

DEVELOPMENT AND EVALUATION OF AN INFANT-CARE TRAINING PROGRAM WITH FIRST-TIME FATHERS

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We evaluated the effectiveness of a multicomponent package in training infant-care skills to first-time fathers. After developing and socially validating a set of infant-care skills, we assessed the effects of training in a hospital-based program with expectant fathers (Experiment 1) and in a home-based program with fathers having varied degrees of experience with their infants (Experiment 2). In both experiments, a multiple probe design demonstrated that the training package was responsible for producing criterion performance by the expectant and first-time fathers. A 1-month generalization probe in Experiment 1 showed that the effects transferred across training conditions (training doll to human infant) and settings (hospital to home). An increase in the number of infant-stimulation activities performed by fathers was also observed in both experiments.

DESCRIPTORS: fathers, infant-care skills, social validation

Fathers continue to spend less time caring for their newborns than do mothers (Araji, 1977; Kotelchuck, 1976; Parke & Sawin, 1976). A variety of cultural shifts, however, have resulted in fathers adopting a more active role in infant care (Parke, Hymel, Power & Tinsley, 1980). These trends include an increasing number of mothers who are employed outside the home, a greater percentage of legal decisions awarding child custody to fathers, enhanced father participation in labor and delivery, earlier postpartum hospital discharges, an increase in the percentage of Caesarean-delivered infants, a rise in the survival rate of low-birth-weight preterm infants, and the diminished role of the extended family as a major support mechanism.

Few studies have examined the design and eval-

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Reprints and copies of the training manual and task analyses may be obtained from Ronald Dachman, North Suburban Center for the Arthritic Diseases, Ltd., 455 South Roselle Road, Suite 100, Schaumburg, Illinois 60193.

uation of infant-care training programs for expectant fathers. One article describes a program to teach fathers a number of infant-care skills, including folding and changing a diaper, bottle feeding, and holding a newborn (Giefer & Nelson, 1981). The program appeared to be successful in teaching these skills; however, this finding is attenuated by methodological weaknesses including the use of a one group posttest only design (Cook & Campbell, 1979), lack of performance criterion levels, no reliability data on performance, and reliance on a 4-item questionnaire as the sole outcome measure.

Another study analyzed the effects of a postpartum intervention on various attitudes and behaviors of fathers (Parke et al., 1980). One group of fathers viewed a 15-min videotape in which a father demonstrated infant-stimulation activities, feeding, burping, and diapering. A control group of fathers followed the standard hospital routine. Subjects who participated in treatment stimulated their infants more during the feeding session, vocalized more to their infants during play sessions, and fed and diapered their babies more frequently at 3 months than did fathers who had not seen the videotape.

This study offers an experimental analysis of an infant-care training protocol using multiple outcome measures (i.e., direct observation of father-

infant interaction and self-report data). Experiment 1 describes an evaluation of a hospital-based training program for expectant fathers. The purpose of Experiment 2 was to evaluate the effects of home-based training administered with fathers having varied degrees of experience with their newborns. Both experiments extend prior research on infant-care skills by systematically developing and validating a set of target skills and by improving on the research methodology with which training programs for fathers have been evaluated.

GENERAL METHOD

Development and Validation of Infant-Care Procedures

The set of infant-care procedures developed for this study was validated systematically using three discrete steps: the identification of critical infant-care skills, a task analysis of each skill, and the development and revision of protocols based on the feedback of experts (cf. Cuvo, 1978; Mathews, Whang, & Fawcett, 1980).

Identification of critical skills. Interviews with experts in pediatric medicine, early childhood educators, and parents were conducted to identify appropriate infant-care skills. Texts in pediatric medicine and nursing, relevant journal articles, and parent-education pamphlets were also consulted to identify these skills. The general skills chosen included the upright, football, and cradle holds; feeding; burping; bathing; cloth and disposable diapering; and rectal and axillary temperature measurement.

