disturbance and, thus, should be elevated during pregnancy (according to crisis theory). The McConnell and Daston (1961) finding supports this hypothesis on the basis of significant decrease in Penetration scores following delivery. Furthermore, it indicates that the Rorschach technique, utilizing a modified body image scoring approach, does lend itself to a psychological investigation of pregnancy and the postnatal period, permitting analysis of body experiences over this time span.

Nonetheless, there remains certain discrepancies and inconsistencies in findings pertaining to the Fisher and Cleveland (1958) body image indices. McConnell and Daston (1961) did not find change in Barrier status following delivery. However, Edwards (1970) reported a decrease in both Barrier and Penetration scores at the postnatal period. On the basis of most research reports, including studies of test-retest reliability, a decrease in Barrier scores would

not be predicted. Since Edwards (1970) assessed a sample of unwed mothers utilizing a modification of the Rorschach, the Holtzman Inkblot Technique (Holtzman et al, 1961), one may question the comparability of the two studies. This issue requires further clarification and the present study will attempt to do so by reappraising the approach taken by McConnell and Daston (1961).

Psychological test investigation of an aspect of body image, attitudes toward one's body, and pregnancy has also received attention. Venezia (1972) constructed a more sophisticated version of the Semantic Differential and sought to analyze the relationship between certain personality traits, attitudes towards pregnancy and motherhood, and body attitudes. For the most part, significant findings were not obtained with the exception of a negative relationship between extraversion and body attitude. That is, the more extraverted, the more likely the body would be evaluated in negative fashion during pregnancy. Extraversion increased following delivery, a finding which is compatible with clinical-theoretical writings on the psychology of pregnancy, e.g. Deutsch's (1945) description of the "introversive tendencies" which accompany pregnancy.

With the exception of the above cited finding, relationships between measures were not found and suggestions were offered in terms of modifying the body attitude measure. Nonetheless, if one goes back to the definition of body image first intro-

duced by Schilder (1950): "... the picture of our own body which we form in our mind ..." (p. 11), and Horowitz's (1966) body image model which indicates multi-dimensionality, i.e. thoughts, ideas, fantasies and dreams emanating from a variety of stimuli, it can be seen that a body attitude scale fails to elicit the type of body image phenomena described in clinical reports.

As there appears to be a variety of body image responses associated with pregnancy, particularly at the later stages, it would seem necessary to consider an assessment approach which does not restrict responses to a single body image attribute. Thus, selection of test instruments should take into account a procedure which permits expression along a variety of body image dimensions.

Therefore, this study will incorporate assessment techniques ranging from the relatively "objective" to those considered "projective", the assumption being that body image study requires a multi-dimensional assessment procedure.

3. Body Image and the Postnatal Period

The concept of body image formulated by Schilder (1950) and Horowitz (1966) suggests that significant change in body image status occurs following parturition. That is, if the body image functions in constant "transactional relationship with internal and external perceptions ..." (Horowitz, 1966, p. 456), it can be hypothesized that shifts in body image will

be observed owing to the profound somatic and psychological alterations accompanying delivery.

The biopsychological component, which refers to the relationship between endocrinological influences and psychic reaction following conception, has been discussed by Benedek (1970). Continuity between pre-pregnant and pregnant status is suggested. For example, dreams and fantasies connoting the functions of pregnancy, e.g. giving life and providing care, have been portrayed as a psychological adjunct to the female reproductive (ovulatory) cycle, only to be intensified in the course of the pregnancy experience. This means that elevated hormonal-metabolic activity brought about by conception tends to stimulate and provoke mental activity increasing (in theory) the likelihood for new body image experience. Benedek (1960) explains:

> Ovulation is a unique physiological event since it is accompanied by systemic reactions. Of the physiological signs of the systemic reactions, best known are the heightened basal body temperature and the change in bioelectrical potentials of the skin ... A shift of the woman's interest to her own body and its welfare are characteristic signs of ovulation (p. 8).

She goes on to state, "It is the physiological characteristic of woman that her reproductive function requires an increase in metabolic processes". Therefore, in the case of skin sensitivity, one can anticipate generalized group response to body image items connoting "skin sensitivity" during pregnancy, diminishing in the course of the postnatal period. Pregnancy, representing an intensification of an aspect of ongoing

female reproductive cycle, brings about new body sensations and psychological reactions. Thus, if greater body awareness and response is expected in the course of pregnancy, termination should be accompanied by its diminution.

The factor of weight gain followed by weight loss also suggests significant body image changes. According to a large sample investigation by Alexander and Downs (1953), "A normal weight gain during pregnancy is 20 to 25 pounds or 17 per cent of body weight". The effects of weight gain during pregnancy and weight loss following delivery suggest the following with regard to body image status and change: it may be hypothesized that weight gain accompanying pregnancy produces responses in the direction of experienced body increase and enlargement. Following delivery, decreased body size results in a shift toward perceived body dimunition.

4. Summary

It would seem that the multitude of somatic and psychological events occurring during pregnancy, culminating in the realities of motherhood, provide for a wide spectrum of body image reactions. Most often, the literature depicts the more extreme and dramatic body image phenomena when discussing psychological reaction to bodily change, pregnancy not withstanding. The postnatal period has also received attention, though

typically highlighting the more aberrant, i.e. body image phenomena whereby the body is attributed qualities which bear little resemblance to actual physical dimensions and morphological characteristics.

The present study will attempt to throw light on more normalized body image reaction associated with pregnancy with particular interest in stability or change in body image as women pass through the last phase of their pregnancy, give birth, and then accomodate to the postnatal experience.

Body image data gathered during pregnancy, which has mainly been of the interview-discussion type, has indicated that during the later stages, in particular, considerable reaction is exhibited.

Body related stimuli are evoked from a variety of sources, internal and external, and it is hypothesized that in relation to non-pregnant women, pregnant women will display significantly different body image phenomena along specified body image dimensions.

A dynamic body image theory argues that somatic change will in turn bring about body image change. Thus, following delivery, change in body image should be observed. Presumably, return to non-pregnant status produces change in the direction or comparable to women who have never been pregnant. Therefore, it is hypothesized that group differences observed at late pregnancy will no longer be found upon retest. At the postnatal

period, body image change has once again occurred and those aspects of body image previously discerned at late pregnancy will no longer be in evidence.

CHAPTER II

EXPERIMENTAL DESIGN

This chapter discusses the method by which body image characteristics of late pregnancy and the postnatal period are studied. The purpose was to systematically assess body image attributes common to a sample of pregnant women during the third trimester and following delivery (six weeks postnatal).

Pregnant subjects and non-pregnant controls are first described followed by an explanation of the instruments and administration procedures. Lastly, statistical analysis is explained in relation to the specific hypotheses under investigation.

1. Subjects

The experimental group consists of 32 subjects. They are described as follows: (1) Age: mean age was 27 years, 3 months; ages ranging from 22 years to 39 years; (2) Education: all women had completed high school and over three-quarters had continued their studies beyond graduation, i.e. university, professional or business school; (3) Number of pregnancy: 21 women were experiencing their first; 9 women their second; one woman her third; and one woman her fourth.

The pregnant sample is comprised of 21 primiparaes and 11 multiparaes.

Subjects comprising the experimental group were solicited in person (by letter) as they awaited medical examination by their obstetrician. All were private patients of senior staff physicians affiliated with the Department of Obstetrics and Gynaecology, Montreal General Hospital, Montreal, Quebec.

Based upon length of pregnancy--approaching or beginning the third trimester (28 weeks)--each woman was handed a letter inviting participation in a research project designed to learn about the pregnancy-postnatal experience. No attempt was made to select a particular woman, i.e. age, number of pregnancies, etc. Upon reading the letter, those agreeing to particpate were asked to sign their name and give their telephone number and were told that they would be contacted shortly so as to organize for group test administration.

The control group consisted of 28 women whose mean age was 23 years, 7 months; ages ranging from 19 years to 29 years. Women in this group were solicited from among professional and secretarial staff at the Montreal General Hospital by way of letter, advertisement, and personal inquiry. Volunteers comprised such professions as nursing, occupational therapy, social work, and secretarial staff. Marital status included 12 married women and 16 unmarried women. Participation was based upon one restriction: that they had never been pregnant.

2. Tools of the Experiment

Body image was assessed through four tests: (1) The Rorschach inkblots; (2) The Body Focus Questionnaire; (3) The Body Distortion Questionnaire; and (4) an index of Body Prominence.

The rationale behind the choice of these instruments was based upon the body image model of Schilder (1950) and Horowitz (1966), the bio-psychological nature of pregnancy, and previous research findings.

The concept of body image as proposed by Schilder and Horowitz emphasized the multi-dimensional nature of the body image process. For example, the body may be "pictured" on the basis of physical qualities, i.e. height, weight, and color, or the body may be "experienced", i.e. a set of beliefs or ideas about body (part) function. Thus, it seemed important to permit subjects to express both "representational" components of their body image based upon reaction to their actual physical characteristics and "non-representational" aspects referring to the more personal and subjective reactions, beliefs, and interpretations associated with body experience. Instrumentation would, therefore, be both structured and unstructured, anatomically-bound and ideationally-bound. This would allow pregnant subjects opportunity to respond to the multiplicity of somatic changes accompanying pregnancy and the postnatal period as well as to express individualized body experiences.

Previous research findings also played a part in the choice of instrumentation. For example, the Rorschach technique has been used extensively in body image studies (Fisher & Cleveland, 1958, 1968) and, thus, comparisons can be made with earlier findings. The three other body image measures, developed more recently, appear promising, however, they have been used primarily with non-somatically involved populations (Fisher, 1970). The present study, as such, will provide new test findings.

In addition, it should be noted that there is evidence suggesting statistical independence among body image measures in general (Cardone & Olson, 1973), which indicates a need for administering a body image test battery in order to comprehensively investigate body image status. As pointed out by Shontz (1969), the concept of body image is quite broad in scope, referring to any number of attributes and dimensions. This study should provide clarification as to the relevance of the four instruments for use in somato-psychological investigations.

The Rorschach Inkblot Technique: Used widely by clinical psychologists as a method for evaluating personality and psychopathology, this technique was introduced by Hermann Rorschach in 1921. Developed initially as a method for studying perception, memory, and association (Piotrowski, 1965), it later gained popularity for purposes of psychiatric diagnosis.

Consisting of a series of ten cards or inkblots, the Rorschach test is typically administred on an individual basis after the respondee is requested to state his or her perceptions.

The number of responses is normally left up to the respondee and averages range around 25. Each response is written down verbatim and, typically, a period of explanation follows initial test administration whereby the subject is requested to clarify the basis for his or her responses. Finally, on the basis of one of the more widely used scoring-interpretive methods, i.e. Klopfer, Beck, or Piotrowski, responses are tabulated, coded, and plotted, and thus form the basis for personality evaluation. Administration time normally takes an hour to an hour and a half.

The evolution of the Rorschach Inkblot Technique as a measure of body image begins with a study conducted by Cleveland and Fisher (1954). Evaluating personality traits of arthritic patients, they observed what they believed to be a rather unique set of responses to the Rorschach inkblots. That is, there seemed to be a tendency among his patient sample to produce responses emphasizing surface featrues of the blot symbolizing "protection" and "outer firmness", i.e. a suit of armor. The authors concluded that a relationship may exist between body symptomatology and Rorschach perceptual style and found evidence supporting this hypothesis (disease site and perceptual style) in subsequent investigations (Fisher & Cleveland, 1955). Responses from differing psychosomatic populations (arthritics versus ulcerative colitis patients) indicated a relationship between the somatic nature of the illness and inkblot perception: illness involving the body musculature related to an emphasis on peripheral hardness,

protection, covering, and definiteness; illness involving the gastro-intestinal system related to an emphasis on peripheral permeability, weakness, breakage, and lack of firmness. Thinking that they may have found evidence for a significant body image dimension, which they labelled body boundary, Fisher and Cleveland proceeded to carry out a series of investigations utilizing their newly developed Rorschach scoring approach (Fisher & Cleveland, 1958, 1968).

Body boundary refers to "the manner in which the individual experiences the limits of his body" (p. 155) and is a psychological construct derived from psychoanalytic writings, i.e. Freud, Federn, Jung, and Reich.

