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Cost-Effectiveness of Childcare Discounts on Parent Participation in Preventive Parent Training in Low-Income Communities

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Abstract

We tested the cost-effectiveness of giving low-income parents childcare discounts contingent on their participation in the Chicago Parent Program, a 12-session preventive parent training (PT) program offered at their child's daycare center. Eight centers were matched and randomized to an experimental condition in which parents received a discount on their childcare bill (M = $8.92 per session attended) or a control group with no financial incentive. Participants (n = 174) consisted mostly of African American (55%) or Latino (42%) mothers, 62% reporting annual household incomes less than $20,000. Parents in the discount condition were 15.4% more likely to enroll than control parents, though this difference was not significant. There were no differences in PT attendance, parents' motivations for enrolling, or the degree to which parents were actively engaged in PT sessions by condition. Despite the added cost of the discounts, there was no difference in group costs by condition. Parent interviews revealed important challenges in implementing financial incentive programs in community-based agencies serving low-income families. Cost simulations show how low parent enrollment or low attendance negatively affect the economic efficiency of group-based PT. Implications for policies guiding financial incentive

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programs targeting low-income families and their participation in prevention programs are discussed.

Keywords

Financial incentives; Discounts; Parent training; Prevention; Cost; Childcare

Introduction

Parent training (PT) is a set of systematic programs for teaching parents child management skills and a widely used approach for promoting positive parenting and reducing behavioral risk in young children (Briesmeister and Schaefer, 2007). Delivered preventatively to parents of young children, PT has been shown to reduce parent reliance on corporal punishment and improve parenting and child behavior (Gross et al., 2009; Pearl, 2009). However, PT programs cannot work if parents do not attend. Indeed, participation rates in PT studies tend to be as low as 30–50% of the eligible populations (Gershater-Molko, Lutzker, &Wesch, 2003; Spoth & Redmond, 2000) and even lower among economically disadvantaged and ethnic minority families (Baker, Arnold, & Meagher, 2011; Coatsworth, Duncan, Pantin, & Szapocznik, 2006; Heinrichs, Bertram, Kuschel, & Hahlweg, 2005).

One strategy for increasing participation rates in prevention programs targeting parents and young children is the strategic use of financial incentives (Dumas, Begle, French, & Pearl, 2010; Heinrichs, 2006). The theory underlying the use of financial incentives is based on operant conditioning (Skinner, 1953) and behavioral economics (Hosseini, 2003) and the idea that financial incentives can serve as reinforcers to influence people's decision making. The effectiveness of these reinforcers is tied to a number of important factors such as the magnitude of the incentive, the timing of the incentive, and the way it is delivered (Volpp, Asch, Galvin, & Loewenstein, 2011). However, the science guiding the use of financial incentives for changing health behavior has only recently been a focus of research (Kane, Johnson, Town, & Butler, 2004b; Sutherland, Christianson, & Leatherman, 2008).

One of the largest and most studied financial incentive models is the use of conditional cash transfers. In conditional cash transfer programs, families receive payments when they participate in select activities designed to promote their children's growth and development, improve school outcomes, and build skills that may improve their long term economic status (de Janvry and Sadoulet, 2006; Riccio et al., 2010). Conditional cash transfer programs have been associated with improvements in children's health, growth, and development (Fernald, Gertler, & Neufeld, 2008; Ozer, Fernald, Manley, & Gertler, 2009).

Although economists have argued that cash incentive programs are defensible because they encourage investment in human capital (Fiszbein et al., 2009), these programs have been controversial. Some of this concern relates to public sentiment that people should not be paid to do what they are "supposed" to do (Long, Helweg-Larsen, & Volpp, 2008; Ripley, 2010). It is also possible that financial incentives, which act as external motivators of behavior change, can have the unintended consequence of diminishing people's intrinsic motivation to engage in healthy behavior (Deci, Koestner, & Ryan, 1999). Indeed, some research has shown that improved health behavior tied to financial incentives is often reversed once the financial reward program has ended (DeFulio and Silverman, 2011; Volpp et al., 2008).

Nonetheless, families living in poverty face daily challenges that compete for their limited time and energy and programs designed to prevent problems that have not yet happened are

unlikely to hold appeal under these conditions. Thus, financial incentives might well be a cost-effective way to encourage low-income parents to participate in prevention programs. However, it is also important to examine the extent to which financial incentives might lead to unintended consequences such as dampening people's intrinsic motivation to positively engage in preventive programs.

One financial incentive strategy that may be cost effective but less controversial is offering parents discounts on common child-related expenses such as childcare. This method may be more socially acceptable since discounts such as childcare tax credits and discounted childcare costs through government subsidy are a familiar and popular benefit for American families. It is estimated that among U.S. families living in poverty, 53% of the children under 5 years old are in non-parental care, with the majority of those children enrolled in center-based care (Lippman, Vandivere, Keith, & Atienza, 2008). Childcare centers have been identified as particularly important institutions for working poor families, providing access to resources such as dental, mental health, and other support services that families with higher incomes can more easily access in their communities (Breitenstein et al., 2007; Small, Jacobs, & Massengill, 2008). Thus, testing the effectiveness of discounts in childcare centers is of particular relevance for economically disadvantaged families because of childcare centers' (a) central role in helping low-income families and (b) potential for reaching a large number of families who could benefit from prevention programs.

The purposes of this study are to (a) test the cost-effectiveness of giving parents childcare discounts contingent on their participation in preventive PT and (b) examine how childcare discounts were associated with parents' motivations for enrolling in preventive PT. Given the challenge of recruiting low-income, ethnic minority parents, we specifically focused on childcare centers serving predominantly working-poor families and families of color. For this study, participation is defined in three ways: *enrollment* (percent of eligible parents who consent to participate and complete baseline assessments), *attendance* (number of PT sessions parents attend), and *engagement* (quality of participation in the PT sessions they attended). We hypothesized that (a) parent enrollment and attendance would be higher in those centers randomized to receive the discount (*discount condition*) compared to those not receiving the discount (*control condition*), but (b) parents in the two conditions would be equally engaged in the intervention. We also examined parents' motivations for enrolling in preventive PT since parents who are offered financial incentives may identify different reasons for their decisions to enroll than parents who are not offered this financial incentive. Finally, we evaluated the cost-effectiveness of the discount incentives for increasing parent enrollment and attendance.

