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Ethnic Differences in Engagement in Parent Training: Patterns of Attendance, Attitudes, and Impact on Treatment Outcomes

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Ethnic Differences in Engagement in Parent Training

Patterns of Attendance, Attitudes, and Impact on Treatment Outcomes

A dissertation submitted for the degree of

Doctor of Philosophy in Psychology

by

Lorinda Yee Chia Ho

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ABSTRACT OF THE DISSERTATION

Ethnic Differences in Engagement in Parent Training

Patterns of Attendance, Attitudes, and Impact on Treatment Outcomes

By

Lorinda Yee Chia Ho

Doctor of Philosophy in Psychology

University of California, Los Angeles, 2015

Professor Anna Lau, Chair

The dissertation aimed to examine ethnic minority parents' attendance and session engagement in Parent Training (PT) and their impact on treatment outcome. In study one, we found that African American parent participants were less likely than Non-Hispanic White parents to not attend any session, even after controlling for other baseline variables known to impact attendance. Once ethnic minority parents attended a session, however, their subsequent attendance was not found to be different from Non-Hispanic White parents'. In study two, we found that once ethnic minority parents joined a PT session, their group leaders did not rate their participation differently from Non-Hispanic White participants. Also, leader-rated participation scores at the outset of PT were found to predict later session inattendance and dropouts. Lastly, study three examined how attendance and session engagement may predict treatment outcomes of parenting practices and child behavior problems. The results showed no significant difference

between ethnic minority parents' and Non-Hispanic White parents' parenting practices and child behaviors at post-treatment. In addition, results revealed that leader-rated participation at the beginning of PT predicted some of the parenting practice outcomes at post-treatment. This suggests that group leaders may be able to identify parents who are less likely to respond to treatment very early in the course of PT by evaluating their in-session participation, and that session engagement may be a better predictor of treatment outcome than attendance. These findings suggest that the main barrier for ethnic minority parents to benefit from PT appear to be at the recruitment stage, and they participate in similar ways as Non-Hispanic White parents once they successfully attended at least one session. Nonetheless, there was some evidence that leaders can still benefit from increased cultural sensitivity to ethnic minority's disengagement in PT. Clinical implications and limitations are discussed.

The dissertation of Lorinda Yee Chia Ho is approved.

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Lau, A. S., Fung, J. J., Ho, L. Y., Liu, L. L., & Gudiño, O. G. (2011). Parent training with high-risk immigrant Chinese families: A pilot group randomized trial yielding practice-based evidence. *Behavior Therapy, 42*(3), 413-426.

Fung, J., Ho, L, Louie, J., L., Martinez, J., & Lau, A. (2010). Directions in understanding, preventing, and treating disruptions in parenting and child behavior problems in Asian American families. In F. Leong, L. Juang, D.B. Qin, H.E. Fitzgerald (Eds.) *Asian American and Pacific Islander Children and Mental Health Handbook, Volume 2: Prevention and Treatment.* California: Praeger.

Parent training (PT) programs have consistently been shown to be effective in improving parenting practices and reducing externalizing behaviors in children (e.g. Greenberg et al., 2001, Webster-Stratton & Taylor, 2001; Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; Michaelson, Davenport, Dretzke, Barlow & Day, 2013). Based largely on social learning and attachment theories, PT identifies parents as the most effective agents of change for their children and aims to reduce child behavior problems through improving parent-child relationships and addressing inconsistent and ineffective parenting styles (White, McNally, & Cartwright-Hatton, 2003; Scott & Dadds, 2009). Core practices taught in PT programs include the consistent use of attention, praise and rewards to encourage positive behaviors, and effective use of non-corporal methods – such as differential reinforcement of other behaviors, time-outs, loss of privileges – to discourage misbehaviors (e.g. Webster-Stratton 1981).

There is growing evidence supporting the effectiveness of PT for ethnic minority families (see Miranda, Bernal, Lau, Kohn, Hwang, & LaFromboise, 2005; Reid, Webster-Stratton, & Beauchaine, 2001; Huey & Polo, 2008). However, the benefits of family-focused preventative programs – such as PT – for the general public are often constrained by difficulties in the recruitment and retention of families, and researchers have long called for more attention to these issues (e.g. Spoth & Redmond, 2000). In fact, the National Institutes of Health (2001) has identified low engagement and retention as significant threats to the potential impact of evidence-based interventions. These issues become especially important when working with ethnic minority families, as research findings have shown that minority families are even more difficult to successfully recruit and engage in preventative programs compared to their Non-Hispanic White counterparts (e.g. Bloomquist et al., 2009; Cunningham et al., 2000; Orrell-Valente et al., 1999).

The goals of this dissertation are two-fold. First, I will investigate the role of ethnicity in patterns and trajectories of attendance and engagement in a trial of evidence-based PT. Second, and most importantly, I will examine whether these patterns of engagement may help predict changes in treatment outcomes including parenting practices and child behavior problems.

Engagement

Engagement in an intervention encompasses the entire process from stated intent to participate, to actual enrollment in a program, to attendance at sessions, and finally to quality of participation (Dumas, Nissley-Tsiopinis, & Moreland, 2006). This definition of engagement is intentionally broad in scope and transcends other definition of engagement that are restricted to the processes of enrollment and/or attendance in an intervention (Dumas et al., 2006). Previous studies have characterized parents as "engaged" if they successfully enrolled and attended 1 or 2 sessions (e.g., Cunningham et al., 2000, Gross, Julion, & Fogg, 2001), thus engagement was equivalent to successful enrollment. But a comprehensive investigation of engagement is important in studies of the impact of therapeutic processes on treatment outcomes. For example, although Dumas and Albin's (1986) reported no association between engagement in PT and treatment outcomes, engagement was only operationalized as percentage of attendance and completion of homework assignments. These definitions may miss important aspects of participation that characterize levels of active involvement. For example, in other studies, the term engagement was used to describe therapist ratings of the quality of active participation by parents during PT sessions (e.g., Garvey et al., 2006; Orrell-Valente et al., 1999). The processes of enrollment, attendance and quality of participation may each play an important and distinctive role in ensuring of the benefits of a PT intervention, it is important to discriminate between these "engagement" processes. Furthermore, previous research suggests that the predictors of

engagement at various stages in PT vary. For example, Frankel and Simmons (1992) found that whereas parent characteristics explained likelihood of showing up for an initial intake session, characteristics of the therapist predicted subsequent retention in PT.

