

# Who Will Breastfeed? The Cognitive Motivation for Breastfeeding

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*S. Kreitler and H. Kreitler*

Department of Psychology, Tel Aviv University, Tel Aviv, Israel

## **Abstract**

Despite the interest in breastfeeding and its impact, little is known about its motivational determinants. A previous study showed that breastfeeders (BFs), partial breastfeeders (PBFs) and nonbreastfeeders (NBFs) differed in their endorsement of the four kinds of beliefs which play a major role as determinants of behavior in line with the cognitive orientation (CO) theory. This study was designed mainly to cross-validate the questionnaire and to apply it for predicting the occurrence and duration of breastfeeding. The subjects were 90 women in the first trimester of pregnancy who answered a demographic and a CO questionnaire of breastfeeding. On the basis of information they provided on the phone 16–19 months later, they were divided into three groups: BFs (mean of breastfeeding 23.4 weeks), PBFs (4.1 weeks) and NBFs. The groups did not differ in background variables but did differ in their responses to the questionnaire. The four belief types enabled a correct classification of 85.5–94.1 % of the cases. The subjects' declared intent in regard to breastfeeding did not predict the behavior. Factor and cluster analyses of the questionnaire themes showed characteristic differences among the groups in their views of caring for others, spontaneity, emotionality, acceptance of limitations, etc. Discussion focuses on the theoretical and practical implications of the findings about the structure and contents of the motivational matrix of breastfeeding.

## Zusammenfassung

Trotz des Interesses am Stillen und seiner Bedeutung ist wenig über die emotionalen Motive des Stillens bekannt. Eine frühere Untersuchung hatte gezeigt, daß stillende Mütter (Breastfeeders, BFs), teilweise stillende Mütter (Partial Breastfeeders, PBFs) und nicht stillende Mütter (Nonbreastfeeders, NBFs) sich in ihrer Zuordnung zu vier Arten von emotionalen Einstellungen unterschieden, die eine größere Rolle als Verhaltensdeterminanten entsprechend der kognitiven Orientierungstheorie (CO) spielen. Die vorliegende Untersuchung dient hauptsächlich zur Validierung des Fragebogens und zur Vorhersage des Stillverhaltens und seiner Dauer. Untersucht wurden 90 Frauen im ersten Drittel der Schwangerschaft, die einen demographischen Fragebogen und den Still-Fragebogen der kognitiven Orientierungstheorie zu beantworten hatten. Das tatsächliche Stillverhalten wurde 16–19 Monate später telefonisch erfragt, worauf sich drei Gruppen ergaben: Stillende Mütter (Mittelwert (23,4 Wochen), teilweise stillende Mütter (4,1 Wochen) und nicht stillende Mütter. Diese Gruppen unterschieden sich nicht in den allgemeinen Eigenschaften, aber in ihren Antworten auf die Fragen des Fragebogens. Die vier Einstellungsskalen erlaubten eine korrekte Klassifizierung von 85,5–94,1 % der Fälle. Die offenen Angaben zum beabsichtigten Stillverhalten erwiesen sich nicht als zuverlässig. Faktoren- und Clusteranalysen des Fragebogens zeigten hingegen charakteristische Differenzen zwischen den Gruppen in Bezug auf ihre Ansichten im Umgang mit anderen, Spontaneität, Emotionalität, Akzeptanz von Grenzen usw. Die Diskussion behandelt die theoretischen und praktischen Implikationen dieser Ergebnisse für das Verständnis der Struktur und der Inhalte der motivationalen Grundlagen des Stillverhaltens.

## Who Will Breastfeed?

### The Cognitive Motivation for Breastfeeding

Breastfeeding is one of the more interesting gender-specific behaviors because its determinants reflect a convergence of phylogenetic, emotional, motivational, social and cultural factors (Fildes, 1986; Konner, 1981; Nerlove, 1974; Raphael, 1973; Rosenblatt, 1977; Ryan & Gussler, 1985; Stephens, 1962). On the psychological level there is evidence that breastfeeding is part of a complex pattern of childcare (Mead & Newton, 1967) that includes behaviors, such as increased physical contact with the baby (Bernal & Richards, 1970), responding to the infant's signals (Weisenfeld, Malatesta, Whitman, Granrose, & Uili, 1985), spending more time with it (Newton, Paschall, Melamed, & Ryan, 1974), and manifesting interest in exchange of affection with it (Newton, 1971). Further, it was shown that breastfeeding is also closely related to the mother's personality (Brody, 1956; Stearns, 1978) and her beliefs and attitudes toward themes, such

as breastfeeding, nursing, food (Duskieker, Booth, Seals, & Eckwo, 1985; Fernandez & Guthrie, 1984; Pascoe & Berger, 1985) and even sex and nudity (Newton, 1968; Switzky, Vietze, & Switzky, 1979). While the benefits and liabilities of breastfeeding for mothers, infants and families have been extensively studied and discussed (Bernal et al., 1970; Carter, 1984; Jeliffe & Jeliffe, 1977; Martorell & O'Gara, 1985), little is known about the factors that underlie a woman's decision to breastfeed or not. The studied determinants include socioeconomic conditions (Martorell et al., 1985; Mock, Bertrand, & Mangani, 1986; Ryan & Dent, 1984), social class (Bronfenbrenner, 1958; Havinghurst & Davis, 1955), perceived social support (DeSantis, 1986), and the husband's preference (Jones, 1987; Switzky et al., 1979; Tzuriel & Weller, 1986). Yet these factors do not shed light on the intrapersonal motivational processes that might promote undertaking breastfeeding. Understanding the motivational dynamics of this behavior is becoming increasingly important in view of the new conception of parenting that is emerging in recent years (Thoman & Gaulin-Kremer, 1977), the radical changes in the role of women (Morse & Furst, 1982, pp. 166–7), and even the possible contribution of breastfeeding to demographic control in some cultural contexts (Newton, 1977). Correspondingly, there is growing awareness that such an understanding is to be anchored in a firm theoretical framework that would also enable integrating the diversity of findings and generating potential practical applications (Duskieker et al., 1985; Myers & Siegel, 1985; Pascoe et al., 1985).