Method

PT Intervention

The PT intervention used in this study was the Chicago Parent Program, a 12-session evidence-based parenting program that teaches parents a range of child management techniques using video and group discussion (Gross, Garvey, Julion, & Fogg, 2007a). Although there are many evidence-based parenting programs, the Chicago Parent Program was selected because it was originally designed to address the needs of African American and Latino parents of young children from low-income urban communities, the target population in this study.

Parents meet in 11 weekly 2-h group sessions led by two trained group leaders. A 12th meeting is scheduled 1 month later and serves as a booster session to help parents retain what they learned over the course of the intervention. During the group sessions, parents watch and discuss video vignettes designed to stimulate discussion and problem-solving

around strategies or principles designated for that session. Group leaders use a detailed manual that identifies the vignettes to be shown at each session, discussion questions to be asked for each vignette, and role play exercises to provide opportunities for parents to practice new strategies during group sessions. Parents receive weekly homework assignments and handouts summarizing important points from the session. The Chicago Parent Program has previously been shown to reduce parent reliance on corporal punishment and child behavior problems, improve parenting self-efficacy and increase the consistency of parent discipline in low-income families compared to parents who did not receive the program (Gross et al., 2009).

Participants

A purposive sample of eight Chicago childcare centers was selected to participate in this study. Inclusion criteria were that the center (a) had over 90% of its families considered as "low-income" based on their eligibility for subsidized childcare, (b) was licensed by the state to provide full-day child care, (c) enrolled at least 60 children between the ages of 2 and 4 (inclusive), (d) was able to commit space on-site for running PT groups, and (e) director agreed to having the center randomized to an experimental condition. These 8 centers were then matched on size, racial/ethnic composition, percent of single-parent households, and median income and randomly assigned to one of two conditions: a discount condition in which parents who enrolled in the PT intervention were offered a discount on their childcare bill contingent on weekly attendance in the intervention (n = 4 centers) and a control condition in which parents were not offered a financial incentive for their attendance (n = 4 centers). In addition, participants in both conditions were provided dinner and free childcare during the PT group sessions and incentives ($30 gift cards and a video recording of themselves with their child) for completing research assessments at baseline and 3 follow-up intervals. Follow-up assessments were conducted as part of a larger study not included in this report.

Participants were the parent or legal guardian of a 2–4 year old child enrolled in one of the 8 participating centers. Participants could be English- or Spanish-speaking since the PT program was available in both languages. Recruiters in centers with Spanish-speaking parents were bilingual and all measures were available in Spanish. The target population included 792 families enrolled in the 8 child care centers in September of 2008 or 2009 (N = 395 discount condition; N = 397 control condition).

Discount Strategy

Individual discount amounts varied based on the size of the parents' weekly childcare bill. For parents with a weekly childcare bill of $5 or less, the discount was equal to their total weekly childcare bill. For parents with a weekly childcare bill of more than $5, the discount was equal to $5 plus 20% of their weekly childcare bill less $5. For example, a parent with a $2 weekly childcare bill paid nothing if she attended the PT group that week. Similarly, a parent with a $5/week childcare bill also paid nothing if she attended the PT group that week. If a parent with a $20 childcare bill attended the PT group, she received an $8 discount on that week's bill ($5 + 20% of $15). The average weekly discount parents were eligible to receive based on the weekly childcare bills of all parents in the discount condition was $8.92 (range = $0–35).

Variables and Measures

Variables of interest for this study were parent participation (i.e., enrollment, attendance, and engagement), parents' motivations for enrolling in the intervention, and cost per parent enrolled and per parent per session. In addition, demographic variables describing the

sample and baseline child behavior variables were also measured. Variables and measures are described below.

Enrollment was measured as the number of eligible parents who agreed to participate in the PT intervention, signed consents to participate, and completed the baseline assessments. Attendance was measured by the number of PT group sessions parents attended (possible range = 0–12 sessions).

Parent engagement was assessed after the 11th PT session but before the booster session by group leaders using the Engagement Form (Garvey, Julion, Fogg, Kratovil, & Gross, 2006). This 7-item measure assesses the extent to which parent group attendees actively participated in the group sessions. Active participation is defined as the extent to which the parents, over the 11 sessions, were perceived by group leaders to pay attention to the video scenes, participate in discussions, be supportive to other group members, be open to new ideas, and correctly apply the program principles. Items were scored on a scale of 1 (*not at all*) to 4 (*most of the time*). Alpha reliability of this scale was .89. Validity has been supported by significant associations between engagement scores and improvements in teachers' and parents' ratings of child behavior problems (Garvey et al., 2006) and independent ratings of implementation fidelity (Breitenstein et al., 2010). Because group leaders were aware of how often parents attended the PT sessions, engagement scores may be confounded by attendance. We acknowledge this limitation in the study design.

Parent motivation for enrolling in the PT intervention was assessed at baseline using the Participation Motivation Form, a checklist of 12 or 13 possible reasons identified from previous research (Gross, Julion, & Fogg, 2001) and created specifically for this study. Items tapped motivations related to parenting needs (e.g., "I would like to learn better ways for managing my child's behavior," "I am always looking for ways to be a better parent"), social and leisure interests (e.g., "I would like the chance to talk with other parents with young children," "I would like to have a chance to have a night off from cooking dinner"), encouragement from others (e.g., "another parent recommended that I participate in this program," "my child's teacher recommended that I participate in this program"), and financial incentives ("I would like the $30 gift card [for completing study assessments]"). Checklist items were the same in both conditions except a thirteenth item was added to the checklist in the discount condition: "I would like the discount on my daycare bill." Parents were first asked to check off as many reasons listed as they felt were important in motivating their decision to enroll. They were then asked to circle which reason was "most important" in their decision to enroll. The order of the items was counterbalanced to avoid sequential bias.