Sequential stages of engagement

Figure 1 presents multiple and sequential stages of engagement. Engagement in an intervention begins with recruitment, the process of reaching out to potential participants with information of the intervention. Those who are successfully recruited become enrolled in the intervention and agree to participate in the intervention. The next level of engagement is initial attendance – the process in which those who officially enrolled in the intervention actually showed up to receive any of the intervention. Even among families who have enrolled in a parent training trial and indicated their interest in treatment, some proportion may never attend a single treatment session. The third stage of engagement involves continued attendance. This stage characterizes the dose of treatment received (i.e., what proportion of sessions were attended?). Also of interest in this stage is the pattern of attendance, including consistency and which particular sessions were attended in terms of session content and order. Finally, while some studies have equated high attendance with successful engagement, it is plausible that some participants may attend a high number of sessions but may not establish very meaningful participation in sessions. Thus, the last level of engagement to consider is the quality of participation, as may be measured by leader-rated impressions of parent participation and also parent-rated attitudes concerning the intervention.

Challenges of recruiting families into evidence based prevention trials

The rate at which families are successfully recruited into family mental health prevention programs is typically very low, often ranging from 20-25% (Spoth & Redmond, 2000; Coie et

al., 1991). For instance, a review on studies of older children that required family participation in school-based mental health prevention programs reported that it is common for at least two-thirds of families to decline to participation (Weinberger, Tublen, Ford, & Feldman, 1990). In a study of a universal family-based intervention, a mere 10% of eligible families participated (Cohen & Linton, 1995). Some studies have found that higher-risk families are frequently underrepresented in trials of preventative interventions (e.g. Biglan & Metzler, 1999; Stein, Bauman, & Ireys, 1991), leading to the concerns that families who need the interventions most may not receive them. In a review of over 40 frequently cited PT studies, it was revealed that the recruitment rates for indicated prevention programs were 49 – 70%, while the rates for universal prevention programs were as low as 10% to 38% (Heinrichs, Bertram, Kuschel, & Hahlweg, 2005). Such low recruitment rates not only limit the benefits of mental health interventions to only a small portion of families and children, but may also threaten the external validity of research outcomes (see Spoth & Molgaard, 1993; Spoth & Redmond, 1994).

Moreover, ethnic minority families tend to be more difficult to successfully recruit and engage in preventative programs compared to Non-Hispanic White families (e.g. Bloomquist et al., 2009; Cunningham, Offord, Racine, Hundert, Secord, & McDonald, 2000; Orrell-Valente et al., 1999; Snell-Johns & Mendez, 2004). For example, in a school-based PT trial with approximately 1,500 participating families, immigrant status was one of the few variables that predicted decreased odds of enrollment (Cunningham et al., 2000). The major factors influencing enrollment appeared to be logistical barriers – such as time concerns, scheduling, transportation and child care demands. In two separate refusal surveys, these types of practical barriers were reported by more than half of the respondents as reasons for not participating in the family interventions offered (Spoth, Redmond, Hockaday, & Shin, 1996; Spoth & Redmond, 1993b).

While these concerns affect families in general, they may be especially deterring for immigrant or ethnic minority families, who may lack resources (e.g. alternate caregivers, flexible work schedules, language skills) that support committed attendance (Snell-John et al., 2004).

Researchers and service providers have developed a number of strategies aimed at recruiting ethnic minority families into community prevention efforts. One strategy was to build partnerships with respected members of the community, such as a minister's wife or other well-known and active community elders, and have them contact families in their networks who may benefit from the program (Harachi, Catalano, & Hawkins, 1997; Carpentier et al., 2007). In a study that relied heavily on this method to recruit families of different ethnic groups, a follow-up interview showed that 33% of participants reported that they were recruited by a friend or someone they knew (Harachi et al., 1997), lending some support to the effectiveness of this strategy. Periodic newsletters and postcards, acquiring contact information for family and friends, and frequent tracking have been used to manage family mobility (Dumka et al., 1997; Prinz et al., 2001; Carpentier et al., 2007), which is often found to be a difficult challenge when working with low-income, immigrant populations. Also, holding PT at locations that are both convenient to access and familiar to members of the target community – such as churches and existing service-providing agencies – has often shown to be helpful for recruitment (Harachi et al., 1997). Incentives such as free meals and childcare services at the PT location have also been used successfully to reduce participation obstacles (Lengua et al., 1992; Miranda et al., 1996; Webster-Stratton, 1998). Efforts have also been made to increase program appeal by matching the needs, preferences and values of particular community groups. This includes gathering formative data from focus groups to understand program preferences and important values and preferences of certain ethnic groups, and adjusting PT programs to incorporate and reflect these

preferences and values (e.g. Carpentier et al., 2007). PT trials that incorporated the strategies mentioned above indeed show higher than average enrollment rates between 50 to 70% (see Harachi et al., 1997; Miranda et al., 1996; Carpentier et al., 2007; Eddy et al., 2005).

Attendance in parent training

As difficult as it is to recruit families in preventive PT programs, many families who are "successfully" recruited (i.e., agreed to participate, provided informed consent and completed baseline assessment) end up never attending. For example, in a trial of approximately 300 families, 32.7% of those who consented and enrolled in the trial never attended a single session, despite the low initial enrollment rate of 34.9% (Garvey, Julion, Fogg, Kratovil, & Gross, 2006). Another large scale study conducted in the United Kingdom also reported that a third of the participants who indicated initial interest in the PT program failed to come to any treatment sessions (Scott, O'Connor, Futh, Matias, Price, & Doolan, 2010). In these trials, ethnic minority families made up the vast majority (76% to 93%) of enrolled participants.

Attendance at the initial session is generally crucial to continued attendance. For example, Garvey and colleagues (2006) found that 91% of the parents who attended the first PT session attended at least two or more group sessions; in contrast, only 28.2% of parents who missed the first session attended any of the later sessions. However, despite the good news that families who successfully attended the first session are more likely to return, interventionists still struggle with high dropout and low overall attendance rates in PT programs. It is common for approximately 50% of the recruited families to participate in less than half of the sessions (e.g. Barrera et al., 2002; Charlebois, Vitaro, Normandeau, & Rondeau, 2001).