Task analysis. A videotape was developed showing the coordinator of prenatal education at a community hospital engaged in the designated infant-care skills. Two graduate students independently observed the videotape and performed task analyses of the proposed skills, yielding a sequence of response requirements for each procedure. Disagreements between the observers were resolved by reference to the videotape and the opinion of the taped professional (Cuvo, 1978).

Response evaluation. Sixty researchers and practitioners in pediatric medicine and early child-

hood education who, by virtue of their training and practice in infant education, qualified as infant-care experts and 30 parents were asked to rate the importance of each item of the infant-care task analyses on a 5-point, Likert-type scale with descriptors ranging from "completely unimportant" to "very important" (Goldfried & D'zurilla, 1969). The judges were also asked to determine how comprehensive the protocols were by answering the question: "Overall, how representative is this list of tasks needed by parents when (e.g., feeding) an infant?" Another 5-point scale appeared with descriptors ranging from "very unrepresentative" to "very representative."

The raw data obtained from the judges were converted into percentage scores using the formula developed by Bushell (Mathews *et al.*, 1980):

$$\frac{n(5) + n(4) + n(3) + n(2) + n(1)}{(X)n_2} = \%$$

where X is the total number of respondents, n is the number of respondents per rating, and n_2 is the highest possible rating. For example, the expert ratings for step 2 in the bathing protocol (i.e., gather equipment including the baby's clean clothes and place away from baby's reach) were 4,4,4, 5,5,5,5,4,5,2,5,3,5,4,5,5,5,4,4,5,4,4,5, and 5, respectively. The calculations were as follows:

$$\frac{14(5) + 9(4) + 1(3) + 1(2) + 0(1)}{25(5)} = 88.8\%$$

Therefore, the judges rated step 2 as being 88.8% important. Individual steps receiving scores of less than 80.0% were either excluded from the protocol, modified in response to feedback received from the judges, or included without revisions if parents rated the step as "important" and experts did not rate the step as "completely unimportant." A minimum mean rating of 80% across all steps for each task analysis was required for the final version of an infant-care protocol to be employed as a training tool.

Twenty-six questionnaires (43%) were returned from the designated experts and 12 (40%) were completed by parents. An example of a task analysis (bathing) appears in Table 1.

Table 1
Example of Infant-Care Skill Task Analysis

Bathing Protocol

Step 1. Select a nondrafty location for the bath.

Step 2. Gather all of the equipment, including the baby's clean clothes, and place them away from the baby's reach.

Step 3. Put a towel on the bottom of the tub.*

Step 4. Fill the basin with water that feels comfortable to your elbow or inner wrist.

Step 5. Remove the baby's clothing and diaper, and place them away from the baby.

Step 6. Shampoo

- A. Place the baby gently on a dry towel and wrap.
- B. Use the football hold over the tub.
- C. First wet, then place some shampoo on his or her head and gently massage in a circular motion using the flat pads of your fingers.
- D. Squeeze clear water from the washcloth onto his or her scalp, rinsing away all suds.
- E. Pat dry.

Step 7. With one hand supporting the baby's head, neck, and shoulders and the other supporting the buttocks, gently and gradually slide him or her into the bath water.

Step 8. Support the baby's head on your wrist, with the fingers of that hand holding the baby securely in the armpit.

Step 9. Face

- A. Wet the washcloth and, without soap, wipe the first eye from the inside out.
- B. With the unused portion of the washcloth, rinse and wash the other eye from the inside out.
- C. Rinse the washcloth and gently massage the face.
- D. Wrap the washcloth around one finger and wash only the outside of each ear.

Step 10. Body

- A. Use the washcloth or hand to wet the body from the neck down.
- B. Apply soap to the washcloth or hand and wash the baby's neck, chest, tummy, arms, armpits, and hands.**
- C. Apply the soapy washcloth to the buttocks, legs, and feet.**
- D. Wet the cloth and rinse beginning with the neck and moving down to the feet.

Step 11. Back

- A. Lift the baby up to a sitting position and support his or her head by placing the thumb, first, and middle fingers under the baby's chin.
- B. Apply soap to the cloth or hand and wash his or her back.
- C. Rinse the baby's back with water.