To determine if their *children's behavior problems* were differentially associated with participation by condition (Heinrichs et al., 2005), parents completed the Child Behavior Checklist (CBCL/1½–5; Achenbach & Rescorla, 2000) at the time of enrollment. The CBCL/1½–5 is a 99-item parent-report measure of child behavior problems designed for children 18 months to 5 years. It includes two behavioral dimensions, internalizing problems (n = 36 items) and externalizing problems (n = 24 items), rated by parents on a scale of 0 (*not true*) to 2 (*very true or often true*). Previous research has reported high reliabilities, significant associations with other measures of child behavior, and psychometric equivalence across African American and Latino preschool children (Gross et al., 2006, 2007b). Alpha reliabilities for the internalizing and externalizing scales in this study were . 71 and .85, respectively.

Parents also completed a family background form asking them to report their child's sex and age and the parent's age, relationship to child, education level, parity, race/ethnicity, immigrant status, marital status, and annual household income.

Since the cost analysis was conducted from the societal perspective (Drummond, Sculpher, Torrance, O'Brient, & Stoddart, 2005), *costs* included group (i.e., payer) costs and parent costs. *Group costs* included group leader stipends; site coordinator stipends (staff employed by the agency who posted reminder signs, reserved childcare staff to supervise children during parent groups, prepared the room, and ordered the food); the cost of applying the discounts to parents' childcare bills; the cost of food provided during group sessions; stipends for teachers providing childcare offered during parent group sessions; and recruitment costs. Group leader, site coordinator, and childcare provider stipends were the actual salaries paid. The cost of applying the discount to parents' childcare bills was estimated through self-report by the financial manager of each childcare center of the time spent processing the discounts and applying the discounts to the parents' childcare bills in their centers' billing systems. The cost of recruitment time was estimated for each recruiter at 15 h per week for the 8 week recruitment period. Fixed costs associated with space and equipment were excluded, since the childcare centers generally provide a meeting room, television and DVD player. Up-front training and training material costs for group leaders were also excluded. Group leaders generally facilitate multiple groups over time, and therefore, sunk costs associated with training would be spread across a number of groups.

Parent costs included the *opportunity cost* of participating in the program, estimated at 2 h per session multiplied by the parent's reported hourly wage. In this study, opportunity costs represent costs due to time spent in one activity rather than an alternative activity. For example, if a parent takes time off of work to attend a PT session, the opportunity cost of attending the PT session is the wages foregone from taking time away from work (Varian, 1996). Hourly wage was imputed for parents who did not report an hourly wage at baseline using the 2009 median usual weekly earnings data from the Bureau of Labor Statistics' 2009 Current Population Survey that was adjusted for parent sex, age and race/ethnicity.

At the conclusion of each PT session, parents completed a weekly effort form asking (a) whether they had to find alternate care for their other children in order to attend the PT session (yes or no); (b) whether they left work early to attend the PT session (yes or no); and (c), if they did leave work early to attend, how much earlier they left work. These data were used to estimate parent opportunity costs associated with attending PT sessions. Time left early from work was multiplied by the parent's hourly wage to estimate missed work opportunity cost. The cost of childcare for other children during the parent sessions was estimated for 2 h per parent session multiplied by the median hourly wage from the Bureau of Labor Statistics' 2009 Current Population Survey, not adjusted for age, sex, or race, since this information was not reported for the in-home childcare provider some parents hired to care for children left at home.

Total costs were the sum of group and parent costs. All costs were adjusted to reflect year 2009 prices in U.S. dollars using the Bureau of Labor Statistics' Consumer Price Index for all items and all urban consumers. The primary cost effectiveness measures were total cost per parent enrolled and total cost per parent per session attended.

Procedures

Parents were recruited between 2008 and 2010. To conserve resources, four centers (2 from the discount and 2 from the control conditions) were randomly selected to enter the study in 2008 and the remaining four centers entered the study in 2009. With the exception of the incentive description for parents in the experimental condition, recruitment strategies were

the same across all sites. Specifically, recruitment at each childcare center was initiated 8 weeks prior to the start of each group. Recruiters (six African American, nine Latino, one non-Latino White) spent an average of 15 h per week recruiting parents during child drop-off and pick-up times (typically 7–9 a.m. or 3–6 p.m.). Parents received verbal and written information describing the purpose and length of the parenting program, the availability of free dinner and childcare while the parent groups met, the requirements of the study evaluation procedures, and the gift cards participants would receive for completing study assessments. Recruiters attended parent and teacher meetings at the childcare center to explain these aspects of the study and enlist their support. In addition, recruitment flyers were posted prominently in center hallways, given to children to take home to their parents, and placed in center newsletters. In addition, recruiters in the incentive condition child-care sites provided parents with information describing the amount of the discount they could expect to receive on their childcare bills for each parenting group session they attended. To ensure participants understood how the discounts worked, recruiters gave parents a chart depicting the amount they could expect to see discounted from their childcare bill for each session they attended and the remaining amount to be paid by them at each billing cycle.

Parents who expressed interest in the study and who met eligibility criteria were asked to sign a consent form and complete baseline research assessments. PT groups were offered in English and Spanish. If PT groups in both languages were requested by parents at the same center, two PT groups were simultaneously offered at the childcare site, one in English and one in Spanish. Three rounds of 12-session PT groups were offered at each childcare center (typically in fall, winter, and spring) and, over the course of the study, a total of 31 parent groups were conducted (15 in the control condition, 16 in the discount condition; 32.2% conducted in Spanish).

If at least four parents enrolled by the designated parent group start date, two group leaders were assigned to lead that group. If fewer than four parents enrolled, one group leader was assigned to lead that group. Group leaders were responsible for collecting study-specific information (i.e., weekly attendance, weekly effort forms, engagement ratings) in addition to facilitating the sessions. Within 24 h following the PT session, the project coordinator calculated and submitted the discounts to the child care center accounting offices to be applied toward the attending parents' childcare bills. Although payments accrued weekly, 3 of the 4 childcare centers billed parents monthly. Therefore, in these centers, parents were to receive all discounts due them from four successive weeks in a single bill sent from the child care center. One childcare center that billed parents weekly was to include parent discounts in their weekly billing statements.

