# Infant Feeding Decisions and Practices in the U.S. and Colombia

**Author:** Ramirez, Angela; Bravo, Irene M; Katsikas, Steven

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**Abstract:** None available.

**Full Text:** Headnote ABSTRACT: Infant feeding decisions and practices were examined in a preliminary cross-cultural sample of the U.S. and Colombia using the Theory of Reasoned Action (TRA) and the Transtheoretical Model (TM) (Humphreys, Thompson &Miner, 1998) as a theoretical framework. The sample consisted of 80 participants in the third trimester of pregnancy, 40 were recruited in the U.S. and 40 in Colombia. As hypothesized, breastfeeding rates were significantly higher in Colombia than in the U.S. Breastfeeding rates were not significantly mediated by income, and perceived social support for breastfeeding was significantly higher in Colombia. KEY WORDS: Infant feeding decisions, breastfeeding practices, cross-cultural breastfeeding practices, decision-making processes in breastfeeding practice. INTRODUCTION Undoubtedly, breastfeeding offers many psychological, healthenhancing and practical benefits to both infant and mother (Healthy People 2010, 1998-2000). However, it is unclear how culture and socioeconomic status (SES) affect mothers in their decision to adopt the most appropriate infant-feeding method. The purpose of this study was to examine how culture and SES affect infant-feeding decisions, examining an initial cross-sectional sample of women in the U.S. and Colombia. Although women in the U.S. have been encouraged to breastfeed by both national and international organizations (Center for Disease Control, American Pediatric Association and the World Health Organization), U.S. actual breastfeeding rates are yet to reach those goals. Colombia is a developing country also actively involved in increasing and maintaining breastfeeding practices. Because studies comparing these two countries are scarce, and due to the great advantages involved in increasing breastfeeding practices throughout the world, we compared how a group of mothers in the U.S. and Colombia decide upon and practice breastfeeding. It was anticipated that the results of this study would be useful in stimulating more research to recommend practices that could potentially increase breastfeeding rates in the U.S. and Colombia. Kloeblen, Thompson, and Miner (1999) examined how minority, low SES American women decide on breastfeeding methods, using the Theory of Reasoned Action (TRA) and the Transtheoretical Model (TM) (Humphreys, Thompson &Miner, 1998), as the theoretical framework for their study. Based on Kloeblen et al. (1999) findings, we examined the psychological processes and social support (Arlotti, Cottrell, Lee &Curtin, 1998; Bocanegra, 1998; Buxton et al., 1991; Houghton &Graybeal, 2001; Libbus, Bush, &Hockman, 1997; Littman, Medendorp, &Goldfarb, 1994) needed to select and persist in breastfeeding in two cross-cultural groups of pregnant women in the U.S. and Colombia. We now briefly describe the two decision-making process theories that guided our research, the TRA and the TM models. The Theory of Reasoned Action (TRA) The TRA model describes the cognitive processes involved in reaching a particular decision. The TRA states that the direct precursor of voluntary action is intention. However, before this readiness to act is reached, it is necessary to assess attitudes toward the behavior, perceived social pressures, and the individuals' perceived behavioral control over the event (Libbus, Bush &Hockman, 1997). Numerous studies have found that positive maternal attitudes and beliefs toward breastfeeding predict breastfeeding intention and behaviors (Bocanegra, 1998; Duckett et al., 1998; Humphreys et al., 1998; Kloeblen et al., 1999; Matich &Sims, 1992; Richardson &Champion, 1992; Wambach, 1997), thus providing support to the TRA model. Similar to the TRA model, the TM approach provides more detailed and sequential information on the specific steps needed in the decision-making process. The Transtheoretical Model (TM) The TM proposes that a complex, three-phase process precedes behavior change (Humphreys et al., 1998). These three phases are: 1) stages of change, 2) processes of change, and 3) decisional balance. The first phase, stages of change, has 3 levels of readiness.