Many family characteristics have been found to predict attendance in PT. While enrollment difficulties are largely associated with logistic barriers, ongoing attendance is often

linked to participant characteristics and parenting styles (Cunningham et al., 2000). Low attendance rates have been associated with lower parental socioeconomic status and education, single parenthood, larger family size, and poorer parental psychological well-being (August, Lee, Bloomquist, Realmuto, & Hektner, 2003; Heinrichs et al, 2005, Gorman-Smith et al., 2002, Coatsworth, Duncan, Pantin, and Szpcznilk, 2006, Dumas & Wahler, 1983; Firestone & Witt, 1982, Kazdin, 1990; Kazdin, Mazurick , & Bass, 1993, Prinz & Miller, 1994; Wahler, 1980). On the other hand, positive parent child interactions, higher levels of parental involvement, better family communication and positive parenting styles were associated with higher rates of attendance (Boxmeyer & Lochman, 2006; Charlebois, Vitaro, Normadeau, & Rondeau, 2001; Ryan, Boxmeyer, & Lochman, 2007). These findings suggest that families at highest risk and with greater need for PT are the least likely to attend. However, according to a meta-analysis of 11 available studies on PT for conduct problems, although many demographic variables emerged as significant predictors of dropout – including single parent status, low family income, low education, young maternal age, ethnic minority group status, and negative life events – each individual predictor only resulted in a "small or insubstantial" effect size on dropouts in the .10 to .30 range (Reyno & McGrath, 2006).

The small net effect sizes of these predictor variables on PT attendance are attributable in part to the mixed nature of the research findings. For example, when it comes to children's mental health need and parent attendance in PT, the direction of effects is variable from study to study. While some studies found that families who reported more severe behavior problems in their children attend fewer sessions (August, Egan, Realmuto, & Hektner, 2003a; Boxmeyer & Lochman, 2006; Watt, Hoyland, Best, & Dadds, 2007), other studies report the opposite pattern whereby attendance increases with child behavior problem severity (Reid, Webster-Stratton, &

Baydar, 2004; Dumas, Nissley-Tsiopinis, & Moreland, 2007; Bloomquist, Horowitz, August, Lee, Realmuto, & Klimes-Dougan, 2009).

Not surprisingly, lower attendance in PT is associated with poorer treatment outcomes (Kazdin, Mazurick, & Siegel, 1994; Prinz & Miller, 1994). Some authors speculate that low attendance may be responsible for the lack of improved child outcomes in their studies, as parents may not have been sufficiently exposed to the concepts taught in PT to allow for changes in parenting styles that are needed to modify child behavior (e.g. Scott et al., 2010). For example, session attendance has been associated with reductions in mothers' critical statements and negative physical behaviors at 1-year post-intervention (Tucker, Gross, Fogg, Dalney, & Lapporte, 1998). August and colleagues (2001) reported that only parents who attended at least half of the family skills training sessions showed significant improvements in reported use of effective discipline practices. Lavigne and colleagues (2008) investigated dose effects in their data, and found that attending a minimum of 7 (out of 12) PT sessions was associated with improved outcomes at post-treatment and follow-up, which led them to suggest that attending less than half of the sessions would signify dropout.

Ethnic differences in PT attendance

Again, retention in PT appears especially challenging when serving ethnic minority families. Ethnic minority status has been associated with higher attrition in child mental health treatment trials, in general (e.g., Kazdin, 1995; Kendall & Sugarman, 1997). Studies have found that ethnic minority parents are more likely to attend fewer sessions (Nix, Bierman, McMahon, & Conduct Problems Prevention Research Group, 2009), and more likely to drop out of PT programs than Whites (Copage, Bennett, & McNeil, 2001; Kazdin & Whitley, 2003). Low income and ethnic minority parents may be more likely to drop out of PT due to practical

barriers, such as time and scheduling constraints (Gross, Julion & Fogg, 2001). Kazdin, Holland, and Crowley (1997) reported that greater attrition among ethnic minority families could be explained by barriers including stressors and obstacles that compete with treatment, perceived treatment demands and complaints, perceived irrelevance of treatments, and poor relationship with therapists.

While low socioeconomic status predicted poorer attendance in many studies (e.g. August et al., 2003; Heinrichs et al, 2005), there is evidence that the effect of SES on attendance may be moderated by ethnicity. In their 2010 study, Lavigne and colleagues found that while SES significantly predicted drop-out from PT, the association was dependent upon ethnic minority status, such that being from a low SES, ethnic minority family predicted non-completion 73% of the time, yet being from a low SES, White family predicted completion 80% of the time (Lavigne, LeBailly, Gouze, Binns, Keller, & Pate, 2010). Thus, while PT can be effective for ethnic minority families, a high proportion of minority families are unable to benefit from the programs due to barriers to both enrollment and attendance.

Attendance as patterns rather than rates

Attendance in interventions is commonly examined by contrasting dropouts versus completers, or by attendance rates – the number or percentage of sessions attended. However, some have argued that meaningful information may be neglected if using only binary categories or attendance rates, as families with similar percent attendance may have had quite different treatment experiences (Coatsworth et al., 2006a; Gorman-Smith et al., 2002). Coatsworth and colleagues (2006a) employed person-centered analyses to empirically identify common patterns of missing attendance in “Familias Unidas”, a 30-session family-focused PT intervention designed for Hispanic parents with teenage children. Participants exhibited one of three patterns

of attendance: 1) non-attenders (parents who never attended a single session; 2) consistent-high-attenders (parents who had high attendance throughout intervention); 3) variable-attenders (parents whose attendance in the first 15 sessions was inconsistent with their attendance in the last 15 sessions). Three subgroups within "variable-attenders were identified (dropouts; variable-low-attenders; variable-high-attenders). Parents who shared similar attendance rates often showed different types of attendance – for instance, parents who never attended a single session in the second half of the intervention, had similar attendance rates as parents in the variable-low-attenders – illustrating that attendance measured in rates may obscure information about participant engagement and treatment receipt.

Coatsworth and colleagues (2006a), in the same study, found ethnicity to be a significant predictor of attendance patterns, despite ethnically-matched group leaders. African-American parents were more likely to never attend or attend inconsistently compared to Hispanic parents; while Hispanic parents were more likely to have high attendance consistently. The program was originally designed for Hispanic parents with a focus on issues of immigration and acculturation and may not have felt as relevant to African-American parents (Coatsworth, Pantin, & Szapocznik, 2002). Thus, it is unclear whether the ethnic difference in attendance patterns shown in this study can be generalized to other PT programs that may be more widely applicable across communities.

Quality of participation in parent training

Another concern of delivering PT to ethnic minority parents is whether or not they are able to establish a comparable quality of participation during the PT sessions they do attend, as compared to Non-Hispanic White parents. It is also important to understand whether ethnic minority parents find the PT skills to be genuinely helpful and whether they are able to actively

participate in PT sessions.