The research of Fisher and Cleveland (1958) indicates two types of boundary response, Barrier and Penetration, which can be described as follows: (1) Barrier refers to responses denoting body boundary definiteness, i.e. cave, man in armour, animal with striped skin, turtle with shell, or woman in costume. Response may or may not refer to actual body references, as can be seen, for scoring criteria is more concerned with meaning or symbolic value as opposed to literal content: "In each Barrier response the surface is characterized by a protective enclosing, decorative, concealing, or substantive connotation" (Fisher, 1970, p. 157). (2) Penetration denotes body boundary weakness and indefiniteness, and can be illustrated by a "mashed bug", "a person bleeding", "a broken body", "a torn coat", and "a withered

skin". Here, the connotation is penetrability, opening, lack of substance, and degeneration.

Numerous studies are cited by Fisher (1970) which indicate objectivity in scoring for Barrier and Penetration. In terms of reliability, Barrier test-retest coefficients are typically over 0.80. Daston and McConnell (1962) reported a Pearson r of 0.89 after a two-month interval. In a preliminary study designed specifically to evaluate test-retest reliability this writer obtained a Pearson r of 0.95 with a sample of 20 pregnant subjects (one to seven-week time interval). Results pertaining to the Penetration index tend to vary. Fisher reports test-retest findings around 0.80 or higher; however, Karmel (1973) obtained a Pearson r of 0.50 for pregnant subjects. Research findings in general (Fisher, 1970) suggest that the Penetration score is more directly influenced by situational factors, i.e. stress at the time of testing, and, thus, in the case of pregnant subjects may reflect emotional lability and heightened sensitivity to situational factors, particularly during late pregnancy. Penetration scores may be a highly sensitive index of ongoing body experience at a specific point during pregnancy. On the other hand, it may be subject to a multitude of stimulus inputs not necessarily specific to the pregnancy experience.

Fisher (1970) summarizes the merits of his Rorschach body boundary scoring technique, citing overall research findings:

> ... When subjects were asked to describe a series of inkblots they varied considerably in the characteristics they

> ascribed to the peripheries of their percepts. There were marked differences in the frequency with which definite structure, definite substance, and definite surface qualities were attributed to the periphery. These differences were found to be correlated with various direct and indirect measures of body feeling and sensation. A good deal of evidence accumulated that the way in which an individual depicts the boundaries of his ink blot responses mirrors how he feels about his own body boundaries (p. 157).

The findings summarized by Fisher (1970) indicate that not only is the Rorschach technique a method for evaluating body experience in a general sense (Schafer, 1953), but, in addition, appears to provide specific information in terms of a psychological sense of body boundary definiteness and firmness and the converse, a sense of weakness, vulnerability, and body boundary disruption.

For purposes of body image (body boundary) assessment, Rorschach test administration differs from traditional clinical psychological diagnostic procedures. A "controlled" administration technique is employed whereby all subjects, experimental and control, are required to offer 25 responses: three to cards I, II, III, VII, and X; two for cards, IV, V, VI, and IX. This procedure has been followed by body boundary researchers since the first studies reported by Fisher and Cleveland (1958).

The Body Focus Questionnaire: This approach to body image study is discussed in detail by Fisher (1970). Each subject is confronted with the choice of indicating greater "awareness"

to one of a pair of body parts, i.e. heart versus stomach. There are a total of 108 pairs which are categorized into eight (body focus) scales: Front-Back, Right-Left, Heart, Stomach, Eyes, Mouth, Head, and Arms. Items per scale vary from 11 to 19. Administration requires 20 to 30 minutes. Instructions state:

> Turn your attention upon yourself. Concentrate on your body. Below is a list in which different areas of your body are listed in pairs. In each case pick the area or part which is at the moment most clear in your awareness.

The rationale behind construction of this questionaire is explained by the author:

> The BFQ represents a compromise between the intent to obtain meaningful samples of certain subjective aspects of body experience and the need to be able to express such information in easily quantifiable terms (Fisher, 1970, p. 327).

For purposes of the present study, the entire BFQ was administered to all participants, however, only the Stomach scale was utilized in the results. In light of the nature of the bodily changes accompanying pregnancy, delivery, and the postnatal period, this scale seemed most applicable permitting comparison with Fisher's previous findings for non-pregnant females as well.

Scoring for Stomach awareness is based upon tallying the frequency of "stomach" choices, there being a maximum of 14 choices.

Test-retest data provided by Fisher (1970) indicated fair consistancy over time (7-day interval): 0.54 (N = 49) and 0.66. A preliminary investigation by Karmel (1973) yielded a test-retest coefficient of 0.51 among pregnant subjects.

While these results indicate moderate fluctuation in body part awareness (focus) as measured by the BFQ, suggesting that among pregnant subjects change in response may not be specific to the pregnancy experience since similar reliability coefficients were found among non-pregnant women, examination of mean Stomach scores shows considerable consistency for pregnant participants: 10.50 (first testing); 10.75 (second testing). Restricted range of scores (standard deviations of 2.01 and 1.95) may be a factor reducing test-retest reliability coefficients.

A study by Fisher (1967) lends support to the BFQ as a measure of body experience and, thus, appropriate for the study of reaction to bodily change. He found that among a sample of college males (N = 16) BFQ Stomach scores were positively correlated with physiological measures of stomach activation (electrogastrogram). Correlation coefficients were 0.65 and 0.69 under varying experimental conditions (pre-stress and post-stress). Fisher (1967) concluded that "self-reports of body experiences offer valid observations about the body's physiological functioning..." (p. 647). To date, there are no studies reported utilizing the BFQ under conditions of actual bodily (physiological) activation or change.

The Body Distortion Questionnaire: In order to systematically investigate disturbances of body image, believed to be common among psychiatric patients, Fisher (1970) developed the following paper-and-pencil technique.

Subjects are confronted with 82 statements depicting different kinds of unusual body experience and body image distortion, i.e. my body feels strange. Content or choice of statements was based upon interview data taken from a population of psychiatric patients, mainly schizophrenics who were hospitalized. Subjects are asked to indicate either "yes", "no" or undecided".

Similar to the BFQ, statements comprise a number of categories, permitting assessment based upon a Total score as well as scores for seven distortion categories: (1) Larger: 14 items; (2) Smaller: 14 itmes; (3) Boundary: 10 items; (4) Blocked Openings: 10 items; (5) Skin: 10 itmes; (6) Dirt: 6 items; and (7) Depersonalization: 10 items. As indicated above, statements emphasize the unusual and aberrant, often referring to a change and discrepancy with more normal (premorbid) body image status. The entire Body Distortion Questionnaire was utilized in the present study.

Test-retest coefficients reported by Fisher (1970) show consistency in response for BDQ Total scores. After one and two-week intervals, female subjects were found to have reliability coefficients of 0.87 and 0.81 (N = 37, N = 49). In a previous study, Karmel (1973) reports a test-retest coefficient

of 0.93 for a sample of pregnant women during the third trimester.

When examining for consistency with regard to BDQ sub-categories, giving an indication of internal or intra-test reliability, results reported by Fisher (1970) show that fluctuation has been observed for college women. For example, the highest test-retest coefficient reported by Fisher (1970) is 0.50 for the category Small. Variability apparently noted among college women was, however, not observed for women at late pregnancy as Karmel (1973) obtained test-retest correlations over 0.80 for almost all BDQ sub-categories. It appears that body image distortions experienced by women at late pregnancy tend to remain constant throughout this time interval. This suggests that retesting following delivery should reveal the extent to which pregnancy induces new and, perhaps, unusual body experiences and the degree to which change and readjustment occurs during the postnatal period.

Of further note is the fact that BDQ categories show statistical independence and, to date, are unrelated to Rorschach body boundary scores for the most part, the exception being a low positive correlation between Barrier and Blocked Openings (0.40 and 0.29 for two female samples). No consistent correlations were found between Penetration and BDQ variables. The present study further examines these relationships.

Research findings for the BDQ (Fisher, 1970) indicate that psychiatric patients obtain higher Total distortion scores although differences between schizophrenics and neurotics have not been found. The category Smaller most consistently differ-

entiated psychiatric patients from normals, and Fisher (1970) draws the following conclusions:

> In general, one may say that psychiatric patients are aware of more distorted body experiences than normals. They are shrinking and becoming smaller ... The sense of body smallness may be a translation into body terms of feelings of inferiority (p. 557).

Generally speaking, it is the Total BDQ score which has best distinguished normals from psychiatric patients. In relation to other body image variables--Barrier, Penetration, and the BFQ--the Body Distortion Questionnaire appears to be unrelated.

Body Prominence Index: In order to obtain a measure of general body concern, awareness and attention, a rather simple, unstructured paper-and-pencil technique was devised by Fisher (1970). It asks subjects to list "Twenty things that you are aware of, or conscious of, right now," requesting that participants use several words in their responses, i.e. a sentence or phrase. Scoring is based upon the frequency of direct and indirect references to one's body and employs the following scoring criteria: (1) explicit body designations, i.e. "My eyes are tired"; (2) temperature sensations, i.e. "I feel cold"; (3) kinesthetic sensations, i.e. "I feel like walking"; (4) eating and oral imagery, i.e. "I'd like to have lunch"; (5) body experiences, i.e. "I enjoy sleeping"; (6) references to health, i.e. "My arm is sore"; and (7) clothing descriptions, i.e. "I like this dress".

In terms of reliability, interscorer and test-retest, Fisher (1970) reports significant agreement among judges, continuously over 90%; however, stability of scores over time has not held up as well, particularly among female college students. The latter have demonstrated less consistency when compared with their male counterparts, the following Pearson r's reported: 0.49, 0.60, and 0.42. These results pertain to a one-week interval. Karmel (1973) found greater stability over time for pregnant women at late pregnancy (0.68).

Validity studies reported by Fisher (1970) indicate that Body Prominence scores are related to body awareness and the capacity for psychological arousal as it pertains to body-focus stimuli. That is, where conscious attention is directed to the body under varying conditions, Body Prominence scores will increase. As the subject's perceptual field received more stimuli involving the body, it was reflected in the Body Prominence Index. The question now remains: How will women experiencing actual somatic activity express their condition on this paper-and-pencil body image measure? For, previous studies have utilized "suggestion" techniques under conditions of presumed cooperation. The present study represents the first attempt at examining the applicability of this body image evaluative approach for subjects undergoing non-laboratory induced, non-cognitive bodily experience.

Of note are the results reported by Fisher (1970) comparing Body Prominence scores with body boundary status. As previously stated, body image measures used in this study have

tended toward statistical independence. However, there appears to be an exception for Body Prominence and Barrier scores. Among female college students, moderate positive correlations were found (0.26 to 0.46), and the conclusion was made that "a woman's amount of body awareness is related to her boundary definiteness" (p. 523). Reviewing research findings pertaining to Barrier status and its relationship to general body awareness (Body Prominence), Fisher (1970) concludes:

> Considerable data portray the person with well articulated boundaries as self-steering, goal oriented, and possessed of a clearly stated sense of identity. Clear-cut boundaries seem to be accompanied by the ability to behave as a well-individuated person ... it would appear that the degree of body awareness in women is an expression of individuation. The woman who is relatively highly aware of her body may be viewed as one who expresses herself with a clear sense of identity. Her body awareness is perhaps one manifestation of her explicit differentiation from her environs (p. 525).

The present study further examines the body boundary (Barrier)-body awareness (Body Prominence) relationship, thus noting the extent to which body awareness during late pregnancy is linked with body boundary status and whether this relationship changes subsequent to delivery.

3. Method

Procedure for organizing test administration, physical setting, and actual test administration was similar for both pregnant and non-pregnant subjects.

After obtaining on a weekly basis names and telephone numbers of pregnant women who had agreed to participate, testing was organized so as to permit the subjects to meet in small groups (three to six), complete the four body image tests, and go on to their scheduled medical examination.

Upon arrival, the subjects were seated in semi-circle fashion in a large classroom type setting, introduced to each other, and then handed envelopes containing all necessary test materials. The order of test administration was similar on both occasions and began with the Body Focus Questionnaire. This test was selected first owing to its clarity and simplicity, and was felt to be a good "icebreaker". The directions were read aloud, questions answered, and then testing commenced. About 15 to 20 minutes were required for all participants to complete the quest-tionnaire.

When the BFQ was completed, the subjects were asked to continue by responding to the Body Distortion Questionnaire. Similar to the BFQ, directions are clear-cut, the test is struc-tured and explicit in format. Response time was about 10 minutes.

The Rorschach Inkblot Technique was next administered in the following manner. The ten inkblot patterns had been

photographed and made into 35mm. slides for purpose of group testing. The subjects were seated in a row approximately 15 feet from a screen and directions were offered by this writer. Already given forms which indicated the required number of responses (25) in total and the number of responses per slide (two or three), they were told to write down what they saw, whatever it may be. Once questions were answered, slides were flashed on the screen and this writer waited for all participants to complete the requirements for each slide before proceeding to the next. Time required to complete Rorschach test administration was 35 to 45 minutes.

