BEHAVIORAL DEVELOPMENT BULLETIN

VOLUME 19
NUMBER 1
MARCH 2014

# Mothers' and fathers' knowledge of behavioral principles as applied to children: data from a normative sample

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ABSTRACT

Research on knowledge of behavioral principles has been conducted with several different groups of individuals (e.g., mothers, undergraduates, direct-care staff, therapists). However, no studies were found comparing maternal and paternal knowledge of behavioral principles. The current study compared knowledge of behavioral principles, as measured by the Knowledge of Behavioral Principles as Applied to Children (KBPAC), for a community sample of 40 mother-father pairs of a young male child. Results indicated that mothers and fathers exhibited similar levels of knowledge. The KBPAC also was correlated with social position, parent report of child behavior problems, and parental education. Implications of these findings are discussed.

KEYWORDS: maternal, paternal, knowledge, behavioral principles

Research has stressed the importance of fathers in child development and suggested that fathers may provide distinctive influences to child behaviors, as compared to mothers (Bagner & Eyberg, 2010; Lamb, 1997; Palkovitz, 1996; Parke & Brott, 1999; Popenoe, 1999). However, fathers continue to be understudied in child development literature. Interestingly, when children's maladaptive behaviors warrant intervention, few fathers actively participate in behavioral parent training (BPT) outcome studies (Budd & O'Brien, 1982; Coplin & Houts, 1991; Tiano & McNeil, 2005). From 1970 to 1981, only 3 studies (13%) utilizing BPT included fathers (Budd & O'Brien, 1982). This rate improved to 35 (37%) BPT studies from 1981 to 1988 (Coplin & Houts, 1991), but decreased to 10 studies (no percentage was specified) from 1989 to 2003 (Tiano & McNeil, 2005).

BPT programs are efficacious treatments for child externalizing behaviors and are based on behavioral principles (e.g., positive reinforcement, punishment, contingencies; Kazdin, 1987; Serketich & Dumas, 1996). Thus, at completion of treatment, parents receiving BPT should exhibit some understanding of behavioral principles. In a study by McLoughlin (1985), nineteen mothers read a manual of behavior management strategies (not behavioral principles) and implemented those strategies with their child's negative behaviors. Findings indicated that mothers' knowledge of behavioral principles increased as a result of utilizing behaviorally-oriented approaches. Similarly, after completion of a five-hour child management training, parents' Knowledge of Behavioral Principles as Applied to Children (KBPAC) scores increased from 48% to 85% (O'Dell, Tarler-Benlolo, & Flynn, 1979). In comparing group parent training and individual family therapy, Pevsner (1982) found that after treatment families receiving group therapy exhibited more knowledge of behavioral principles than those receiving individual therapy families. However, O'Dell et al. (1979) and Pevsner (1982) failed to indicate which parent completed the KBPAC (if only one parent completed the measure) or report scores for both parents. Thus, no research was found that reported maternal and paternal KBPAC scores separately or that evaluated behavioral principles knowledge of mothers and fathers who received BPT.

Recent studies evaluating behavioral knowledge largely have been conducted with non-parental samples and failed to report scores separately for men and women. In particular, no studies were found comparing mothers and fathers on knowledge of behavioral principles in regard to its application to child behaviors. Thus, whether mothers and fathers demonstrate similar levels of knowledge of behavioral principles either prior to or following training in these strategies is unknown. Because BPT is effective in decreasing problem behaviors in children, parents of children with few or minor behavior problems may benefit from the knowledge and skills targeted in BPT (e.g., consistency, understanding of behavioral theories, effective discipline strategies). The current study examined maternal and paternal knowledge of behavioral principles in a community sample.

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**Table 1.** Demographic characteristics and KBPAC scores of entire sample

| Demographic variable | Mean | *SD* |
|---|---|---|
| Parent age[a] | 34.24 | 6.40 |
| Child age[b] | 4.65 | 1.65 |
| Number of children in the home[a] | 2.28 | .81 |
| Involvement with child[a] | 24.55 | 15.65 |
| Number of hours per week child is in care of others[a] | 2.03 | 1.31 |
| Hollingshead Index[a] | 2.56 (upper middle class) | 1.09 |
| ECBI intensity scale raw score[c] | 103.38 | 20.19 |
| ECBI problem scale raw score[c] | 6.52 | 5.42 |
| KBPAC score[a] | 43.43 | 13.58 |
| | *n* | % |
| Parent race | | |
| Caucasian | 79 | 98.75% |
| African American | 1 | 1.25% |
| Child race | | |
| Caucasian | 39 | 97.50% |
| African American | 1 | 2.50% |
| Marital status | | |
| Married | 76 | 95.00% |
| Not married | 4 | 5.00% |
| Biological parent | 76 | 95.00% |

*Note.* ECBI = Eyberg Child Behavior Inventory (Eyberg & Pincus, 1999). *a* represents *n* = 80. *b* represents *n* = 40. *c* represents *n* = 79.