The first level is pre-contemplation, or an assessment of the situation without any involvement or intention to engage in the behavior. The second level is contemplation, in which there is active thinking about modifying or engaging in new behaviors in the next 6 months. The last level is preparation; a decision to act has been reached, and it will be implemented within the next 30 days. The second stage of the TM model, processes of change, entails a sequence of 10 steps: 1) Consciousness-raising. The behavior is positively evaluated, and motivation to engage in the new behavior is at its highest. 2) Self reevaluation. Assessment of the level of self-efficacy required to followthrough with the behavior. 3) Self-liberation. Old cognitive and behavioral patterns are discarded and new procedures seem exhilarating and feasible. 4) Counter-conditioning. To proceed with new patterns of behavior, it is necessary to undo environmental pressures that maintained in place old patterns of behavior. 5) Stimulus control. There is a conscious effort to control crucial aspects of the environment that will facilitate the success of the new behavior. 6) Reinforcement management. Self-reinforcement is important to maintain motivation. 7) Helping relationships. Although self-reinforcement is crucial, it is very helpful to have a good support system to encourage the new behavior. 8) Dramatic relief. Now that the new behavior is solidly implemented, reinforced, and encouraged, there is a sense of enormous relief. 9) Environmental re-evaluation. The environment has changed and it needs to be reassessed. 10) Social liberation. Social obstacles that hindered the implementation of the new behavior do not seem important any more. The last stage of change, decisional balance, requires that costs and benefits toward the new behavior be examined. Kloeblen et al. (1999) found that women in the later stages of change had more positive attitudes toward breastfeeding. After this overview of the theoretical framework we used to guide our study, we briefly review some of the cultural factors that mediate the decision to breastfeed in the U.S. and Colombia. Breastfeeding in the U.S. and Colombia United States. Breastfeeding rates have fluctuated in the U.S. from 57% in 1982-83, to 55.5% in 1984-85 (National Center for Health Statistics, 1996), and 64% in 1998. Statistics on breastfeeding rates by ethnicity provide the following percentages: Blacks 45%, Whites 68%, and Hispanics 66% (Healthy People 2010, 1998-2000). The Center for Disease Control goals for 2010-similar to the American Pediatric Association and the World Health Organization-is to increase breastfeeding to 75% in early postpartum, to 50% in the 5 to 6 month period after birth, and to 25% when the infant is 1 year old (Healthy People 2010, 1998-2000). This goal is still far, as 64% of American mothers breastfeed initially, but this rate drops to about 20% when the infant is approximately six months of age (Hausman, 2000). Culture-specific notions, ethnicity, and education seem to affect how U.S. mothers approach breastfeeding (Quarles, Williams, Hoyle, Brimeyer, &Williams, 1994). U.S. mothers rely mostly on professionals for breastfeeding advice (Millard, 1990), and no evidence of a strong social support to continue breastfeeding is reported. Indeed, it has been reported that new U.S. immigrants from South American, African, Asian and European countries breastfeed longer than Caribbean immigrants or North American women (Bocanegra, 1998). This finding may be related to the availability of stronger social support to breastfeed in non-U.S. countries. Conversely, higher education and higher SES are usually predictors of prolonged breastfeeding in the U.S. (Malloy &Berendes, 1998; Richardson &Champion, 1992; Ryan et al., 1991; Starbird, 1991), and are associated with positive attitudes toward breastfeeding (Duckett et al., 1998). Interestingly, Native-Americans of lower education (less than high school) breastfeed longer than those with higher education (Houghton &Graybeal, 2001). Colombia. Breastfeeding rates have remained steady in Colombia, with 90% of infants being breastfed up to 4 months (Profamilia, 1995). Approximately 83% of mothers of lower SES regions breastfeed (Carrasquilla, Osorno, Paredes, Soto &Vasquez, (The Foundation of Education (FES) in Colombia), 1992). In rural zones, breastfeeding stops at an average of 13 months, and in urban areas, at approximately 10 months (Profamilia). Mothers with no formal education breastfeed for approximately 12.4 months, whereas mothers with formal education stop at approximately 9.5 months (Plan Nacional, 1991). It is common that lay women provide breastfeeding expertise in Colombia (Millard, 1990), and that street vendors or women involved in agricultural work breastfeed longer than those employed in factory, clerical, or professional positions (Plan Nacional, 1991). In conclusion, many psychological and cultural factors

