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Predictors of Enrollment and Retention in a Preventive Parenting Intervention for Divorced Families

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Abstract

Participation rates in parenting programs are typically low, severely limiting the public health significance of these interventions. We examined predictors of parenting program enrollment and retention in a sample of 325 divorced mothers. Predictors included intervention timing and maternal reports of child, parent, family, and sociocultural risk factors. In multivariate analyses, child maladjustment and family income-to-needs positively predicted enrollment, and higher maternal education and recruitment near the time of the divorce predicted retention. Findings have implications for the optimal timing of preventive parenting programs for divorcing families and point to the importance of examining predictors of enrollment and retention simultaneously.

Parenting skills programs have proven to be effective in preventing the onset and escalation of child mental health and substance use problems (e.g., Lochman & van den Steenhoven, 2002). Unfortunately, most parents decline participation in preventive parenting programs (Heinrichs et al., 2005; Spoth & Redmond, 2000). The effectiveness of a disseminated intervention is a function of both the program's effect size per participant and the target population's participation rate (Braver & Smith, 1996). When an intervention produces a large effect but has a small participation rate, its population impact is likely to be small, consequently providing little public health benefit. Although efficacy and participation contribute equally to population effectiveness, an abundance of research has been devoted to the former with little study of the latter. Thus, to increase the public health significance of preventive parenting programs, prevention scientists need to identify predictors of participation and develop and test theory-based strategies to increase participation.

Two aspects of participation are particularly important to study. Predictors of enrollment are important to identify, because very little research has focused on this aspect of participation, despite the finding that only a minority of the targeted population enrolls in preventive parenting programs (Heinrichs et al., 2005; Spoth & Redmond, 2000). Attention to predictors of retention is also important, because attendance level has been shown to mediate parenting program effects on parent and child outcomes (Brody et al., 2006; Reid et al., 2004).

Maximizing enrollment and retention may be especially critical for families at risk for child maladjustment problems. Researchers have identified a variety of risk factors (e.g., poverty, early childhood aggression, parental psychopathology, rejecting parenting) that increase the likelihood that children will develop mental health and substance use problems (Mrazek & Haggerty, 1994). Recently, several researchers have found significant baseline risk by program interaction effects indicating that children at risk for later problems benefit more from

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preventive parenting programs than those at low risk, with risk defined in a variety of ways, including the presence of pre-existing child adjustment problems (Reid et al., 2004; Wolchik et al., 2000), low parenting quality (Reid et al., 2004; Wolchik et al., 2000), and exposure to sociocultural risk factors (Olds, 2002).

All children in our study were at risk for later problems, such as mental health problems, academic underachievement, and relationship difficulties, due to their parents' divorce (Amato, 2001; Chase-Lansdale et al., 1995). However, consistent with research showing the cumulative effects of multiple risk factors (Sameroff, 2006), in our control group we found that exposure to other risk factors in addition to parental divorce (e.g., low family income, child externalizing behavior, maternal distress, stressful life events) predicted the highest risk of problems six years later in adolescence (Dawson-McClure et al., 2004). In addition, baseline risk by intervention interaction effects indicated that families with higher initial scores on a composite measure of these risk factors benefited most from our parenting intervention in terms of fewer adolescent mental health problems, lower substance use, and higher academic competence six years after the intervention compared to the control group (Dawson-McClure et al., 2004).

Conceptual Framework

Given that children at high risk for later problems tend to benefit most from ours and other preventive parenting programs, it is important to examine how risk factors relate to parental enrollment and retention in these programs. To understand how risk factors might predict enrollment and retention, we draw from theoretical models that explain the circumstances under which people do or do not engage in preventive health behaviors. Several models have been developed to explain engagement in preventive health behaviors (see Glanz and colleagues, 2002 for a review). Given its large evidence base, we primarily refer to the Health Belief Model (HBM) (Rosenstock, 1966), although some constructs from other models, such as Protection Motivation Theory (Rogers, 1983) and the Transtheoretical Model (Prochaska et al., 1994) overlap with those of the HBM.

A large body of research supports the validity of health beliefs as predictors of preventive behaviors, such as getting vaccinations, eating a healthy diet, and engaging in regular exercise (Janz & Becker, 1984). Four HBM constructs have been investigated extensively and shown to predict engagement in these and other preventive health behaviors: 1) *perceived susceptibility* to a health problem; 2) *perceived severity* of the problem if no action is taken; 3) *perceived benefits* of taking a specific preventive action; and 4) *perceived barriers* to performing a specific preventive action. A fifth HBM construct, *cue to action*, is also considered important but has received less empirical attention (Strecher et al., 1997).

Perceived Need—The first three HBM constructs - perceived susceptibility, severity, and benefits—reflect a person's perceived need for a preventive intervention (in our case, participation in a parenting program). According to the HBM, people are more likely to engage in a preventive health behavior if they perceive themselves to be at high risk for a problem, think the problem would be serious if it occurred, and believe the preventive health behavior under consideration will effectively mitigate the risk (Janz & Becker, 1984). Similar to Perrino and colleagues, we define perceived need as endorsement of child or family problems that we have targeted for intervention (Perrino et al., 2001). Our recruitment materials emphasized that the program was designed to prevent the development of child behavioral and psychological adjustment problems following divorce by teaching mothers skills to facilitate good mother-child relationships and effective discipline strategies. Therefore, we expected that mothers who perceived needs in one or more of these three areas—child adjustment, mother-child relationship quality, and/or discipline effectiveness—would be more likely to enroll and remain in the parenting program than those who did not perceive needs in these areas.