It was the purpose of the present study to contribute to the understanding of the motivation to breastfeed and to prepare a tool that would enable to predict first, whether a woman about to have a child would breastfeed or not, and secondly, to what extent she would persevere and succeed in this venture. The study is based on the findings of a previous exploration with 120 women (Kreitler & Kreitler, 1990a) which showed that there are specific beliefs that characterize each of the following groups of women: those who breastfeed, those who start out to breastfeed but stop after a short time and those who do not breastfeed. The importance of this finding becomes evident in view of the theoretical framework of the cognitive orientation (CO) theory that is common both to the previous and the present study. The CO theory seemed to us adequate for studying the motivational determinants of breastfeeding because it is a comprehensive theory of human motivation which enables predicting and changing behavior (Kreitler & Kreitler, 1976, 1985). A brief summary of the theory is necessary for understanding the procedure and findings of the study.

The basic tenet of the CO theory is that cognitive contents, namely, meanings, beliefs or opinions, guide human behavior. The processes intervening between input and output may be grouped into four stages, each characterized in terms of metaphoric questions and answers. The first stage is initiated by an external or internal input, and is focused on the question "What is it?" It leads to input identification in the form of initial meaning, which enables unconditioned or conditioned responses. The second stage is focused on the question "What does it mean to me and for me?" and is initiated by a meaning signalling the need for molar action or feedback indicating failure of the previous responses in coping

with the situation. By means of enriched meaning generation it leads to a specification of whether action is required or not. A positive answer initiates the third stage which is focused on the question "What will I do?" The answer is sought by means of relevant beliefs of four types: (a) Beliefs about goals, which express actions or states desired or undesired by the individual, e.g., 'I want to succeed in business'; (b) Beliefs about rules and norms, which express social, ethical, esthetic and other rules and standards, e.g., 'One should not fuss too much over an infant's feeding'; (c) Beliefs about self, which express information about oneself, such as one's habits, actions, feelings, abilities, etc., e.g., 'Breastfeeding makes me feel like a primitive person'; and (d) General beliefs, which express information about others and the environment, e.g., 'Mother's milk is no better than a cow's milk'. If all four belief types point in the direction of the same behavior, a CO cluster is formed, generating a behavioral intent supporting the performance of that action. In other cases, when two belief types point in one direction and two in another, there may be conflict resulting in the formation of two CO clusters and two behavioral intents. The fourth stage is focused on the question "How will I do it?" The answer is in the form of a behavioral program that guides the actual performance of the action. Some behavioral programs are innate (such as reflexes), some are partly learned and partly innate (such as programs guiding breastfeeding or defense mechanisms), most are learned and some are formed ad hoc.

The CO theory has been applied successfully to the predictions of over 50 different behaviors, such as being on time, achievement (Kreitler et al., 1976, 1982), quitting smoking following behavior therapy (Kreitler, Shahar, & Kreitler, 1976), planning (Kreitler & Kreitler, 1987), assertiveness (Lobel, 1982), or overeating (Kreitler & Chemerinski, 1988) in different populations including normal adults, schizophrenics (Kreitler, Schwartz, & Kreitler, 1987), children (Kreitler, Kreitler, & Zigler, 1974) and mentally retarded persons (Kreitler & Kreitler, 1988). The prediction is based on information about the subject's CO cluster and the availability of behavioral program(s) in the studied domain of behavior. When it can be assumed that the behavioral program is available, a person will show the expected behavior if there are enough relevant beliefs orienting toward that behavior in all four or at least three of the belief types.

The CO theory has enabled also successful changes of behavior, such as curiosity, pain tolerance (Kreitler et al., 1976) or impulsivity (Zakay, Bar-El, & Kreitler, 1984). The change has been effected by producing four or at least three belief types orienting toward the desired behavior, and by training an adequate behavioral program when necessary.

Both in regard to predicting behavior and changing it the relevant beliefs are not those that refer directly to the studied behavior but to themes that constitute the meanings of the behavior and can be identified by means of a standard procedure developed within the framework of the CO theory. For example, overeating is predicted by beliefs that refer not to eating or food but to the meanings of these that include vulnerability, unclear self identity or avoidance of limitations.

The first step for studying the motivation for breastfeeding by means of the CO theory was done in the previous study which led to the identification of 28

themes reflecting the meanings of breastfeeding, for example, making extraordinary efforts for others, back to nature, or readiness for physical contact.

A CO questionnaire of breastfeeding was constructed with 308 items (74 to 83 in each of the four belief types). It was administered to 120 women of three groups: 40 who breastfed their present infant as well as previous children if any for at least 16 weeks without supplementary nutrition, 40 who breastfed their present infant as well as previous ones without additional nutrition for a maximum of 6 weeks or with additional nutrition for a maximum of 8 weeks; and 40 who did not at all breastfeed their present infant or previous ones if any. The questionnaire enabled discriminating correctly among the three groups in 81.74% of the cases. This previous study was considered as merely preliminary because (a) it was retrospective, and (b) it was based on a questionnaire too long to be useful.

Thus, in view of the encouraging results of the preliminary study, the present study was designed to shorten and improve the CO questionnaire of breastfeeding and to cross-validate it by applying it for actual prospective prediction of breastfeeding. Our hypothesis was that the four belief types would enable to predict who of a group of women would breastfeed fully and successfully, who would start out and stop after a brief period of several weeks, and who would not breastfeed at all. For control purposes we intended also to compare the prediction based on the CO theory with the prediction reflecting a direct statement of intent by the women concerning breastfeeding. We did not expect the forecast based on the latter to constitute a prediction, because in line with the CO theory statements of intent do not reflect all the motivational determinants of behavior but at best only one or another belief type. The reason is that declarations of intent do not determine behaviors but fulfill other functions, such as manipulating the environment, projecting a favorable self image, or even replacing action.

Finally, the study was designed also to enable examining interrelations of themes of beliefs and of the three studied groups. We expected that the groupings of the themes would provide insight into the dynamics of breastfeeding beyond that provided by the prediction based on the four belief types. Concerning the relations of the three groups, the major question of interest was whether in terms of motivational dynamics the group of unsuccessful breastfeeders would prove to be closer to the breastfeeders, as in the previous study (Kreitler & Kreitler, 1990a), to the nonbreastfeeders or to none of these groups.

## Method

### *Subjects*

Subjects were 90 women who showed up in the sickfund or private clinics for pregnancy within the first three months of pregnancy. They all knew that they were pregnant. Their mean age was 28.3 ( $SD = 1.9$ ). All except 3 were married. On the average they had 1.9 ( $SD = .4$ ) children. The majority (72.22%) were working outside the home, the rest were housewives. The socioeconomic status of 29.05% the women was low, and of the rest medium, according to Hollingshead's (1975) modified index. The mean number of years of education in the

sample was 11.9. Most (81.11 %) were born in Israel, the rest elsewhere but had been in the country 10.2 years on the average. Slightly over half (55.5 %) were of European or American cultural background, the rest were from a Near-Eastern or North-African background.