mediate the decision to breastfeed in both the U.S. and Colombia. The purpose of this study was to examine some of those factors using The Breast Feeding Intention Scale (Humphreys et al., 1998), a valid instrument that measures beliefs and behaviors toward infant feeding methods. More importantly, we wanted to assess whether the decision to breast feed was followed by actual breastfeeding behaviors. Thus, we hypothesized that: a) breastfeeding rates would be higher in Colombia than in the U.S., as evidenced by plans to breastfeed and reported postpartum breastfeeding rates at 1 month postpartum, and b) women of lower SES would be more likely to formula-feed in the U.S., but more likely to breastfeed in Colombia. METHOD Participants Participants were 80 females in their last trimester of pregnancy. Forty participants were recruited from 4 U.S. Southeastern Florida clinics, hospitals, and obstetricians' offices, and 40 participants were recruited from 5 hospitals and obstetricians' offices in Bogota, Colombia. Southeastern Florida participants. Participants were either born in or had been living in the U.S. for a minimum of 7 years. Because of the high proportion of immigrants living in Southeast Florida, the selected sample was representative of this population. Every other pregnant woman entering the obstetricians' offices (n = 11) and clinics (n = 10) was selected to participate, and all pregnant women recruited at Lamaze classes (n = 19) agreed to participate in the study. Their age ranged from 19-40 years, with a mean age of 29.18 (SD 5.66). Fiftyfive percent were married and 45% were single, with 67.5% of them reporting they were having their first child, 30% had 1 child, and 2.5% had 2 children. SES was reported as low (n = 22; 55%), middle (n = 4; 10%), and high (n = 14; 35%)-as determined by the U.S. Census Bureau (2000), and percentage with High School education vs. no High School education was 85% and 15% respectively. Bogota, Colombia, participants. All participants were born in Colombia. The sample was recruited from 3 clinics (n = 18) and 2 hospitals (n = 22). Their age ranged from 20-42 years, mean age 29.35 (SD 5.62). Sixty percent were married and 40% were single, with 35% of them reporting they were having their first child, 42.5% had 1 child, 15% had 2 children, and 7.5% had 3 or more children. SES was reported as low (n = 29, 72.5%), middle (n = 7, 17.5%), and high (n = 4; 10%)-as reported by the National Administrative Department of Statistics (1993), and percentage with High School vs. no High School was 65% and 35% respectively. Measure The Breastfeeding Intention Scale. This is a 6 page, 70-item selfadministered scale developed by Humphreys et al. (1998) and based on the TRA/TM theories. The scale is available in English and Spanish and it has a 5-point Likert format. It is composed of 3 subscales that measure intention and 5 statements that assess plans: The subscales' names and reliability coefficients are: Beliefs about Breastfeeding (Decisional Balance) r .79, (20 items, range -2 to 2; total score -40 to 40), Thoughts about Breastfeeding (Processes of Change), r .83, (20 paired items, range 0-10), and Important People (Subjective Norms), r .67, (15 items, range 5 to 625 - significant others' scores are multiplied by each other and added to the score. The Infant Feeding Plans, include 5 related statements ranging from "not intending to breastfeed" to "planning to breastfeed." The Breast Feeding Intention scale was normed on a sample of 1,001 pregnant minority women of low SES (80.2% African-American and 14.2% Hispanic), recruited at a WIC maternal clinic. This scale is based on the assumption that "intention to formula-feed is the baseline condition from which women will change towards the intention to breastfeed for increasingly greater duration" (Humphreys et al., 1998, p. 335). Decisional Balance explores positive and negative beliefs about breastfeeding, and a positive score represents predominantly positive beliefs. A high score on Processes of Change is representative of the latter stages of change. Last, a high score in Subjective Norms is indicative of appropriate social support to initiate and persist in breastfeeding. Follow-up Phone Call Participants consented to provide their phone number for a brief, follow-up postpartum phone call. Participants were informed that the phone call would last approximately 10 minutes. This step was necessary to assess whether the decision to breastfeed was carried out postpartum. We anticipated that 1 month follow-up would provide the highest breastfeeding rate for all groups. Procedure The scale was slightly modified for the present study. Questions about country of birth, years living in the U.S., number of people in household, and income level were added, and those asking for participants' phone numbers and WIC/Medicaid benefits were deleted. The final version had six sections: 1) informed consent, directions and introduction, 2) Beliefs about