The Body Prominence Index was last administered, this writer leaving the room until testing was completed. Response time to this instrument varied considerably as some subjects worked quickly in rapid, free association style. For them, it would take five to ten minutes. Others worked laboriously at this rather unstructured, open-ended task, and for them it sometimes required 15 to 20 minutes or longer.

In general, the test format progressed from the clear-cut, well structured and explicit to the more ambiguous and amorphous, which was deliberately chosen by this writer. Research reported on by Fisher and Cleveland (1958) show no differences between individual versus group test administration for the Rorschach when the number of responses is controlled for.

For non-pregnant controls, testing followed the same procedure and format as described above: classroom setting,

order to test presentation, group test procedure, and presence of this writer.

Retesting was carried out in similar fashion. Women who had been pregnant were contacted by phone so as to coordinate testing with their six-week postnatal medical examination. Of the original group of 50 pregnant participants, 18 were unable to return for testing owing, they explained, to the demands of their new role. Reasons given by the 18 who did not return included problems with transportation, baby-sitting, care of newborn and illness.

4. Analysis of the Data

The statistics involved a two-way analysis of variance with repeated measures on one factor. The two factors were groups and change over time. Repeated measures were taken for the four body image measures (12 dependent variables) for each subject. The groups were pregnant and control. The time factor levels were late pregnancy and post-pregnancy (postnatal).

Statistical analysis was carried out according to the methodology formulated by Kirk (1968) for split-plot designs (pp. 245-266). Where a significant interaction was found, computation then proceeded to test for simple main effects so as to answer the following questions: (a) Is there a difference between groups at the first testing (late pregnancy versus controls) and (b) Is there a difference between groups at the second testing (postnatal versus controls)?

FIGURE 1

Split-Plot Design (Kirk, 1968)

	b_1	b_2
a_1	N = 32	N = 32
a_2	N = 28	N = 28

a_1 = Pregnant

a_2 = Non-pregnant

b_1 = time 1 (Late Pregnancy)

b_2 = time 2 (Postnatal)

A correlation matrix was also computed for the 12 body image variables at pre-test and at post-test.

5. Specific Hypotheses

This study is designed to investigate the question of body image change in relation to bodily change: changes in bodily status from late pregnancy to the postnatal period.

The concept of body image has been conceived of as multi-dimensional and it has been stated that pregnancy and the postnatal experience may elicit a variety of reactions, some in response to actual physical alteration and some based upon more personalized meaning and evaluation.

A body image test battery was selected in order to assess reaction to somatic influences, i.e. change in body size, and experimential-phenomenological states, i.e. body boundary status.

The basic question under investigation, to be examined along twelve body image dependent variables, is now presented in null hypothesis form:

There is no significant interaction between status (pregnant versus control) and time (pregnancy-postnatal) when comparing the body image scores of pregnant and control subjects.

Where significant interaction effects are found, two null hypotheses are formulated:

There is no significant difference in body image scores when comparing pregnant and non-pregnant subjects.

There is no significant difference in body image scores when comparing pregnant subjects after delivery (postnatal) with non-pregnant subjects (upon retesting).

CHAPTER III

PRESENTATION OF RESULTS

This chapter presents the results obtained on four body image measures administered to a sample of pregnant women during the third trimester and at six weeks following delivery. These results will be compared with data collected from a sample of non-pregnant women, retested after a similar time interval. The problem under investigation concerns body image change in relation to change in somatic status and the null hypothesis states that there is no interaction between group status (pregnant versus non-pregnant) and time (late pregnancy versus postnatal period). For body image change to be considered a function of change in physical status and not simply due to the factor of time and related temporal influences, statistical analysis evaluated for interaction effects labelled AB when illustrated in table form. Factor A refers to groups: a_1 (pregnant-postnatal) and a_2 (non-pregnant). Factor B refers to time: b_1 (late pregnancy versus non-pregnant at first testing) and b_2 (postnatal versus non-pregnant at second testing). Where significant interaction was found, statistical analysis proceeded to evaluate for simple effects at b_1 and b_2. (see Figure 1).

As previously noted, while four body image measures were employed, chosen so as to elicit a variety of body image data as well as permit comparison with earlier findings, a total of 12 body image dependent variables went into the statistical analysis. This is due to the fact that one instrument comprises

two distinct scores with contrasting psychological meaning while another instrument was constructed with a number of sub-categories, each of relevance when assessing the body image status of pergnant women. Only the Rorschach inkblot technique had been administered previously to sample of pregnant women and present findings will be examined in light of earlier reports. The results obtained for the three other body image measures will be evaluated against results obtained by Fisher (1970). Results are now shown for each of the 12 dependent variables.

1. Rorschach Barrier

Analysis of variance of interaction effects (AB) resulted in an F ratio of 1.47 (NS). As these results are not significant, the null hypothesis cannot be rejected.

It is of interest to note that mean Barrier values for both pregnant and non-pregnant groups are comparable: 6.0 and 5.7 (pregnant S's) and 6.0 and 6.5 (control S's). On the basis of previous research findings, the results of the present study with regard to Barrier scores are comparable. McConnell and Daston (1961) did not find systematic change in Barrier scores following partuition, although their study did not include a control group. Unfortunately, they do not indicate mean Barrier values. More recently, Edwards (1969) found a significant decrease in Barrier scores following delivery among unmarried teenagers experiencing their first pregnancy. In this example,

TABLE 1

Analysis of Variance Summary Table (Barrier)

Source	SS	df	MS	F
Between subjects	947.29	59		
A (preg/nonpreg)	4.56	1	4.56	0.28
Subj w. groups	942.73	58	16.25	
Within subjects	219.51	60	3.66	
B (periods of time)	0.41	1	0.41	0.11
AB	5.43	1	5.43	1.47
B x subj w. groups	213.67	58	3.68	
Total	1166.80	119		

the author administered a modified version of the Rorschach technique, namely, the Holtzman Inkblot Technique (1961), and does indicate mean Barrier values. The bulk of the evidence reported by Fisher (1970) supports the position that Barrier scores remain stable over time in adult populations. However, since most research endeavors do not involve populations undergoing bodily change, it would appear that further comments are necessary on this subject. These questions will be taken up in the section titled Discussion of Results.

2. Rorschach Penetration

Analysis of variance for interaction effects (AB) resulted in an F ratio of 1.96 (NS). As these results are not significant, the null hypothesis cannot be rejected.

On the basis of previous research (McConnell & Daston, 1961; Edwards, 1970), a significant decrease in Penetration scores following parturition would be predicted. Results of this study indicate that the direction of change for both groups at retest is in the direction of decline in scores. However, as no interaction effect was found, it cannot be stated that change in physical status associated with pregnancy and the postnatal period produced this decline.

This issue bears further discussion and will be taken up in the next section.

TABLE 2

Analysis of Variance Summary Table (Penetration)

Source	SS	df	MS	F
Between subjects	230.87	59		
A (preg/nonpreg)	12.26	1	12.26	3.25
Subj w. groups	218.61	58	3.77	
Within subjects	109.00	60	1.81	
B (periods of time)	10.80	1	10.80	6.59**
AB	3.22	1	3.22	1.96
B x subj w. groups	94.98	58	1.64	
Total	339.87	119		

**p<.01

3. Body Prominence

Analysis of variance for interaction effects (AB) resulted in an F ratio of 7.25, significant at the 0.01 confidence level. The null hypothesis which states that there will be no significant difference in Body Prominence scores where time and group status are combined is, therefore, rejected. To further examine this finding, testing for simple effects was carried out, summarized in Table 4.

At late pregnancy, ANOVA for simple effects revealed an F ratio of 0.57 (NS). Consequently, the second null hypothesis, that there is no significant difference between pregnant and non-pregnant subjects on a measure of Body Prominence cannot be rejected.

At the postnatal period, ANOVA for simple effects resulted in an F ratio of 2.08 (NS). The null hypothesis, that there is no significant difference between postnatal and control subjects on a measure of Body Prominence cannot be rejected.

While significant differences between groups were not demonstrated at pre- and post-test, change among pregnant subjects following parturition was observed. ANOVA for simple effects revealed an F ratio of 17.49 ($P < .01$).

On the basis of clinical reports reviewed in Chapter I, it would be predicted that Body Prominence scores are significantly higher for the pregnant group when compared to non-pregnant controls. However, this was not found. Instead, a trend can be noted whereby Body Prominence scores do appear to

TABLE 3

Analysis of Variance Summary Table (Body Prominence)

Source	SS	df	MS	F
Between subjects	1665.47	59		
A (preg/nonpreg)	4.10	1	4.10	0.14
Subj w. groups	1661.37	58	28.64	
Within subjects	432.00	60	7.20	
B (periods of time)	58.80	1	58.80	10.28**
AB	41.49	1	41.49	7.25**
B x subj w. groups	331.71	58	5.72	
Total	2097.47	119		

** $p < .01$

TABLE 4

Analysis of Variance for Simple Effects on Body Prominence

Source	SS	df	MS	F
Between subjects				
Between A at b_1	9.75	1	9.75	0.57
Between A at b_2	35.83	1	35.83	2.08
Within Cell	1993.00	116	17.18	
Within Subjects				
Between B at a_1	100.00	1	100.00	17.49**
Between B at a_2	0.29	1	0.29	0.05
AB	41.49	1	41.49	7.25**
B x subj w. groups	331.71	58	5.72	
Total	1661.37	119		

** $p < .01$

decrease following delivery, that is, based upon group mean values: 7.8 and 5.3 (pregnant-postnatal); 7.0 and 6.9 (non-pregnant S's on test-retest). An F ratio of 2.08 (NS), however, fails to support true group differences on the second testing. Issues pertaining to Body Prominence results will be discussed in the next section.

4. Body Focus Questionnaire

Analysis of variance for interaction effects (AB) resulted in an F ratio of 9.47, significant at the 0.01 confidence level. The null hypothesis which states that there is no significant difference in Body Focus Stomach scores where time and group status are combined is, therefore, rejected. To further analyze these findings, testing for simple effects was carried out, summarized in Table 6.

At late pregnancy, ANOVA for simple effects revealed an F ratio of 9.26, significant at the 0.01 confidence level. The null hypothesis, that there is no significant difference between pregnant and non-pregnant subjects on a measure of Body Focus (Stomach) is rejected.

At the postnatal period, ANOVA for simple effects revealed an F ratio of 0.32 (NS). The null hypothesis, that there is no significant difference between women postnatally and non-pregnant women upon retest cannot be rejected.

On the basis of a review of the clinical literature

TABLE 5

Analysis of Variance Summary Table (Body Focus Stomach)

Source	SS	df	MS	F
Between subjects	684.87	59		
A (preg/nonpreg)	26.50	1	26.50	2.33
Subj w. groups	658.37	58	11.35	
Within subjects	409.00	60	6.65	
B (periods of time)	6.53	1	6.53	1.09
AB	56.47	1	56.47	9.47**
B x subj w. groups	346.00	58	5.97	
Total	1093.87	119		

** p .01

TABLE 6

Analysis of Variance for Simple Effects on Body Focus Stomach

Source	SS	df	MS	F
Between Subjects				
Between A at b_1	80.17	1	80.17	9.26**
Between A at b_2	2.80	1	2.80	0.32
Within Cell	1004.37	116	8.66	
Within Subjects				
Between B at a_1	49.00	1	49.00	8.21**
Between B at a_2	14.01	1	14.01	2.35
AB	56.47	1	56.47	9.47**
B x subj w. groups	346.00	58	5.97	
Total	658.37	119		

** $p < .01$

on pregnancy, the present results can be considered consistent to these reports. At late pregnancy, conscious attention appears focused with greater intensity upon the abdominal region in relation to the degree of body part attention afforded to this body region by non-pregnant women. Following parturition, at the postnatal period, these differences are no longer observed. Mean scores for Body Focus Stomach are 8.8 and 7.0 (pregnancy-postnatal) and 6.5 and 7.5 (non-pregnant S's on test-retest).

5. Body Distortion Questionnaire (Total)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 19.45, significant at the 0.01 confidence level. The null hypothesis which states that there is no significant difference in BDQ Total scores where time and group status are combined is, therefore, rejected. To further examine these findings, testing for simple effects was carried out, summarized in Table 8.

At late pregnancy, ANOVA for simple effects revealed an F ratio of 14.79, significant at the 0.01 confidence level. The null hypothesis, that there is no significant difference between pregnant and non-pregnant women on a measure of Body Distortion is rejected.