Impact of participation quality on treatment outcomes

A number of studies have found a positive relationship between quality of participation and treatment outcome in PT. Reid et al. (2004) found that participation quality in PT was associated with reductions in conduct problems in children as measured by independent rater observations of parent-child interactions. Nix et al. (2009) and Garvey et al. (2006) both reported that therapist-rated quality of participation, rather than attendance, significantly predicted better treatment response. One other study investigating outcomes of PT with parents of children in Head Start programs found that parents who were more engaged – as measured by number of sessions attended, completion of homework assignments and therapist-rated participation in discussions – improved their parenting skills more than the parents who were less engaged (Baydar, Reid, & Webster-Stratton, 2003). Specifically, engagement was found in this study to be related to reduced harsh/negative style and inconsistent/ineffective style of parenting, and to increased supportive/positive style of parenting (Baydar et al., 2003). These findings demonstrate the importance of understanding what can be done to increase not only attendance, but also the quality of parents' participation in PT.

Predictors of participation quality in PT

Various family characteristics have been shown to predict quality of participation in PT. Parents with lower levels of education and job skills (Nix et al., 2009), and single-parent status (Dumas et al., 2006) have been associated with lower ratings of participation in PT. Attendance has also been found to predict participation quality, not surprisingly families who attended more sessions tend to be more active participants in treatment (Dumas et al., 2006; Orrell-Valente et al., 1999; Garvey et al., 2006). As with treatment attendance, there are mixed findings when it

comes to levels of need for PT and observed participation quality in PT. In some studies, mothers whose children exhibited more conduct problems (Reid et al., 2004) and who had higher levels of harsh/negative parenting (Baydar et al., 2003) were actually found to participate more actively. However, supportive/positive parenting was also found to predict better quality of participation, although harsh/negative parenting emerged as a stronger predictor than supportive/positive parenting (Baydar et al., 2003). These findings replicated previous results in a PT program for elementary children, which found that the highest risk parents (those who exhibited harsh parenting) and the lowest risk parents (those who exhibited positive parenting style) were the most engaged in their school-based parenting program (Reid, Eddy, Fetrow, & Stoolmiller, 1999). Based on these findings, Baydar and colleagues (2003) suggested that mothers who are harsh or negative toward their children at baseline may be even more motivated to improve their skills than parents who are less harsh, thus supporting the use of preventive parenting programs for high risk parents who need the intervention the most.

Ethnic differences in participation quality in PT

Despite the paucity of research in this area, there is some evidence that there are notable ethnic differences in the quality of participation in PT. In one study, ethnicity was found to predict therapist-rated quality of participation, in that African American parents were rated by PT leaders as showing lower levels of interest and involvement during sessions than their Non-Hispanic White counterparts. It is of interest to note that almost half of the therapists (42%) in this study were African Americans. Also, ethnicity emerged as the sole predictor of participation quality, as age, SES, parent's marital status did not predict participation scores (Orrell-Valente et al., 1999). This finding was replicated by Nix and colleagues' study, in which African-American parents were also rated by group leaders as showing lower levels of participation compared to

European-American parents (Nix, Bierman, McMahon, & Conduct Problems Prevention Research Group, 2009); quality was defined as degree of participation and interest displayed during parent groups and observed parent-child interactions, and comprehension and acceptance of PT concepts.

One explanation that has been offered to understand the reduced participation quality of ethnic minorities is that PT intervention practices may not be culturally acceptable for diverse families (Boothe et al., 2005; Borrego et al., 2004; McCabe et al., 2005). The strategies taught in PT have largely been developed and validated with middle-class Whites, leading to arguments that some of these skills may not resonate as well with diverse families (Forehand and Kotchick, 1996; Wood and Baker, 1999), possibly contributing to the frequently observed high attrition rates (Kumpfer, Alvarado, Smith, & Bellamy, 2002). For example, Heffer and Kelly (1987) found that low-income African American mothers were less accepting of time-out compared to Non-Hispanic Whites and higher-income African Americans. Also, therapists working with South Asian (Paiva, 2008) and Chinese families (Hsu, 1985; Crisante & Ng, 2003) have commonly reported meeting considerable resistance when teaching parents to praise their children and ignore their misbehaviors, both of which are core reinforcement and differential attention skills in PT programs. Other therapists noted that Asian parents often wished to discuss methods of controlling child defiant behaviors during early sessions when the content of most programs is dedicated to discussions of positive reinforcement skills (Ho et al., 1999). Consistent with these concerns, Reid et al. (2001) reported that while African- and Hispanic-American parents rated comparable satisfaction with PT as Non-Hispanic Whites, Asian-American parents rated lower satisfaction than other ethnic groups. It is plausible that ethnic minority parents may become more withdrawn and less involved in PT group discussions when certain content

material runs counter to their cultural perspective.

Concerns such as these have led to calls for culturally-adapted versions of PT tailored to address potential cultural concerns among ethnic minority families, but while these efforts have increased retention rates, their effects on treatment outcomes have been inconsistent (Lau, 2006). While a recent meta-analysis concluded that culturally-adapted psychosocial treatments were more effective than traditional treatments, most of the research studies reviewed were conducted with adult patients and it is unclear if the effectiveness generalize to the child/family treatments, including PT (Smith, Rodriguez, Bernal, 2010). A recent study compared the effectiveness of a culturally modified version of Parent-Child Interaction Therapy (PCIT) to standard PCIT and Treatment as Usual (TAU) for Mexican American families (McCabe & Yeh, 2009). They found that while the culturally-modified version produced significantly superior results than TAU, it was not significantly more effective than the standard PCIT. Finally, there have also been instances where fidelity and efficacy have been compromised with inappropriate adaptations that omit important behavioral skills training, even though retention appears enhanced (Kumpfer et al., 2002).

Despite efforts to improve the cultural sensitivity of PT, few studies have systematically compared ratings of participation quality and satisfaction across sessions featuring varying PT content skills with an ethnically diverse sample. This information may help to identify topics in PT curricula that may be problematic for ethnic minority groups and aid in the understanding of how disengagement from specific practice elements in PT may impact retention, quality of participation and treatment outcomes.

Bidirectional relationships between attendance and quality of participation

Attendance has been found to be correlated with quality of parental participation in PT

(Dumas et al., 2006; Orrell-Valente et al., 1999; Garvey et al., 2006). In most of these studies, attendance was analyzed as a predictor of therapist-rated participation quality, however, as participation scores are frequently rated by leaders at the end of the intervention (e.g. Garvey et al., 2006), it is plausible in these cases that interventionists simply rated parents who were "better attenders" with higher ratings of participation quality. A few studies have investigated week-to-week participation quality as a predictor of subsequent attendance/retention. Fox and Gottfredson (2003) reported that a higher percentage of noncompleters than completers in a family-focused intervention reported that the sessions did not keep their interest, that they felt uncomfortable talking in front of the group, or did not find it easy to relate to the group leader. As such, understanding and evoking the high quality of participation from parents in PT may be vital in ensuring that participants receive an optimal dosage of sessions. Coatsworth and colleagues (2006b) found that early participation ratings rated by leaders in the first half of the intervention were predictive of later retention patterns in the second half of the intervention. This finding is significant as it shows that PT therapists may be very effective in identifying families that are more likely to dropout based on their degrees of engagement during the first few sessions. Thus, therapists may be able to implement strategies to improve engagement and prevent attrition.