Breastfeeding, 3) Thoughts about Breastfeeding, 4) Important People, 5) Infant Feeding Plans, and 6) demographic information. Prior to data collection, the first author in the U.S. and an assistant in Colombia obtained approval from participating hospitals and obstetricians' offices, and personally distributed the questionnaire packages. Questionnaires were administered at clinics, doctor's offices or hospitals. Completing the whole questionnaire package lasted less than 20 minutes, and all women approached agreed to complete it. The consent form provided experimenters' phone numbers and offered a summary of the study's results upon request. Information collected included: 1) birth date, ethnicity, income, education, and pregnancy information, and 2) The Breastfeeding Intention Scale. After assuring strict confidentiality, experimenters asked for participants' phone numbers to follow-up with them postpartum. Experimenters called at 1 month postpartum and asked participants which infant feeding method they were using. The phone call lasted 5-10 minutes. RESULTS Internal Consistency Reliability estimates for the data were obtained. Internal consistency (Cronbach alpha reliability) of all subscales was satisfactory. Reliability coefficients for the U.S. and Colombia combined were: .78 Decisional Balance, .85 Processes of Change, and .67 Subjective Norms. For the U.S: .84 Decisional Balance, .87 Processes of Change, and .75 Subjective Norms, and for Colombia: .71 Decisional Balance, .77 Processes of Change, and .62 Subjective Norms. Group Comparison Groups were not significantly different in terms of age, marital status, and prenatal health care. However, Chi-square analyses revealed significant differences in income level, x^sup 2^(2, N = 80) = 7.34, p = .026, level of education x^sup 2^(1, N= 80) = 4.27, p = .039, and number of children, x^sup 2^(3, N = 80) = 11.56, p = .009. Because of these differences, analyses of variance (entering income level, education and number of children as factors) were conducted for each subscale to assess the impact of these factors. No statistically significant effects were found for any of these variables. Thus, subsequent analyses were not adjusted for income level, education, or number of children.

**Table 1**
**Infant Feeding Plan**

| *Group* | *Feeding Plan* | *N* | *Percentage* |
|---|---|---|---|
| United States | Precontemplation | 5 | 12.5 |
| | Contemplation | 4 | 10 |
| | Preparation | 15 | 37.5 |
| | Action | 3 | 7.5 |
| | Maintenance | 13 | 32.5 |
| Total | | 40 | 100 |
| Colombia | Precontemplation | 0 | |
| | Contemplation | 0 | |
| | Preparation | 7 | 17.5 |
| | Action | 1 | 2.5 |
| | Maintenance | 32 | 80 |
| Total | | 40 | 100 |

Note. Precontemplation = bottle-feed only; Contemplation = unsure about breast-feeding; Preparation = planning to breast-feed with no specific planned duration; Action = planning to breast-feed for at least 1 month; Maintenance = planning to breast-feed for at least 6 months.