All parent groups were audio recorded, and a random selection of 20–25% of group sessions were independently rated for adherence to the PT protocol and group leader skill using procedures described by Breitenstein et al. (2010). Group leaders whose sessions fell below criterion for high fidelity were provided additional coaching.

Analysis

Chi-square and t tests were used to examine differences by condition on parent participation variables and motivations for participating. For the cost analysis, we conducted two sensitivity analyses: one that excluded recruitment costs, since it could be possible for child care centers to rely on in-house staff to recruit for the program by hanging flyers in the center or sending flyers home with the children. The second sensitivity analysis used median hourly wages for U.S. workers from the Bureau of Labor Statistics' 2009 Current Population Survey, adjusted for age, sex, and race/ethnicity, rather than the actual wages, for the parent's opportunity costs to test whether results were robust to the actual wages of enrolled parents.

Results

Sample

The sample included 174 parents and their children (n = 93 in the discount condition; n = 81 in the control condition). As shown in Table 1, most of these parents were mothers (89%), employed (71%), unmarried (71%), and ethnic minority (97% African American or Latino). All parents met income eligibility criteria for receiving subsidized childcare, with over 62% reporting annual household incomes under $20,000. Mean parent age in the control condition was 28.5 years (SD = 7.5) and mean parent age in the discount condition was 29.7 years (SD = 6.8). There were no significant differences between the two conditions on any of the demographic variables except immigrant status; parents in the discount condition (n = 33, 35.5%) were more likely to be immigrants to the U.S. than parents in the control condition (n = 16, 19.8%), $\chi^2(1) = 5.3$, $p = .02$. However, immigrant status was not related to annual household income, $\chi^2(5) = 0.916$, p = n.s.

Participation

Participation was defined by enrollment rate, attendance at weekly PT sessions, and engagement (i.e., quality of participation in the PT sessions they attended). There were 395 eligible parents in the discount condition and 397 eligible parents in the control condition based on fall enrollment of each study year. Parents in the discount condition (n = 93) were 15.4% more likely to enroll than parents in the control condition (n = 81) but, this difference was not significant, $\chi^2(1) = 1.14$, p = n.s.

Parents in the discount condition attended an average of 6.26 weekly group sessions (SD = 4.58) while parents in the control condition attended an average of 5.86 weekly group sessions (SD = 4.48) sessions. While this difference was in the hypothesized direction, it was not statistically significant, $t(172) = -0.57$, p = n.s. Percent of enrolled parents attending each PT session ranged from 65% attending the first session to 47% attending the booster session (mean percent of enrollment parents in attendance across PT sessions = 55.92%). There were no differences in session attendance rates by condition, $t(29) = .175$, p = n.s. There were also no group differences when the data were examined by non-attenders (parents who enrolled but attended none of the PT sessions) or high attenders (parents attending more than 75% of sessions); 23% of parents in both conditions were non-attenders. More parents in the discount condition (42%) than in the control condition (37%) were high attenders, though this difference was also not significant, $\chi^2(1) = .43$, p = n.s. There was a small but significant positive relationship between the discount amount and attendance with parents receiving larger discounts attending more PT sessions ($r = .22$, $p < .05$).

Parent engagement in the PT sessions was equally high across both groups; average engagement scores were 3.3 (SD = .42) and 3.2 (SD = .60) in the control and discount groups, respectively (possible range = 1–4). Thus, parents who received the discount were as actively engaged as parents who did not receive the financial incentive. Engagement scores were significantly correlated with number of sessions attended ($r = .62$, $p < .001$).

To better understand why attendance rates were not more sensitive to the discount incentive, we contacted parents in the discount condition who attended at least one PT session to find out (a) whether they recalled receiving the discount on their childcare bill and (b) how long it took for them to notice the discount on their childcare bill. These two questions addressed key factors known to influence the effectiveness of financial incentives, whether the incentives were of sufficient magnitude to be noticed and the length of the delay in receiving the incentive (Epstein, Salvy, Carr, Dearing, & Bickel, 2010; Petry et al., 2004; Roll, Reilly, & Johanson, 2000; Silverman, Chutuape, Bigelow, & Stitzer, 1999). Sixty-one of 72 parents

who attended at least one PT session were interviewed by telephone (85% response rate). Of these 61 parents, 56% (n = 34) reported receiving their discounts while still attending the parent groups. However, 23% (n = 14) reported receiving their discounts only after the last parent group session ended, and 21% (n = 13) did not recall ever receiving their discount (although the childcare center reports discounting their childcare bill). There was no relationship between the discount amount and the reported delay in receiving the discount. Contrary to expectation, delays were greatest in the one childcare center that billed weekly, where two parents did not receive their discounts until 1 year after completing the PT program.

Motivation for Enrolling

Parent responses to the Participation Motivation Form are presented in Table 2. Motivations endorsed by at least 90% of parents in both conditions tended to be those related to parenting (i.e., wanting to learn better ways to communicate with their child, wanting to learn better ways to manage their child's behavior, looking for ways to be a better parent). Within the discount condition, nearly 80% of parents endorsed the childcare discount as a motivator for enrolling in the program. However, only 2.2% identified it as the most important reason. The most important reasons for enrolling in the program were looking for ways to be a better parent (37.6% in the discount; 37.5% in the control) and learning better ways to communicate with their child (25.8% in the discount; 35% in the control). There were no significant differences in parents' reports of most important motivation for enrolling by condition, $\chi^2(10) = 8.16$, p = n.s.

Heinrichs et al. (2005) found that parents of children with more behavior problems were more likely to participate in PT. Therefore, we examined parents' reports of their children's behavior problems at enrollment to determine whether parents of children with more behavior problems were more likely to enroll in one condition than the other. Mean internalizing behavior problems scores in the control condition (M = 7.02, SD = 5.7) and in the discount condition (M = 8.18, SD = 7.0) were not significantly different, $t(172) = -1.19$, p = n.s. Similarly, there were no significant differences in children's baseline externalizing scores by condition (M = 10.18, SD = 8.2 in the control and M = 10.32, SD = 7.6 in the discount), $t(172) = -0.12$, p = n.s.