### *Procedure*

All women who showed up within a predetermined period in one of four randomly selected clinics for pregnancy and who were in the first months of their pregnancy (1–3) were addressed and asked to participate in a study about “attitudes of women”. If they agreed they were administered two questionnaires: (a) a demographic questionnaire that requested information about address, age, place of birth, education, employment, profession, marital status, number of children, background of family, and included also the following question: Do you plan to breastfeed your baby? Yes-No-Perhaps; and (b) the CO questionnaire of breastfeeding, that was an improved version of the original questionnaire constructed in a previous study (Kreitler & Kreitler, 1990a). The improvement was effected by adding to the questionnaire new themes on the basis of a renewed analysis of the meaning of breastfeeding in pretest subjects, and by deleting inadequate items, that is, items that were not answered by more than 10 % of the original sample, or did not discriminate among the three groups or had a restricted response distribution (namely, three or fewer of the five alternatives were used). Thus, 156 items that constituted 50.65 % of the total number of items were deleted. The questionnaire had four randomly ordered parts, which dealt with beliefs about goals (e.g., ‘I want to maintain the regular routine of my life at all costs’), beliefs about rules and norms (e.g., ‘One should let things develop slowly, naturally, of their own accord’), beliefs about oneself (e.g., ‘I tend to be jealous’), and general beliefs (e.g., ‘Inequality among the genders is a social catastrophe’). Each part was preceded by instructions emphasizing the particular nature of the contents in that part (e.g., goals, rules and norms). The four questionnaire parts included simple statements and the subject was requested to check on a 5-point scale how true each was. The statements represented beliefs that referred to themes identified previously (Kreitler & Kreitler, 1990a) as representing common meanings of breastfeeding. The themes, phrased so that the stated alternative or the first mentioned one reflects the position orienting toward breastfeeding, were:

- (1) producing for children ideal conditions (spoiling) versus relying on their natural sturdiness to survive;
- (2) preventing later problems by adequate early treatment of the child;
- (3) erotic elements as an integral aspect of interpersonal relations;
- (4) spontaneous vs directed processes and development (i.e., letting things happen versus trying to control or direct them);
- (5) making extraordinary efforts for others;
- (6) the uniqueness of the mother’s role in regard to the child versus the role of the father and other adults;
- (7) accepting or rejecting the inequality of women;

- (8) back to nature;
- (9) enjoying sensory experiences;
- (10) blurring or emphasizing the distinctions between human being and animal;
- (11) the uniqueness of the bond between parents and children versus its being a regular interpersonal relation;
- (12) independence versus conformity in behavior;
- (13) importance of controlled nutrition;
- (14) investing emotion in one's actions versus doing things in the simplest and most direct manner;
- (15) jealousy in interpersonal relations;
- (16) behaving spontaneously vs controlling oneself and one's moods;
- (17) promoting versus avoiding physical contact;
- (18) possessiveness in interpersonal relations;
- (19) dirt and smells as disgusting;
- (20) accepting limitations on one's freedom;
- (21) promoting one's career;
- (22) giving freely of oneself versus preserving oneself and caring for oneself;
- (23) being aware of one's body and sensitive to it;
- (24) acting by emotion and intuition rather than by reason;
- (25) caring actively for one's health;
- (26) devotion and fidelity to others;
- (27) not caring versus special caring for one's external appearance;
- (28) readiness to disrupt the daily routine vs its strict maintenance;
- (29) innovation vs preserving tradition.

Originally each of the 29 themes was represented in all four belief types but following the deletion of inadequate items the number of items in each belief type ranged from 23 to 26 (see Table 1 for this and other information about the questionnaire).

On the basis of the questionnaire, each subject got four scores, one in each belief type, and an index score called the CO score which was the sum of the four binary scores, formed by assigning to each belief type 1 if the score was above the group mean in that belief type or 0 if the score was below the group mean. The CO score ranges from 0, when none of the belief types supports the examined behavior, to 4, when all the belief types support it. The CO score is based on the well-supported assumptions of the CO theory that (a) the four belief types have comparable contributions to the guidance of behavior; and (b) the support effected by each belief type for a given course of action is subject to the all-or-nothing principle (i.e., in order to be effective the belief type has to have a certain minimum strength but its impact does not increase beyond that threshold).

After a woman returned the questionnaires the experimenter asked her permission to contact her on the phone for additional information, if necessary. All agreed. They were contacted on the phone when their baby was expected to be about 10 months old, that is, 16 to 19 months after completing the questionnaires. They were asked whether they worked outside the home, and if yes when they started; about the amount of time spent with the baby and the degree to which they enjoyed it; the availability of help; the baby's general health; and

**Table 1.** Psychometric and statistical information about the Cognitive Orientation Questionnaire of Breastfeeding (Revised Version).

	Items in Questionnaire					Themes in Questionnaire				
	BS	N	GB	G	Total	BS	N	GB	G	Total
No. of items	36	40	40	36	154	26	26	23	24	29
Reliability:										
Cronbach's Alpha	.86	.90	.88	.77	–	.80	.87	.84	.74	.92
Discrimination										
bet. groups: (n)	33	32	33	31	129	21	23	19	18	27
Overall sig. F(%)	91.7	80.0	82.5	86.1	83.8	80.8	88.5	82.6	75.0	93.1
Sig. differences										
bet. group pairs:										
NBF & PBFs	(n) 17	17	19	11	64	18	18	14	13	23
	(%) 47.2	42.5	47.5	30.5	41.5	69.2	69.2	60.9	54.2	79.3
NBFs & BFs	(n) 19	20	22	15	76	18	22	18	18	28
	(%) 52.8	50.0	55.0	41.7	49.3	69.2	88.5	78.3	75.0	96.5
PBFs & BFs	(n) 6	14	13	16	49	13	13	6	12	13
	(%) 16.7	35.0	32.5	44.4	31.8	50.0	50.0	26.1	50.0	44.8
Freq. of patterns										
patterns:										
NBF<PBF<BF	(n) 18	22	24	19	83	18	20	13	18	23
	(%) 50.0	55.0	58.6	52.8	53.9	69.2	76.9	56.5	75.2	79.3
PBF<NBF<BF	(n) 2	6	5	9	22	0	2	2	4	1
	(%) 5.5	15.0	12.1	25.0	14.3	0.0	7.7	8.7	16.7	3.4
NBF<BF<PBF	(n) 16	12	11	8	47	8	4	8	2	5
	(%) 44.4	30.0	29.3	22.2	30.5	30.8	15.4	34.8	8.3	17.2

*Note.* In “items” the Total represents direct sums, in “themes” it represents the results of counting the themes on the basis of the total number of items. The percentages were computed from the total number of items or themes in the specific type of belief. The differences between group pairs were computed by the Newman-Keuls procedure. All reported differences are significant at least on the level of  $p < .05$ .