The Dissertation

The dissertation aimed to better understand ethnic minority parents' overall engagement in PT. Study One focused on investigating differences between Non-Hispanic White and ethnic minority parents in the patterns of attendance in PT, controlling for other subject characteristics that have been found to impact attendance. Study Two aimed to examine ethnic minority parents' satisfaction and participation quality trajectories throughout PT, compared to Non-Hispanic White parents. Lastly, Study Three examined how patterns of attendance and engagement relate

to treatment outcomes of parenting practices and child behavior problems.

While many studies have examined attendance rates in PT and its impact on treatment outcome, only one study to date has attempted to identify patterns of attendance in PT (Coatsworth et al., 2006a; 2006b). Coatsworth and colleagues found that many parents who shared similar attendance rates in a particular culturally-adapted PT program were in fact showing distinct patterns of attendance that indicated different intervention experiences. They also found that African American parents and Hispanic parents showed different patterns of attendance. However, as their study involved a culturally-adapted PT originally developed for Hispanic parents and their participants were either African-American or Hispanic, it was unclear whether meaningful patterns of attendance can also be found in more widely used PT programs with Non-Hispanic White and other ethnic minority participants. In this study, we were interested in examining whether ethnic minority families would exhibit different patterns of attendance from Non-Hispanic White parents in a widely disseminated mainstream PT program. Moreover, we examined whether patterns of attendance can successfully predict differences in PT treatment outcomes, which has not yet been examined in the published literature.

Another major area of investigation involved the examination of ethnic differences in the trajectories of participation quality and satisfaction throughout PT. Previous studies have found that ethnic minority families were more likely to be rated with lower quality participation and that participation quality predicted treatment outcomes. However, as almost all previous studies that examined participation quality in PT measured the variable as a mean score collapsed across all sessions, we do not have information on how participation quality vary throughout the course of PT. In this study, I am interested in examining trajectories of participation quality throughout the course of PT, which would potentially provide new information on the process of

engagement.

Another issue with the measurement of participation quality in PT is that it has almost always been rated solely by PT therapists or group leaders (e.g. Nix et al., 2009; Orrell-Valente, 1999; Baydar et al. 2003; Garvey et al., 2006). However, this measurement of participation quality only captures the interventionist's perspective on parental engagement, and not whether a participating parent finds the intervention engaging and useful – which may arguably be a more sensitive measure of engagement. This study measured participation quality using both leader-rated participation and parent-rated treatment attitudes about the intervention. We examined the extent to which both measurements of engagement predict treatment outcomes.

Study One Hypotheses

Hypothesis 1. Ethnic minority parents will show significantly lower rates of initial attendance and retention in PT, above and beyond the effects of other variables known to impact engagement.

Attendance was used both as a continuous outcome variable (percentage of completed sessions) and also a categorical variable (four categories: did not attend any session after enrollment in the trial; attended less than half of sessions; attended half or more sessions; attended all sessions). With percentage of attendance as outcome, parent ethnicity was examined as a main effect variable in an analysis of covariance (ANCOVA) model, controlling for demographic and parental covariates that have previously been shown to predict engagement (Reyno & McGrath, 2006) – poverty (dependence on public assistance), parental education, baseline child behavior problems, problematic parenting (self-reported use of physical punishment), and mother's baseline clinical status (anger and depression). With categorical attendance as outcome, a multinomial logistic regression was used for the analysis examining the

same predictor variables.

Hypothesis 2. There will be ethnic differences in empirical patterns of attendance. Ethnic minority parents will be less likely to be consistent attenders, more likely to drop out, and show sporadic patterns of attendance compared to Non-Hispanic Whites, controlling for other variables known to predict engagement

While Coatsworth and colleagues (2006a) utilized a coding scheme to manually assign participants to attendance groups, the current study will use a hierarchical cluster analysis to determine the optimal number of clusters that identify groups of participants who shared the same patterns of attendance. An agglomerative method of hierarchical cluster analysis was used to join similar patterns of attendance into meaningful and distinct clusters. The resulting clusters were then used as a dependent variable in multinomial logistic regression to determine whether ethnicity predicts patterns of attendance, controlling for other factors previously shown to predict attendance.

Study Two Hypothesis

Hypothesis 3. There will be ethnic differences in trajectories of participation quality throughout the PT program, as measured by leader-rated participation scores and parent-rated treatment attitudes, controlling for other variables known to predict engagement.

As previous research has consistently shown that ethnic minority parents received lower mean ratings of participation quality, it was hypothesized that ethnic minority parents will show lower initial levels of participation quality at the outset of PT and less growth in engagement throughout the course of PT.

Study Three Hypothesis

Hypothesis 4: Patterns of attendance and trajectory of participation quality will predict

treatment outcome in PT, as indexed by changes in parenting practices and child behavioral outcomes from pre-treatment to post-treatment.

Despite the paucity of research on the impact of participation quality on treatment outcome in PT, a few studies have shown better session engagement to predict better treatment outcomes. We hypothesized that better parent-reported treatment attitude and leader-rated participation and attitude ratings will predict improvements in treatment outcome.

Answers to the above research questions will aid service providers in developing strategies to improve overall engagement when working with families of minority status. By understanding how specific patterns of attendance and participation predict treatment outcomes, practitioners may be better able to identify families who are likely to be disengaged from PT and develop specific approaches to encourage engagement earlier in the process of PT to prevent drop-out and bolster outcomes.