Child maladjustment: Findings from prior research support the expected link between perceived child adjustment problems and enrollment and retention in preventive parenting programs. That is, a few researchers have found that parents who report high child maladjustment were more likely to enroll in parenting programs than those who reported few adjustment problems (Cunningham et al., 2000; Dumas et al., 2007; Heinrichs et al., 2005). Consistent with the HBM, Spoth and colleagues have found that perceived child maladjustment was indirectly related to enrollment through parents' perceptions that their children will experience later problems, the severity of those perceived problems, and the perceived benefits of parenting skills programs (Spoth & Redmond, 1995; Spoth et al., 2000). Thus, parents who report high child maladjustment may enroll in a parenting program because they recognize that their needs coincide with the goals and content of the parenting program. Similar to enrollment, parental reports of child adjustment problems have been associated with higher retention in parenting programs as well (Cunningham et al., 2000; Garvey et al., 2006; Haggerty et al., 2002).

Parenting problems: Prior findings have been largely consistent with the hypothesized link between perceived need in the parenting domain and higher participation (Baydar et al., 2003; Garvey et al., 2006; Gorman-Smith et al., 2002; Perrino et al., 2001). For example, Baydar and colleagues found that mothers who used higher levels of negative and ineffective parenting strategies at baseline were more likely than other mothers to remain engaged in their parenting program (as defined by a composite measure that included attendance, homework completion, and discussion participation). Gorman-Smith and colleagues (2002) found that parents with lower monitoring scores at baseline more readily joined and attended sessions than other parents. However, contrary to these findings, Cohen and Linton (1995) found that parents who reported *good* parent-child relationships and monitoring practices were more likely to enroll in a parent-targeted, school-based drug prevention program than those who reported problems in these areas.

Perceived Barriers—In addition to perceived need, health behavior researchers have documented the impact of perceived barriers on preventive health behaviors (Janz & Becker, 1984). Perceived barriers are obstacles or costs that make it difficult to engage in a specific health behavior. According to the HBM and several other models (e.g., Transtheoretical), the expectation is that people conduct an informal cost-benefit analysis when deciding whether or not to engage in a specific preventive action (Janz & Becker, 1984; Prochaska et al., 1994). It is expected that if perceived intervention-related needs outweigh perceived intervention-related barriers, one is likely to engage in the intervention. On the other hand, if perceived barriers are high, people may not participate in a preventive intervention, even if they recognize the need for it. Several of the risk factors examined in our study may create barriers to enrollment and retention, including sociocultural factors, family stress, and maternal distress.

Sociocultural barriers: Low family income and SES have predicted lower enrollment and retention in preventive parenting interventions (Coatsworth et al., 2006; Cunningham et al., 2000; Haggerty et al., 2002). Low-income families may be more likely than affluent families to experience a variety of barriers to participating in a multi-session parenting program, including lack of transportation and childcare, unstable work schedules that create scheduling conflicts, and mistrust in providers due to negative prior experiences with social and health services. Consistent with the HBM, Spoth and colleagues (2000) found that the association between family income and intentions to enroll was accounted for by greater perceived barriers among lower income families.

Ethnic minority parents may also experience more barriers to participation than Anglo parents, due to perceived racism, mistrust of providers, and fears of stigmatization (Keller & McDade,

2000; Schultz & Vaughn, 1999). In fact, several investigators have found lower retention among ethnic minority parents (e.g., Cohen & Linton, 1995; Danoff et al., 1994).

Family stress: High stress is likely to present barriers to participation as well, particularly for retention, because mothers undergoing high levels of stress may have a difficult time successfully managing the demands of a multi-session, homework-driven parenting program. Consistent with this, Gorman-Smith and colleagues (2002) found that intensive efforts were necessary to retain parents who were experiencing high levels of family stress.

Maternal distress: Mothers who are experiencing high levels of distress or depression also may have a difficult time managing the demands of a parenting program. Although some researchers have not found evidence of a link between maternal distress and enrollment or retention (Cunningham et al., 2000; Garvey et al., 2006), Baydar and colleagues (2003) found that mothers with higher depressive symptoms were less likely to maintain their participation in an intensive, multi-session parenting intervention than were those mothers who reported fewer depressive symptoms at baseline.

Cue to Action—The final HBM construct, cue to action, has received much less attention from health behavior researchers than the other constructs. However, it is expected to be an important determinant of engagement in preventive behaviors (Strecher et al., 1997). A cue to action is a trigger that stimulates the decision-making process whereby a person evaluates benefits and barriers and decides whether or not to take a specific preventive action. Some examples of potential cues to action include receiving a reminder postcard from a service provider, seeing an advertisement for a preventive intervention, being referred to an intervention, or experiencing a salient event (Janz & Becker, 1984).

In our study, we used several cues to action to engage and retain participants, including media advertisements and reminder calls after missed sessions. The primary cue to action that was variable in our study was the timing of the invitation relative to the divorce event. Although all parents invited into the program were already divorced, the length of time that had elapsed since the divorce varied. Salient events or transitions, such as divorce, often cue individuals to re-prioritize existing goals and develop new goals associated with the event or transition (Zirkel & Cantor, 1990). Thus, parents may be more likely to enroll and remain in an intervention for divorced families when it is offered close to the time of the divorce. Around the time of divorce, child-focused concerns may be a high priority, as parents contemplate the divorce's impact on their children's adjustment.

Intervention Program

In this study, we examined predictors of enrollment and retention in an 11-week, 13-session preventive parenting program for divorced mothers. This preventive parenting program has been shown to provide long-term benefits for divorced families (e.g., reduced child mental health problems), particularly for those who entered the program at high risk for subsequent youth problems (Dawson-McClure et al., 2004; Wolchik et al., 2002; Wolchik et al., 1993).

The program was developed using a “small theory” approach (Lipsey, 1980), which specifies the processes through which intervention strategies are expected to impact child outcomes. First, basic research was used to identify potentially modifiable factors that have been shown to impact children's psychological adjustment following divorce (i.e., putative mediators). Second, strategies were designed to enhance protective factors for children by targeting these putative mediators for intervention. Prior research had shown consistent associations between the following factors and children's adjustment to divorce: a) quality of the child's relationship with the custodial parent; b) discipline strategies; c) amount of contact between the child and

the noncustodial parent; d) interparental conflict; e) child coping skills; and f) children's divorce appraisals (Wolchik et al., 2007; Wolchik et al., 2000). Thus, intervention strategies were designed to impact these putative mediators, with the expectation that changing them would lead to more positive psychological outcomes for children following divorce.