Step 12. Drying

- A. Lift the baby out of the tub while supporting his or her head, shoulders, and buttocks, and place him or her on a dry towel.
- B. Wrap the child in the towel and pat dry.
- C. Apply alcohol around the base and top of the umbilical cord.**
- D. If prescribed by your physician or if a rash is present, apply lotion.* **
- E. Dress the baby in a clean diaper and clothes.

* Optional step.

** Sequence not important.

Infant-Stimulation Activities

The infant-stimulation activities selected for this study were compiled from the infant-care and early-childhood education literature (e.g., Bluma, Shearer, Frohman, & Hilliard, 1976) and from interviews with experts in infant care. Activities were chosen that were appropriate for infants aged newborn to 8 weeks. These activities were incorporated into each infant-care skill and were considered part of the procedure. A partial list of the

activities used in this experiment is presented below.

1. Put your face 6–8 inches from your infant when talking or singing to him or her.
2. Repeat sounds your baby makes.
3. Sing to your baby or recite poems or nursery rhymes.
4. Gently rock your infant.
5. Gently rub your infant's head.
6. Touch a rattle to your infant's fingertips or back of hand.

Personnel and Training

Graduate students in clinical psychology served as the trainers and primary observers. Random assignment of subjects to trainers was preformed to control for differences across staff members. The investigator conducted reliability checks in both experiments. Teaching the trainers to employ the coding system consisted of three phases: (a) memorization of the infant-care coding system, (b) scoring father-infant interactions, and (c) competency-based instruction in the use of the infant-care skills.

Setting and Materials

All baseline and training sessions for Experiment 1 and all baseline sessions for Experiment 2 were conducted in a 7 m × 7 m hospital classroom. The classroom contained a table on which the materials necessary for the correct performance of all infant-care procedures were located. These items included a plastic newborn-sized doll, several disposable and cloth diapers, one jar of petroleum jelly, a box of wipettes, diaper pins, rubbing alcohol, washcloths, towels, soap, shampoo, a plastic bathtub, glass thermometer, T-shirts, a plastic wash basin, bath water, an 8-ounce bottle, and formula. The generalization measure for Experiment 1 and the final pretraining probes and training sessions for Experiment 2 were conducted in the fathers' homes.

Probes

Fathers were evaluated on their performance of the infant-care skills via probes conducted before and after training. During each probe session, the trainer asked the father to demonstrate how he would bathe, feed, burp, hold, diaper, and take his infant's temperature. Each father was given the following instructions at the start of the first observation session:

"I am going to ask you to perform a set of infant-care procedures. The baby doll and the rest of the materials necessary to successfully complete these skills are located on the table. I will let you know when to begin and which procedure to demonstrate. Be sure to let me know when you are finished with one procedure and ready to move on

to the next. Please hold all your questions until the end of the session. Also, feel free to talk your way through a procedure if you are unsure of what you are doing. The cassette player will only be used to signal the start of intervals which will enable me to record information more accurately. The headphone will be used to minimize distractions for you. Do you have any questions? OK let's begin."

Prior to subsequent observation sessions, a simplified version of these instructions was repeated. Each probe lasted 30–40 min, depending on the number of target behaviors correctly performed.

Generalization probes. In order to assess the effects of training across training conditions (training doll to human infant) and settings (hospital to home), direct observations of the fathers performing the infant-care skills with their own newborns were conducted in each subject's home 1 month following the birth of each father's child.

Data Collection and Reliability

During baseline, training, and generalization conditions of both experiments, a trained observer, seated approximately 1 m from the subject, recorded the occurrence and sequence of each step in the task analysis of infant-care skills (Katz & Lutzker, 1980). Observations were conducted in 15-s intervals (signaled by a cassette recorder with headphones) for 30–40 consecutive min. The frequency of infant-stimulation activities was also scored in each 15-s interval.