Study overview

This study combined assessments from three cohorts of families enrolled in Puget Sound and Seattle area Head Start centers who participated in two different prevention trials. The first two cohorts of participants entered trial 1 (Head Start [HS] trial) in the fall of 1993 and the fall of 1994 (Webster-Stratton, 1998). The third cohort entered trial 2 (Center for Substance Abuse Prevention [CSAP] trial) in the fall of 1997 (Webster-Stratton, Reid, & Hammond, 2001). Three previous publications have used the same combined sample of 882 families (Baydar, Reid, & Webster-Stratton, 2003; Reid, Webster-Stratton, & Beauchaine, 2001; Reid, Webster-Stratton, & Baydar, 2004). The current study extended previous reports on these trials by examining the differences in attendance rates and patterns by ethnic groups, while controlling for other known predictors of parental engagement and attendance. Both HS and CSAP trials employed the same

design wherein Head Start preschool centers were matched on several variables (e.g., ethnic composition, number of classrooms, average experience of teachers) and randomly assigned to either an experimental condition in which parents were invited to participate in the Incredible Years Parenting Training Program, or a control condition consisting of the regular Head Start curriculum. In total, 14 Head Start centers were assigned randomly to the intervention condition and 9 centers were assigned randomly to the control conditions. These centers were chosen from within one large urban Head Start district on the basis of their similarity in terms of percentages of ethnic minority families, teachers' qualifications, family service workers' qualifications and education, number of classrooms, number of children, children's enrollment age, and length of school day. The sites were also chosen on the basis of their willingness to participate in the study and to be randomly assigned to either the intervention or the control group. Only one center that was invited to participate refused. Families who were enrolled in Head Start programs in the 23 centers that agreed to participate were eligible and invited to participate in the trials.

Study One Method

Participants

In this current study, participants who were in centers randomized to the treatment group were included in the sample. The study only used mother-reported data, as only a small percentage of data contained father-reported information. Among these participants, 13 mothers were excluded due to missing data on self-reported ethnicity. The resulting sample included in this study were 558 mothers who were assigned to the treatment group, who provided data at baseline assessment, and reported their ethnicity as one of the following: African American, Hispanic American, Asian American, or Non-Hispanic White (Caucasian). Amongst the participant children, 51.7% were boys and 48.3% were girls, with a mean age of 55.79 months. Fifty-five percent of participants were single mothers, 34% of participants were ethnic minorities, including 82 (14.7%) African Americans, 54 (9.7%) Hispanic Americans, and 53 Asian Americans (9.5%). Three hundred and sixty nine (64%) of participants were Non-Hispanic Whites.

Measures

Predictor Variables.

Sociodemographic data.

Parents were asked to report their ethnicity (Non-Hispanic White/ Hispanic/ African American/ Asian), the number of years of formal education received (variable dichotomized to more than 12 years [high school graduate or higher] versus 12 years or fewer), relationship status (unpartnered/ partnered), receipt of public assistance/financial aid (Yes/ No), and self-reported history of child maltreatment allegations filed with child protective services (CPS reports) (Yes/ No).

Clinical characteristics of parents.

Two measures were administered to provide risk indicators at baseline: 1) CES–D Depression Scale (CES-D; Radloff, 1977; Radloff & Teri, 1986), a 20-item reliable and valid index of self-reported depressive symptoms. In the present study a single dichotomous score was used from this measure based on a cut-off on the CES-D scale score of 16 or above as an indicator of depressive affect.

2) Brief Anger-Aggression Questionnaire (BAAQ; Maiuro et al., 1987), a six-item measure developed for assessment of anger level. In the present study, a single dichotomous score was used from this measure based on a cut-off on the BAAQ score of 9 or above as an indicator of anger management problems.

Attendance Outcomes.

Percentage of Attendance.

The number of sessions attended by each parent participant was recorded by group leaders. Since the two trials had different numbers of total session, the percentage of attended session out of the total number of sessions in the trial was calculated and used, instead of the absolute number of sessions attended.

Categorical Attendance Outcome.

A 3-level Categorical Attendance score was computed using each parent participant's percentage of attendance. Those who did not attend any session were assigned a score of 0, those who attended less than 50% of sessions were assigned a score of 1, and those who attended 50% or more of sessions were assigned a score of 2.

Procedures

Recruitment.

Recruitment of families began when families first enrolled in Head Start and continued throughout the fall orientations at the preschool sites. Parents were told about the study, given brochures, and asked to participate by the Head Start family service workers (FSWs) and teachers. Families indicated their interest in hearing more about the study by signing an interest form. These families were first contacted by phone, and later a home visit in which the study was explained in more detail. Parents who remained interested in the study then provided written informed consent and pre-intervention assessments were conducted.

Intervention.

Parent training groups. After pre-intervention assessments were completed, parents randomized to the intervention sites were invited to participate in the PT program. The major components of the Incredible Years preventive intervention involved teaching positive discipline strategies and effective parenting skills. Both the 8-week and 12-week prevention programs were abbreviated versions of Webster-Stratton's established treatment program for families of children with diagnosed conduct problems (Webster-Stratton & Hancock, 1998). The programs consisted of weekly parent group meetings (8-16 parents for 2 hours, once a week), in which parents viewed videotapes of families from a variety of ethnic and socioeconomic backgrounds modeling the targeted parenting skills. After each 2-minute vignette, the group leaders lead a focused discussion of the parent-child interactions and target parenting skills. Through discussion, the parents generate the underlying principles of behavior modification and review the benefits and barriers to each skill. Behavioral rehearsal is prompted with role plays and homework assignments. Topics in the program included child-directed play, praise and tangible rewards,

limit-setting, ignoring, time-out, logical consequences and problem solving.

The PT programs were led by certified Parenting Clinic leaders who were paired with Family Service Workers (FSW) from the Head Start site. The certification process of Parenting Clinic leaders involved participating in a 3-day workshop led by the program developer, coleading two groups with a previously certified leader, as well as submitting the videotapes of these groups to the program developer for review. The Family Service Workers also received the 3-day training prior to co-leading their first groups. Group leaders represented diverse backgrounds, but were not necessarily matched to the ethnicity of parents in the groups. Approximately 30% of the FSWs had masters degrees, and the remainder had bachelors degrees in social work, psychology, or human services. In terms of ongoing supervision, Parenting Clinic coleaders met weekly for group supervision, FSWs met monthly for supervision. They were provided an intervention manual that specified the content of each session, videotape vignettes to be shown, questions to be explored with the group, recommended role plays, and homework assignments for group members. The program developer observed two groups of each group leader throughout the study.

Although both HS and CSAP trials versions of the prevention program cover the same PT content, the HS trial offered the curriculum in weekly 2-hour sessions for 8 weeks. The CSAP trial offered the same curriculum but it was lengthened to 12 weekly 2-hour sessions largely to permit more time for group discussion and practice. In both trials the program was translated and offered in Vietnamese and Spanish. In centers where enough parents spoke one of these languages, a Spanish or Vietnamese group was offered by trained native speakers. In centers where only a few parents spoke these languages, non-English-speaking parents participated in an English group with the assistance of trained translators. Table 1 illustrates how the content of

each of the 12 sessions of the CSAP trial corresponds to each of the 8 sessions in the HS trial.