Based on the HBM and prior research in this area, we hypothesized that perceived needs that coincide with the intervention - maternal reports of child adjustment problems, negative mother-child relationship quality, and ineffective discipline practices - would be associated with higher enrollment and retention in the parenting program. We expected that sociocultural risk factors (i.e., low income, low education, and minority ethnicity), negative life events, and maternal distress would create barriers to participation leading to lower rates of enrollment and retention. We also hypothesized that the divorce transition would serve as a cue to action for mothers such that when the invitation into the program occurred close to the divorce transition, mothers would be more likely to enroll and remain in the program than when the invitation occurred a long time after the divorce. Although preventive interventions are often timed to coincide with salient events or life transitions (e.g., divorce, school entry, adolescence), this is the first study to examine if intervention timing predicts participation in a preventive parenting program.

Method

Participants

Recruitment—Potential participants for the parenting program efficacy trial were primarily identified from court records of divorce decrees granted in Maricopa County, a large metropolitan county in Arizona (see Wolchik et al., 2000 for a full description of recruitment procedures). Figure 1 provides a detailed flowchart of the recruitment process and numbers; the main highlights are summarized below. The initial recruitment pool included 1,914 families, 98 of which responded to media announcements and 1,816 of which were randomly selected from divorce decrees granted within two years of the intervention start date for families that included at least one child between the ages of 9 and 12. Potential participants were contacted via letters and phone calls. For cases in which court record addresses were incorrect, project staff used various methods of obtaining updated information (e.g., reverse telephone directories). As illustrated in Figure 1, a subset of individuals not located through these recruitment methods (1st stage) were randomly selected for more intensive recruitment efforts (2nd stage).

The following inclusion criteria were used to determine whether a family was eligible to participate in the intervention trial: a) the divorce decree was granted within the previous two years; b) the primary residential parent was female; c) at least one child aged 9 to 12 lived with the mother most of the time; d) the mother and children living at home were not receiving mental health treatment; e) the mother had not re-partnered; f) custody was expected to remain stable during the trial; g) the family lived within a 1-hour drive of the intervention delivery site; h) the mother and target child spoke and read English fluently; i) the child was not receiving special education services; and j) if the child was diagnosed with an attention deficit disorder, s/he was taking medication. The last two criteria were included because involvement in special education or unmedicated attentional problems could create barriers to participation in the child coping component if assigned to the dual-component condition (parenting group plus child-coping group). Because the intervention was preventive and thus not designed to address significant clinical problems, families were excluded and referred for treatment if the child reported suicidal ideation, had a score higher than 17 on the Children's Depression Inventory (Burbach et al., 1986; Kovacs, 1985), or scored above the 97th percentile on the Externalizing subscale of the Child Behavior Checklist (Achenbach, 1991).

Eligible families were asked to participate in an in-home recruitment visit. At the recruitment visit, the experimental conditions were described, mothers were told that they would be randomly assigned to one of three program conditions and would be asked to participate in interviews on four occasions, and questions about the program were answered.

Sample—As shown in bold in Figure 1, of the 1,396 families for whom we had verified contact information, 671 met initial eligibility criteria; however, 49 of these families were found to be ineligible at the pretest interview due to changes that occurred after the phone screen (e.g., mother planned to remarry, mother or child had clinical levels of symptomatology). Of mothers who remained eligible, 42.7% ($n = 266$) accepted the intervention and completed pretest interviews. Although we did not interview mothers who refused the recruitment visit, families who completed the recruitment visit but declined the intervention were recruited to participate in research interviews only. Of these families, 37.5% ($n = 42$) declined to be interviewed and 11 cases were dropped due to changes in the family after the phone screen that made them ineligible. Thus, the sample for this study included 325 divorced, custodial mothers, 266 of whom enrolled in the intervention and completed pretest interviews and 59 of whom declined the intervention but completed pretest interviews.

The sample was composed primarily of Anglos (86.5%). Family income averaged twice the poverty threshold, and maternal education averaged two years post high school. Most mothers had been divorced for approximately one year (range = 0 to 29 months).

Procedure—In families with multiple children in the age range, mothers reported on one randomly selected child (i.e., target child). Mothers and target children were interviewed five times over the course of the trial: pretest, post-intervention; and 3-month, 6-month, and 6-year follow-ups. Trained staff interviewed mothers and children separately in the family's home. Because we were interested in examining relations between mothers' perceptions of child, family and sociocultural variables and their decisions to enroll and remain in parenting groups, only maternal report data from the pretest interviews were used in analyses. Families received \$45 compensation for participating in the pretest interviews.

Intervention conditions: Following the pretest interview, mothers who remained eligible and interested in participating in the parenting intervention attended an orientation meeting, where they were randomly assigned to one of three conditions: parenting group, dual-component parenting and child coping groups, or literature control condition. In the experimental conditions, groups met once per week for 11 sessions (1.75 hours each). There were also two individual sessions (1 hour each) to tailor the program to individual needs. In the dual-component condition, parent and child groups met separately but concurrently. Each group was co-led by two Master's level clinicians, and sessions were held on a university campus. Manualized curricula were used, with videotaped modeling, role plays, and weekly homework assignments used to teach and practice skills.

For the parent group, intervention techniques targeted the following putative mediators: mother-child relationship quality, discipline strategies, contact between the child and the noncustodial parent, and interparental conflict. Mothers learned skills in each of these areas. To improve mother-child relationships, mothers were encouraged to organize fun family activities every week, engage in quality time with each child alone each week, positively reinforce desirable behaviors, and use active listening skills when communicating with the children. With respect to discipline, mothers were taught how to set clear and realistic expectations, monitor misbehaviors, select appropriate consequences, and use consequences consistently. To facilitate contact between the child and the noncustodial parent, mothers were educated about the importance of the child's relationship with his or her father and were taught strategies for reducing obstacles to visitation. To reduce children's exposure to interparental

conflict, mothers learned anger management skills and were encouraged to avoid arguing with the noncustodial parent when the children were present.