Effort to Attend Parent Groups

Table 3 reports the additional effort that parents made to attend weekly parent groups. There were no significant differences between parents in the discount and control conditions on the effort they reported to (a) pick up other children and bring them to the childcare center, (b) arrange for someone else to care for their other children during parent groups, or (c) make special arrangements to attend. However, parents in the discount condition reported a significantly lower mean hourly wage (M = \$10.80, SD = \$3.28) than parents in the control condition (M = \$12.08, SD = \$4.11), $t(172) = 2.28$, p = .026.

Cost of the Parent Groups

Table 4 reports the parent, group, and total costs for the 12-session parent group per parent enrolled, based on the parents' actual attendance. There were no differences in the parent costs per parent enrolled in the program, $t(172) = 1.61$, p = n.s.; group costs per parent enrolled, $t(172) = 1.61$, p = n.s.; or total costs per parent enrolled, $t(172) = 0.25$, p = n.s. The total discount paid out over the 12 session parent group per parent enrolled in the discount condition was \$61.52(SD = \$72.63). The cost of food provided at the parenting sessions did differ by condition, with food costs being higher in the control group, $t(172) = 4.29$, $p < .001$. Each childcare center provided food for the parents attending the PT sessions and their children brought to the center. The centers were provided a food budget; however, it was at

each center's discretion to select the means of providing the food (i.e., prepared in-house or ordered from an outside caterer or restaurant), the menu, and the quantity of food.

Table 5 reports the parent-related costs per session attended for parents who attended at least one PT session. Parent opportunity costs of attending the group sessions tended to be lower in the discount condition, $t(132) = 1.95$, $p = .05$. This difference was due to the fact that parents in the discount condition had a lower mean hourly wage than parents in the control condition. Although the parent opportunity costs were $27.93 in the control condition and $26.72 in the discount condition, the average discount paid per session attended was about one-third of the opportunity cost ($M = \$9.23$, $SD = \$6.20$).

To better understand the costs associated with different rates of enrollment and attendance, we conducted two sets of simulations. Table 6 reports the estimated parent, group, and total cost per PT session, assuming parents attended all 12 PT sessions, for three different enrollment sizes of parent groups: a minimum enrollment scenario with 3 parents enrolled, a moderate enrollment scenario with six parents enrolled, and a maximum enrollment scenario with 15 parents enrolled. The mean parent costs per PT session are $27.28 across the three scenarios, since the individual parent costs do not depend on the size of the group. When only three parents enroll and attend, the group costs are $129.91 per parent per PT session, and total costs (parent plus group costs) are $157.19 per parent per PT session. In contrast, when 15 parents enroll and attend (the ideal maximum group size), group costs per parent per PT session are $60.80 and total costs per parent per PT session are $88.08. As shown in Table 6, group costs assume a larger percent of the total cost when only three parents attend (83%) than when all 15 parents attend (69%). These data show that the group costs (a) more than double and (b) assume a larger percent of the total cost when group-based PT is conducted for only a few parents, highlighting the economic efficiency of enrolling more parents in a group-based PT intervention.

Figure 1 shows the parent, group, and total cost per parent per session for group sizes ranging from three parents to 15 parents enrolled, assuming that parents attend all 12 sessions. Because child care costs are not fixed (i.e., 2 childcare workers are needed for groups with 3–9 parents bringing children; 3 childcare workers are needed for groups with 9–15 parents bringing children) and group leader costs may not be fixed (1 group leader for groups of three parents; two group leaders for groups of 4–15 parents), the group cost per parent session is not perfectly linear.

Whereas Table 6 and Fig. 1 depict costs associated with variable enrollment, assuming parents who enroll also attend, Table 7 presents the estimated parent, group, and total costs per PT session for different attendance rates when 15 parents enroll (i.e., sign-up to participate in the PT program prior to the first session). These scenarios include two low attendance scenarios (i.e., 15 parents enroll but only 1 parent attends or only five parents attend) and two high attendance scenarios (i.e., 15 parents enroll but only 10 parents attend or all 15 parents attend). These scenarios were selected based on attendance patterns that commonly occur in group-based PT programs. Results of this economic analysis show that with only one parent attending each PT session, the group cost per parent per session attended is nearly 15 times higher than when all 15 parents attend ($911.93 per parent per session versus $60.80 per parent per session). When 5 parents attend, the group costs are three times higher than when all 15 parents attend. These data demonstrate the economic inefficiency of attaining maximum enrollment without high attendance.

Discussion

This study tested whether giving childcare discounts to low-income parents of young children contingent on attendance in a weekly preventive parent training (PT) program would increase their participation. In this study we defined participation in three ways: enrollment (i.e., signing up to participate in the parent group sessions), attendance in the weekly parent group sessions, and engagement (i.e., quality of participation in the weekly parent group sessions). The results of this study indicated that although parents in the discount condition were more likely to enroll than parents in the control condition, this difference was not statistically significant. Moreover, modest discounts on parents' childcare bills did not appear to have an effect on parent attendance, engagement, or motivations for enrolling.

One important finding was that despite the added expense of discounting childcare bills, there was no difference in per parent group costs by condition. Although parents in the discount condition did not attend significantly more parent group sessions than parents in the control condition, the higher enrollment number meant more parents overall attended the parent group sessions. Thus, more parents attending PT in the discount condition made these group sessions relatively more efficient to deliver.

There are a number of important implications of this study from a policy perspective. First, we found substantial parent-related costs associated with attending a PT session. The parent opportunity cost averaged approximately $27 per session. Yet discounts administered to parents averaged about $9 per session. Although opportunity costs are not actual dollars directly paid by the parents to attend the PT sessions, research suggests that parents do place a value on how much their time is worth (Brown, Finkelstein, Brown, Buchner, & Johnson, 2009; Guyll, Spoth, & Redmond, 2003; Kane, Johnson, and Town, 2004a). One of the most common reasons cited by parents for not enrolling or attending preventive PT is that they are "too busy" (Garvey et al., 2006). However, it can be expected that at some level of incentive, parents will decide that they are not too busy to invest their time in prevention. The results of this study suggest that low-income parents make purposeful decisions about how to use their time, and it is possible that a discount of $9 per session may be perceived as an undervaluation of their time. Consistent with this interpretation, PT attendance was positively associated with discount amount.