Results

Percent attendance

Table 3 displays results from a multiple regression analysis which examined the associations between mother's ethnicity and percentage of attendance. In the first step of the analysis, mother's ethnicity (Non-Hispanic White mothers as reference group) was entered as predictors of percentage of attendance. African American ($B = -.18$, $p < .01$) and Asian American ($B = -.12$, $p < .01$) mothers attended a significantly lower percentage of sessions. In the second step, sociodemographic variables and baseline clinical indicators that have previously been shown to predict attendance were simultaneously entered as predictors to determine whether the effect of mother's ethnicity may be accounted for by other characteristics. Of these 7 variables, only maternal education was found to significantly predict percentage of attendance ($B = -.11$, $p < .05$), the second step of the model was associated with a marginally significant R-squared change ($\Delta R^2 = .02$, $p < .10$). African American remained a significant predictor ($B = -.18$, $p < .01$), but Asian American ethnicity was reduced to a marginally significant predictor ($B = -.09$, $p < .10$).

Table 4 shows additional steps performed to query mediation. It was revealed that Asian American ethnicity significantly predicted maternal education ($B = 1.64$; $p < .01$), which in turn significantly predicted percentage attendance. When maternal education was covaried, Asian American ethnicity no longer predicted percent attendance, and the Sobel test revealed significant mediation ($z = -2.08$; $p < .05$).

Categories of attrition/retention

Table 5 displays results from a multinomial logistic regression which also examined the associations between mother's ethnicity and attrition/retention. In this analysis, attendance was coded into a 3-level ordinal categorical variable – did not attend, attendance less than 50% and attendance more than 50%, with the latter category serving as the reference group. In the first step of the analysis, only ethnicity was entered and African American, Asian American, and Hispanic parents were all found to be significantly more likely than Non Hispanic Whites to never attend. Ethnicity was significantly not associated with attending fewer than 50% of sessions.

In the second step of the analysis, the other putative predictor variables were entered, only maternal education was marginally associated with zero attendance. Yet in this step, only African American mothers were significantly more likely than Non Hispanic Whites to not attend. Asian American and Hispanic mothers were no longer shown to be significantly different from Non Hispanic White mothers in this step of the analysis. Again, none of the variables predicted membership in the categories of attendance at less than 50% of sessions as compared to attendance at more than 50% of sessions.

Patterns of attendance

The matching coefficients subtype of agglomerative cluster analysis designed for use with binary data (Dillon and Goldstein, 1984) was used as a person centered analyses to identify groups of parents evincing similar patterns of session attendance. Using this method, observations with more similar patterns of responses on the given binary variables are seen as closer to one another than are those with more disparate response patterns. This method considers the number of cases where subjects have binary values of 1s, as well as the number of cases where subjects have binary values of 0s. Analyses were specified for 3-group, 4-group, and

5-group cluster solutions for data from each trial. Cluster solutions were specified for data from each trial separately given the different number of sessions. The various solutions were compared and evaluated in their potential to differentiate meaningful patterns of attendance from one another, without creating redundant groups.

3-group clustering.

HS trial (8 sessions): The first group that emerged (n = 197) shared a pattern of high-attendance throughout the course of treatment. The 2nd group (n= 47) shared an inconsistent pattern of attendance, characterized by high initial attendance and followed by low and sporadic attendance. The last group (n = 138) shared low initial attendance with dropout following the 3rd session.

CSAP trial (12 sessions): The first group that emerged (n = 66) shared a pattern of high-attendance throughout PT. The 2nd group (n = 27) shared an inconsistent pattern of attendance that is characterized by high initial attendance followed by low, sporadic attendance. The last group (n = 138) had low attendance spread across the course of PT.

4-group clustering.

HS trial: This analysis yielded the same first two groups from the 3-group clustering: the high-attenders (n = 197) and the inconsistent attenders (n = 47). The group of drop-outs from the 3-cluster solution was split into two groups in the 4-group solution: a group that attended no sessions (n = 85) and a group that had some initial attendance but dropped out after the 3rd session (n = 53).

CSAP trial: This analysis yielded the same first two groups from the 3-group clustering: the high-attenders (n = 66) and the inconsistent attenders (n = 27). The group of low-attenders

from the last analysis was split into two groups: a group that did not attend any session (n = 107) and a group that dropped-out after the 5th session (n = 25).

5-group clustering.

HS trial: Three groups from the 4-group analysis remained: the inconsistent attenders (n = 47), the non-attenders (n = 85), and those who dropped out after the 3rd session (n = 53). The high-attenders group was split into two groups (n = 105 and n = 92), however, both of these clusters are characterized by high percentage of attendance throughout the course of PT.

CSAP trial: Three groups from the previous 4-group analysis remained: the inconsistent attenders (n = 27), the non-attenders (n = 107) and the high attenders (n = 66). The dropout group was split into two groups: a group that had first-session attendance but dropped out after 2 sessions (n = 15) and another group that shared low initial attendance and dropped out after the 5th session (n=10).

Cluster solution chosen for further analysis.

The 4-group clustering was selected for both HS and CSAP trials as they each helped to identify the same 4 meaningful major patterns of attendance, with little redundancy across groups. Since the two trials yielded 4 clusters that could be described in similar ways, the clusters were combined across the two trials. The resultant clusters were: Non-attenders (n = 192), Dropouts with some initial attendance (through the first 3 or 5 sessions) (n = 78), Inconsistent-attenders with good initial attendance followed by sporadic attendance (n = 74), and High-attenders (n = 263).

Predictors of attendance cluster group membership

Table 6 displays results from a multinomial logistic regression analysis that examined the associations between mother's ethnicity and attendance cluster membership. In the first step of

the analysis, only mother's ethnicity was entered. Using the high-attendance group as the reference group, mothers of all of three ethnic minority groups were more likely than Non Hispanic White mothers to be in the non-attenders group. Compared to Non Hispanic White mothers, African American mothers were 3.76 times more likely, Hispanic mothers were 2.01 times more likely, and Asian American mothers were 3.08 times to belong in the non-attendance group. Ethnicity did not significantly predict membership in the inconsistent-attenders or the dropout clusters relative to the high-attenders cluster.

In the second step of the analysis, demographic variables and baseline mental health indicators were also entered as predictors to predict cluster membership. African American mothers remained 3.14 times more likely than Non Hispanic Whites to belong in the non-attenders group, after accounting for the covariates. Asian American and Hispanic mothers were no longer significantly different from Non Hispanic White mothers in terms of group membership. This analysis also showed that mothers with low maternal education were 2.01 more likely to be in the non-attenders group ($p < .05$) and also 2.34 more likely to be in the inconsistent attendance group ($p < .05$). Mothers with previous CPS abuse reports were marginally less likely to belong in the non-attenders group ($p < .10$).