BS = Beliefs about self, N = Beliefs about rules and norms, BG = General beliefs, G = Beliefs about goals, NBF = Nonbreastfeeders, PBF = Partial breastfeeders, BF = Breastfeeders.

about breastfeeding – if it took place, and if yes for how long, what were the difficulties and whether it was supplemented through other food. In regard to a random sample of 25 women, information was obtained also from nurses in the Child and Mother Care clinics.

The number of women addressed initially and who were in the beginning of pregnancy was 110. Of these 6 refused to participate in the study and further 7 agreed but returned not fully completed questionnaires. Attempts to persuade them to complete the questionnaires failed. Of the 97 remaining women, 3 lost their babies during pregnancy and 1 shortly after delivery. Three further women changed their address and could not be located 16 to 19 months later. Thus, we remained with a sample of 90 women.



## Results

### *Definition of the Three Groups*

On the basis of information about breastfeeding obtained from the women on the phone, the subjects were divided into three groups: (a) Nonbreastfeeders (NBFs): women who did not breastfeed their baby at all and made no attempt to do so ( $n = 18$ ; 20 %); (b) Partial breastfeeders (PBFs); women who started to breastfeed the baby and did so without supplemental food for a maximum of 6 weeks and then transferred fully to bottle feeding, or women who from the very beginning mixed breastfeeding with bottle feeding and gave up breastfeeding after 2 to 8 weeks ( $n = 39$ ; 43.33 %); and (c) Breastfeeders (BFs): women who breastfed the baby fully without any bottle feeding for at least 16 weeks and then either stopped or continued breastfeeding supplemented through other food ( $n = 33$ ; 36.57 %). It is of interest to note that the distribution in our group compares fairly well with the distribution reported for an Israeli population about five years earlier (Mansbach, Palti, Pevsner, Pridan, & Palti, 1984): 89.7 % started breastfeeding (in our sample, 79.7 %), and 27.3 % were still at it over 4.5 months (in our sample, 36.7 %).

For 25 women the information about breastfeeding obtained by phone from the subjects was compared with that obtained from the nurses at the clinic. The assignment of subjects to one of the three groups (by two independent judges who did not know the source of the information) was identical according to both sources of information. This finding supports the reliability of the information obtained by phone for the whole sample.

### *Background Information about the Three Groups*

The three groups of women differed in mean duration of breastfeeding: it was 0 for NBFs, 4.1 ( $SD = 1.3$ ) weeks for the PBFs, and 23.4 ( $SD = 2.4$ ) weeks for the BFs. They were compared on the different demographic and background variables. The comparisons showed they did not differ significantly in age, place of birth, number of years in Israel, cultural background, socioeconomic status, years of education, proportion of women working outside the home, or the length of time they stayed at home before going back to work, the availability of help, number of children, overall time spent with the baby (evaluated by the mother as 'a lot' = 3, 'medium' = 2, 'little' = 1), and gender of the present baby. There were however significant differences in (a) overall tendency of the baby to be sick as reported by the mother ('a lot' = 3, 'medium' = 2, 'a little' = 1, 'never' = 0; the means were for NBFs = 2.1, for PBFs = 1.5, and for BFs = 0.6,  $F = 4.58$ ,  $df = 2/87$ ,  $p \leq .05$ ), and (b) mother's enjoyment of spending time with the baby, as evaluated by the mother ('a lot' = 3, 'medium' = 2, 'a little' = 1, 'never' = 0; the means were for NBFs = 1.8, for PBFs = 2.7, and for BFs = 2.9,  $F = 3.72$ ,  $df = 2/87$ ,  $p \leq .05$ ). Both of these variables on which the groups differed may be considered as related to the physio-psychological complex of breastfeeding. Thus, if the mothers' report of the children's illnesses are taken for actual statements of fact, the children's better or worse state of health could be attributed to the occurrence or nonoccurrence of breastfeeding, respectively (Jeliffe et al.,

1977; Martorell et al., 1985). If however the reports are interpreted as reflecting the mothers' sense of difficulty and displeasure in regard to infant care, then the reports of illness as well as of enjoyment correspond to the findings that BFs tend to react to their infants more affectively and pleurably than NBFs (Jeliffe et al., 1977; Mead et al., 1967; Newton, 1971).

### *Characteristics of the CO Questionnaire of Breastfeeding*

Table 1 shows that the reliabilities of the questionnaire are satisfactory and were not reduced through the deletion of more than 50 % of the original items. Further, in each belief type the majority of items and of themes yielded significant differences among the three groups or between pairs of groups. In most cases the direction of the differences conforms to expectation, namely, the scores of the NBFs are lower than those of the PBFs and those of the PBFs lower than those of the BFs. Moreover, regardless of the particular pattern of results, the scores of NBFs are always lower than those of the BFs. Thus, on the whole the replication has provided a successful cross-validation of the questionnaire.

PBFs are the only group which yielded sometimes – in the minority of cases – unexpected results. Contrary to expectation, its results were sometimes (in 14 % of the items or 3 % of the themes) lower than those of the NBFs, and sometimes (in 30 % of the items and 17 % of the themes) higher than those of the BFs. It is likely that the results of the PBFs do not impair the questionnaire's validity but are rather attributable to the special characteristics of the PBF group.

### *Predicting Breastfeeding*

Comparing the responses of the three groups to the CO questionnaire showed that, as expected, the groups differed in each of the belief types (Table 2): BFs had significantly higher scores than PBFs (except in beliefs about self), and PBFs had significantly higher scores than NBFs. The CO score showed that in BFs 3 to 4 belief types oriented toward breastfeeding, in PBFs only 2, and in NBFs 0 to 1.