The percent occurrence of correct steps in the proper sequence for each skill was calculated. The correctness of each critical step (i.e., those considered to be essential to the performance of the skill) required both the performance of the task as described in the task analysis and, if sequence was considered important, its occurrence in the proper order with respect to the preceding task (see Table 1 for an example). If a subject met the established level of performance for an infant-care skill (80% of the critical steps performed correctly), that subject was given a score of one and was considered to have performed the skill to criterion. A total of 10 (performance at or above criterion for each of

the infant-care skills) was the maximum score possible for a subject to obtain in each session. Performing any eight of the ten infant-care skills across two consecutive sessions was the criterion level for termination of training. The display of any of the designated verbal or nonverbal infant-stimulation activities was scored separately.

Reliability data were collected in 29.3% of all sessions by a second observer who simultaneously but independently scored observations in the hospital and homes. An agreement was scored when both observers recorded the occurrence or nonoccurrence of a step in the same 15-s interval (or in the same sequence when more than one step was scored). Occurrence and nonoccurrence reliabilities for the infant-care skills were computed using the percent agreement formula by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100.

In Experiment 1, mean occurrence reliability across skill areas ranged from 72.9% (cloth diapering) to 100% (upright and cradle holds) ($M = 83.0\%$). Mean nonoccurrence reliability ranged from 66.7% (football hold) to 100% (upright and cradle holds) ($M = 92.1\%$). In Experiment 2, mean occurrence reliability across skill areas ranged from 78.8% (feeding) to 100% (cradle, football, and upright holds) ($M = 85.3\%$). Mean nonoccurrence reliability ranged from 80.8% (feeding) to 100% (cradle, football, and upright holds, and burping) ($M = 90.6\%$).

Occurrence reliability for infant-stimulation activities was computed across infant-care skills and experimental conditions using the formula described above. An agreement was scored when both observers recorded an infant-stimulation activity as occurring in the same 15-s interval. The mean occurrence reliability scores for stimulation activities across infant-care skills and experimental conditions for Experiments 1 and 2 were 83.8% and 79.6%, respectively.

Experimental Design

The effects of training were examined using a multiple probe design across fathers (Horner & Baer, 1978). In Experiment 1, pretraining probes

were conducted in the hospital with the training doll; in Experiment 2, probes were administered in each father's home with his newborn.

Consumer Satisfaction Measures

The social significance of the treatment goals, strategies, and outcomes (Wolf, 1978) was assessed using two modified forms of the Parent's Consumer Satisfaction Questionnaire (Forehand & McMahon, 1981). Each subject and subject's wife were asked to complete one of these forms (presented in Table 2) following the completion of training. Six questionnaires (100%) were returned from the subjects and five (83.3%) from the wives. None of the questionnaires were completed anonymously.

EXPERIMENT 1

METHOD

Subjects

Three adult males, whose wives were pregnant for the first time, participated. Father 1, age 24, held a high school degree and was employed as a construction worker; Father 2, age 26, was employed as a hair stylist; and Father 3, age 34, held a master's degree in education and taught at a local public school. All three fathers reported having no prior experience in infant care.

Procedure

Baseline. The trainer met with each father in a hospital classroom to review the rationale and time requirements of the study and to assess his performance of the infant-care skills. Feedback was not provided to fathers on the accuracy of their performance during baseline. All fathers were told they would be taught to bathe, feed, burp, hold, diaper, and take their infant's temperature. They were also told they would be taught some creative ways to interact with their babies. The trainer answered any questions and asked the fathers to paraphrase the instructions to ensure their complete understanding. The fathers were instructed to refrain from discussing their involvement in the

Table 2
Mean Responses to Fathers' and Wives' Satisfaction Questionnaire for Experiments 1 and 2