Hypotheses Testing The first hypothesis stated that breastfeeding rates would be higher in Colombia than in the United States, as evidenced by participants' plans to breastfeed and by 1-month follow-up. In examining infant feeding plans, the majority of participants in Colombia (32 of 40; 80%) had a plan to breastfeed for at least 6 months postpartum, whereas participants in the United States were less certain (13 of 40; 33%) about their plan to breastfeed for at least 6 months (see Table 1 for participants' involvement in each stage of change). The follow-up phone call provided information about the current infant feeding method at 1 month postpartum. Exclusive breastfeeding was higher among the participants in Colombia (34 of 37 or 92%; 3 could not be reached at follow-up) as opposed to participants in the United States (12 of 38 or 32%; 2 could not be reached

at follow-up). In comparing infant feeding plans to the 1 month follow-up, 31 participants in the U.S. intended to breastfeed, but only 17 (2 participants could not be reached) or 55% were breastfeeding at follow-up, whereas in Colombia, 40 participants planned to breastfeed and 35 (3 could not be reached) or 88% were breastfeeding at follow-up.

**Table 2**
**Percentage Distributions for Income Level and Infant Feeding Method by Country**

| | *% Breast-feeding within entire sample* | *% Not Breast-feeding within entire sample* | *Total %* |
|---|---|---|---|
| Income Level in the U.S. | | | |
| Low | 24.3 | 27 | 51.4 |
| Middle | 2.7 | 8.1 | 10.8 |
| High | 24.3 | 13.5 | 37.8 |
| Total | 51.4 | 48.6 | 100 |
| Income Level in Colombia | | | |
| Low | 64.9 | 5.4 | 70.3 |
| Middle | 18.9 | 0 | 18.9 |
| High | 10.8 | 0 | 10.8 |
| Total % | 94.6 | 5.4 | 100 |

The second hypothesis stated that lower-income females would be more likely to formula-feed in the United States, but more likely to breastfeed in Colombia. To examine the influence of income level on infant feeding method at 1 month postpartum, variables were recoded as follows: "Breastfeeding and "combination of breastfeeding and formula feeding" were coded as "breastfeeding"; "formula feeding" and "breast-milk in bottle" were coded as "formula feeding." This recoding resulted in two categories: breastfeeding and formula feeding; the categories of importance in this study. In terms of SES, percentage differences between "breastfeeding" and "formula feeding" in the U.S. and Colombia were in the hypothesized direction (see Table 2 for those results). Descriptive statistics and mean score differences on the Breast Feeding Intention subscales by country are displayed on Table 3. To assess whether mean score differences between the U.S. and Colombia groups were statistically significant, we conducted independent samples f-tests. In examining score differences between the U.S. and Colombia in the Breast Feeding Intention subscales, no significant differences were found in Decisional Balance or Processes of Change, but significant mean differences were found in Subjective Norms, indicating that women in Colombia perceived having greater social support for breastfeeding when compared to women in the U.S.

**Table 3**
**Means, SD, and Independent t-tests for the U.S. and Colombia [Col] on each Subscale**

| | *U.S. (n = 40)* | | *Col (n = 40)* | | | | |
|---|---|---|---|---|---|---|---|
| *Scale* | *M* | *(SD)* | *M* | *(SD)* | *t* | *df* | *p* |
| Beliefs | 16.9 | (10.26) | 17.83 | (8.43) | −.440 | 78 | .661 |
| Thoughts | 5.63 | (1.69) | 5.93 | (1.91) | −.743 | 78 | .460 |
| Important People | 228.38 | (89.75) | 273.48 | (79.60) | −2.38 | 78 | .020* |