For the child group in the dual-component condition, intervention strategies targeted the following putative mediators: coping skills, children's divorce appraisals, and the quality of the mother-child relationship. Children learned problem-solving skills, positive cognitive restructuring, feeling awareness, and relaxation skills. They were also taught how to challenge negative appraisals and use "I-messages" when communicating with parents.

Mothers and children in the literature control condition received three books (one sent to each mother and each child at three week intervals), along with a syllabus to guide their reading.

Measures

Predictor Variables

Child maladjustment: The age 4-18 version of the Child Behavior Checklist (CBCL) was used. The CBCL is a widely used parent-report measure of the frequency of recent childhood adjustment problems rated on a 3-point scale. The Total Problem Scale *T* score was used as an indicator of overall maladjustment. Achenbach (1991) found high test-retest reliability ($r = .93$) and internal consistency ($\alpha = .96$) for the Total Problem Scale.

Mother-child relationship quality: Positive mother-child relationship quality was assessed as a composite of two self-report measures ($r = .46$): a 20-item version (Wolchik et al., 2000) of the acceptance and rejection subscales ($\alpha = .86$) of the Child Report of Parenting Behavior Inventory (CRPBI; Schaefer, 1965) and the 10-item Open Family Communication subscale ($\alpha = .71$) of the Parent-Adolescent Communication Scale (Barnes & Olson, 1982).

Effective discipline: A composite of three self-report scales was used to assess effective discipline ($\alpha = .65$): the inconsistent discipline subscale of the CRPBI (Schaefer, 1965) ($\alpha = .81$) (reverse scored) and the Oregon Social Learning Center ratio of appropriate-to-inappropriate discipline and follow-through scales ($\alpha = .81$) (Oregon Social Learning Center, 1991).

Maternal distress: Maternal distress was assessed with the 27-item Psychiatric Epidemiology Research Interview (PERI) Demoralization scale ($\alpha = .91$), a self-report measure of general psychiatric distress (Dohrenwend et al., 1980). Items assess feelings of anxiety, sadness, helplessness, hopelessness, psychophysiologic symptoms, perceived physical health, poor self-esteem, and confused thinking. Dohrenwend and colleagues (1980) have demonstrated adequate reliability and construct validity of this measure.

Negative life events: The number of general and divorce-specific events experienced by the target child in the past month was assessed with the 33-item Negative Life Events Scale (Sandler et al., 1988). This scale has been shown to predict children's adjustment cross-sectionally and longitudinally (Sandler et al., 1994).

Income-to-needs ratio: A family's income-to-needs ratio was computed by dividing the mother's report of her annual household income by the U.S. Census Bureau's official poverty threshold for the year in which income was reported (U.S. Bureau of the Census, 1993, 1995). The poverty threshold is based on the number of people and children at home. An income-to-needs ratio of 1.0 reflects income at the official poverty line. Higher income-to-needs has been associated with lower externalizing behavior among children in epidemiologic samples, controlling for other sociocultural factors such as family structure and SES (e.g., Duncan et al., 1994).

Maternal education: Education level was assessed as the highest level of education completed using an ordinal scale (e.g., elementary, some high school, high school graduation). For analyses, this ordinal variable was converted to a continuous variable (i.e., elementary = 6, some high school = 10, high school grad = 12, etc...).

Mothers' self-reported race/ethnicity: The sample's ethnic composition was as follows: White, Non Hispanic (86.5%; $n = 281$); Hispanic (8.3%; $n = 27$); African American (2.2%; $n = 7$); Asian/Pacific Islander (0.9%, $n = 3$); Native American (0.3%, $n = 1$); and Other (1.9%; $n = 6$). Given the limited representation of ethnic minorities in the sample, it was not possible to examine minority subgroups separately. Because prior research suggests that Anglos (i.e., White, Non Hispanics) are more likely to participate in mental health prevention and treatment services than other racial/ethnic subgroups (Alegría et al., 2002; Haggerty et al., 2006; Zhang et al., 1998), the following dichotomous variable was created for maternal ethnicity: Anglo = 0, Ethnic Minority = 1 (i.e., non-Anglo).

Months since divorce: Mothers reported the month and year that the divorce decree was granted. Months since divorce was calculated by subtracting the divorce decree date from the pretest assessment date after converting years to months.

Dependent Variables

Enrollment: Enrollment was assessed as a dichotomous variable indicating whether the mother agreed to participate in the parenting intervention at the recruitment visit.

Retention: Retention was a dichotomous variable indicating whether the mother remained in the parenting program after she enrolled. Specifically, mothers who enrolled but did not attend any sessions or dropped out before the program was completed were considered not retained. Cases assigned to the literature control condition were excluded from the retention variable, given that participation in this self-study condition was qualitatively different from participation in the parenting group conditions. Multiple attempts were made to keep mothers involved in the parenting intervention once enrolled. When mothers failed to attend sessions, group leaders made follow-up phone calls to schedule make-up sessions. Including make-up sessions, those who were retained in the intervention attended an average of 12.1 of the 13 sessions; those who were not retained attended an average of 1.5 sessions.

Results

Descriptives and Intercorrelations

Table 1 presents descriptive statistics and intercorrelations among study variables. Child adjustment problems were elevated approximately $\frac{1}{2}$ SD but still within the scale's normal range. The majority of mothers who enrolled in the intervention were retained. There was no significant difference between the two intervention conditions (i.e., parenting only vs. parenting plus child coping) in rate of retention, $\chi^2(1, N = 164) = 1.8, p = .18$. As hypothesized, family income-to-needs and maternal education were positively correlated with enrollment and retention. Mothers recruited closer to the time of the divorce were more likely to enroll and remain in the intervention, and were more distressed, than those whose divorces were less recent. Mothers who reported higher child adjustment problems were significantly more likely to enroll in the program than those who reported lower child problems. Mothers from ethnic minority backgrounds were more likely to drop out of the program than Anglo mothers.