A. Overall Program

1. At this point, my expectation for a satisfactory outcome of the training program is: 1 = very pessimistic, 7 = very optimistic; response: 6.0 (fathers); 6.0 (wives)
2. I feel the approach to teaching infant care by using this type of training program is: 1 = very inappropriate, 7 = very appropriate; response: 6.0 (fathers); 5.75 (wives)
3. Would you recommend the program to a friend or relative? 1 = strongly not recommended, 7 = strongly recommend; response: 6.0 (fathers); 5.75 (wives)
4. How confident are you in your ability (your husband's ability) to use these infant care skills with your newborn? 1 = very unconfident, 7 = very confident; response: 6.6 (fathers); 6.75 (wives)
5. My overall feeling about the training program is: 1 = very negative, 7 = very positive; response: 6.0 (fathers); 6.25 (wives)
6. At this point, I think my husband's ability to handle caretaking concerns is: 1 = considerably worse, 7 = greatly improved; response: 6.25

B. Difficulty

Scale: 1 = extremely difficult, 2 = difficult, 3 = somewhat difficult, 4 = neutral, 5 = somewhat easy, 6 = easy, 7 = extremely easy

1. Holding: response: 6.8 (fathers); 6.75 (wives)
2. Feeding: response: 5.6 (fathers); 6.25 (wives)
3. Burping: response: 5.8 (fathers); 6.5 (wives)
4. Bathing: response: 4.6 (fathers); 6.5 (wives)
5. Diapering: response: 6.2 (fathers); 6.5 (wives)
6. Temperature taking: response: 5.0 (fathers); 4.75 (wives)
7. The overall group of procedures: response: 5.6 (fathers); 6.25 (wives)

C. Usefulness

Scale: 1 = extremely not useful, 2 = not useful, 3 = somewhat not useful, 4 = neutral, 5 = somewhat useful, 6 = useful, 7 = extremely useful

1. Holding: response: 6.0 (fathers); 6.25 (wives)
 2. Feeding: response: 5.6 (fathers); 6.25 (wives)
 3. Burping: response: 5.0 (fathers); 6.0 (wives)
 4. Bathing: response: 6.2 (fathers); 6.5 (wives)
 5. Diapering: response: 6.0 (fathers); 6.25 (wives)
 6. Temperature taking: response: 5.5 (fathers); 5.5 (wives)
 7. The overall group of procedures: response: 6.0 (fathers); 6.5 (wives)
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project with others. After the initial baseline session, subsequent sessions were conducted in the same manner as described above, but without the briefing.

Training. Following completion of baseline probes, training was administered for the set of infant-care procedures following this sequence: training manual, posttraining manual probe, modeling, and role playing with corrective feedback.

First, each father received a programmed instruction manual that included (a) instructions for using the materials, (b) a series of fact sheets providing supplementary information regarding the care skills, (c) a description of each skill with examples of all procedures, (d) review questions to answer following each procedure throughout the

text, and (e) a self-administered 20-item practice quiz and answer sheet. Each father had approximately 1 week to read the manual and complete the questions and the practice quiz. Each father then met individually with the trainer, who answered questions regarding the training manual and reviewed the 20-item practice quiz to determine whether the father had adequately learned the behaviors. Immediate feedback was provided on the father's quiz performance. If the father scored less than 90% on the practice quiz, the material was reviewed with the trainer, after which the father provided oral answers to those questions answered incorrectly. Each father then engaged in a 30–40 min observation probe to determine the effects of the training manual.