At the postnatal period, ANOVA for simple effects revealed an F ratio of 0.03 (NS). The null hypothesis, that there is no significant difference between postnatal and control subjects on a measure of Body Distortion cannot be rejected.

TABLE 7

Analysis of Variance Summary Table (Body Distortion Total)

Source	SS	df	MS	F
Between subjects	9076.17	59		
A (preg/nonpreg)	700.73	1	700.73	4.85*
Subj w. groups	8375.44	58	144.40	
Within subjects	2801.00	60	46.67	
B (periods of time)	425.63	1	425.63	13.88**
AB	596.43	1	596.43	19.45**
B x subj w. groups	1778.94	58	30.67	
Total	11877.17	119		

*p<.05

**p<.01

TABLE 8

Analysis of Variance for Simple Effects on Body Distortion

Source	SS	df	MS	F
Between Subjects				
Between A at b_1	1295.06	1	1295.06	14.79**
Between A at b_2	2.46	1	2.46	0.03
Within Cell	10154.37	116	87.54	
Within Subjects				
Between B at a_1	1000.14	1	1000.14	32.61**
Between B at a_2	14.00	1	14.00	0.46
AB	596.43	1	596.43	19.45**
B x subj w. groups	1778.94	58	30.67	
Total	8375.44	119		

** $p < .01$

On the basis of a review of the clinical literature on the pregnancy experience, the above results indicate that a sense of body distortion tends to be shared by pregnant women as a group. While there may be instances of the more dramatic and aberrant body experiences reported in the psychiatric literature, among a group of normal pregnant women a significant number of body image reactions were expressed. The mean for the pregnant group was 16.3 as compared with a mean of 7.0 for non-pregnant controls. Following parturition, a significant decrease can be observed for pregnant women. When comparing groups upon retesting group differences are no longer found. This finding is consistent with the clinical observations and theoretical formulation of Edwards (1973) who states that "reintegration of the body" occurs about three weeks post-partum. At the second testing mean BDQ Total scores were 8.4 (postnatal S's) and 8.0 (control S's). These results will receive further attention in the following section.

6. Body Distortion Questionnaire (Large)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 7.15, significant at the 0.01 confidence level. The null hypothesis which states that there is no significant difference in BDQ Large where time and group status are combined is, therefore, rejected. To further analyze this finding, testing for simple effects was carried out, summarized in Table 10.

TABLE 9

Analysis of Variance Summary Table (Body Distortion Large)

Source	SS	df	MS	F
Between subjects	581.49	59		
A (preg/nonpreg)	13.57	1	13.57	1.39
Subj w. groups	567.92	58	9.79	
Within subjects	225.50	60	3.76	
B (periods of time)	23.41	1	23.41	7.55**
AB	22.17	1	22.17	7.15**
B x subj w. groups	179.92	58	3.10	
Total	806.99	119		

** $p < .01$

TABLE 10

Analysis of Variance for Simple Effects on BDQ Large

Source	SS	df	MS	F
Between Subjects				
Between A at b_1	35.22	1	35.22	5.46*
Between A at b_2	0.55	1	0.55	0.09
Within Cell	747.84	116	6.45	
Within Subjects				
Between B at a_1	43.89	1	43.89	14.16**
Between B at a_2	0.08	1	0.08	0.03
AB	22.17	1	22.17	7.15**
B x subj w. groups	179.72	58	3.10	
Total	567.92	119		

* $p < .05$

** $p < .01$

At late pregnancy, ANOVA for simple effects revealed an F ratio of 5.46, significant at the 0.05 confidence level. Thus, the second null hypothesis, that there is no significant difference between pregnant and non-pregnant subjects on a measure of Body Distortion Large, is rejected.

At the postnatal period, ANOVA for simple effects resulted in an F ratio of 0.09 (NS). The null hypothesis, that there is no significant difference between postnatal and control subjects on a measure of Body Distortion Large cannot be rejected.

In relation to clinical reports and the physical (size) changes accompanying late pregnancy and parturition, these results indicate that the body image variable, BDQ Large, is a sensitive indice. Pregnant women as a group readily express a sense of increased size differing significantly when compared with non-pregnant women and, following delivery, tend to approximate non-pregnant women when questioned on their sense of body (part) largeness. Mean BDQ Large values are 3.8 and 2.1 (pregnancy -postnatal) and 2.2. and 2.3 (controls).

7. Body Distortion Questionnaire (Small)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 0.90 (NS). The null hypothesis which states that there is no significant difference in Body Distortion Small scores where time and group status are combined cannot be rejected.

TABLE 11

Analysis of Variance Summary Table (Body Distortion Small)

Source	SS	df	MS	F
Between subjects	241.43	59		
A (preg/nonpreg)	1.05	1	1.05	0.25
Subj w. groups	240.38	58	4.14	
Within subjects	148.82	60	2.48	
B (periods of time)	83.33	1	83.33	0.00
AB	1.00	1	1.00	0.90
B x subj w. groups	64.49	58	1.11	
Total	390.25	119		

This finding indicates an absence of differential change over time for groups suggesting that a sense of body (part) smallness is not a body image reaction specific or concomitant to the pregnancy-postnatal experience. The BDQ Smaller sub-category apparently is not influenced by pregnancy nor events associated with the postnatal period. Mean BDQ Small values are 0.97 and 1.2 (pregnancy-postnatal) and 0.96 and 0.79 (controls). While it has been previously reported that the Smallness sub-category differentiated psychiatric from non-psychiatric groups (Fisher, 1970), the present study does not offer evidence suggesting that body distortion based upon the BDQ Total score is due to body image reactions which reveal a sense of increased or decreased smallness. This issue will be further discussed in the next section.

8. Body Distortion Questionnaire (Boundary)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 15.89, significant at the 0.01 confidence level. The null hypothesis which states that there is no significant difference in BDQ Boundary scores where time and group status are combined is, therefore, rejected. To further analyze this finding, testing for simple effects was carried out, summarized in Table 13.

At late pregnancy, ANOVA for simple effects revealed an F ratio of 17.29, significant at the 0.01 confidence level.

TABLE 12

Analysis of Variance Summary Table (Body Distortion Boundary)

Source	SS	df	MS	F
Between subjects	169.67	59		
A (preg/nonpreg)	15.72	1	15.72	5.92**
Subj w. groups	153.95	58	2.65	
Within subjects	99.00	60	1.65	
B (periods of time)	10.80	1	10.80	9.05**
AB	18.97	1	18.97	15.89**
B x subj w. groups	69.23	58	1.19	
Total	268.67	119		

** $p < .01$

TABLE 13

Analysis of Variance for Simple Effects on BDQ Boundary

Source	SS	df	MS	F
Between Subjects				
Between A at b_1	33.2	1	33.2	17.29**
Between A at b_2	0.07	1	0.07	0.04
Within Cell	233.18	116	1.92	
Within Subjects				
Between B at a_1	27.57	1	27.57	23.17**
Between B at a_2	0.87	1	0.87	0.73
AB	18.97	1	18.97	15.89**
B x subj w. groups	69.23	58	1.19	
Total	153.95	119		

** $p < .01$

The null hypothesis, that there is no significant difference between pregnant and non-pregnant subjects on a measure of Body Distortion Boundary Loss is rejected.

At the postnatal period, ANOVA for simple effects revealed an F ratio of 0.04 (NS). The null hypothesis, that there is no significant difference between women postnatally and non-pregnant women upon retest cannot be rejected.

On the basis of the clinical literature depicting the pregnancy experience, including the body image study of McConnell and Daston (1961), the findings of this study show a consistent trend. Pregnant women as a group express significantly greater concern, reaction, sensitivity, and strangeness with regard to their body periphery, the space their bodies occupy, and overall body integrity when compared to non-pregnant women. Following parturition, upon retesting at the postnatal period, reaction to their body boundary as previously described lessens considerably, and group differences are no longer observed. Thus, it can be said that the BDQ Boundary sub-category is sensitive to the pregnancy experience and as a measure of body image expresses changes associated with the progression from late pregnancy to the postnatal period. Mean BDQ Boundary values are 1.8 and 0.5 (pregnancy-postnatal) and 0.32 and 0.57 (controls). The relationship of BDQ Boundary to other body boundary indices will be taken up in the next section.

9. Body Distortion Questionnaire (Blocked Opening)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 16.98, significant at the 0.01 confidence level. The null hypothesis which states that there is no significant difference in BDQ Blocked Opening scores where time and group status are combined is, therefore, rejected. To further analyze this finding, testing for simple effects was carried out, summarized in Table 15.

At late pregnancy, ANOVA for simple effects revealed an F ratio of 17.46, significant at the 0.01 confidence level. The null hypothesis, that there is no significant difference between pregnant and non-pregnant subjects on a measure of BDQ Blocked Opening is rejected.

At the postnatal period, ANOVA for simple effects revealed an F ratio of 1.00 (NS). The null hypothesis, that there is no significant difference between women postnatally and non-pregnant women upon retest cannot be rejected.

In relation to the more personalized descriptions of the pregnancy experienced encountered in the clinical literature (Colman & Colman, 1971), BDQ Blocked Opening results appear as would be predicted. A body image experience connoting exaggerated "fullness" and a sense of being "blocked up" is conveyed to a significantly greater degree among pregnant women when compared to a sample of non-pregnant women. Furthermore, subsequent to delivery, there is a significant shift in the direction of decreased BDQ blocked Opening response so that at the postnatal

TABLE 14

Analysis of Variance Summary Table (BDQ Blocked Opening)

Source	SS	df	MS	F
Between subjects	185.30	59		
A (preg/nonpreg)	12.86	1	12.86	4.33*
Subj w. groups	172.44	58	2.97	
Within subjects	153.99	60	2.57	
B (periods of time)	16.13	1	16.13	8.77**
AB	31.21	1	31.21	16.98**
B x subj w. groups	106.65	58	1.84	
Total	339.29	119		

*p<.05

**p<.01

TABLE 15

Analysis of Variance for Simple Effects on Body Distortion
Blocked Opening

Source	SS	df	MS	F
Between Subjects				
Between A at b_1	42.07	1	42.07	17.46**
Between A at b_2	2.42	1	2.42	1.00
Within Cell	279.09	116	2.41	
Within Subjects				
Between B at a_1	45.57	1	45.57	24.77**
Between B at a_2	2.16	1	2.16	1.17
AB	31.21	1	31.21	16.96**
B x subj w. groups	106.65	58	1.84	
Total	172.44	119		

** $p < .01$

period group differences are no longer observed. Thus, it would appear that the BDQ Blocked Opening sub-category is a body image measure which follows a trend consistent with the physical aspects of the pregnancy-postnatal experience. Mean BDQ Blocked Opening values are 2.5 and 0.81 (pregnancy-postnatal) and 0.82 and 1.2 (controls).

10. Body Distortion Questionnaire (Skin)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 11.57, significant at the 0.01 confidence level. The null hypothesis which states that there is no significant difference in BDQ Skin scores where time and group status are combined is, therefore, rejected. To further analyze these findings, testing for simple effects was carried out, summarized in Table 17.

At late pregnancy, ANOVA for simple effects revealed an F ratio of 20.88, significant at the 0.01 confidence level. The null hypothesis, that there is no significant difference between pregnant and non-pregnant subjects on a measure of Body Distortion Skin is rejected.

At the postnatal period, ANOVA for simple effects revealed an F ratio of 0.24 (NS). The null hypothesis, that there is no significant difference between women postnatally and non-pregnant women upon retest cannot be rejected.

In the review of the literature, it was pointed out by Benedek (1960) how ovulation influences body temperature and,

TABLE 16

Analysis of Variance Summary Table (Body Distortion Skin)

Source	SS	df	MS	F
Between subjects	216.49	59		
A (preg/nonpreg)	31.90	1	31.90	10.02**
Subj w. groups	184.59	58	3.18	
Within subjects	144.49	60	2.41	
B (periods of time)	20.00	1	20.00	11.18**
AB	20.70	1	20.70	11.57**
B x subj w. groups	103.79	58	1.79	
Total	360.98	119		

** $p < .01$

TABLE 17

Analysis of Variance for Simple Effects on Body Distortion Skin

Source	SS	df	MS	F
Between Subjects				
Between A at b_1	52.00	1	52.0	20.88**
Between A at b_2	0.60	1	0.60	0.24
Within Cell	288.38	116	2.49	
Within Subjects				
Between B at a_1	40.64	1	40.64	22.70**
Between B at a_2	0.07	1	0.07	0.04
AB	20.70	1	20.70	11.57**
B x subj w. groups	103.79	58	1.79	
Total	184.59	119		

** $p < .01$

in particular, skin reactivity (bioelectrical skin potentials). Pregnancy, representing and intensification of aspects of the ovulatory cycle, would be expected to bring about greater or increased skin reactivity (sensation). Thus, the prediction would be made that pregnant women as a group display significantly greater skin reactivity, e.g. concern, awareness, sensitivity, and attention. BDQ Skin results confirm this prediction. Differences are observed at late pregnancy, however, upon retesting the groups can longer be distinguished on the basis of BDQ Skin scores. Responses along this body image dimension appear to closely approximate the pregnancy experience and a shift is seen which corresponds to certain physical aspects of the pregnancy-postnatal experience. In this sense, this body image variable assesses body image change in relation to somatic change. Mean BDQ Skin values are 2.7 and 1.1 (pregnancy-postnatal) and 0.82 and 0.89 (controls).