Not surprisingly, sociocultural variables were significantly intercorrelated and were associated with maternal distress and parenting variables in expected directions. Measures of child

problems, parenting, maternal distress, and negative life events were also intercorrelated--mothers who reported problems in one domain were likely to report problems in other domains.

Regression Analyses

Multivariate logistic regression analyses were conducted to examine unique predictors of enrollment and retention. The dependent variables in this study have a special dependence (i.e., a significant proportion of the responses on retention are missing because participants who did not enroll in the study could not have been retained). To address this dependence, a two-part logistic regression analysis was conducted that permits the estimation of all parameters between the predictors and dichotomous outcomes simultaneously. MPlus 3.11 (Muthén & Muthén, 2004) was employed using Weighted Least Squares estimation, accounting for missing data by assuming ignorable missingness at random (Arbuckle, 1996). The two-part logistic regression analysis controls for relations between predictors and enrollment while estimating relations between predictors and retention. It also controls for the association between the two dichotomous outcomes. This approach was chosen because it is more parsimonious than conducting separate logistic regression analyses for each outcome. However, as a test of model robustness, results of separate logistic regression analyses were examined (not shown) and found to yield the same pattern of significant findings as the two-part logistic regression.

In the two-part logistic regression analysis, enrollment and retention were regressed onto child maladjustment, mother-child relationship quality, effective discipline, maternal distress, negative life events, family income-to-needs, maternal education, maternal ethnicity, and months since divorce, controlling for the relation between enrollment and retention (residual $r = .20$). As shown in Table 2, higher child maladjustment and family income-to-needs uniquely predicted higher enrollment. Maternal education uniquely predicted higher retention, and number of months since divorce uniquely predicted lower retention. The hypothesized predictors accounted for 18% of the variance in enrollment and 16% of the variance in retention. Results are graphically displayed in Figure 2.

The hypothesized model yielded a chi-square of 0.0 because the parameters between all predictors and outcomes were estimated. Thus, to obtain an estimate of overall model fit, one path needed to be constrained. Given the lack of a significant relation between maternal distress and enrollment in the hypothesized model ($\beta = .02, t = .21$), we chose to constrain this path to equal 0. Model fit was evaluated using the Weighted Root Mean Square Residual (WRMR). A WRMR value less than .90 is indicative of a good fit for models with categorical outcomes (Yu, 2002). The post hoc model with 1 degree of freedom indicated that the overall hypothesized model fit the data well, with a WRMR value of .05.

Point of Drop-Out

We did not have a sufficient number of attriters to make distinctions among different patterns of retention in multivariate analyses; however, we conducted exploratory bivariate analyses to examine whether or not any of the independent variables differentially predicted the point at which drop-out occurred. A series of logistic regression analyses was conducted with the 52 participants who enrolled in the program but dropped out before the intervention was completed. The dependent variable was the point of drop out: never attended ($n = 35$) vs. dropped out after the first session ($n = 17$). The only significant predictor was number of negative life events ($OR = 1.28, p < .02$). Mothers who reported their children had experienced more negative life events in the past month were more likely to drop out after starting the intervention rather than dropping out before the intervention began.

Discussion

This study examined predictors of enrollment and retention in a preventive parenting program for divorced mothers. Similar to other preventive parenting programs, we found that less than half of eligible mothers enrolled in the intervention; however, most of those who enrolled were retained in the program. This was the first study to examine predictors of enrollment and retention in a parenting program simultaneously. Correlates of enrollment and retention were similar; however, unique predictors emerged in multivariate regression analyses. Mothers who perceived high child maladjustment were more likely to enroll than those who perceived few child problems, whereas those with lower incomes were less likely to enroll than those with higher incomes. Mothers with higher education levels and those recruited nearer to the time of the divorce were more likely to be retained. Maternal parenting variables and maternal distress did not significantly predict enrollment or retention. Among attriters, a greater number of negative life events was associated with dropping out after the first session of the intervention rather than dropping out before the intervention began.

Predictors of Enrollment

Previous researchers have found that youth at risk for later problems tend to benefit more from preventive parenting programs than those from low-risk families (Dawson-McClure et al., 2004; Olds, 2002; Reid et al., 2004). In this study, we found that mothers whose children had more adjustment problems were more likely to enroll in the parenting intervention. These findings are consistent with the HBM prediction that people who perceive a need for intervention (i.e., acknowledge current problems or risk for problems that can be addressed by an intervention) are more likely to engage. Findings also coincide with other research showing that parents who perceive higher levels of child adjustment problems tend to self-select into parenting programs (Cunningham et al., 2000; Dumas et al., 2007).

Mothers with low family incomes were less likely to enroll. Thus, it is particularly important to develop strategies to increase enrollment among low-income families. Understanding the intervening processes that explain why low-income parents choose not to enroll is needed for the systematic development of theory-based strategies that target those processes (Sandler et al., 1997). Consistent with the HBM, prior research has shown that lower income families experience more logistical barriers to participation (e.g., scheduling conflicts, lack of transportation, lack of childcare) (Spoth et al., 2000) and more interpersonal barriers such as mistrust of providers, prior negative experiences, and fears of stigmatization (Keller & McDade, 2000) than higher income families. Thus, reducing logistical and interpersonal barriers may increase enrollment among low-income parents. Techniques commonly advocated to reduce logistical barriers include administering the program at a convenient location, scheduling sessions on weeknights, and offering incentives (e.g., money, food, transportation, childcare) (Spoth & Redmond, 2000). Helping parents problem-solve solutions to participation obstacles may also increase enrollment. Interpersonal barriers might be lessened by discussing caregivers' previous experiences and attitudes toward social services during the recruitment process. McKay and colleagues have shown that these barrier-reduction strategies significantly increased attendance at child mental health treatment sessions (McKay et al., 1998).