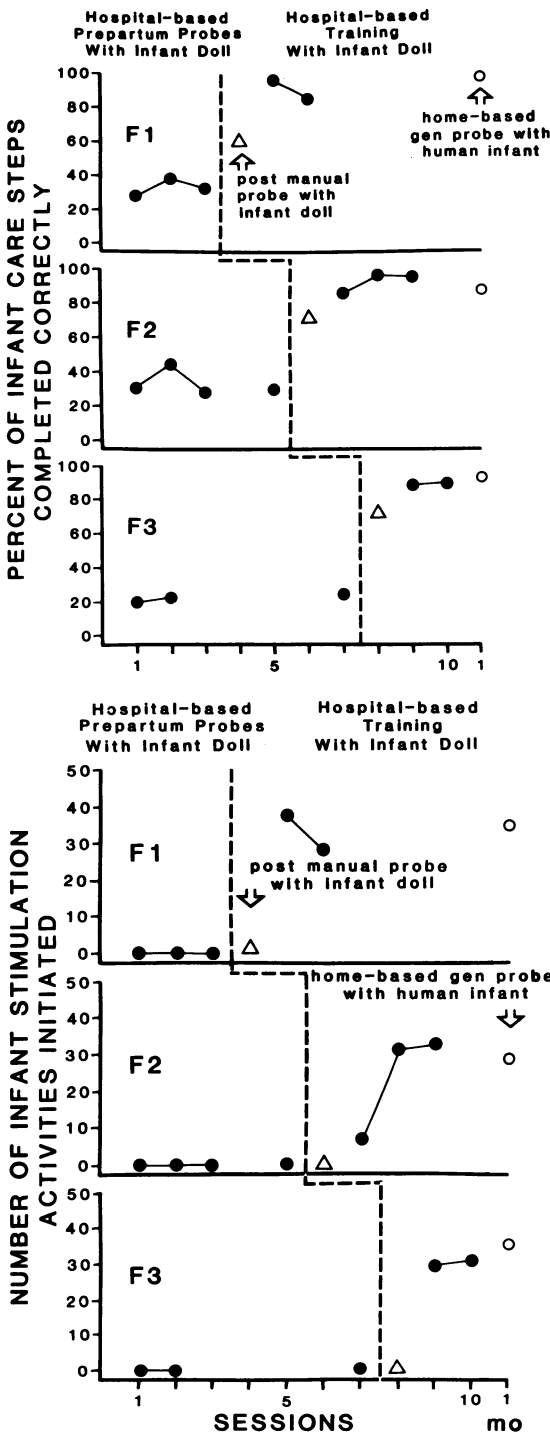


Figure 1. The percentage of infant-care steps completed correctly (top) and the number of infant-stimulation activities initiated (bottom) across the three fathers during Experiment 1.

Next, each father observed the trainer modeling those infant-care skills on which he did not reach criterion. The trainer described the critical features of each step while performing the procedure. Finally, each father role played those behaviors on which he did not reach criterion as the trainer read the respective steps from the manual. Corrective feedback was provided on his performance.

Immediately following the first training session, each father was asked to engage in all of the infant-care skills without the use of the training manual, so that his performance could be observed and the effects of training evaluated. Corrective feedback was provided on his performance, and the second training session was scheduled.

At the beginning of the second training session, data were again collected on each father's performance of the care skills. If he did not reach the established performance criterion, training was administered using modeling, role playing, and corrective feedback.

The initial training session lasted approximately 90 min with follow-up sessions requiring 30 to 60 min. A mean of 2.2 training sessions (range, 2-3 sessions) was conducted per subject.

RESULTS AND DISCUSSION

The top portion of Figure 1 shows the percentage of infant-care steps completed correctly for each father across all experimental conditions. The mean baseline scores were 32.1%, 33%, and 22.4% for Fathers 1, 2, and 3, respectively. The postmanual probe data indicate that the percentage of infant-care steps performed correctly increased to 60 for Father 1, 71 for Father 2, and 73.2 for Father 3. The introduction of modeling, role playing, and corrective feedback resulted in means of 90.2%, 91%, and 88.4% for Fathers 1, 2, and 3, respectively. Results of the probe administered within the first month following the birth of each father's child demonstrated the generalization of treatment effects across settings (hospital to home) and across training conditions (training doll to human infant). The percentage of infant-care steps performed correctly at home with the newborns was 97.2, 87.3, and 93.3, for Fathers 1, 2, and 3, respectively.

The number of infant-stimulation activities initiated by each father is shown in the bottom portion of Figure 1. The baseline scores were zero and did not improve on the postmanual probe, except for Father 1, who engaged in one activity. The introduction of modeling, role playing, and corrective feedback resulted in a pronounced increase in the number of stimulation activities performed, to means of 25, 23, and 50 for Fathers 1, 2, and 3, respectively. The number of activities performed at home with the newborns during the generalization probe was 34 for Father 1, 29 for Father 2, and 35 for Father 3.