Dumas et al. (2010) found similar results. In their study, parents offered monetary incentives averaging $8.50 per session were no more likely to attend PT group sessions than parents offered no monetary incentive. In contrast, Heinrichs (2006) recruited 76% more parents into preventive PT when they were offered $20 for attending each of four 2-h group sessions and a bonus of $40 if they attended all four sessions. Taken together, these results suggest that financial incentives that do not cover a majority of the parents' costs of participating in a PT program may be insufficient to encourage greater enrollment or attendance. Future work should build on these estimates of parent opportunity costs of attending PT sessions and assess whether larger financial incentives that more closely approximate the parents' opportunity costs improve enrollment and attendance.

Second, we demonstrated that larger groups have lower costs per parent enrolled in the program. The majority of the group costs are fixed, so they do not vary based on the number of parents enrolled (i.e., time associated with recruitment, group leader costs, site coordinator costs). Because of these fixed costs, the cost per parent decreases dramatically as the group size increases. In our simulations of parent and group costs for enrollment and attendance rates (Tables 6 and 7 and Fig. 1), we found that group costs per parent per session attended are most efficient when (a) the maximum number of parents enroll and (b)

all parents who enroll also attend. For example, the total cost of a single PT session when 15 parents sign up to participate but only one parent attends exceeds $939. Previous work has characterized the problem of low participation rates as a problem affecting research designs, treatment effectiveness, interpretations of outcome data, and the limited reach of effective interventions in real world contexts (Dodge, 2009; Nock and Ferriter, 2005; Winslow, Bonds, Wolchik, Sander, & Braver, 2009). The results presented here highlight the additional problem that low participation rates have on exponentially increasing the cost of delivering PT interventions in community-agencies that are already struggling with limited funds.

Because we used group leaders who had previously been trained on the Chicago Parent Program for other projects and our analysis focused on the direct costs of recruiting for and running the individual groups, we excluded the up-front training costs (trainer salaries, lost work time for the group leader to attend a 2-day training session, space and supplies) from our analysis. These up-front training costs may vary substantially based on group leader turnover, the number of groups each group leader facilitates and the size of the training sessions. We estimate, based on previous work with the Chicago Parent Program (Ridge, 2010), that up-front training costs are between $55 per group if 20 group leaders are trained in one session and $196 per group if 5 group leaders are trained in one session and assuming each group leader facilitates 2 groups each year.

Parents who attended PT sessions in the discount condition reported lower hourly wages than parents attending PT sessions in the control condition. Although a higher proportion of parents enrolled in the discount condition were immigrants to the U.S., household incomes were not found to be lower among immigrant than non-immigrant families. Other researchers have found financial incentives to be associated with higher attendance rates among very low-income parents (Dumas et al., 2010). This highlights the potential of well-designed financial incentive programs for motivating participation among families that are typically very difficult to engage in preventive PT.

Importantly, discounts did not appear to have an effect on the quality of parents' participation in the group sessions; parents in both conditions participated in the group sessions with similarly high levels of engagement. This finding is consistent with parents' reported motivations for enrolling. In both conditions, parents reported that the most important reasons for enrolling in the PT program were "looking for ways to be a better parent" and wanting "to learn better ways to communicate with [their] child". Although 80% of parents in the discount condition endorsed getting the discount as an important motivation for enrollment, only 2% endorsed it as the most important reason in their decision to enroll. These data suggest that the discount contributed to their decision to enroll in the parenting groups but it was not as important as their intrinsic motivation to be better parents. This finding is an important reminder that one of the most powerful incentives in low-income parents' decision to enroll in parenting groups is their own desire to be good parents (Gross et al., 2001).

To better understand why discounts were not more effective for increasing attendance rates, parents in the discount condition were interviewed by phone to find out more about their experiences with the discounts. The results of these interviews revealed important problems with using discounts, particularly when they are not applied in a timely way. For example, 23% of parents interviewed did not recall receiving their discounts while they were attending the parent groups, and another 21% did not recall ever receiving their discounts. Discussion with the childcare center billing offices indicated that all of these parents did eventually receive their discounts. However, in two cases, parents did not receive it until 1 year after their parent group ended due, in part, to changes at the center level following

budget cuts and staff reductions. Although most parents received their discounts while still participating in the parent group, these results highlight the challenges community-based agencies encounter implementing incentive programs. Without providing additional resources for administering financial incentive programs, community-based agencies, already challenged by limited resources, will have great difficulty using these potentially powerful reinforcement tools in an effective way.

There are a number of reasons why parents might not recall getting their discount even when those discounts were delivered in a timely way. First, the discounts may have been too small to be memorable or noticeable on a bill covering a full month of childcare costs. This problem would be particularly relevant when discount amounts are too small or the number of sessions attended is too few. Second, if parents were behind on their childcare payments, discounts may have been used to offset their debt, possibly diminishing their value as an incentive. Third, parents may not have reviewed their billing statements and seen the applied discount. These findings underscore the challenges of using childcare discounts in centers serving low-income families to motivate participation in a weekly preventive parenting program.

There are two important limitations to this study. Ideally, the data should have been analyzed as a group randomized trial using random effects multi-level models since randomization occurred at the site level. However, our power to detect effects with only four sites per condition would have been severely constrained (Murray, 1998). Given that analyzing data at the individual level revealed no statistically significant differences in participation by condition, multilevel analyses controlling for site effects would not have yielded a different outcome. Nonetheless, we acknowledge this design limitation, particularly given that the 8 childcare centers functioned quite differently with regard to how discounts were administered. Future research would greatly benefit from using more childcare sites to allow for a more powerful test of effects using discounts.

Another limitation is that we did not compare the effects of different discount amounts on parent participation. It is possible that discounts of a larger magnitude would have been more effective in raising enrollment and attendance rates, especially given the finding that (a) discount amounts were positively (though modestly) correlated with attendance and (b) the average discount of $9 was one-third of the estimated parent cost to attend.

