

The Relation Between Tachystoscopic Pictures and Neurotic Postpartum Depression: The Building of an Instrument

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Abstract: None available.

Full Text: Headnote ABSTRACT: Research is presented based upon perceptual defence theory relating to the possibility of detecting the risk of postpartum depression in pregnant women. The authors develop a tachystoscopic method and report on a study using the method on a sample of 43 French Canadian women. The method involves testing identification and reaction times to photographic stimuli related to perinatal issues. Our research is based on the theory of perceptual defence. This theory proposes that pictures or words related to emotional topics have recognition thresholds that are different from the ones of neutral material. Many classical experiments as reviewed by Dixon (1981) and Bowlby (1980) have shown that most subjects take longer expositions to recognize anxiety-provoking or threatening stimuli. While there is some controversy concerning the specific underlying mechanisms of this phenomenon, most authors agree that perceptual defence is a psychophysiological manifestation of a psychological defence against some disturbing stimuli. A few researchers have applied perceptual defence theory to clinical situations. For example, Williams and Quirke (1972) have shown significant differences in perception thresholds related to different types of psychopathology whereas Kragh and Smith (1970) have studied the relationship between several defence mechanisms and the perception of tachystoscopic pictures. However, to date, Uddenberg (1974) is the only author to have worked with pregnant subjects in a way that could lead to early detection of post-partum depression. In a longitudinal study with 89 pregnant subjects, Uddenberg (1974) projected through a tachystoscope the image of an obviously pregnant woman. He demonstrated that the time to correctly identify the image was positively and significantly related to: a) an abnormally long duration of labor at delivery and b) the occurrence of a "neurotic" postpartum depression. These findings point to an interesting possibility of the early detection of postpartum depression through a nonintrusive and generally pleasant technique resting on a measure of perceptual defence to pregnancy-related stimuli. A FEW WORDS ABOUT "NEUROTIC" POSTPARTUM DEPRESSION Almost all authors agree with Pitt's (1968) definition of this depression as characterized by crying, tiredness, emotional lability, decreased libido, feelings of incompetence and guilt related to the maternal role, irritability towards the baby and the spouse, anxiety and hypochondriacal preoccupations. Suicidal ideas are rare and rarer are suicidal attempts. Women suffering from "neurotic" postpartum depression remain in contact with reality and generally take good or adequate physical care of their baby. There is however a tendency for those women to be unresponsive or psychologically absent to their baby's intimate needs. The most frequently reported rate of this kind of depression is around 20% (see Uddenberg, 1974; Hayworth et al, 1980; Paykel et al, 1980; Oakley, 1980; Kumar, 1982; Atkinson et al, 1983; Saucier, 1986), although the range varies from 7% (Dalton, 1971) to 45% (Tonge, 1986). The rate of "neurotic" postpartum depression is very different from the one of psychotic postpartum depression (or postpartum psychosis) which is found in 2 or 3 cases out of one thousand, and of the one of postpartum "blues" which is the most frequently observed phenomenon after delivery. It is important, as we see it, to detect as soon as possible, the vulnerability to postpartum depression because of the long-term effects on all the family (the mother, the baby, the spouse) of this state. Different authors have observed long term effects of this depression on the affective (Alexander et al, 1982; Cox et al, 1982; Weissmann, 1981; Zaticek et al, 1979), cognitive (Brockington, 1985) and sometimes physical development of the child (Sameroff et al, 1982). We decided to study, beginning by a pilot experience, the possible relationship of postpartum depression scores to the perception of tachystoscopic perinatal stimuli in

women having delivered three or four months before their participation in the study. We hypothesized that the time required for correct identification of pregnancy related stimuli would vary in relation to the scores obtained from a depression rating scale.

SELECTION OF TACHYSTOSCOPIC STIMULI

In order to construct the tachystoscopic test and to go beyond Uddenberg's (1974) single stimulus experiment (the picture of a pregnant woman), we selected themes related to the usual anxieties experienced during pregnancy and postpartum period. We expected stimuli to provoke conscious or unconscious emotions and to enhance perceptual defence mechanisms in case of unresolved conflicts. The themes we choose concern pregnancy, birth, relations with parents, spouse and the baby, subjects attitudes toward delivery and care to the baby, including fear of hurting it. From these themes, we selected a series of pictures and French words most likely to evoke them. A panel of expert clinicians choose from them 10 pictures and 13 words.