## » METHOD

### Participants

Participants included 80 parents (40 mother-father pairs) of a two-to seven-year-old male child. Participants must have been the primary caregivers and lived in the house with the child for the last two years.

### Measures

***Demographic form.*** Each mother and father completed a demographic form presenting descriptive information on the parents, target child, and family. Amount of parental involvement from each parent was calculated by the sum of the hours spent engaging in caregiving and play activities on a typical week day and the hours spent engaging in caregiving and play activities on a typical weekend day. See table 1 for demographic information of the entire sample and table 2 for demographic information of each parent.

***Hollingshead.*** The Hollingshead Index (Hollingshead, 1957) is a two-factor index of a social position score derived from an individual's education level and income. A social class score also can be derived from the social position score. The higher the social class or Hollingshead score, the lower the socioeconomic status (i.e., Class I = upper class; Class III = middle class; Class V = lower class).

***Eyberg Child Behavior Inventory (ECBI).*** Each mother and father participant completed an ECBI on the target child. Information obtained from this measure was used as demographic data to describe the behavior of the child sample. The ECBI (Eyberg & Pincus, 1999) is a 36-item questionnaire examining child disruptive behavior as reported by the parent(s). The Intensity scale measures the frequency of child externalizing behaviors on a scale of 1 (Never) to 7 (Always). The Problem scale measures whether the parent perceives each of the listed child behaviors as a problem for that parent. Clinical cutoff scores of 132 (*t*-score = 60; Intensity scale) and 15 (*t*-score = 60; Problem scale) have been suggested by Colvin, Eyberg, and Adams (1999). Good psychometric data have been reported for the ECBI. For example, both scales demonstrated high internal consistency (Intensity = .95, Problem = .92). In addition, both scales have demonstrated discriminative validity; construct validity, and inter-parent agreement (Colvin et al.; Eyberg & Pincus). Finally, the test-retest reliability of the Intensity scale was reported for 12 weeks ($r$ = .80) and 10 months ($r$ = .75; Funderburk, Eyberg, Rich, & Behar, 2003). See table 1 for ECBI scores of entire sample and table 2 for each parent's ECBI score.

***Knowledge of Behavioral Principles as Applied to Children (KBPAC).*** The original KBPAC (O'Dell, Tarler-Benlolo, & Flynn, 1979) is a 50-item multiple choice questionnaire that evaluates familiarity with behaviorally-oriented strategies as applied to children. The authors were careful to use general language and avoid the use of behavioral vocabulary in this measure. The KBPAC presents scenarios of common child behaviors to which the respondent is to choose the best technique to address the child's actions. The techniques used in this measure include reinforcement, punishment, schedules, shaping, differential attention, extinction, and monitoring behavior. Ten- and 25-item versions of this measure were developed (Furtkamp, Giffort, & Schiers, 1982) to decrease administration time. The current study used the 25-item KBPAC. An example item from this measure is: "Which of the following is the most effective form of punishment in the long run for reducing a child's undesirable behavior?". This shortened version of the KBPAC has demonstrated psychometric data similar to the 50-item KBPAC. In addition, a range of internal consistencies has been reported for this version (Cronbach's $\alpha$ = .42–.84; Sturmey, Newton, Milne, & Burdett, 1987). It is important to note that the KBPAC has not been validated with mothers or fathers. Refer to table 1 for KBPAC scores of the sample and table 2 for scores separated by gender.