11. Body Distortion Questionnaire (Dirt)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 2.95 (NS). The null hypothesis which states that there is no significant difference in Body Distortion Dirt scores where time and group status are combined cannot be rejected. This result precludes further statistical analysis.

A review of literature on the pregnancy-postnatal experience does not depict any outstanding body image trend with regard to "dirtiness" as might be expressed on the BDQ Dirt sub-

TABLE 18

Analysis of Variance Summary Table (Body Distortion Dirt)

Source	SS	df	MS	F
Between subjects	134.80	59		
A (preg/nonpreg)	0.98	1	0.98	0.42
Subj w. groups	133.82	58	2.31	
Within subjects	86.00	60	1.43	
B (periods of time)	0.13	1	0.13	0.09
AB	4.15	1	4.15	2.95
B x subj w. groups	81.72	58	1.41	
Total	220.80	119		

category. Such statements whereby the body, its parts or regions are portrayed as either dirty, unclean, or germ-ridden have been attributed to certain patients suffering from postpartum psychiatric illness. Generally speaking, in the absence of physical symptoms and related signs of disease, body image reactions of the above type are normally linked with emotional disturbance (Fisher, 1970). Therefore, it is not surprising that the BDQ Dirt Body image variable did not appear sensitive to changes associated with late pregnancy, delivery, and the postnatal period. Mean BDQ Dirt values are 1.1 and 0.84 (pregnancy-postnatal) and 0.57 and 1.0 (controls).

12. Body Distortion Questionnaire (Depersonalization)

Analysis of variance for interaction effects (AB) resulted in an F ratio of 2.89 (NS). The null hypothesis which states that there is no significant difference in Body Distortion Depersonalization scores where time and group status are combined cannot be rejected. While this finding precludes further statistical analysis, it should be noted that ANOVA for interaction effects failed to support group differences as the confidence level was 0.09.

On the basis of the clinical literature portraying the pregnancy experience, the prediction would have been made that group differences did exist. Depersonalization refers to feelings of strangeness and unreality though not necessarily

TABLE 19

Analysis of Variance Summary Table (BDQ Depersonalization)

Source	SS	df	MS	F
Between subjects	214.87	59		
A (preg/nonpreg)	6.69	1	6.69	1.86
Subj w. groups	208.18	58	3.59	
Within subjects	94.99	60	1.58	
B (periods of time)	2.13	1	2.13	1.40
AB	4.40	1	4.40	2.89
B x subj w. groups	88.46	58	1.53	
Total	309.86	119		

focused on the body (Hinsie & Campbell, 1970). It may apply to oneself or one's surrounding and, thus, is non-specific with regard to form or type of psychiatric illness. The clinical literature on pregnancy points out how bodily changes at various points during the nine month period produce feelings of "strangeness" has different meaning in the context of pregnancy when compared to the "strangeness" described by the non-somatically involved individual. In addition, if we look at the findings reported by Fisher (1970) it can be seen that the BDQ Depersonalization sub-category failed to differentiate normals from psychiatric patients. This issue will receive further attention in the next section.

CHAPTER IV

DISCUSSION OF RESULTS

This chapter will discuss the results in the following manner. First, the results are summarized and evaluated in terms of body image theory, previous research findings, and the psychology of the pregnancy-postnatal experience. Second, the relationship between body image variables will be examined. Finally, implications for future research will be discussed.

1. Summary and Evaluation of Results

This study was designed to answer the question: In a sample of pregnant women, does body image change accompany change in bodily status as manifested by the pregnancy-postnatal experience? To answer this question, four body image measures were administered at late pregnancy and at the postnatal period, to be compared with results obtained from non-pregnant women retested over a similar time interval. Time and group status were combined in the statistical design and analysis. Where interaction (AB) was found, the null hypothesis (indicating no significant change) was rejected.

The results of the study suggest that the somatic changes accompanying pregnancy, parturition, and the postnatal period produce body image change along the following dimensions: Body Prominence; Body Focus Stomach; Body Distortion Total, Large, Boundary, Blocked Opening, and Skin. Thus, out of a possible total of 12 body image variables, results for seven support the thesis that body image change accompanies change in bodily status as exemplified by progress from late pregnancy to the postnatal period.

Since body image change was not found for five variables- body boundary (Barrier and Penetration); Body Distortion Small, Dirt, and Depersonalization- it would seem necessary to consider the questions: Do the results adequately justify an interpretation of body image change? Should body image change have been observed along all dimensions and what conclusions can be drawn from these findings?

On the basis of the body image theories of Schilder (1950) and Horowitz (1966), it can be seen that body image change can occur along any number of dimensions or variables, seemingly dependent on the nature of the problem and population under investigation. Thus far, body image change, outside of the more dramatic and atypical, has not received adequate attention in the research literature, particularly, where somatic change has taken place.

In the case of late pregnancy and the postnatal period, somatic changes would include (1) weight gain and generalized increase in body size followed by weight loss; and (2) redistribution of body mass determined by fetal growth whereby the abdominal region becomes the focal point in relation to the total body mass. Weight gain followed by weight loss; redefinition of body mass followed by return to normal (prepregnant) dimensions represent the somatic changes in question. In this context, do the results obtained on the selected body image measures reflect a psychological response in the predicted direction? If so, the body change-body image change thesis would find support.

With regard to weight gain and weight loss, the results indicate that the pregnant group demonstrated significant change on the Body Distortion Large variable following parturition as well as group differences at late pregnancy. These differences were no longer observable at the postnatal period. In addition, BDQ Large correlated 0.88 (p .001) with BDQ Total at late pregnancy indicating the extent to which body distortion is associated with statements of body largeness. At the postnatal period, BDQ Small correlated 0.81 (p .001) with BDQ Total. This suggests that body distortion (as measured in this study)

is related to a largeness-smallness component, which would correspond to the somatic features seen at late pregnancy and the direction of change found at the postnatal period.

Concerning the second issue, as the abdominal region becomes an area of focalization owing to fetal activity and fetal growth, it would be hypothesized that group differences should be observed at late pregnancy and a significant decline should be found at the postnatal period. Results for the Body Focus Questionnaire Stomach scores support the hypothesis. Fisher (1970) reports a mean BFQ Stomach score of 7.3 (N = 496). The non-pregnant control group in this study produced a mean score of 7.0. At late pregnancy, a BFQ Stomach mean score of 8.8 was computed. Differences between groups was significant ($p < .01$). Thus, it can be stated that at late pregnancy the abdominal region becomes an area of increased body image focus. Following parturition, at the postnatal period, group differences are no longer observed.

To summarize, at this point it can be stated that weight gain followed by weight loss is reflected in significant changes in BDQ Large scores and that redistribution of body mass is observed on the BFQ Stomach measure.

Since increased weight results in confirmation of such experience (BDQ Large) and abdominal emphasis results in increased attention to that body region (BFQ Stomach), it would seem likely that late pregnancy brings about increased conscious attention to the body as opposed to stimuli not connected or related to the body. Would there not be greater overall awareness, if not concern and preoccupation, as depicted by some writers (Colman, 1969; Colman & Colman, 1971)?

In order to study this question, the Body Prominence Index was chosen so as to tap the general body awareness dimension and indicate whether a pregnant woman's "field of consciousness" differed from that of a non-pregnant woman. Within the physical setting available to both groups, would the object of conscious awareness be one's body and body-related references, or would awareness extend to all possible stimuli with apparent selectivity and discrimination?

Colman (1969) studied women during pregnancy for "altered field of consciousness" and, based upon group discussions, reported a spectrum of reactions suggesting new sensitivities and concerns among group members. However, systematic study of body image phenomena was not undertaken. In the present study, where group discussions did not take

place, the results for the Body Prominence Index showed that pregnant women did not list a significantly greater number of direct and indirect body references when compared with non-pregnant women. Based upon a summation of Body Prominence scores, group means were 7.8 (pregnant) and 7.0 (non-pregnant).

Initially, this finding would lead one to conclude that given a "stream of consciousness" task, pregnant women as a group do not emphasis greater overall body attention. However, an alternate explanation might also be pursued: The instrument as presently constructed restricts the conclusions and interpretations which can be made since scores are based upon frequency of response- a quantitative index. The extent to which, for example, direct body statements as opposed to indirect body statements distinguishes pregnant from non-pregnant subjects cannot be deduced. Therefore, one can say that given the structure of the task confronting each subject, pregnant women do not respond differently than non-pregnant women and, thus, do not display greater overall body awareness.

Since it had been found that group differences do exist along certain body image dimensions, i.e. Body Focus Stomach and Body Distortion Large, one could argue that the Body Prominence Index as presently designed is rather limited in utility since it only permits measurement based upon summation of scores. As pointed out, it

cannot be determined whether more specific conscious concerns or sensitivities are entertained. Greater refinement from the standpoint of test construction is, thus, recommended in order to more fully determine the possibilities of utilizing this method of body image study. Since significant interaction effects were found, it would appear that this method holds promise and should be further studied both from the standpoint of test construction and other populations undergoing somatic change or body alteration. For example, in the present study, an interesting observation is made. While mean scores between groups were almost equivalent at the first testing (A at b_1), group means at retest were 5.3 (postnatal) and 6.9 (controls). As indicated in Table 4 this finding is not statistically significant. Nonetheless, a trend can be noted and with greater refinement of the Body Prominence Index and further investigations, one might learn more about the nature of body image change following changes in bodily states and conditions. Body Prominence responses could be categorized, i.e. the Body Distortion Questionnaire, and categories could analyzed in terms of their relative importance, thus adding to an understanding of the nature of body image phenomena within given populations.

This study is also interested in learning the extent to which the somatic changes of pregnancy are experienced as either novel, different, atypical, or strange, and what changes in attitude may be observed at the postnatal period.

Szasz (1957) speaks of "normal inattentiveness" when we are not moved or stirred by activities which pertain to the body or bodily function. The Body Distortion Questionnaire not only calls attention to specific bodily experience regarding change and alteration, e.g. My body feels unusually heavy, but, in addition, cites body experiences which connote a sense of psychological discomfort, uneasiness, and incongruity in relation to one's past history of presumed "inattentiveness", e.g. My body feels like it is not mine.

On the basis of clinical writings on the pregnancy experience, one would expect not only an increase in body attention and interest (which was not found on the Body Prominence Index), but an increase in expressed body concern, strangeness, and disturbance. That is, the inclination to both experience disturbance and articulate that disturbance is enhanced during pregnancy (Bibring, 1959). The desire to share the spectrum of experiences, both somatic and psychological, is now in greater evidence and is prone to greater conscious concern, more readily available via group discussions (Colman, 1969). Therefore, it would be

hypothesized that pregnant women as a group demonstrate significantly higher Body Distortion Total scores when compared with non-pregnant women. Results supported this hypothesis.

The period following parturition, however, remains less clear since the literature on the psychology of the postnatal women, once again, focuses on disturbance. For example, much clinical reporting is available on postpartum psychiatric illness and, in this context, one can learn about (disturbances) in body perception (Asch, 1965). The more aberrant and atypical is, thus, familiar to many clinicians.

This study has found that following parturition, at six weeks postnatal, body image disturbances associated with pregnancy are no longer in evidence. This finding was observed on all Body Distortion variables. Mean BDQ Total scores were 8.4 (postnatal subjects) and 8.0 (control subjects). Thus, it can be stated that the somatic changes accompanying pregnancy do bring about an increased sense of the unusual and atypical; however, this mental state is temporary and should no longer be evident by six weeks postpartum.

This viewpoint is consistent with the clinical observations and conceptual framework of Edwards (1973):

> With birth comes the disintegration of the pregnant body image ... Reintegration after birth involves closure of the birth experience, repair of the body ... Especially does closure include a restored body image (pp. 31-32)

As the newborn becomes the focal point of concern and interest, a "reintegration" process takes place. According to Edwards (1973), this process of return and restoration takes about three weeks and is tied in with a normalization and routinization of bodily functions, e.g. the ability to return to normal activities.