Table 3 shows that CO scores enable a differentiation among the groups that deviates significantly from chance. As expected, most (90.9 %) of the subjects with high CO scores (scores 3 or 4) breastfed to some extent (72.7 % fully and a further 18.2 % partly), and none of the subjects with low CO scores (scores 1 or 0) engaged in breastfeeding in any form. Further, a majority of the subjects with a CO score of 2 – which indicates a potential conflict – belonged, as expected, to the group of the PBFs (56.41 %). The rest were either NBFs (25.64 %) or BFs (17.95 %).

Table 3 also shows that the prediction based on the declaration of the subjects concerning breastfeeding did not deviate significantly from chance. Only 23.33 % of the 90 subjects behaved as expected, which constitutes a nonsignificant decrease of 10 % below the chance level of 33.33 % ( $CR = 1.261$ , ns). Notably, the best fit was obtained for those whose declaration was "perhaps": 41.4 % of them belonged to the PBFs, whereas only 14.6 % of those who said "No" actually proved to be NBFs and only 15.4 % of those who said "Yes" eventually belonged to the BFs.

**Table 2.** Comparisons of the scores of nonbreastfeeders, partial breastfeeders and breastfeeders on the Cognitive Orientation Questionnaire of Breastfeeding.

Variables	F-Values	(a) NBF	(b) PBF	(c) BF	Sig. Difs
Beliefs about norms	26.445***	111.073 22.365	131.734 10.358	140.770 11.714	a<b****, a<c****, b<c***
Beliefs about goals	38.300****	98.379 10.015	108.589 6.401	115.016 3.564	a<b****, a<c****, b<c****
General Beliefs	31.935****	101.954 19.241	125.570 11.123	131.494 10.397	a<b****, a<c****, b<c*
Beliefs about self	28.245****	99.966 16.774	119.405 8.123	121.756 8.285	a<b****, a<c****
Cog. Orient. score	42.171****	0.333 0.471	1.932 1.095	3.273 1.052	a<b****, a<c****, b<c**

*Note.* The F-values are based on one-way analyses of variance with  $df = 2/86$ . The "Sig. Difs" in the last column represent group differences based on the a posteriori Newman-Keuls procedure. For each variable, the numbers in the first row are the means, in the second row, the standard deviations.

NBF = Nonbreastfeeders, PBF = Partial breastfeeders, BF = Breastfeeders.

\*  $p < .05$     \*\*  $p < .01$     \*\*\*  $p < .001$     \*\*\*\*  $p < .0001$

**Table 3.** Interrelations between the behavior of breastfeeding, on the one hand, and CO scores of Breastfeeding or Declaration of Intent to breastfeed, on the other hand.

Variable	NBFs	PBFs	BFs	Chi-Square
<b>CO Scores</b>				
Scores 0 and 1	18	10	3	
Score 2	0	22	6	
Scores 3 and 4	0	7	24	68.213***
<b>Declaration</b>				
No	7	20	21	
Perhaps	7	12	10	
Yes	4	7	2	4.439

*Note.* CO = Cognitive Orientation, NBF = Nonbreastfeeders, PBF = Partial breastfeeders, BF = Breastfeeders.

\*\*\*  $p < .001$

A stepwise discriminant analysis was performed in order to examine the extent of the prediction of breastfeeding by means of the four belief types and their differential contributions to the prediction. The analysis (Table 4) showed that the four belief types enabled a correct classification of the subjects into the three groups in 85.55 % of the cases, which represents an increase of 52.25 % above the chance level of 33.33 % (the improvement is significant;  $CR = 7.138$ ,

$p < .001$ ). The degree of correct classifications is similar in the NBFs (83.3 %) and PBFs (82.1 %) but is higher in the BF (90.9 %). The faulty classifications occurred only between adjacent groups (3.3 % of the NBFs were classified mistakenly as PBFs, 7.8 % of the PBFs were classified as PBs and 3.3 % of the BFs were classified as PBFs).

**Table 4.** Results of the stepwise discriminant analysis with the belief types as predictors and the three groups of women (NBFs, PBFs and BFs) as the dependent variable.

Statistical Indices	Function 1	Function 2
Standardized canonical discriminant function coefficients:		
Beliefs about norms	-.307	1.206
General beliefs	.942	-.298
Beliefs about self	.150	-1.095
Beliefs about goals	.765	.264
Eigenvalues	2.342	.193
Per cent of variance	92.390	7.611
Canonical correlations	.837	.402
Wilks' lambda	.251***	.838**
Canonical discriminant functions evaluated at group centroids:		
Group: NBFs	-2.693	-.878
Group: PBFs	.053	.514
Group: BFs	1.406	-.128
Classification of subjects:		
NBFs ( $n = 18$ )		
classified as NBFs = 15 (83.3%), as PBFs = 3 (16.7%), as PBs = 0 (0.0%)		
PBFs ( $n = 39$ )		
classified as NBFs = 0 (0.0%), as PBFs = 32 (82.1%), as PBs = 7 (17.9%)		
BFs ( $n = 33$ )		
classified as NBFs = 0 (0.0%), as PBFs = 3 (9.1%), as PBs = 30 (90.9%)		
Total of correct classifications = 77 (85.55%), Critical Ratio = 7.134****		

Note. NBF = Nonbreastfeeders, PBF = Partial breastfeeders, BF = Breastfeeders.  
 \*\*  $p < .01$     \*\*\*  $p < .001$     \*\*\*\*  $p < .0001$

Table 4 shows that all four belief types had significant contributions to the differentiation among the groups. Each of the two derived functions is defined by the four belief types. One function "correlated" more highly with group differentiation (its canonical correlation was .837 as against .402 of the other function), and accounted for 92.39 % of the variance, whereas the second function accounted only for 7.6 % of the variance. In terms of relative contributions to the functions (see the function coefficients, ignoring the signs) the first function reflects in descending order the discriminating power of general beliefs, goal beliefs, norm beliefs and beliefs about self, and the second function that of norm beliefs, beliefs about self, general beliefs and goal beliefs. In accordance with the group centroids, the first function contributes relatively most toward differ-

entiating between the extreme groups – NBFs and BF (distance between group centroids 4.099) – and least between BF and PBF (distance 2.746), and the second function contributes most toward differentiating between NBFs and PBF (distance 1.392) and least between BF and PBF (distance 0.642).