**Table 2.** Demographic characteristics and KBPAC scores by gender

| | Mother | | Father | | |
|---|---|---|---|---|---|
| | Mean | (*SD*) | Mean | (*SD*) | *t* |
| Demographic variable | | | | | |
| Age | 32.43 | (5.87)[a] | 36.05 | (1.02)[a] | –5.858*** |
| Involvement with child | 16.89 | (5.93)[a] | 12.35 | (6.12)[a] | –3.688** |
| ECBI intensity scale raw score | 104.85 | (21.48)[a] | 101.87 | (18.94)[b] | .581 |
| ECBI problem scale raw score | 5.95 | (5.89)[a] | 7.10 | (4.90)[b] | –1.112 |
| KBPAC percentage | 44.86 | (13.00)[a] | 42.00 | (14.15)[a] | 1.158 |

*Note.* *a* represents *n* = 40. *b* represents *n* = 39. ECBI = Eyberg Child Behavior Inventory (Eyberg & Pincus, 1999). **$p$ < .01. ***$p$ < .001.

**Table 3.** Intercorrelations between demographic variables and knowledge of behavioral principles

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Parent gender | — | -.285* | .356** | .127 | .000 | .074 | -.107 | .106 |
| 2. Parent age | | — | -.220 | -.277* | .267* | -.112 | .018 | .381** |
| 3. Involvement | | | — | .182 | -.366** | .155 | .133 | .002 |
| 4. Hollingshead Index | | | | — | .012 | .215 | .171 | -.262* |
| 5. Child age | | | | | — | -.246* | -.047 | .325** |
| 6. ECBI intensity scale* | | | | | | — | .548** | -.313** |
| 7. ECBI problem scale* | | | | | | | — | -.126 |
| 8. KBPAC | | | | | | | | — |

*Note.* $n = 80$, except * represents $n = 79$. ECBI = Eyberg Child Behavior Inventory (Eyberg & Pincus, 1999). KBPAC = Knowledge of Behavioral Principles as Applied To Children (Furtkamp, Giffort, & Schiers, 1982). *$p < .05$. **$p < .01$.

### Procedure

Data for this project were collected in the participants' homes and as part of a larger study. Each caregiver completed paper-and-pencil measures, as well as a videotaped 15-minute interaction with their son. All information was obtained in the presence of the investigator.

## » RESULTS

A paired-samples t test was conducted to evaluate whether mothers and fathers differed in their knowledge of behavioral principles. Average scores on the KBPAC were 44.86 ($SD = 13$) for mothers and 42 ($SD = 14.15$) for fathers. Results indicated that mothers and fathers exhibited similar knowledge of behavioral principles, $t(39) = 1.158$, $p = .254$ (see table 2).

Negative correlations were found between knowledge of behavioral principles, Hollingshead Index (social position), $r(79) = -.26$, $p < .05$, and child behavior problems as rated on the ECBI Intensity Scale, $r(79) = -.31$, $p < .01$ (see table 3). These correlations suggest that higher knowledge of behavioral principles is associated with higher social class (i.e., lower social position score on Hollingshead) and lower child behavior problems. An additional significant correlation was found between parental education level and knowledge of behavioral principles, $r(79) = .444$, $p < .0001$, suggesting that the higher the education level of the parent, the higher the knowledge of behavioral principles. Interestingly, KBPAC scores did not correlate with level of involvement with the child, $r(79) = -.085$, $p > .05$, but did significantly correlate with the number of years as a parent, $r(79) = .323$, $p < .01$ suggesting that years of parenting experience influences knowledge of behavioral principles as opposed to how involved the parent is with the child.

## » DISCUSSION

Mothers and fathers did not differ on their knowledge of behavioral principles as measured by the KBPAC. This finding may be attributed to similar social position scores for mothers and fathers. Education and occupation are used in calculating the Hollingshead social position index. Similar social position scores suggest similar education levels and occupations for parents. In this study, both the Hollingshead Index and education level were positively correlated with the KBPAC. Similar to the findings of Rasnake, Martin, Tarnowsk, and Mullick (1993), the correlation in the current study between education and KBPAC indicates that more educated parents exhibited greater knowledge of behavioral principles than less educated parents. However, it is important to note that the average percentage for parents on the KBPAC was 43% out of 100%. This score is similar to previous research conducted with parents and the KBPAC. Parents in a study by O'Dell, Tarler-Benlolo, and Flynn (1979) obtained an average of 48% on the KBPAC prior to attending child behavior management training.