Predictors of Retention

Intervention Timing—This was the first study to examine intervention timing as a predictor of participation. As expected, mothers were more likely to remain in the parenting program when it was offered closer to the time of the divorce. As suggested by the HBM, the salient event of getting divorced may serve as a cue to action for parents. Around the time of the divorce, parents may be concerned about how the divorce transition will affect their children

and may remain in the intervention because it is helping them address concerns that are highly salient at that time. Motivational researchers have shown that individuals are more likely to act upon goals when they are highly salient (Abraham & Sheeran, 2003; Austin & Vancouver, 1996). Parents might be more likely to drop out of the intervention when it is offered a long time after the divorce, because the topics and concerns are less salient for them at that point.

Our findings have implications for the optimal timing of parenting programs for divorcing families. Such programs may be offered at different points depending on the service delivery system in which they are embedded. For example, programs offered through the court system, such as mandatory information classes for divorcing parents, are usually delivered during the divorce process, whereas programs offered through schools may be offered to all divorced parents, regardless of how much time has passed since the divorce. Our findings suggest that offering parenting programs closer to the time of the divorce could help maximize attendance, which would help families receive the most benefit from these programs (Brody et al., 2006; Reid et al., 2004).

Because the parenting intervention was designed for mothers who are already divorced, our sample did not include families who were separated but not yet divorced. Most parents in our sample had been separated for over a year (average length of physical separation was 15 months); only 3% of the sample had been separated less than 6 months prior to the pretest interview. It is possible that offering a parenting intervention close to the time of *physical separation* would lead to higher rates of enrollment and retention; however, around the time of physical separation, other divorce-related concerns (e.g., legal issues, employment, relocation) may be more salient than concerns about children's adjustment. Thus, enrollment and retention might be *lower* if parents were recruited close to the time of physical separation rather than close to the divorce. Also, the divorce event is a more feasible marker for intervention timing than the moment of separation. Identifying the population of parents who have recently separated but not yet entered the court system would be difficult, whereas using filings for divorce is a viable method of reaching the population because public court records can be used to identify and recruit families.

Maternal Education—In addition to the amount of time since the divorce, maternal education uniquely predicted retention. Highly educated parents may value education and have a greater trust in educational institutions, making them less likely than lower educated parents to drop out of a psychoeducational program delivered at a university. They also may possess motivational cognitions that are consistent with parenting interventions (e.g., internal locus of control, positive intervention expectancies) (Miller & Prinz, 2003). Highly educated mothers may experience fewer obstacles to participation as well. For example, their occupations may allow for more flexibility or control over work schedules than lower educated mothers.

Future research should examine intervening processes that account for the relation between education level and parenting program retention so that theory-based strategies for increasing retention can be developed and evaluated. For example, retention might be increased by offering parenting interventions in trusted community settings (e.g., churches) and encouraging parents to discuss negative feelings and expectancies, so that group leaders can help address them. Using a randomized, experimental design, Prinz and Miller (1994) found that when therapists addressed parents' feelings and cognitions about treatment and other concerns not related to parenting, parents were less likely to drop out of parent training for child aggression problems, particularly parents undergoing high levels of stress.

Retention might also be increased by helping parents plan exactly how they will resolve obstacles to attendance. Multiple randomized, experimental studies have demonstrated the

efficacy of helping individuals plan how they will follow through with intentions to engage in health-related behaviors (e.g., exercise, healthy eating) (Sheeran, 2002).

Point of Drop-Out

Exploratory bivariate analyses indicated that mothers who reported their children had experienced a greater number of negative events in the past month were more likely to enroll in the intervention and then later drop out than enroll in the intervention but never attend. These findings are consistent with those of Gorman-Smith and colleagues (2002) who found that intensive efforts were needed to retain families experiencing high levels of stress. Under conditions of high stress, parents may have a difficult time avoiding scheduling conflicts and keeping parenting program attendance as a high priority. Given our small sample of attriters, we were unable to examine predictors of retention patterns in multivariate analyses. Therefore, our finding that negative life events predicted the point at which mothers were likely to drop out should be interpreted cautiously. Future research with larger samples should be conducted to corroborate this and examine predictors of retention patterns more rigorously.

Limitations and Future Directions

One limitation of the study was that the variance in participation accounted for by the predictors was relatively small. This was probably due to not assessing the most proximal HBM constructs, mothers' perceptions of the barriers and benefits of participating in the parenting intervention. Spoth and colleagues (2000) found that perceived barriers and benefits were proximal predictors of intentions to enroll in a preventive parenting intervention. Other conceptually important variables (e.g., parental goals) have yet to be examined as predictors of participation in preventive parenting programs. In future research, investigators should broaden their theoretical framework and empirical tests to include these variables.

Our study was also limited by having a relatively small number of mothers who declined to enroll. Because the option to participate in interviews but not the intervention was presented only if mothers declined the intervention during the recruitment visit, we do not have data from the 32.5% ($n = 218$) of mothers who declined the recruitment visit (see Figure 1). It is unclear if and how our sample of mothers who chose not to enroll during the recruitment visit differs from those who declined earlier in the recruitment process. Nevertheless, we believe this study makes an important contribution given the very limited number of studies on predictors of enrollment separate from attendance (Dumas et al., 2007; Heinrichs et al., 2005; Spoth et al., 2000) and the lack of attention to intervention timing as a potential predictor of enrollment and retention. In future work, researchers should design studies specifically devoted to investigating participation or conduct surveys with all eligible parents prior to offering participation in an intervention trial (Spoth et al., 2000).