In order to better explore the contribution of the belief types to predicting breastfeeding we performed three further stepwise discriminant analyses. In the first, the groups to be differentiated were NBFs and PBFs ( $n = 57$ ) versus BF ( $n = 33$ ). The percentage of correct classifications was again 85.55 % (47 or 82.5 % in the NBFs+PBFs and 30 or 90.9 % in the BF), which constitutes a 35.55 % improvement above the chance level of 50 % ( $CR = 5.103, p < .001$ ) and the distance between the group centroids was 1.726. In this analysis the predictors defined only one function (canonical correlation .64) with contributions (in descending order) by goal beliefs, beliefs about self, general beliefs and norm beliefs (standardized canonical coefficients were .707,  $-.622$ , .562 and .520, respectively).

In the second analysis the groups to be differentiated were NBFs ( $n = 18$ ) versus BF + PBFs ( $n = 72$ ). The percentage of correct classifications was 93.33 % (15 or 83.3 % in the NBFs and 69 or 95.8 % in the BF+PBFs), which constitutes a 43.33 % improvement above the chance level of 50 % ( $CR = 6.451, p < .001$ , and the distance between the group centroids was 1.951). In this as in the former analysis the predictors defined only one function (canonical correlation .80), with contributions (in descending order) by general beliefs, goal beliefs, norm beliefs, and beliefs about self (standardized canonical coefficients were .963, .672,  $-.653$  and .432, respectively). Finally, in the third analysis, the groups to be differentiated were NBFs ( $n = 18$ ) versus BF ( $n = 33$ ). The percentage of correct classifications was 94.12 (15 or 83.3 % in the NBFs and 33 or 100 % in the BF), which constitutes a 44.12 % improvement above the chance level of 50 % ( $CR = 4.966, p < .001$ , and the distance between the group centroids was 1.951). Again, the predictors defined only one function (canonical correlation .87), but the listed contributions (in descending order) were of only three belief types: general beliefs, goal beliefs, and norm beliefs (standardized canonical coefficients were .925, .740, and  $-.249$ , respectively).

### *Interrelations of Themes in the Three Groups*

In order to gain insight into the motivational dynamics of the women in the three groups, we examined the grouping of the different themes by two methods: factor analysis and cluster analysis. They differ mainly in the unit that serves as basis for the groupings. Factor analysis analyzes the variance of each variable and yields factors defined by the saturations of different variables, each of which may be loaded on more than one factor; in contrast, cluster analysis analyzes the interrelations between the variables as wholeunits and yields clusters each of which is defined by an exclusive set of variables.

Table 5 shows that the factors produced in the BF can be characterized tentatively as Intimacy, Giving of Oneself, Acceptance of the Inequality of Women, and Possessiveness in Interpersonal Relations. The factors in the NBFs are no less clearly delineated. They may be characterized as Rejection of Limitations,

Functionality (which seems to be the element common to maintaining strict daily routine, directed development, career and preferring to do things in the simplest and most direct manner), and Self Care. Whereas the factors that emerged in the BFs were focused on different aspects of interpersonal relations, the factors that emerged in the NBFs seem to be focused rather on the mother herself, on different aspects of her activity and welfare. In view of these findings it is of particular interest to note that each of the two factors that emerged in the PBFs had loadings on aspects of interpersonal relations (characteristic of the factors in the BFs) and on aspects of the mother's welfare and activity (characteristic of the factors in the NBFs). This fact, which made it impossible to characterize the factors by simple titles, illustrates most clearly the intermediary position of the PBFs between the two other groups.

The clustering of the themes presented in Table 6 underscores the important foci for each of the three groups. For the BFs, these are giving to others, freely and spontaneously; awareness of the special nature of the emotionally-grounded interpersonal relation; promoting harmony with nature; emphasis on sensuality; and readiness to accept limitations (which include inequality and career). In the NBFs, accepting limitations is a much more salient motif, that includes social, physical and emotional restrictions. Conceptually related clusters are those that focus on independence, maintaining control and loosening up control. The cluster of "caring for others" has a slightly forced connotation due to mentioning spoiling, extraordinary efforts and considering the benefits of preventing later problems by early treatment. Finally, the major foci in the PBFs are caring for others, that includes both caring emotionally and caring for health; making efforts for others, that notably includes also promoting one's career; possessiveness, mainly in the emotional sense; rejecting accepted regulations and distinctions, that couples eroticism with spontaneity and disruption of routine; and acceptance of limitations, that in this group is allied to physical and sensory aspects rather than to social ones.

The idiosyncratic nature of the groupings in the three groups demonstrates how differently the same themes are grasped by subjects in each group. Take for example the theme of erotic elements: in the BFs it is embedded in the cluster of sensuality; in the PBFs it is allied with spontaneity, independence and blurring of the distinctions between human and animal, as part of a cluster with the general connotation of rebelliousness; whereas in the NBFs it is part of a cluster whose common denominator seems to be acceptance of limitations. Even when the same title of a cluster recurs in two or more groups (which happened only in two cases) the difference in the subsumed themes is greater than the similarity. Thus, "caring for others" includes the issue of health only in the PBFs but not in the NBFs.

## **Discussion**

The study showed that the CO Questionnaire of Breastfeeding enables to predict prospectively who of a group of women in the first trimester of pregnancy would breastfeed her baby fully and for a relatively long duration, who would do so

**Table 5.** Results of factor analyses of the themes in the three groups of women.

Group	Factor 1	Factor 2	Factor 3	Factor 4
BFs	Spoiling .91 Phys cont. .94	Giving freely .78 Devotion .86 Possessiven. .69	Uniqueness of mother's role .90 Accepting inequality .75	Jealousy .85 Indepen. .75 Possess-iven. .54
Eigenv.	4.362	2.578	1.869	1.240
Var. %	40.3%	23.8%	17.3%	11.5%
Title	Intimacy, openness	Giving of oneself, commitment	Acceptance of inequality	Possessiven., appropriation
NBFs	Accepting limit. -.86 Accept. inequal. -.77 Dirt & smells disgust. .69	Career .73 Disrupting routine -.71 Invest. emot. -.64 Spont. dev. -.54	Caring for appearance .82 Giving freely of oneself -.57	
Eigenv.	8.458	1.865	1.139	
Var. %	73.8%	16.3%	9.9%	
Title	Rejecting limitations	Functionality	Self care	
PBFs	Accepting limit. -.83 Preventing problems .82 Spont. develop. -.75 Phys. contact .71 Giving of oneself -.60 Dirt & smells disgust. .52	Spoiling .64 Career .60 Investing emotions -.57 Caring for appearance .55		
Eigenv.	5.678	1.382		
Var. %	67.1%	16.3%		
Title	?	?		