The mean KBPAC percentage in this study is similar to scores reported for other populations as well. Specifically, various samples of individuals working with populations with developmental disabilities included direct care staff scoring an average of 51% (Furtkamp, Giffort, & Schiers, 1982); professionals including nurses, occupational therapists, psychiatrists, and physiotherapists obtaining 49% (Sturmey, Newton, Milne, & Burdett, 1987); and school staff achieving a mean of 52% (Sturmey et al., 1987). However, community mental health agency therapists' mean KBPAC score of 64% is somewhat higher than the 43% obtained by parents in this study (Herschell, 2004). The majority of therapists (almost 90%) in Herschell's study (2004), however, had masters-level degrees, while parents in the present study reported, on average, completing "some college." These discrepancies in education and scores on the KBPAC between the present study and Herschell (2004) may support the idea that education, particularly education in mental health, increases knowledge of behavioral principles.

Parent scores on the KBPAC were significantly correlated with several additional variables. Interestingly, the older the parent and the child, the more knowledge of behavioral principles the parents exhibited. This finding may be due to parenting experience, especially because higher KBPAC scores in this study were associated with more years as a parent. The older the parent and the child, the more years the parents would have with the child. Thus, parents would have increased experience with parenting practices and more time to try a variety of behavior management strategies as the years pass. This experience with behavior management may lead to an increase in parental knowledge of behavioral principles.

Interestingly, although fathers were less involved with their children than mothers, father involvement did not correlate with KBPAC scores. As previously discussed, years of parenting experience impacts knowledge of behavioral principles. Perhaps this variable is more predictive of a parent's understanding of behavior modification than how much time the parent spends with the child.

Results also indicated that knowledge of behavioral principles is associated with parent report of child behavior problems. More specifically, parents with greater knowledge of behavioral principles reported less externalizing behaviors in their children. This correlation between knowledge and behavior problems also may be influenced by parental experience with managing behavior. It would be expected that as parents gain more experience with implementing discipline techniques and knowledge of behavioral principles, ability to handle child externalizing behaviors would improve, thus decreasing the frequency of behavior problems.

This study found that mothers and fathers of a young male child from a normative sample exhibited similar levels of knowledge of behavioral principles. In addition, knowledge of behavioral principles was correlated with several demographic and parental variables. These findings suggest that at-risk families (i.e., families with low socioeconomic status and parental education and numerous child behavior problems) may have more difficulty with BPT programs and implementing effective discipline techniques than families with few disadvantages. Results of the current study suggest that training parents in these behavioral principles may aid in enhancing the use of strategies to manage child behavior. Instead of simply teaching behavioral parent strategies, clinicians could teach parents the principles behind these techniques to increase understanding of the reasons why these programs are effective, and help program for generalizing parental use of these skills to other situations and behaviors.

## Limitations

There are limitations of the study with generalizability of results. With the KBPAC, results of knowledge of behavioral principles with fathers were not found in the literature. This prevents comparison of paternal KBPAC scores in this study with KBPAC scores of other fathers. In addition, few studies have been conducted utilizing the KBPAC with parents. To provide normative data on parental knowledge of behavioral principles, additional studies must be conducted with parents and the KBPAC. The current study also did not evaluate experience with parenting or length of time as a parent, which may impact knowledge of behavioral principles.

Generalizability of results also may be hindered by the demographic characteristics of the present study. The Hollingshead head score of this sample was impacted by the high education level (finishing some college) and occupations of the participants. As a result, the average income for this sample was $66,000. Results obtained from the current sample may not apply to families in higher or lower social positions. Additionally, the overwhelming majority of the sample was Caucasian, limiting the applicability of these findings to various cultures. Only parents of male children were examined in this study to control for child gender effects. Thus, parents with female children may produce different data than parents of male children. Because a community sample of children with few to minor behavior problems as used, data from parents of children with clinical levels of behavior problems may differ from the current findings. Finally, this sample included parents willing to volunteer which may be an indication of level of parental involvement. Thus, this sample may not be representative of most families, or particularly, families referred for BPT.

## Future directions

More recent research on the KBPAC has been conducted with populations other than parents, highlighting the need for additional studies examining parental knowledge of behavioral principles. In addition, no studies were found that separately reported paternal and maternal KBPAC scores. Similarly, Tiano and McNeil (2005) found that few studies of parents in behavioral parent training programs collected, reported, or analyzed paternal data independently from maternal data. Thus, future research should obtain, report, and compare maternal and paternal KBPAC scores to provide normative data of behavioral knowledge for mothers and fathers to further determine if knowledge of behavioral principles is correlated with or predictive of completion of BPT programs. ■

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