While the relationship between change in somatic status and body image change has been found for three of four body image measures, results obtained from administration of the Rorschach inkblots do not support the somatic change-body image change hypothesis. This finding contrasts with results published by McConnell and Daston (1961) and Edwards (1970) who both demonstrated significant decrease in Penetration of Boundary scores following delivery. The latter author also found a significant decrease for Barrier as well.

In the case of McConnell and Daston (1961) a shift in Barrier status was not observed following parturition, which was similarly found in the present investigation. The results of the Edwards (1970) study show a significant decrease and the author draws the inference that this discrepancy in findings may be due to sampling differences, i.e. primiparaes versus multiparaes.

In other words, women experiencing their first pregnancy may differ from women experiencing second and third pregnancies in terms of body boundary status and propensity for boundary dissolution. Edwards (1970) makes this conclusion because his sample consisted of primiparaes. However, since the sample in Edwards study were not only primiparaes, but unwed mothers as well, this outcome for Barrier status may also reflect the psychological status of the unwed mother experiencing the first pregnancy and not simply the effects of first pregnancy for women in general.

In addition, there is the issue of the use of the Holtzman et al (1961) inkblot technique as opposed to the Rorschach approach, since the former was employed by Edwards. The Holtzman method utilizes an alternate form technique whereby Form A is first administered followed by Form B at retest. In order to examine this question, Fisher and Cleveland (1958) compared each method, analyzing for Barrier status over two test administrations. Both chi-square and correlation statistics indicated commonality between methods as it pertains to Barrier scores, for high versus low S's were similarly distinguished regardless of administration approach. A correlation value of .81 was computed for Barrier score distributions. Thus, until otherwise demonstrated, it appears that results for Barrier scores are not due to instrumentation. Further research is necessary so as to delineate the relationship between Barrier status and number of pregnancy.

Stability in Barrier status was found despite alteration

in bodily status. Apparently, body boundary tends to remain constant over time and, most likely, is impervious to somatic influences alone.

Since body image change was evidenced on three other body image measures, it would appear that the body boundary dimension functions independently of the other body image dimensions. This point will be examined in greater detail in the following section.

Interestingly, while Barrier scores appear unaffected by bodily change, it is possible to note examples of Barrier fluctuation under conditions of cognitive influence, i.e. directing an individual to imagine a particular body experience (Fisher, 1970; Van De Mark & Neuringer, 1969). Under such experimental conditions, a significant increase or decrease in Barrier scores was observed in response to verbal directions designed to encourage focus either upon the body exterior or body interior, respectively.

Conceivably, stability in Barrier status from late pregnancy to the postnatal period is due to a lack of cognitive arousal with regard to the body exterior, an area of the body which is "neutral" in a psychological sense for pregnant women under normal circumstances.

In a similar vein, the significant decrease in Barrier scores found by Edwards (1970) may be due to a shift in cognitive focus peculiar to a group of unwed mothers. If the conclusion drawn by Van De Mark and Neuringer (1969) is correct--that imagery

may be as, or more effective, than physical stimulation in producing Barrier change--then body boundary may represent essentially a cognitive attribute resistent to somatic factors.

The issue seems to be: Is stability in Barrier status found because the somatic aspects of the pregnancy-postnatal experience fail to produce an effect? Or, is Barrier status generally impervious to somatic factors regardless of the specific features of the physical condition? For example, would body boundary change be found following plastic surgery involving the body exterior, e.g. nose, breasts?

In summary, the results of the present investigation agree with the findings of McConnell and Daston (1961) with regard to post-delivery Barrier status as well as the findings reported by Fisher (1970) on the stability of Barrier scores over time. However, results obtained for Penetration of Boundary standout in contrast to previous reports (Edwards, 1970; McConnell & Daston, 1961).

Penetration of Boundary status has been related to (1) presence of body interior symptomatology, namely, ulcerative colitis (Fisher & Cleveland, 1958); acute psychiatric illness followed by symptom remission (Cleveland, 1960); and body interior cognitive focus (Van De Mark & Neuringer, 1969). Nonetheless, many other studies have provided either conflicting or inconclusive results. According to Fisher (1970), it should be "treated as an exploratory measure whose basic meaning is still a matter of uncertainty" (p. 177).

The pregnancy studies of McConnell and Daston (1961) and Edwards (1970) indicated a significant decrease following parturition which is consistent with (a) a decrease in body interior somatic activity and (b) a decrease in perceived emotional vulnerability or crisis. Psychological views on pregnancy support the latter viewpoint (Bibring, 1959; Caplan, 1959; Heiman, 1965), that (late) pregnancy is a period of emotional crisis, and, thus, one can readily relate decrease in Penetration scores to lessened emotional vulnerability. McConnell and Daston (1961) explain their findings on this basis.

The results for Penetration scores found in the present investigation failed to indicate group differences when change, on the basis of time, and change, on the basis of group status, are combined. In order to compare findings from the two earlier studies, it seems necessary to consider statistical design, samplings, and empirical data.

Concerning the first point, neither study employed a control group and, thus, assumed that change in scores was a function of post-delivery changes, e.g. lessened emotional duress specific to the postnatal period. While this conclusion seems warranted, it is possible that a decrease in Penetration scores could have been due to factors unrelated to the pregnancy-postnatal experience. Fisher (1970) points out that Penetration scores appear to be sensitive to "immediate situational factors", consequently, a shift in the direction of lowered scores may reflect increased comfort with experimenter, test, or test setting.

Possibly all three factors contributed to previous research findings. However, another explanation may be considered which this writer believes to be of greater significance.

McConnell and Daston (1961) administered tests to 24 primiparous clinic patients, retested three days postpartum. Edwards (1970) studied 53 young, unmarried women. Only the latter author supplies raw data, which enables comparison with the norms reported by Fisher and Cleveland (1958) and the findings of the present investigation.

Edwards (1970) found mean Penetration scores of 3.59 and 2.84 for pregnant subjects (abnormals versus normals). Fisher and Cleveland (1958) report a mean of 2.2 for college students. Pregnant subjects in this study obtained a mean Penetration score of 2.8 which decreased to 1.8 following parturition.

These findings suggest that the Edwards (1970) sample on the basis of Penetration scores (as well as Barrier results) is a less psychologically adaptive, more stress-ridden group of individuals, particularly at the latter stages of their pregnancy. Conversely, it suggests that the sample of pregnant women participating in this study manifested better stress adaptation, a finding further supported by Barrier results as well. Thus, significant decrease was not observed at the postnatal period owing to the psychological status of the sample at late pregnancy.

To conclude, when comparing present findings with those of McConnell and Daston (1961) and Edwards (1970), it appears likely that the samples are quite different, particularly in the latter case. These discrepant findings are, however, quite meaningful as they suggest differential stress adaptation on the part of pregnant women which in turn may be reflected on body image dimensions. This viewpoint is believed to find support by correlational data presented next which shows the relationship between body boundary and the other body image variables. Discrepancies for Penetration results suggest a "differential stress adaptation" hypothesis, perhaps, specific to the pregnancy-postnatal experience. Nonetheless, further research is required in order to delineate the nature of "situational" factors which appear to influence Penetration responses.

2. The Relationship Among Body Image Variables

The findings of this study can also be examined in terms of the relationship between body image variables, which were selected on the basis of (a) body image theory; (b) clinical accounts of the pregnancy-postnatal experience; and (c) the research of Fisher and Cleveland (1958, 1968) and Fisher (1970).

The selection of body image measures has also tried to take into account the methodological issues posed by Shontz (1969) in terms of conceptualizing, studying, and measuring body image phenomena: utilizing a "broad" conceptual framework while limiting the investigation to a study of the relation-

ship of bodily change to body image status. At the same time, instruments were chosen so as to permit assessment along a number of body image parameters: reaction to change in a fairly specific body region; reaction to the body as a whole in the sense of conscious awareness; and reaction of an affective type meaning the feelings and emotions brought on by such somatic experience.

An examination of the statistical relationship among the 12 body image variables sheds light on the above issues and would seem to provide additional evidence either confirming or rejecting the notion of body image change as it pertains to the pregnancy-postnatal experience. It should also give indication of the psychological significance of each measure and the question of employing a body image test battery as opposed to the use of a single instrument. For, speaking historically, many body image studies have involved a single assessment approach, e.g. drawings.

Looking at Table 20, a correlation matrix computed at late pregnancy shows that only a few significant coefficients were obtained: (1) Barrier and Body Distortion Blocked Opening (-.34); (2) Penetration and Body Distortion Small (.30); (3) Body Prominence and Body Distortion Total (.29); and (4) Body Focus Stomach and Body Distortion Total (.44). Other significant findings refer to Body Distortion sub-categories.

Neither Barrier nor Penetration measures were found to be related to the three other measures with the exception of a single BDQ sub-category. The findings for Barrier contrasts with

TABLE 20

Intercorrelations Between Body Image Variables (Pregnancy)

	Pen.	B-P	BFQ	BDQ T	BDQ lg	BDQ Sm	BDQ Bd	BDQ BO	BDQ Sk	BDQ Dt	BDQ Dep
Barrier	-.14	-.08	.03	-.28	-.10	-.10	-.26	-.34*	-.15	-.19	-.20
Penetra.		-.05	-.01	..09	-.04	.30*	.00	.29	.09	.07	-.06
B-P			.07	.29*	.16	.23	.24	.27	.19	.26	.11
BFQ				..44**	.43**	.27	.40**	.40**	.25	.23	.22
BDQ T					.88***	.67***	.76***	.64***	.70***	.64***	.79***
BDQ Lg						.56***	.61***	.40***	.53***	.54***	.72***
BDQ Sm							.49**	.28	.37*	.39**	.33*
BDQ Bd								.41**	.36*	.22	.63***
BDQ BO									.52***	.46**	.44*
BDQ Sk										.42**	.48**
BDQ Dt											.45**

* p < .05 ** p < .01 *** p < .001

the results obtained by Fisher (1970) among non-pregnant college females where boundary definiteness was positively related to Body Prominence. For pregnant women, general body awareness is more closely linked to body distortion (.29), an association which can also be observed at the postnatal period (.44). Pregnant women seem to express a sense of conscious body awareness in relation to expressions of atypical body experience. At the postnatal period, this relationship becomes even more in evidence as general body awareness is now linked with a continued sense of boundary disturbance (.42) and persistant feelings of blocked body openings (.59). Fisher (1970) was inclined to view general body awareness as a positive psychological attribute related to a clear sense of identity. In the absence of finding a positive relationship between boundary definiteness and overall body awareness it remains to be determined whether expressions of body distortion are related to psychological attributes connoting a well established identity and similar indices of more positive psychological functioning.

The positive relationship found between Penetration and Body Distortion Small scores, while low, tends to be consistent with previous findings. That is, both Penetration and BDQ Small scores have been associated with clinical signs of emotional disturbance, vulnerability, and heightened stress. Conceivably, women at late pregnancy who continue to express a sense of body smallness are those women who are experiencing greater emotional

duress. To indicate "smallness" may represent a method of coping with one's actual physical state and the feelings produced by dramatic weight gain, reapportioning of body mass, and conspicuous public signs of body enlargement.

At late pregnancy, an association can also be found between Body Focus Stomach and Body Distortion Total Scores. To express a sense of body distortion is, thus, related to stomach focus (.44). Since a similar relationship was found for BDQ Total and Body Prominence, it would seem to express a sense of body distortion, with all its nuances, is tied in with the pregnant woman's response to her body both in total and to a specified body region (abdominal). If this be so, then it can be said that there exists a basic propensity among pregnant women to respond to their bodies in a multiplicity of ways, however, first there needs to be an acceptance or willingness to express a sense of the more unusual and atypical. To be able to say "I am having rather strange feelings about my body ... it's really different now ...", may represent a basic psychological mode of reaction. In other words, body image reaction at late pregnancy may have a "unitary" flavor, that is, may be linked to a basic tendency to both experience and reveal the more atypical and incongruous.