*Note.* The numbers in the columns are saturations. Only factors with eigenvalues > 1.00 are presented, and only variables with saturations > .50 are listed. The table is based on a Varimax rotated factor matrix after rotation with Kaiser normalization. The themes are presented in an abbreviated form. NBF = Nonbreastfeeders, PBF = Partial breastfeeders, BF = Breastfeeders.

partly and for a relatively short period only, and who would not breastfeed at all. The prediction led to the correct identification of 85.5 % to 94.1 % of the cases (in the different analyses) which represents a highly significant improvement in classifying the subjects beyond the chance level. The success in prediction is im-

**Table 6.** Results of clustering of themes in the three groups of women.

Group	CLUSTERS	Measure of Sim.				
BFs	I. <ul style="list-style-type: none"> <li>* 1. Producing for children ideal conditions (spoiling)</li> <li>* 2. Jealousy</li> <li>** 3. Independence</li> <li>** 4. Behaving spontaneously</li> <li>** 5. Readiness to disrupt routine</li> <li>** 6. Not caring for one's external appearance</li> <li>** 7. Innovation</li> <li>*** 8. Giving freely of oneself</li> <li>*** 9. Devotion and fidelity to others</li> </ul>	77.82				
			II. <ul style="list-style-type: none"> <li>* 1. Making extraordinary efforts for others</li> <li>* 2. Possessiveness in interpersonal relations</li> <li>** 3. Investing emotions in one's actions</li> <li>** 4. Acting by emotion rather than by reason</li> <li>*** 5. Uniqueness of bond bet. parents &amp; children</li> </ul>	79.46		
					Suggested Title: Giving to others	
					(or: Emotionality) of the Interspersal Bond	
					III. <ul style="list-style-type: none"> <li>* 1. Preventing later problems by early treatment</li> <li>** 2. Importance of controlled nutrition</li> <li>** 3. Caring actively for health</li> </ul>	88.32
			IV. <ul style="list-style-type: none"> <li>* 1. Erotic elements as an integral aspect</li> <li>** 2. Promoting physical contact</li> <li>*** 3. Awareness of one's body</li> <li>**** 4. Enjoyment of sensory experiences</li> </ul>	76.10		
					Suggested Title: Sensuality	
					V. <ul style="list-style-type: none"> <li>* 1. Back to nature</li> <li>* 2. Blurring of distinctions bet. man &amp; animal</li> <li>** 3. Uniqueness of mother's role</li> <li>*** 4. Spontaneous development</li> </ul>	61.02
	Suggested Title: Harmony with nature					
	VI. <ul style="list-style-type: none"> <li>* 1. Accepting the inequality of women</li> <li>* 2. Acceptance of limitations</li> <li>* 3. Career</li> <li>** 4. Dirt and smells disgusting</li> </ul>	51.70				
			Suggested title: Acceptance of limitations			

portant both because it lends further confirmation to the CO theory that underlies the procedure applied, as well as because it constitutes cross-validation for the CO Questionnaire for Breastfeeding. Despite the deletion of items and change in sample and design, the questionnaire held its ground and proved to be useful in classifying the subjects even beyond the level attained in the original attempt.

Further, the success of the prediction based on the CO theory stands in contrast to the failure in prediction based on the subject's declaration concerning



Table 6. (continued)

Group	CLUSTERS	Measure of Sim.			
PBFs	I. <ul style="list-style-type: none"> <li>* 1. Preventing later problems by early treatment</li> <li>* 2. Back to nature</li> <li>* 3. Importance of controlled nutrition</li> <li>* 4. Caring actively for health</li> <li>** 5. Uniqueness of bond bet. parents &amp; children</li> <li>** 6. Uniqueness of mother's role</li> <li>** 7. Accepting inequality of women</li> <li>** 8. Devotion and fidelity to others</li> </ul> Suggested Title: Caring for others	74.66			
		II. <ul style="list-style-type: none"> <li>* 1. Career</li> <li>* 2. Not caring for one's external appearance</li> <li>** 3. Making extraordinary efforts for others</li> <li>** 4. Giving freely of oneself</li> </ul> Suggested Title: Making efforts for others	73.58		
			III. <ul style="list-style-type: none"> <li>* 1. Erotic elements as an integral aspect</li> <li>* 2. Blurring of distinctions bet. man &amp; animal</li> <li>** 3. Spontaneous development</li> <li>** 4. Behaving spontaneously</li> <li>*** 5. Readiness to disrupt routine</li> <li>*** 6. Innovation</li> <li>*** 7. Independence</li> </ul> Suggested Title: Rejecting accepted regulations	73.07	
				IV. <ul style="list-style-type: none"> <li>* 1. Producing for children ideal conditions (spoiling)</li> <li>** 2. Jealousy</li> <li>** 3. Promoting physical contact</li> <li>*** 4. Possessiveness in interpersonal relations</li> <li>**** 5. Investing emotions in one's actions</li> <li>**** 6. Acting by emotion rather than by reason</li> </ul> Suggested Title: Possessiveness	71.58
					V. <ul style="list-style-type: none"> <li>* 1. Accepting limitations</li> <li>* 2. Awareness of one's body</li> <li>** 3. Dirt &amp; smells as disgusting</li> <li>*** 4. Enjoyment of sensory experiences</li> </ul> Suggested Title: Acceptance of limitations

breastfeeding. This failure supports the CO theory just as the success in prediction based on the four belief types. The reason is that according to the CO theory declarations of intent should not be expected to predict behavior. They may fulfil different functions but providing for the prediction of behavior is certainly not one of their major functions. The fact that they refer directly to some behavior (e.g., "I will go to the soccer game", "I intend to breastfeed" "I hereby declare my intention to fight evil") has misled some into assuming a direct relation between the declared intent and the behavior (Fishbein & Ajzen, 1975). This has resulted in heroic efforts to account for the bulk of findings indicating the absence of a relation between the two. To be sure, intents may be related

Table 6. (continued)