The findings of Experiment 1 demonstrate the effectiveness of a multicomponent behavioral training package in teaching a set of infant-care skills to first-time expectant fathers. Results of the generalization probe indicate that the three fathers performed the care skills at home with their newborns at a level commensurate with that observed after training with the doll.

EXPERIMENT 2

Experiment 2 was conducted to determine if experience with one's infant is sufficient to result in competent caretaking. Training was conducted exclusively with the fathers' newborn infants. Thus, Experiment 2 differed from Experiment 1 in the use of infants as opposed to dolls and by the conduct of training sessions in the home as opposed to the hospital. In addition, several improvements were made in the manual and in the infant-care protocols based on suggestions of the fathers in Experiment 1.

METHOD

Subjects

Three men whose wives were pregnant for the first time participated. Father 1, age 29, held a bachelor's degree and reported having no prior experience in the area of infant care. Father 2, age 26, completed 2 years of college and indicated having some experience feeding and diapering his 10-month-old nephew. Father 3, a 26-year-old college graduate, reported having some experience with young children as a babysitter.

Procedure

Baseline. Subjects participated in three baseline sessions at the hospital with the infant doll, after which their skill levels were probed in their homes with their 2-, 6-, and 8-week-old infants, respectively. The same data collection procedures described in Experiment 1 were used.

Training. Training for Experiment 2 followed this sequence: training manual, modeling (with the baby doll), and role playing (with the actual infant) with corrective feedback. The postmanual probe was omitted from the training protocol because the infant-care skills acquired by fathers in Experiment 1 on the basis of the manual alone were insufficient to meet criterion on any of the skill areas. The procedures were otherwise identical to those described in Experiment 1.

RESULTS AND DISCUSSION

Figure 2 shows the percentage of infant-care steps performed correctly by the three fathers in this experiment. The mean baseline scores were 22.1%, 32.9%, and 29.3% for Fathers 1, 2, and 3, respectively. The in-home probe data show an increase in the percentage of infant-care steps completed correctly to 31.3 for Father 1, 57 for Father 2, and 59 for Father 3. The introduction of the behavioral training package produced an immediate increase in mean percentages to 80, 90, and 92 for the three fathers, respectively.

The number of verbal and physical infant-stimulation activities initiated by each father in Experiment 2 is shown in the bottom of Figure 2. The baseline scores were zero for the stimulation activities involving physical contact and one for verbal activities. The home-based probe data show increases in stimulation activities to 43 for Father 1, 25 for Father 2, and 9 for Father 3. After the introduction of training, the mean number of activities remained stable at 43 for Father 1, and increased to 43 and 41 for Fathers 2 and 3, respectively.

Results of this experiment suggest that the training was effective in increasing the number of infant-care skills mastered by fathers having varying degrees of experience with their infants. Skills were probed in the fathers' homes with their babies