Pictures.

An artist drew the pictures according to the 10 relevant themes. Those themes are: 1. A pregnant woman 2. A smiling baby 3. A father and his baby 4. A mother and her pregnant daughter 5. Delivery 6. A mother and her baby 7. A man and a woman making love 8. A mother slapping her baby 9. A father with his pregnant daughter 10. A crying baby

A pretest with 10 subjects

showed that all pictures meant exactly what they intended to mean.

Words.

The words are: 1. "faire l'amour" ("make love") 2. "enceinte" ("pregnant") 3. "avortement" ("abortion") 4. "nourrir" ("feed") 5. "papa et moi" ("daddy and I") 6. "vomir" ("vomit") 7. "foetus" ("foetus") 8. "maman et moi" ("mommy and I") 9. "belle" ("attractive") 10. "bébé" ("baby") 11. "battre mon enfant" ("slap my child") 12. "jouir" ("reach orgasm") 13. "accoucher" ("give birth")

Measurement of Depression

The self-administered Carroll Rating Scale for Depression (CRSD) was chosen because of its psychometric qualities (Carroll, 1981) and of its previous application to postpartum depression by one researcher of our team (Saucier, 1986). The scale contains 52 questions that the respondent answers "yes" or "no." These questions are related to all the usual aspects of non-psychotic depression, with one third of these questions controlling for response bias.

EXPERIMENTAL PROCEDURE

For the tachystoscopic testing, a computer program was developed to present brief displays of the pictures and the words on a cathodic screen. A micro computer (Commodore-64) was selected for its satisfactory graphic capacities and to make the experiment easily reproducible. The stimuli were presented at increasingly longer expositions, first presented for 16.7 milliseconds and repeated by increasing its duration by 16.7 milliseconds at each successive presentation until it was correctly identified. The stimuli followed a randomly established constant sequence of presentation. The program registered and printed the presentation time (PT) required for the correct identification of the stimulus and also the reaction time (RT) taken by the subject to press a button to signal that stimulus identification. The procedure was repeated for each of the 23 stimuli (10 pictures and 13 words) in a randomly established sequence identical for all subjects. The experiment was conducted in a single laboratory session lasting about one hour. The tachystoscopic pictures were first presented and were followed by the words. Finally the subjects completed the CRSD (measurement of depression).

Subjects

A total of 43 Caucasian French speaking women (having 3 to 4 month old babies) responded to an advertisement in a local magazine. The mean age of these women was 26.2 years (range, 22 to 35 years). They were all married or in a stable marital situations, mainly from middle class, and living in an urban area.

Results

Relations between depression and the time required to identify and to react to a picture or to a word were evaluated through discriminant analysis and multiple linear regression. Discriminant functions were calculated by SPSS (Statistical Package for Social Sciences) direct method, that is, subjects were classified in two groups on the basis of their score on the CRSD (score of depression).

- * Subjects having two (2) symptoms or less (n = 12) were placed in a non-depressed group.
- * Subjects having nine (9) symptoms or more (n = 11) were placed in a depressed group.
- * Subjects having something between two and nine symptoms (n = 20) were not included in the discriminant analysis in order to facilitate the potential dichotomy.

Two discriminant analyses were done, one for the experimental pictures and the other for the experimental words. Both analyses included presentation times (PT) and reaction times (RT).

1. The discriminant analysis of the presentation time (PT) and the reaction time (RT), both for pictures and words, show significant differences between depressed and non-depressed groups (p