There has been a dramatic increase in the use of financial incentives for motivating healthy behavior (Barth & Green, 2007; Long et al., 2008; Safeer, 2008). However, their use has not been guided by a strong evidence base for best practice across populations. Incentive amounts vary widely across target populations and health behaviors (Kane et al. 2004b) with little consensus on what amounts are appropriate from both a societal and personal motivation perspective. Moreover, we lack clear evidence on how best to market incentive packages (i.e., what is the message we want to communicate to parents about financial incentives) or how to implement them without overwhelming the already stretched resources in community-based agencies. Scientists and economists have concluded that investments in early childhood are among the best investments we can make as a society (Knudsen, Heckman, Cameron, & Shonkoff, 2006), but policy makers need more and better data to guide decision-making. The results of this study suggest that financial incentives that improve enrollment and attendance rates make interventions more cost-effective to deliver but incentives that are too small and too delayed are of limited value.

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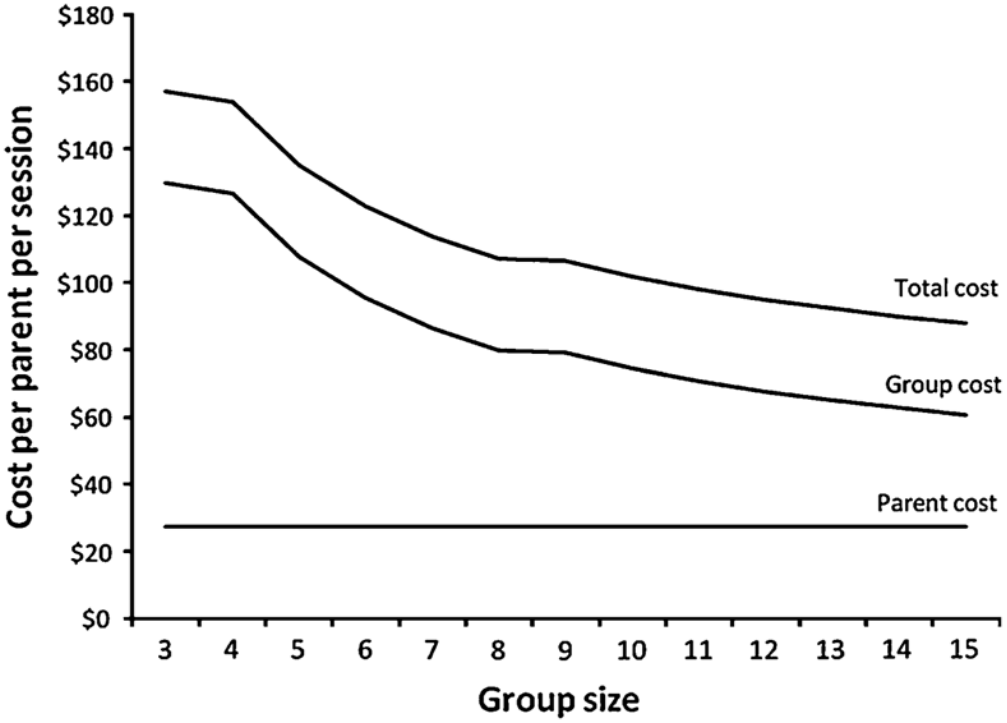

Fig. 1.

Estimated cost per parent training session for different group sizes, assuming parents attend all 12 sessions, 2009 dollars. Parent costs include opportunity costs associated with leaving work early to attend group sessions, providing child care for other children off-site, and attending group sessions. Group costs include recruitment (15 h per week for 8 weeks), group leader (one group leader for three parents enrolled; two group leaders for 4–15 parents enrolled), food, childcare (two providers for 3–8 parents enrolled; three providers for 9–15 parents enrolled), site coordinator, and handout costs. Group costs exclude childcare discounts. Total costs = parent costs plus group costs

Table 1

Parent and child demographic characteristics by condition

Sample characteristic	Control *f* (%)	Discount *f* (%)	Total sample *f* (%)
% Mothers	71 (87.7)	84 (90.3)	155 (89.1)
Employment status			
Working full-time	34 (42.0)	41 (44.1)	75 (43.1)
Working part-time	8 (9.9)	20 (21.5)	28 (16.1)
Going to school	15 (18.5)	12 (12.9)	27 (15.5)
Working and going to school	11 (13.9)	9 (9.7)	20 (11.4)
Not working	10 (12.4)	10 (10.8)	20 (11.4)
Other	3 (3.7)	1 (1.1)	4 (2.3)
Annual household income			
< $10,000	23 (28.4)	25 (26.9)	48 (27.6)
$10,000–$14,999	21 (25.9)	20 (21.5)	41 (23.6)
$15,000–$19,999	5 (6.2)	14 (15.1)	19 (10.9)
$20,000–$29,999	10 (12.4)	13 (14.0)	23 (13.2)
$30,000–$39,000	9 (11.1)	7 (7.5)	16 (9.2)
≤$40,000	4 (4.9)	5 (5.4)	9 (5.2)
Unknown or missing	9 (11.1)	9 (9.7)	18 (10.3)
% Latino	31 (38.3)	42 (45.2)	73 (42.0)
% Immigrants to U.S.*	16 (19.8)	33 (35.9)	49 (28.2)
% African American	47 (58.0)	49 (52.7)	96 (55.2)
% Boys	44 (54.3)	48 (51.6)	92 (52.9)

* $p < .05$

Table 2

Percent of parents endorsing motivations for enrolling in parent training as “Important” and “Most Important” by condition