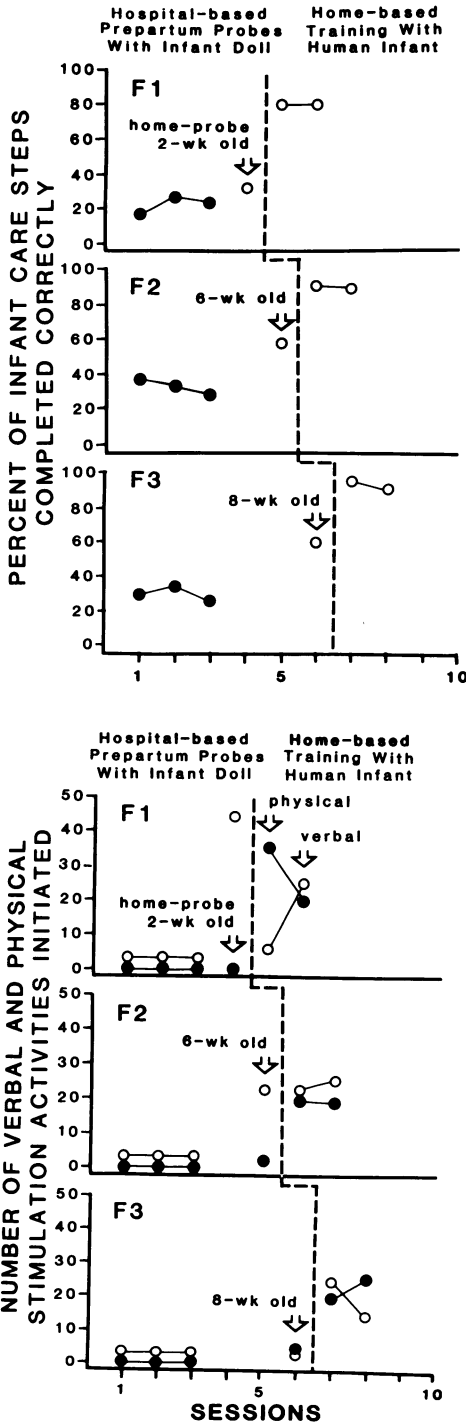


Figure 2. The percentage of infant-care steps completed correctly (top) and the number of infant-stimulation activities initiated (bottom) across the three fathers during Experiment 2.

at different times during the early postpartum period to evaluate whether experience with their infants was sufficient to produce competent caretaking. The baseline data across all three fathers revealed low levels of performance, with none of the fathers demonstrating competence for any of the procedures. The introduction of training produced an immediate increase in the number of infant-care skills mastered.

Also noteworthy is the change in the types of infant stimulation provided by the fathers. Although a mean of 25 stimulation activities was performed per father during the pretraining probe, only seven activities ($M = 2.3$ per father) involved any form of physical contact. After the introduction of training, the number of nonverbal activities increased considerably ($M = 22$ per father). These data suggest that experience with one's infant is not necessarily sufficient to produce certain forms of father-infant interaction.

GENERAL DISCUSSION

Results of Experiments 1 and 2 demonstrate the effectiveness of a multicomponent training package in teaching six first-time fathers a set of infant-care skills. In Experiment 1, hospital-based training produced increases in the number of skills mastered with three expectant fathers using a training doll. Experiment 2 examined the effects of home-based training with fathers having varying degrees of experience with their infants.

As evidenced by the consumer satisfaction data, the fathers in both experiments approved of the training procedures and treatment outcomes. They also expressed confidence in performing the care skills with their children. The data compiled from the wives' questionnaires a mean of 5.0 months following the end of training indicated unanimous approval of the intervention procedures and satisfaction with the manner in which their husbands provided infant care.

Several issues warrant consideration when interpreting these results. First, although the training manual produced increases in the number of infant-care steps performed correctly in Experiment 1, those increases were not sufficient to meet the

80% criterion level of performance. Furthermore, use of the manual did not lead to an increase in infant-stimulation activities. These findings are not unique; several studies have demonstrated that written materials are less effective than modeling, role playing, and feedback in creating behavior change (Nay, 1975; Quilitch, 1975). There is some evidence, however, suggesting that written protocols can effect significant behavior change (Friman, Finney, Glasscock, Weigel, & Christopherson, 1986; Miltenberger & Fuqua, 1986). Because the use of a training manual offers a potentially cost-effective approach to infant-care training, an experimental analysis of the effects of the manual as revised for Experiment 2 or variants thereof with fathers and their newborns during the early postpartum period merits further investigation.

This study also demonstrates the acquisition of infant-care skills by first-time fathers, but did not address whether those fathers actually engaged in more care skills at home with their babies than do untrained fathers. Maintenance of training, and the residual benefits to fathers and infants from the fathers' mastery of infant-care skills, are separate research questions that warrant further attention.

Finally, we found that infant-care training has historically been done in an informal manner. Prior experience in addition to informal training has been successful to some degree. It may be possible, however, that infants' health status may be improved by implementing more formalized methods of training for both fathers and mothers.

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