<.0002). The depressed subjects are far apart of the non-depressed ones in their results on the tachystoscopic test, both in the pictures stimuli and in the words stimuli with no overlapping of the two groups. The results show that depression scores and responses to experimental stimuli are closely related. 2. It is noticeable however that depressed subjects are characterized by displaying sometimes longer time than nondepressed ones to recognize and/or react to some pictures or words, but for other stimuli they react faster and identify them more quickly than the non-depressed ones. Of the ten pictures, the three more discriminating stimuli are: mother with her pregnant daughter, crying baby, and a man and a woman making love (depressed woman taking more time to recognize or to react to these, perhaps indicating perceptual defence). Of the thirteen words, the stimulus having the most discriminating weight is "bebe" ("baby") being however negatively correlated to depression score, meaning that depressed woman display perceptual vigilance in front of this stimuli, recognizing this word faster than non-depressed subjects. The two other words significantly but positively correlated to depression scores are: "faire l'amour" ("make love") and "enceinte" ("pregnant"). 3. A multiple linear regression was also performed on the depression score from a linear combination of experimental pictures and words. That analysis indicates that 40% of the variability of the depression scores can be explained by a linear combination of the presentation time of two pictures (mother with her pregnant daughter, positively related; crying baby, negatively related) and of two words ("jouir" = "reach orgasm," positively related; "avortement" = "abortion," negatively related). 4. Taken individually, only two pictures showed presentation time significantly different for non-depressed compared to depressed woman. Those are "father and his baby" and "crying baby." Those two stimuli were identified more quickly by depressed women than by non-depressed ones. 5. In a preliminary attempt to understand the psychological phenomena underlying responses to stimuli, factor analyses were also performed through a principal component analysis. Four factors explained 73% of the total variability of the presentation time of the pictures. 1. Factor I includes pictures of: * A father and his pregnant daughter * A man and a woman making love * Delivery 2. Factor II includes pictures of: * A mother and her baby * A mother slapping her baby * A crying baby 3. Factor III includes pictures of: * A father with his baby * A mother and her pregnant daughter * Delivery * A pregnant woman 4. Factor IV includes pictures of: * A smiling baby * A man and a woman making love (negative relation) * A crying baby * A mother and her pregnant daughter (negative relation)

DISCUSSION The results support the hypothesis of differences between depressed and non-depressed recently delivered mothers in time required to identify (PT) and to react (RT) to stimuli related to perinatal issues. In accordance with Uddenberg's (1974) original study, our results indicate that perceptual defence to perinatal stimuli is related to postpartum depression scores. However, our study differs from Uddenberg's by many important features. 1. First, we used 23 stimuli instead of one and the powerful classification function derived from the discriminant analysis is a composite of presentation time and reaction time to those stimuli. 2. secondly, our picture of a pregnant woman (the most similar stimulus to that used by Uddenberg) did not by itself discriminate between the two groups. Indeed, only two stimuli taken individually gave significantly different presentation time for the depressed and the non-depressed groups (father and his baby and crying baby, negatively related, thus showing perceptual vigilance in depressed subjects). 3. Thirdly, our study is a study of the association between perceptual defence and depression scores in the postpartum period while Uddenberg measured perceptual defence during pregnancy. 4. Fourthly, while Uddenberg reported slower identification of his picture for the depressed women, we observed a combination of both slower and accelerated presentation time depending upon the individual stimulus. Concerning this point, we shall only underline that both perceptual defence (slower PT) and perceptual vigilance (accelerated PT) have been reported in perceptual defence research (Dixon, 1981). It appears that some anxiety provoking stimuli tend to accelerate identification, producing the so-called perceptual vigilance. That finding clearly deserves to be scrutinized experimentally and could point to a hierarchy of anxiety provoking themes related to postpartum depression. This possibility may account for the fact that the picture of a pregnant woman had a different impact in pregnancy and in the postpartum period. Indeed, the picture of the pregnant woman, considered alone, was

not discriminating in our study while it was in Uddenberg's. The factor analyses performed on our stimuli could circumscribe some themes with apparent psychological coherence. For example, factor II appears to be related to maternal aggression, since it involves mainly the pictures of a mother slapping her baby, of a crying baby and of a mother and her baby. The delineation of such factors, if replicable, could indicate that the various presentation time (PT) and reaction time (RT) are related to some unconscious themes (perhaps unconscious aggressive impulses) linked with postpartum depression. Our main conclusion is that this study shows a high relation between postpartum levels of depression and perceptual defence (or vigilance) measurements which explain 40% of the variance of depression. This study, and the actual state of research in perinatal issues concerning postpartum depression, convince us to undertake a large prospective study (432 subjects) to evaluate the possibility that such a test performed in the first half of pregnancy could detect the women more vulnerable to postpartum depression and hence make prevention easier. REFERENCES

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