Reason	Control *n* = 80		Discount *n* = 91		χ^{2c}	*p*
	Important[a]	Most important[b]	Important[a]	Most important[b]		
Obtain research incentives ($30 gift cards)	86.1	0	75.3	2.2	3.15	.08
Obtain research incentives (free video with child)	95.0	2.5	93.5	2.2	0.17	.68
Learn better ways to manage child behavior	95.0	12.5	96.8	18.3	0.35	.55
Learn better ways to communicate with child	98.8	35.0	97.8	25.8	0.20	.65
Chance to talk with other parents	97.5	5.0	92.5	3.2	2.20	.14
Chance to have the night off	57.5	1.2	44.6	2.2	2.86	.09
Chance to relax without paying babysitter	65.8	1.2	54.8	0	2.15	.14
Get help with disciplining my child	78.8	5.0	80.6	5.4	0.10	.76
Another parent recommended the program	30.4	0	15.1	0	5.83	.02
Child’s teacher recommended the program	41.2	0	36.6	1.1	0.40	.53
Motivated to enroll by the recruiter	81.0	0	80.6	0	0.01	.95
Looking for ways to be a better parent	95.0	37.5	100.0	37.6	4.76	.03
Would like the discount	NA	NA	79.6	2.2	NA	NA

[a] Parents could endorse multiple motivations as important

[b] Parents could endorse only one motivation as most important

[c] Test of difference for percent of parents endorsing a motivation as important

Table 3

Mean hourly wage and parent effort to attend parent training sessions by condition

Effort	Control *n* = 81	Discount *n* = 93	*p*
Hourly wage	$12.08 (4.11)	$10.80 (3.28)	.026
Number of sessions that parent…			
Made any additional effort to attend parent group	2.12 (3.25)	2.82 (3.93)	.210
Made additional effort to pick up other children and bring to this day care	0.93 (2.32)	1.52 (3.02)	.147
Arranged for someone else to take care of other children	0.94 (2.10)	1.30 (2.83)	.334
Left work earlier than usual to attend parent group	0.47 (1.41)	0.67 (1.95)	.440
Made other special arrangements to attend parent group	0.49 (1.07)	0.60 (1.37)	.560

Standard deviations reported in parentheses. Mean parent effort is the mean number of weeks that parents reported making these additional efforts to attend parent training sessions during the 12-session group

Table 4

Costs for 12-session group per parent enrolled, based on actual attendance, 2009 dollars

Cost	Control *n* = 81	Discount *n* = 93	*p*
Parent costs			
Opportunity cost; off-site child care	$17.70 (39.64)	$24.57 (53.41)	.333
Opportunity cost; left work early to attend	$4.02 (15.50)	$7.36 (26.67)	.307
Opportunity cost; attending group sessions	$145.39 (126.81)	$139.53 (116.62)	.751
Total parent costs per parent enrolled	$167.11 (146.77)	$171.46 (161.03)	.853
Total discount paid out per parent enrolled	–	$61.52 (72.63)	
Group costs per parent enrolled			
Recruitment	$178.81 (100.65)	$169.93 (108.71)	.579
Group leader stipends	$307.79 (164.80)	$289.73 (133.15)	.432
Food	$209.97 (81.08)	$160.87 (69.76)	<.001
Child care	$143.72 (42.04)	$137.81 (72.90)	.507
Site coordinator stipends	$27.09 (15.25)	$25.75 (16.47)	.579
Handouts	$5.99 (0.03)	$5.99 (0.02)	.206
Administration of discounts	–	$2.78 (1.35)	
Group costs per parent enrolled	$873.36 (337.44)	$792.86 (319.83)	.108
Total costs per parent enrolled	$1040.47 (401.17)	$1025.84 (384.84)	.807

Standard deviations reported in parentheses. The opportunity cost of providing child care for other children off-site is based on 2 h per PT session, for parents who indicated that they used child care off-site for other children; the opportunity cost of attending group sessions is based on 2 h per session attended. Recruitment costs are based on one recruiter working 15 h per week for 8 weeks prior to the start of each group per site. Total costs per parent enrolled include parent costs, discounts paid out (discount condition only), and group costs

Table 5

Parent-related costs per parent training session attended, 2009 dollars

Cost	Control *n* = 62	Discount *n* = 71	*p*
Parent costs			
Opportunity cost of providing child care for other children off-site	$2.70 (5.00)	$3.75 (6.40)	.292
Opportunity cost of leaving work early to attend group sessions	$0.68 (2.33)	$1.08 (3.13)	.395
Opportunity cost of attending group sessions	$24.54 (8.71)	$21.89 (7.07)	.054
Total parent costs	$27.93 (9.83)	$26.72 (11.74)	.524
Discount paid per session attended	–	$9.23 (6.20)	

Standard deviations reported in parentheses. Group sizes include only parents who attended at least one group session

Table 6

Estimated cost per parent training session, assuming parents attend all 12 sessions, 2009 dollar

Cost	Enrollment per group		
	Minimum (Group size = 3)	Moderate (Group size = 6)	Maximum (Group size = 15)
Group cost per parent session	$129.91 (83%)	$95.46 (78%)	$60.80 (69%)
Parent cost per parent session	$27.28 (17%)	$27.28 (22%)	$27.28 (31%)
Total cost per parent session	$157.19 (100%)	$122.74 (100%)	$88.08 (100%)

Column percentages are reported in parentheses. Parent costs include opportunity costs associated with leaving work early to attend group sessions, providing child care for other children off-site, and attending group sessions. Group costs include recruitment (15 h per week for 8 weeks), group leader (one group leader for minimum enrollment and two group leaders for moderate and maximum enrollment), food, childcare (two providers for minimum and moderate and three providers for maximum enrollment), site coordinator, and handout costs. Group costs exclude childcare discounts

Table 7

Estimated cost per parent training group session for 15 parents enrolled and different attendance rates, 2009 dollars

Cost	Number of parents in attendance per group session			
	1 Parent	5 Parents	10 Parents	15 Parents
Group cost per parent per session	$911.93 (97%)	$182.39 (87%)	$91.19 (77%)	$60.80 (69%)
Parent cost per parent per session	$27.28 (3%)	$27.28 (13%)	$27.28 (22%)	$27.28 (31%)
Total cost per parent session	$939.21 (100%)	$209.67 (100%)	$118.47 (100%)	$88.08 (100%)

All scenarios are based on 15 parents enrolled in the parent group. Column percentages reported in parentheses. Parent costs include opportunity costs associated with leaving work early to attend group sessions, providing childcare for other children off-site, and attending group sessions. Group costs include recruitment, group leader, food, childcare, site coordinator, and handout costs. Group costs exclude childcare discounts. Costs based on all parents enrolled in program