*$p < .05$

DISCUSSION As hypothesized, differences were found between the U.S. and Colombia in infant feeding intention and practices. Specifically, differences were found in planning what infant feeding method to use, the actual infant feeding method used at postpartum, and the perception of available social support to persist in

breastfeeding. Some indication that SES mediates the selection of infant feeding method also was found. Breastfeeding Rates in U.S. vs. Colombia Although U.S. participants initially indicated intention to breastfeed, they were unsure about how long they would persist in breastfeeding. Yet, in Colombia, participants indicated intention to breastfeed for at least one month. In examining actual infant feeding behaviors at 1 month postpartum, 85% of Colombia participants were exclusively breastfeeding, as compared to 30% of the U.S. participants. These findings are very similar to the results of Colombia's Health Department survey in 1995, when breastfeeding rates were approximately 90% for infants under 4 months of age (Profamilia, 1995). Cultural factors may account for the observed rates. As noted, reliance on professionals' advice about breastfeeding (Aikin, 1999) seems to be culture-specific to the U.S. (Millard, 1990), whereas in Colombia, lay people-such as family and friends-provide such information, and they also receive widespread support from organizations that encourage breastfeeding. Although in the U.S. programs and associations, such as Healthy People 2010 and The American Academy of Pediatrics, strongly promote breastfeeding, breastfeeding has not generalized to the population at large. For example, in a recent survey of U.S. pediatricians, 45% of them viewed breastfeeding and formula feeding as equally acceptable methods of infant feeding (Berry, 2000). Furthermore, it is not generally accepted in the U.S. to breastfeed in public places or in the workplace, making the decision to breastfeed more difficult in the U.S. than in countries where these methods are common practice. Interestingly, in the U.S. participants, there was discrepancy between the infant feeding method they intended to use and the infant feeding method they were actually using at 1-month postpartum. Some of the reasons the U.S. participants provided for not breastfeeding were related to convenience, work, and health, such as the infant not latching on, insufficient milk supply or complicated deliveries. Thus, even if these mothers believed that breastfeeding was the best infantfeeding practice, they may have felt forced to formula feed due to life pressures (Guttman &Zimmerman, 2000). In terms of health, the majority of U.S. participants received prenatal care earlier than the majority of Colombia participants and, in addition, they enjoyed the benefits of the highly advanced medical technology of the U.S. Yet, many more women in the U.S. than in Colombia reported switching to formula feeding for health-related reasons. Furthermore, Colombia is a collectivistic society, where access to family and friends is readily available. Thus, the lower social support for breastfeeding perceived by the U.S. group may be associated to their lower breastfeeding rates. This finding is congruent with previous studies that emphasized the importance of social support in the intention and persistence to maintain breastfeeding practices (Arlotti, Cottrell, Lee &Curtin, 1998; Bocanegra, 1998; Buxton et al., 1991; Houghton &Graybeal, 2001; Libbus et al., 1997; Littman, Medendorp, &Goldfarb, 1994). Infant Feeding Method and Income Level in the U.S. vs. Colombia In examining the influence of SES on the selection of infant feeding method, the U.S. higher-income participants were slightly more likely to breastfeed than the mid and lower-income participants. In Colombia, breastfeeding predominated across all SES groups, with a small percentage bottle-feeding in the lower-income group. These findings are congruent with other studies that associate prolonged breastfeeding with higher SES in the U.S. (Richardson &Champion, 1992). It is plausible that U.S. lower-income mothers need to work soon after birth, and that they have poor maternity leave benefits. On the other hand, in Colombia, lower income mothers, such as street vendors and agricultural workers, typically bring their infants to work. Conclusions This study provided initial cross-cultural findings on infant-feeding decisions and practices in the U.S. and Colombia. Further research is needed to stimulate the use of theoretically based models in studying the decision-making processes required to engage in breastfeeding practices and other health-oriented decisions of benefit to mothers and their infants. Larger samples in the U.S. and Colombia will allow for further generalization of these findings, and follow-up information collected at a later time may provide final status of breastfeeding practices in the countries studied. Furthermore, it may be of interest to explore the mediating role of psychopathological symptoms in the process of infant feeding selection and behaviors. This study contributes to the literature on maternal and infant health, as a preliminary step in understanding cross-cultural attitudes and behaviors involved in infant feeding decisions and practices, from a theoretically based

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