Examining Table 21, the relationship between body image variables at the postnatal period appears to have changed somewhat. Barrier status is now negatively related to Body Focus Stomach (-.35); Penetration scores are positively related to Body Prominence (.35) and Body Distortion Total (.37); and, as previously noted, Body Distortion Total is positively related to Body Promi-

TABLE 21

Intercorrelations Between Body Image Variables (Postnatal)

	Pen.	B-P	BFQ	BDQ T	BDQ Lg	BDQ Sm	BDQ Bd	BDQ BO	BDQ Sk	BDQ Dt	BDQ Dep
Barrier	-.12	-.27	-.35*	-.29	-.26	-.13	-.15	-.16	-.27	-.19	-.13
Penetra.		.35*	-.13	.37*	.04	.11	.13	.64***	.38*	.46**	.27
B-P			.16	.40**	.22	.23	.42**	.59**	.26	.39*	.03
BFQ				.35*	.43**	.38*	.22	.00	.37*	-.06	.06
BDQ T					.69***	.81***	.64***	.65***	.76***	.56***	.63***
BDQ Lg						.42**	.17	.22	.46**	.06	.41**
BDQ Sm							.76***	.42**	.55***	.31*	.55***
BDQ Bd								.43**	.39**	.29*	.46**
BDQ BO									.48**	.59***	.27
BDQ Sk										.48**	.23
BDQ Dt											.24

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

nence(.40), and Body Focus Stomach (.35).

The Barrier-Body Focus finding indicates that women who obtain scores for boundary definiteness tend to be less responsive to the abdominal region. In a psychological sense, there is the implication that postnatal adjustment is related to a decrease in stomach focusing, since stress adjustment tends to positively link with Barrier status.

This interpretation seems plausible in light of the relationships found between Penetration, Body Prominence, and Body Distortion Total scores. Penetration status has been related to conditions involving heightened emotional distress and is generally inversely related to healthy adaptation to new experiences. To continue to experience body awareness and body distortion at six weeks postpartum, when body image "reintegration" should normally take place, may be an indication of continuing emotional distress and difficulties in postnatal adjustment. The relationship of Penetration scores to BDQ sub-categories Blocked Opening (.64), Skin (.38), and Dirt (.46) further underscores the significance of continuing body distortion experiences on postnatal adjustment. While groups differences were not found for Body Distortion at the postnatal period, it appears that where a sense of atypical and discomforting body experiences persist, emotional distress may also be in evidence. This issue would require further investigation and must remain a speculative contention at this time.

With two Body Distortion Quesionnaire sub-categories,

it is of interest to note the relationship between Blocked Opening and Skin scores and the other body image measures, particularly Penetration. BDQ Blocked Opening scores were negatively related to Barrier scores at late pregnancy (-.34) and positively related to Penetration scores at the postnatal period (.64). It would appear that discomforting and disturbed feelings regarding blocked "body openings", possibly sense organs as well, e.g. eyes, nose, ears, are associated with those body image dimensions connoting stress adaptation versus maladaptation (Barrier versus Penetration). However, this finding contrasts with the results obtained by Fisher (1970) among psychiatric patients. In this study, well delineated boundaries at late pregnancy relate negatively to statements endorsing a sense of body blockage. Conversely, at the postnatal period, boundary penetrability shows a high association with body blockage. It would be of interest to identify what Blocked Opening items in particular are responded to in these instances and in what way they represent reaction to those body regions specifically linked to the bodily changes of pregnancy and the postnatal period as opposed to a more generalized sense of body (part) blockage. At the postnatal period, continued blocked opening experiences appear related to more general adjustment problems.

Skin reactivity in terms of sensitivity, attention, concern, and possible discomfort appears as well to be related to a sense of body distortion and boundary vulnerability. Benedek (1960) has explained how the skin is highly sensitive to the

ongoing ovulatory cycle, e.g. temperature changes, and conceivably, this represents one set of factors which induce a heightened skin responsivity. Alterations in body musculature, increase in body mass and alteration in body shape represent additional sources of skin sensitivity. Following parturition, a process of reversal takes place or as Edwards (1973) states "reintegration". Perhaps, the nature of this reintegration process, that is, the extent to which the body musculature returns to a more normalized state influences a more general state of psychological well-being: "The mother with a laceration or large perineal repair fears bowel movements, tearing again, and above all, penetration" (Edwards, 1973, p. 32).

To conclude, the relationship between indices of stress adaptation and adjustment and aspects of disturbed body image reaction has been highlighted and it would seem useful to further investigate those factors, somatic and psychological, which bring about a more successful versus less successful pregnancy-postnatal experience.

3. Implications for Future Research

This study has indicated that body image change accompanies somatic change as women progress from late pregnancy to the postnatal period.

These changes have been noted along those body image dimensions taping general body awareness, abdominal focus, and body distortion. Body boundary is less clearly related to the

somatic events associated with late pregnancy and the postnatal period as pertains to the sample under investigation. Conceivably, this sampling variable is a critical factor in assessing and interpreting body image status and change. Thus, future research is required on pregnant women drawn from other populations, perhaps, from varying cultures and ethnic groups as well. The relevance of society and culture to body image has been noted by Guze (1969). In addition, Goshen-Gottstein (1960) has shown how socio-cultural factors contribute to the psychological experience of pregnancy.

The body image changes found following parturition strongly suggest that the pregnancy experience involves considerable body image reaction. Colman and Colman (1971) and Edwards (1973) provide clinical vignettes depicting varying body image phenomena, the former presenting a chornological description of the pregnancy experience at each trimester. Nonetheless, there are no systematic studies reported which explore body image phenomena in the course of the entire pregnancy experience. What are the earliest of reactions? What brings about such reactions and what are the somatopsychological factors producing change during each successive stage of gestation? These questions require further study.

Group change and group differences have been studied and expounded on. Yet, the results of correlational analysis suggest that intra-group differences may exist. There appears to be relationships between body boundary status and aspects of body image reaction at both late pregnancy and the postnatal period,

although these relationships are not clearly established. Within a sample of pregnant women can intra-group differences be discerned? And, if so, what are the psychological attributes which distinguish among women who express greater versus lesser body image response. Furthermore, to what extent are the qualitative aspects of body image change related to measures of psychological health and adjustment versus disturbance and maladaptation, particularly after parturition? These questions remain to be explored and understood.

The body image measures employed in this study hold promise for further body image research. For example, the Body Distortion Questionnaire was originally designed for the study of body image disturbance among varying psychiatric populations. This study has shown its merits in evaluating psychological reaction to bodily change and alteration. Yet, it is not known whether pregnant women respond qualitatively differently than other somatically changing populations, e.g. patients undergoing weight loss. Scores on each sub-category may refer to different items. Therefore, it seems necessary to administer this questionnaire to other samples of pregnant women followed by statistical refinement, e.g. factor and item analysis. Such statistical techniques would seem useful in order to answer the above questions of a diagnostic type.

SUMMARY AND CONCLUSIONS

The concept of body image as formulated by Schilder (1950) and Horowitz (1966) refers to perceptual, cognitive, and affective reactions to the body based upon a multitude of factors: physiological, psychological, and socio-cultural.

In the past, body image literature, when discussing reactions to bodily change, has emphasized the more atypical and aberrant. The purpose of this study was to explore body image change in relation to (a) bodily changes associated with a non-pathological somatic condition, and (b) a multi-dimensional body image concept. It was believed that the first criterion would be met by investigating women at late pregnancy and at the postnatal period.

In order to assess the various body image dimensions, a body image test battery was selected; tests chosen in order to elicit information for (1) general body awareness; (2) body focus stomach; (3) body distortion; and (4) body boundary. Data was collected from 32 women around the 8th month of pregnancy and at six weeks postnatal. They were compared with 28 never-pregnant controls, retested over a similar time interval. Statistical analysis followed a split-plot design, determining significant interaction (groups x time) and simple effects.

The results indicated significant interaction on three measures: (1) Body Prominence- general body awareness; (2) Body Focus Stomach- attention to the abdominal region;

and (3) Body Distortion- feelings and attitudes connoting unusual and/or atypical body experience.

Change in body boundary, as measured by the Rorschach inkblot responses was not found.

The results supported clinical observations that bodily activity brings about body image reaction and change. More specifically, the bodily changes accompanying late pregnancy and the postnatal period produce body image change. However, results obtained for body boundary indicate that change may not take place along all body image dimensions. Explanations for these discrepant findings were offered, i.e. differences among samples which have been studied.

Analysis of inter-test relationships suggested that body boundary tends to be statistically independent of the other body image variables. Also, there was evidence suggesting that personality factors may influence body image reaction in a qualitative sense. Consequently, suggestions were made regarding implications for future research so as to determine how and why women differ in body image at late pregnancy and at the postnatal period.

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BARRIER RAW SCORES

Pregnant	Postnatal	Control	Control
4	5	6	3
11	14	8	9
11	7	3	4
7	7	8	5
12	10	7	7
4	4	2	2
7	8	3	4
7	4	3	4
10	10	6	5
7	5	7	5
0	0	3	7
5	5	11	13
5	2	2	6
6	4	4	5
4	8	3	4
2	7	5	5
5	3	7	4
2	3	7	9
7	9	7	11
1	0	5	10
9	7	3	5
11	9	6	6
6	3	8	9
3	1	10	13
4	12	12	5
12	6	4	5
10	8	11	10
2	1	6	8
6	4		
1	4		
5	7		
6	6		
N= 32		N = 28	
$\bar{X}$= 6.0	5.7	$\bar{X}$ = 6.0	6.5
S.D= 3.39	3.37	S.D= 2.83	2.94

PENETRATION RAW SCORES

Pregnant	Postnatal	Control	Control
3	2	0	2
4	1	0	0
1	0	0	2
0	2	2	1
0	1	5	1
2	2	0	2
2	1	3	0
3	1	0	0
5	1	4	3
1	0	4	3
5	6	2	2
4	4	4	4
3	2	1	0
4	6	0	0
1	4	5	6
6	0	2	2
2	1	2	3
1	0	1	1
3	0	1	1
3	1	3	2
3	0	1	1
5	2	3	2
2	0	0	1
2	0	4	0
6	3	0	2
3	6	0	1
2	1	1	1
1	1	1	0
3	3		
4	1		
2	3		
1			
N= 32		N= 28	
$\bar{X}$= 2.7	1.8	$\bar{X}$= 1.75	1.5
S.D.= 1.61	1.80	S.D.= 1.69	1.43

BODY PROMINENCE RAW SCORES

Pregnancy	Postnatal	Control	Control
14	13	6	5
9	10	8	10
5	4	7	9
9	3	6	14
18	7	10	6
8	4	11	9
7	0	6	5
8	8	11	12
2	3	2	2
8	2	1	2
19	19	8	14
10	4	4	3
3	0	9	5
14	8	3	0
9	3	11	11
2	0	8	4
14	4	9	11
2	1	7	6
2	1	4	4
9	15	5	4
7	3	11	13
8	5	6	3
1	0	10	8
4	7	7	4
5	3	4	10
5	1	10	9
5	2	8	5
7	2	5	5
13	14		
9	9		
9	9		
6	7		
N= 32		N= 28	
$\bar{X}$= 7.8	5.3	$\bar{X}$= 7.0	5.9
S.D. = 4.54	4.83	S.D. = 2.85	3.90

BODY DISTORTION TOTAL RAW SCORES

Pregnancy	Postnatal	Control	Control
21	6	11	5
12	5	18	26
11	1	2	1
26	2	3	3
17	6	2	1
16	17	10	6
4	0	1	1
13	24	10	23
1	1	15	5
8	5	0	11
40	41	29	36
38	13	5	5
8	4	10	16
20	13	0	0
9	21	14	5
12	2	1	2
21	11	7	5
17	0	1	3
39	23	7	17
26	6	6	6
0	0	16	2
9	2	2	0
0	0	8	0
36	22	10	18
11	3	2	15
19	6	5	10
30	14	0	0
10	1	1	2
12	3		
20	9		
6	6		
1	1		
N = 32		N= 28	
$\bar{X}$ = 16.3	8.4	$\bar{X}$= 7.0	8.0
S.D. = 11.16	9.46	S.D. = 6.85	9.14

BODY DISTORTION LARGE RAW SCORES

Pregnancy	Postnatal	Control	Control
4	0	4	0
3	3	6	10
4	1	0	0
8	2	1	2
5	1	1	1
4	6	4	0
3	0	0	0
3	9	4	5
0	0	3	2
3	0	0	4
7	4	8	8
7	4	2	3
4	2	2	6
4	1	0	0
1	3	4	3
3	0	0	0
3	3	4	1
2	0	0	0
8	3	3	5
4	1	2	2
0	0	8	1
1	1	0	0
0	0	2	0
10	11	1	2
4	0	1	4
6	2	2	4
7	3	0	0
3	0	0	0
3	2		
4	1		
2	3		
0	0		
N= 32		N= 28	
$\bar{X}$= 3.8	2.1	$\bar{X}$= 2.2	2.3
S.D.= 2.51	2.60	S.D.= 2.35	2.68