Another limitation of our sample was a lack of ethnic diversity. Although minority ethnicity was significantly associated with lower retention, the effect became nonsignificant in multivariate analyses. This may have been due to sparse representation of ethnic minorities in the sample or to shared variance between ethnicity and two other significant predictors, maternal education and family income. The size of the sample and the predominance of Anglos also prevented us from being able to examine enrollment and retention rates for ethnic subgroups separately. Future research should employ larger sample sizes and greater ethnic diversity to improve the generalizability of findings.

In our study, unique predictors emerged for enrollment and retention, suggesting it is important to conceptualize participation as a multi-step process. The finding that negative life events predicted the point of drop out among attriters suggests that additional steps in the process may be important to investigate as well. Unfortunately, we did not have enough attriters to examine

multiple steps in the retention process in multivariate analyses. Future research with larger samples should make more fine-grain distinctions in the participation process to identify theory-based strategies for maximizing multiple aspects of participation (e.g., enrollment, initiation, and continued attendance). Given the low rates of enrollment typically found for preventive parenting programs (Heinrichs et al., 2005; Spoth & Redmond, 2000), and the importance of maximizing attendance levels for families to benefit (Brody et al., 2006; Reid et al., 2004), such research has the potential to substantially improve the public health impact of preventive parenting interventions.

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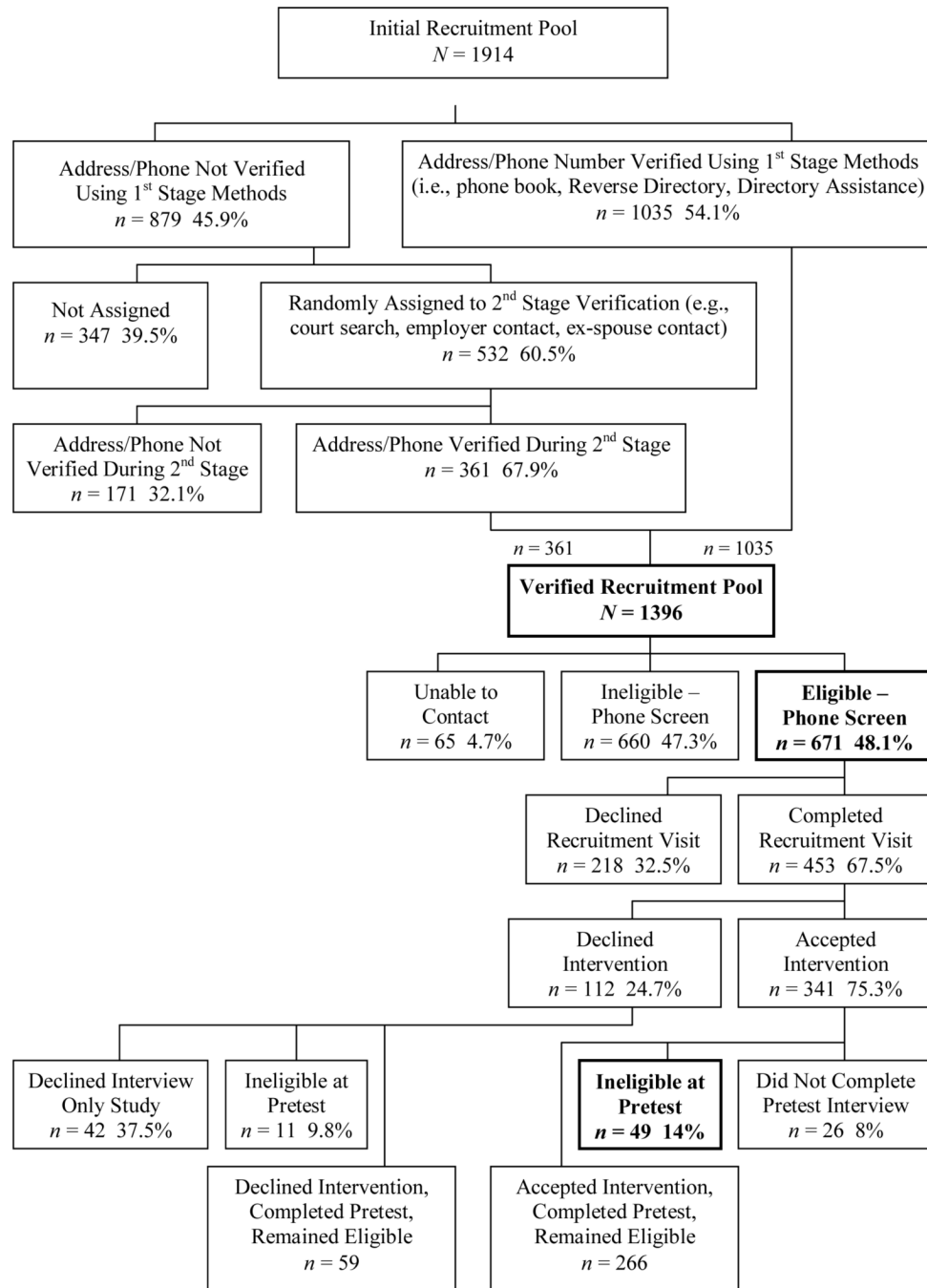


Figure 1.
Flowchart of participant recruitment.