Group	CLUSTERS	Measure of Sim.
NBFs	I. * 1. Accepting the inequality of women * 2. Accepting limitations ** 3. Promoting physical contact ** 4. Awareness of one's body ** 5. Erotic elements as an integral aspect ** 6. Uniqueness of bond bet. parents & children *** 7. Uniqueness of mother's role *** 8. Giving freely of oneself *** 9. Devotion and fidelity to others Suggested Title: Accepting limitations (in general & in interpers. relations specifically)	79.18
	II. * 1. Independence * 2. Innovation ** 3. Career ** 4. Readiness to disrupt routine Suggested Title: Independence	92.60
	III. * 1. Producing for children ideal conditions (spoiling) * 2. Preventing later problems by early treatment ** 3. Investing emotion in one's actions ** 4. Making extraordinary efforts for others Suggested Title: Caring for others	82.13
	VI. * 1. Not caring for one's external appearance * 2. Dirt and smells as disgusting ** 3. Behaving spontaneously ** 4. Back to nature ** 5. Blurring of distinctions bet. man & animal *** 6. Spontaneous development *** 7. Acting by emotion rather than by reason Suggested Title: Letting things go (or: Loosening up control)	69.56
	V. * 1. Jealousy * 2. Possessiveness in interpersonal relations ** 3. Caring actively for health ** 4. Importance of controlled nutrition Suggested Title: Maintaining control	59.92
	VI. * 1. Enjoyment of sensory experiences (This item was not embedded in any cluster)	

*Note.* The table is based on BMDP P1M (Dixon & Brown, 1977) cluster analysis of variables. The criterion used for combining variables into clusters or clusters into larger clusters was average linkage. The lowest limit of acceptable similarity was 50. The asterisks represent subclusters: all variables belonging to one subcluster share the same number of asterisks. NBF = Nonbreastfeeders, PBF = Partial breastfeeders, BF = Breastfeeders.

to the declared behavior. A series of studies (Shmotkin, 1983) showed that only those declared intents that are the product of a CO cluster incorporating the four belief types may predict behavior. But without examining the etiology or

the meaning of the intent (Kreitler et al., 1976), it is impossible to determine whether the declaration would be implemented by an action or not. The necessary examination entails checking the relation of the declared intent to the four belief types that provide, as demonstrated, a much safer and direct procedure for behavior prediction.

A closer examination of the prediction both in terms of the CO score and the discriminant analyses shows that, as expected in line with the CO theory, all 4 or at least 3 belief types are involved as determinants of the behavior of breastfeeding. This finding corresponds to a large body of research (Kreitler et al., 1976, 1982) which showed that molar behaviors require the involvement of 3 to 4 belief types. Yet, it is of interest to note that the four belief types do not play the same role in regard to the different groups. The various discriminant analyses indicate that goal beliefs and general beliefs play a relatively greater role in determining to which of the two extreme groups – BFs or NBFs – a subject belongs. In contrast, the other pair of belief types – norm beliefs and beliefs about self – play a relatively greater role in determining whether a subject belongs to the NBFs or the PBFs.

The findings showed that BFs had 3 to 4 belief types orienting toward breastfeeding while the NBFs had 1 or 0. This indicates, as expected, that in the BFs but not in the NBFs there was sufficient motivational force orienting toward and supporting breastfeeding. Of special interest are however the PBFs. Since they had on the average only two belief types orienting toward breastfeeding, they did not have a motivational force strong enough to support breastfeeding. However, the evidence indicates that even at this initial level their motivational matrix resembled more closely that of the BFs than of the NBFs. Thus, it is possible that only a relatively slight change was necessary for bridging the gap and turning these subjects into breastfeeders. It can be assumed that what happened is that one of the two belief types that were initially too weak to support breastfeeding became temporarily strong enough to reach the threshold (for example, due to the experience of delivery, through the impact of external persuasion or a favorable impression of some model), so that with three belief types supporting the behavior, breastfeeding was at least initiated. However, the increase in the strength of the initially weak belief type was probably only temporary, so that when the circumstances that led to its strengthening disappeared or difficulties attendant upon breastfeeding appeared (e.g., combining nursing with a working schedule, loss of appetite by the baby), the belief type returned to its original weakness. Thus, with only two belief types supporting breastfeeding, the motivational force was certainly not strong enough to maintain it in a form (that is, without supplementary bottle feeding) and for a duration (that is, for more than 6 weeks) to turn it into more than what Newton would call a “token” phenomenon.

Whereas the degree to which the belief types support breastfeeding provides insight into the structure of the motivational matrix underlying the behavior, analyses of the groupings of the themes provide insight into the contents of this motivational matrix. These analyses show major differences among the three groups. According to both the factor and cluster analyses, the motifs characteristic of the BFs are intimacy; free giving of oneself to others; spontaneity;

awareness of the speciality of the interpersonal bond; a tendency toward jealousy grounded in the sensation that the other is part of oneself; emphasis on emotions as well as on sensuality and sensory experiences; striving for harmony with nature; caring for health; and readiness to accept the limitations on one's freedom that attend parenthood, and even the inequality of women that implies for them also femininity and the uniqueness of the mother's role in regard to the infant. In the NBFs we find a rejection of limitations which in them assumes a broad meaning extending to physical, emotional and interpersonal restrictions; and emphasis on independence, caring for oneself, and on maintaining control over their body as well as in the interpersonal sphere. They reject spontaneity and emotions as part of a complex indicating loosened control, blurring of important distinctions, and lack of functionality. In this group, caring for others assumes a slightly negative overtone, due no doubt to the fact that it is embedded in the context of themes like "spoiling", "preventing later problems by adequate early treatment" and "making extraordinary efforts for others".

Finally, in the PBFs we find themes characteristic of both BF's and the NBF's. With the BF's they share the emphasis on emotionality in the interpersonal sphere, and with the NBF's the rejection of limitations which like them they view mainly in physical and sensory terms rather than social. However, a main characteristic of the PBF's seems to be the confluence of self-focused and other-focused themes that emerged in the factor analysis and indicates the unclarity which marks this group also in the behavioral sphere.

The findings of the study have led to identifying the cognitive-motivational determinants of breastfeeding. These determinants suggest that for a woman in the present socio-cultural sphere the decision to breastfeed or not to do so is rooted in tendencies manifested in a broad range of domains including the cognitive, the emotional and the interpersonal. This indicates that effecting changes in breastfeeding cannot be an easy matter attained through advertisement or the advice of the gynecologist. On the other hand, since the cognitive-motivational determinants have been identified, they can be modified by means of procedures developed in the framework of the CO theory (Kreitler & Kreitler, 1990b). In view of the bulk of previous research (Kreitler et al., 1976, 1982; Zakay et al., 1984) which proved that changing systematically relevant cognitive contents leads to predictable changes in behavior, there is every reason to expect that modifying the relevant beliefs and themes of individuals, groups and even very large groups, through education or the possible involvement of massmedia, would increase the incidence and success of breastfeeding, if this is desired and recommended.

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