BODY DISTORTION SMALL RAW SCORES

Pregnancy	Postnatal	Control	Control
4	0	4	2
1	1	1	0
0	0	0	0
0	0	1	0
1	1	1	0
3	2	0	1
0	0	0	0
0	3	1	3
0	0	2	1
0	0	0	1
5	8	5	5
2	1	1	1
0	0	1	4
0	1	0	0
0	2	2	0
2	2	1	0
0	3	1	0
0	0	0	0
3	9	0	0
1	1	2	0
0	0	0	0
2	0	1	0
0	0	0	0
3	2	3	4
0	0	0	0
2	0	0	0
2	1	0	0
0	0	0	0
0	0		
0	0		
0	0		
N= 32		N= 28	
$\bar{X}$= .97	1.2	$\bar{X}$= .96	.79
S.D.= 1.40	2.14	S.D.= 1.29	1.45

BODY DISTORTION BOUNDARY RAW SCORES

Pregnancy	Postnatal	Control	Control
2	0	0	1
2	1	1	0
1	0	0	0
6	0	0	0
3	1	0	0
1	2	0	0
0	0	0	0
2	0	0	1
0	0	2	0
0	1	0	2
7	4	1	3
4	0	0	1
0	0	0	2
1	0	0	0
4	0	2	0
1	0	0	0
2	0	0	0
2	0	0	0
9	3	0	3
4	2	1	1
0	0	1	1
1	0	0	0
0	0	1	0
4	0	0	1
1	0	0	0
0	0	0	0
0	1	0	0
0	0	0	0
2	0		
0	1		
0	0		
	0		
N = 32		N = 28	
$\bar{X}$ = 1.8	0.5	$\bar{X}$ = .32	.57
S.D.= 2.27	0.98	S.D.= 0.61	0.92

BODY DISTORTION BLOCKED OPENING RAW SCORES

Pregnancy	Postnatal	Control	Control
3	2	2	2
2	0	2	7
1	0	0	0
1	0	1	0
3	1	0	0
2	1	4	1
0	0	0	1
2	2	2	1
1	1	0	1
1	0	0	1
4	6	2	5
4	2	0	0
1	0	0	0
2	2	0	0
1	1	3	1
2	0	0	0
7	0	0	1
4	0	1	3
5	0	2	1
7	0	0	0
0	0	2	0
2	0	1	0
0	0	0	0
2	0	0	4
5	2	1	3
2	1	0	1
5	1	0	0
2	0	0	0
3	1		
5	1		
1	2		
0	0		
N= 32		N= 28	
$\bar{X}$= 2.5	.81	$\bar{X}$= .82	1.2
S.D.= 1.93	1.23	S.D.= 1.12	1.74

BODY DISTORTION SKIN RAW SCORES

Pregnancy	Postnatal	Control	Control
1	0	0	0
1	0	1	1
3	0	0	0
2	0	0	1
1	1	0	0
3	0	1	1
0	0	1	0
2	3	0	3
0	0	2	0
3	0	0	0
5	5	3	3
4	4	1	0
1	1	4	3
6	0	0	0
0	4	0	1
2	0	0	0
3	3	1	2
5	0	0	0
5	2	1	2
3	1	1	1
0	0	1	0
3	0	0	0
0	0	1	0
3	2	4	2
1	0	0	2
4	1	0	2
5	3	0	0
1	0	1	1
4	0		
3	4		
2	0		
1	1		
N = 32		N= 28	
$\bar{X}$ = 2.7	1.1	$\bar{X}$= .82	.89
S.D.= 2.18	1.55	S.D.= 1.16	1.07

BODY DISTORTION DIRT RAW SCORES

Pregnancy	Postnatal	Control	Control
3	4	0	0
1	0	2	3
0	0	2	1
0	0	0	0
2	1	0	0
0	0	0	2
0	0	0	0
2	0	0	1
0	0	4	0
0	2	0	0
2	5	2	3
4	0	0	0
0	0	0	1
2	2	0	0
0	5	2	0
0	0	0	2
1	1	0	1
2	0	0	0
0	0	1	3
2	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
4	1	0	2
0	0	0	6
3	1	3	3
3	2	0	0
1	1	0	1
0	0		
4	1		
0	1		
0	0		
N= 32		N= 28	
$\bar{X}$= 1.1	.84	$\bar{X}$= .57	1.0
S.D.= 1.41	1.42	S.D.= 1.10	1.48

BODY DISTORTION DEPERSONALIZATION RAW SCORES

Pregnancy	Postnatal	Control	Control
1	0	0	0
0	0	2	3
0	0	0	0
5	0	0	0
0	0	0	0
1	4	0	0
0	0	0	0
1	2	3	8
0	0	1	1
1	2	0	1
2	2	3	5
8	0	0	0
1	0	2	0
3	5	0	0
2	1	0	0
0	0	0	0
2	1	0	0
0	0	0	0
5	4	0	2
3	0	0	1
0	0	3	0
0	0	0	0
0	0	3	0
5	2	1	1
0	1	0	0
1	1	0	0
3	2	0	0
1	0	0	0
1	0		
1	1		
1	0		
0	0		
N = 32		N = 28	
$\bar{X}$ = 1.5	.88	$\bar{X}$ = .64	.79
S.D. = 1.93	1.36	S.D. = 1.13	1.81

BODY FOCUS QUESTIONNAIRE

Turn your attention upon yourself. Concentrate on your body. Below is a list in which different areas of your body are listed in pairs. In each case pick the area or part which is at the moment most clear in your awareness. If your answer is in the left column blacken in the two lines in the column marked A on the answer sheet. If your answer involves a word in the right column, fill in the two lines in the column marked B on the answer sheet.

1.	Chest	Back of head
2.	Mouth	Neck
3.	Eyes	Nose
4.	Head	Shoulder
5.	Left shoulder	Right shoulder
6.	Arms	Toes
7.	Back of head	Front of head
8.	Stomach	Elbows
9.	Right eye	Left eye
10.	Heart	Skin
11.	Chin	Mouth
12.	Mouth	Eyes
13.	Thighs	Head
14.	Chest	Back of body (at chest level)
15.	Legs	Arms
16.	Front of neck	Back of neck
17.	Head	Stomach
18.	Left arm	Right arm
19.	Muscles	Heart

20.	Mouth	Cheeks
21.	Back of knees	Front of knees
22.	Eyes	Chin
23.	Head	Chest
24.	Arms	Knees
25.	Back of shoulders	Front of shoulders
26.	Stomach	Thighs
27.	Right foot	Left foot
28.	Heart	Feet
29.	Eyebrows	Mouth
30.	Back of hips	Chest
31.	Scalp	Eyes
32.	Knees	Head
33.	Left wrist	Right wrist
34.	Soles of feet	Arms
35.	Front of hips	Back of hips
36.	Feet	Stomach
37.	Left knee	Right knee
38.	Hands	Heart
39.	Face	Back of shoulders
40.	Mouth	Eyes
41.	Eyes	Hair
42.	Head	Elbows
43.	Fingers	Toes
44.	Right side of mouth	Left side of mouth
45.	Back of thighs	Front of thighs
46.	Stomach	Muscles

47.	Right ear	Left ear
48.	Heart	Shoulder
49.	Ears	Mouth
50.	Back of neck	Chest
51.	Ears	Eyes
52.	Ankles	Head
53.	Legs	Fingers
54.	Front of legs	Back of legs
55.	Back of hips	Face
56.	Hands	Stomach
57.	Left elbow	Right elbow
58.	Neck	Heart
59.	Mouth	Nose
60.	Chest	Back of legs
61.	Eyes	Cheeks
62.	Head	Hands
63.	Fingers	Knees
64.	Right thigh	Left thigh
65.	Heart	Head
66.	Hair	Mouth
67.	Back of ankle area	Front of ankle area
68.	Eyebrows	Eyes
69.	Feet	Head
70.	Soles of feet	Fingers
71.	Front of neck	Back of head
72.	Ankles	Stomach
73.	Left ankle	Right ankle

74.	Elbows	Heart
75.	Mouth	Scalp
76.	Chest	Back of shoulders
77.	Right big toe	Left big toe
78.	Eyes	Forehead
79.	Head	Waist
80.	Elbows	Toes
81.	Stomach	Neck
82.	Right thumb	Left thumb
83.	Heart	Thighs
84.	Front of legs	Back of head
85.	Forehead	Mouth
86.	Neck	Eyes
87.	Toes	Head
88.	Legs	Elbows
89.	Knees	Stomach
90.	Left little finger	Right little finger
91.	Elbows	Knees
92.	Stomach	Skin
93.	Heart	Ankles
94.	Soles of feet	Elbows
95.	Heart	Stomach
96.	Knees	Heart
97.	Neck	Toes
98.	Stomach	Inside of throat
99.	Back of head	Front of thighs
100.	Legs	Neck

101.	Stomach	Lungs
102.	Heart	Lungs
103.	Knees	Neck
104.	Right hand	Left hand
105.	Inside of head	Stomach
106.	Inside of throat	Heart
107.	Neck	Soles of feet
108.	Inside of head	Heart

Name _____

Body Distortion Questionnaire

Read each of the statements below. If your answer to a statement is Yes, put an X under Yes. If your answer is No, put an X under No. If you are not sure whether to say Yes or No, put an X under Undecided.

	Yes	No	Undecided
1. My body feels unusually heavy.			
2. My body feels small.			
3. I feel like I should wash my hands.			
4. My mouth feels like it is changing in size.			
5. My body feels numb.			
6. I feel as if my skin is sore.			
7. My eyes feel like they are covered by a film.			
8. Things seem unusually close to my body.			
9. I feel as if parts of my body have disappeared.			
10. My nose feels blocked up.			
11. My hands feel small.			
12. Parts of my body feel swollen.			
13. My armpits feel unclean.			
14. My hands feel like they are changing in size.			
15. My rectum feels unusual.			
16. My skin itches less than usual.			
17. I feel like hiding my body.			
18. My hands feel like they are not mine.			
19. My throat feels blocked up.			
20. My head feels small.			

	Yes	No	Undecided
21. My neck feels unusually large.			
22. My skin feels unclean.			
23. My head feels like it is changing in size.			
24. My genital organs feel unusual.			
25. The right side of my body seems different from the left.			
26. My skin itches more than usual.			
27. I feel like my body is unprotected.			
28. My stomach feels blocked up.			
29. My chin feels small.			
30. My hips feel big.			
31. I feel like I have a dirty taste in my mouth.			
32. My body feels like it is changing in size.			
33. The sex of my body seems different.			
34. My skin feels less ticklish than usual.			
35. I feel that germs can somehow more easily get into my body.			
36. My body is less sensitive than it usually is.			
37. My ears feel stopped up.			
38. My nose feels small.			
39. My legs feel long.			
40. My hands don't feel as alive as usual.			
41. My skin is more ticklish than usual.			
42. I feel like my skin is too thin.			
43. My body feels "dead."			

	Yes	No	Undecided
44. My intestines feel blocked up.			
45. My hips feel small.			
46. My arms feel long.			
47. My toes feel dirty.			
48. My skin is warmer than it should be.			
49. My arms feel short.			
50. I feel like the inside of my body has no protection from things that happen near me.			
51. My body feels strange.			
52. My lungs feel stopped up.			
53. My eyes feel unusually large.			
54. The odor of my breath does not seem pleasant.			
55. My skin is colder than it should be.			
56. My eyes feel unusually small.			
57. Parts of my body feel as if they might become detached from me.			
58. My body feels like it is not mine.			
59. My kidneys feel blocked up.			
60. My mouth feels unusually small.			
61. My feet feel unusually large.			
62. I feel like I want to cover my body with something that will protect me.			
63. My skin feels looser than usual.			
64. My body feels like a non-living object.			
65. My nose feels big.			

	Yes	No	Undecided
66. My body feels like it is "stuffed" or too full.			
67. My feet feel unusually small.			
68. My ears feel unusually large.			
69. My skin feels tighter than usual.			
70. My body feels big.			
71. I feel less able to tell where my body ends and the outer world begins.			
72. I feel distant from my own body.			
73. My body feels blocked up.			
74. My ears feel unusually small.			
75. My mouth feels unusually large.			
76. My body feels too "open".			
77. I seem less aware of my body.			
78. My hands feel big.			
79. My body feels unusually light.			
80. My chin feels large.			
81. My neck feels unusually small.			
82. My legs feel short.			

Body Prominence

AWARENESS I

Directions: Please indicate 20 things that you are aware of or conscious of right now.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

20. _____