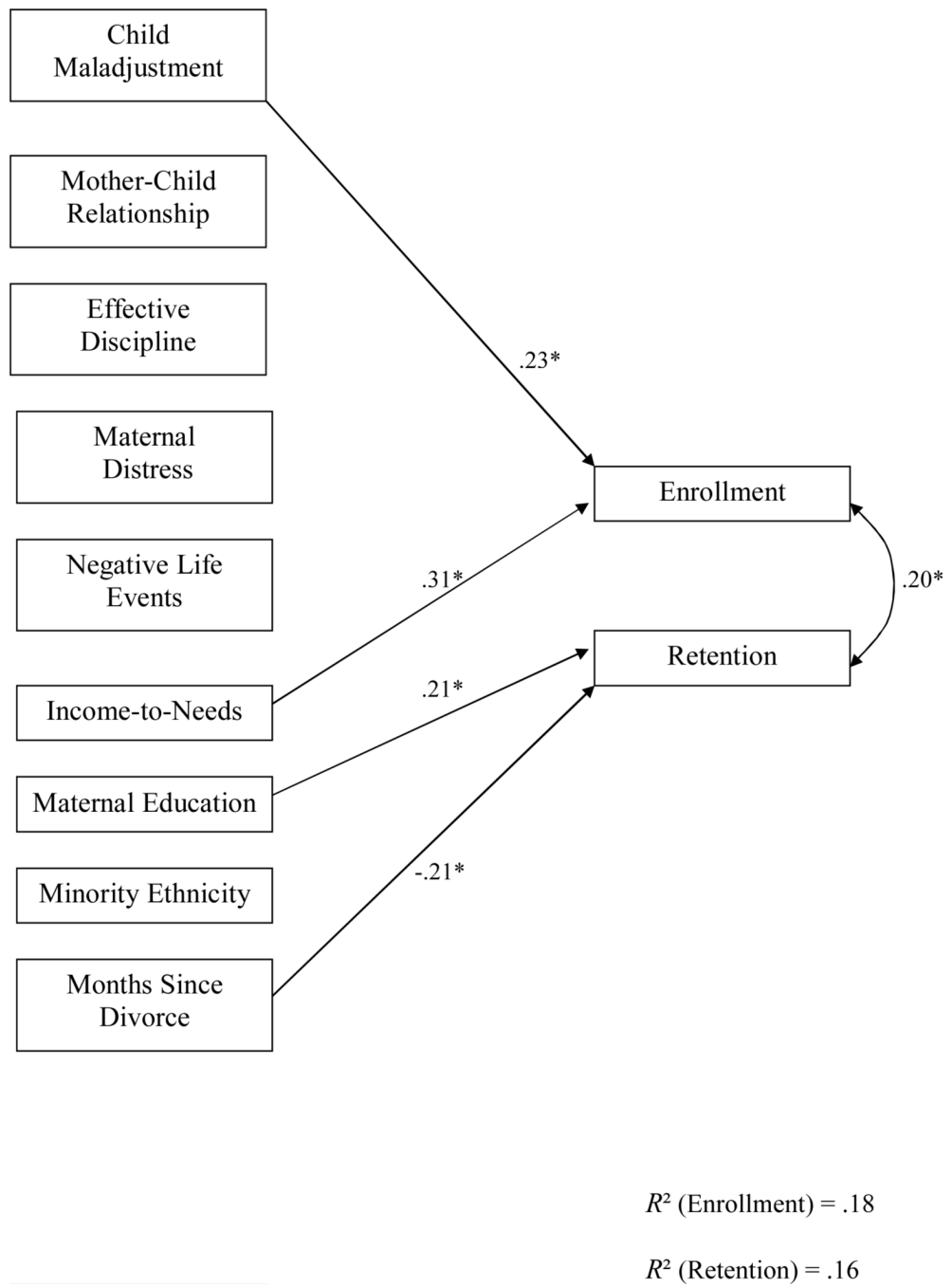


Figure 2. Unique predictors of parenting program enrollment and retention: Results of a two-part logistic regression analysis.

Table 1

Descriptive Statistics and Intercorrelations

Variable	1	2	3	4	5	6	7	8	9	M(SD) or %
1. Child Maladjustment ^a										55.2(10.0)
2. Mother-Child Relationship ^a	-.38*									0.05(0.83)
3. Effective Discipline ^a	-.43*	.54*								0.05(0.74)
4. Maternal Distress ^b	.43*	-.22*	-.25*							57.1(14.4)
5. Negative Life Events ^c	.33*	-.19*	-.17*	.34*						5.5(3.3)
6. Income-to-Needs ^b	-.07	.10	.04	-.12*	-.08					2.1(1.3)
7. Maternal Education ^a	-.02	.05	.11*	-.15*	-.15*	.33*				14.2(1.9)
8. Minority Ethnicity ^a	.09	-.16*	-.14*	.27*	.01	-.32*	-.24*			13.5%
9. Months Since Divorce ^a	-.01	.06	.04	-.12*	-.06	.02	.03	.07		12.6(6.4)
10. Enrollment ^a	.18*	-.05	.02	.09	.07	.24*	.17*	-.00	-.12*	...
11. Retention ^d	.08	-.05	-.14	.01	.01	.18*	.28*	-.32*	-.19*	72.6%

Note. Pearson product-moment correlations were calculated between continuous variables, polyserial correlations between dichotomous and continuous variables, and polychoric correlations between pairs of dichotomous variables.

^a $n = 325$

^b $n = 324$

^c $n = 323$

^d $n = 190$ includes only those who enrolled; literature control cases were excluded.

* $p < .05$.

Table 2

Predicting Parenting Program Enrollment and Retention: Results of a Two-Part Logistic Regression Analysis (N = 321)

Predictor	Enrollment		Retention	
	B(SE B)	β	B(SE B)	β
Child Maladjustment	.03(.01)	.23*	.00(.01)	.03
Mother-Child Relationship	-.05(.12)	-.04	.04(.15)	.03
Effective Discipline	.20(.17)	.13	-.26(.18)	-.17
Maternal Distress	.00(.01)	.02	.00(.01)	.04
Negative Life Events	.01(.03)	.03	.00(.04)	.00
Income-to-Needs	.27(.10)	.31*	.08(.11)	.09
Maternal Education	.06(.05)	.10	.13(.06)	.21*
Minority Ethnicity	.24(.31)	.07	-.47(.30)	-.15
Months Since Divorce	-.03(.02)	-.15	-.04(.02)	-.21*

Note. WRMR = .05; Enrollment: $R^2 = .18$; Retention: $R^2 = .16$.

* $p < .05$.