Discussion

The current study sought to examine ethnic minority parents' attendance in PT. We focused on investigating differences in attendance between Non-Hispanic Whites, African Americans, Hispanic Americans, and Asian Americans, while controlling for the effects of demographic variables and baseline clinical indicators that were previously shown to predict attendance in PT. Three approaches to the study of attendance were used in the attempt to provide information beyond attendance rates: 1) overall attendance rates; 2) attendance coded

into three categories: no attendance; less than half of the sessions; and more than half of the sessions; 3) Four patterns of attendance identified through cluster analysis: High attenders; Non-attenders; Dropouts; Inconsistent-attenders.

In this sample, 30.5% of families who consented and enrolled in the PT program never attended a single session. This finding is consistent with previous studies that also reported that a third of the enrolled families failed to come to any PT sessions (Garvey et al., 2006; Scott et al., 2010). Meanwhile, 35.9% of enrolled families in our study attended more than half of the sessions, and 20.1% attended all sessions. This information highlighted the challenges to disseminating PT to the intended population, despite efforts made to reduce logistical barriers by providing childcare and meals during the sessions and translators for non-English-speaking participants. Among families who successful enrolled in the PT groups, about 3 in 10 never received any intervention. Only 3.5 in 10 of enrolled families received the minimal dosage of treatment (i.e. half of the sessions) that has been found to correlate with improved treatment outcome (August et al., 2001), while only 2 in 10 enrolled families received the full dosage of treatment.

When using overall attendance rates as the measurement of attendance, the analysis revealed that African American parent participants had significantly lower PT attendance rates compared to Non-Hispanic White participants, even after controlling for demographics variables and baseline mental health indicators that were previously shown to predict attendance. While Asian Americans were initially found to have lower rates of attendance, the difference was no longer significant after controlling for maternal education. Low maternal education (less than 12 years) was found to be the only variable that predicted lower attendance rates and not attending any sessions, above and beyond the effect of ethnicity. Yet, including the demographics variables

and baseline mental health indicators as covariates in Model 2 yielded a small change of R-squared value that was only marginally significant, indicating that the covariates only helped to explain less than 2% of the total variance. Nonetheless, a follow-up mediation analysis showed that low parental education significantly mediated the effect of Asian American ethnicity on percent attendance.

Complementary information emerged when using categorical attendance and patterns of attendance derived from cluster analysis as the measurements of attendance. Both analyses initially showed all three ethnic minority groups as more likely than Non Hispanic White mothers to not attend any session. However, after controlling for demographics variables and baseline mental health indicators that were previously shown to predict attendance, the difference remained significant only for African American participants. While previous studies have found that ethnic minority families showed lower rates of attendance, many such studies examined ethnic minority families as one single category of participants in comparison to Non Hispanic Whites (e.g. Lavigne et al., 2010; Nix et al., 2009), rather than examining PT attendance across distinct groups. The current study results showed that African American parent participants may be particularly vulnerable to attrition following recruitment compared to other ethnic groups, particularly in the form of non-attendance.

The current findings that African American participants had lower attendance rates and were specifically more likely to never attend, when compared to Non Hispanic White parents, is consistent with some previous studies showing lower attendance rates among African American. For example, Coatsworth and colleagues (2006a) found that African-American parents were more likely to never attend or attend inconsistently compared to Hispanic parents, despite provided with ethnically matched therapists. Also, Nix and colleagues found in their Fast Track

program a sub-group of African American participants who attended significantly fewer sessions (Nix, Pinderhughes, Bierman, Maples, & CPPRG, 2005). Yet, some studies have not revealed this pattern for African Americans. For example, in a study that examined attendance in another Fast Track program, African Americans were observed to have lower in-session participation, but they did not differ in terms of attendance (Orrell-Valente et al., 1999).

Furthermore, using categorical attendance and patterns of attendance as measurements of attendance revealed that ethnicity did not predict the likelihood of a parent attending less than versus more than half of the PT sessions, or their membership in the dropout or the inconsistent attendance groups. Ethnicity only predicted how likely a parent was to attending any session at all. Previous research with a predominantly African and Hispanic American subject population found that the vast majority of their participants attended at least 2 or more sessions after attending the initial session, and in contrast, only 28% of parents who missed the first session attended any later session (Garvey, 2006). Our results confirmed the importance of ensuring attendance in the first session, and suggests that once ethnic minority families are engaged initially in the first PT session, their continued attendance may not be significantly worse than Non-Hispanic White parents. There are different implications of this finding. First, this may be an indication that the PT group leaders were successful at establishing good rapport with ethnic minority parents during the first session, and the content of the first session may be perceived by ethnic minority parents to be relevant and useful. In order to further investigate this potential interpretation, future research would benefit from collecting session engagement indices such as parent-reported satisfaction with leader skills and session content. Alternatively, it is also plausible that the ethnic minority parents who successfully attended the first session may be a self-selected sub-group that have different characteristics compared to those who did not attend

the first session. Future research may benefit from collecting demographic and other parental characteristic data during the enrollment process. This will allow researchers to examine whether the ethnic minority parents who attend the first session are characteristically different from those who do not.

The current study suggests that it is important to find ways to facilitate African American and other ethnic minority parents in their ability and motivation to attend the first session of PT, as initial attendance appears to be the object of clearest disparity. In a research study that was delivering Fast Track to a culturally-diverse sample, a subset of participants – who were mostly African American with low SES – was identified to show low rates of attendance at groups, but also reported that they were willing to receive home visits (Nix et al., 2005). This may be an option to ensure initial engagement in PT. Other methods to overcome logistic reasons, such as time concerns, scheduling, transportation and child care demands, may also be implemented to motivate participants to attend the first session of PT and increase the likelihood of better overall attendance.

There are several limitations to this study. First, ethnic minority families made up only 34% of the sample, breaking down to 14.7% African Americans, 9.7% Hispanic Americans, and 9.5% Asian Americans, compared to 66% Non-Hispanic Whites. This may potentially have limited the statistical power of the current analyses. Particularly, it may have restricted our ability to examine the differences in PT attendance for Hispanic American and Asian American families, due to the smaller sample sizes for these two ethnic groups in our sample. Second, the clustered groups of attendance patterns also had unequal cell size – the majority of participants were clustered to either the high-attendance group (n=263) or the non-attenders group (n=192), while smaller numbers of participants were clustered to the dropouts group (n = 78) and

inconsistent-attenders group (n = 74). Thirdly, the current study only examined attendance in PT and not other indices of overall engagement, including quality of participation and participant satisfaction in PT. Research indicated that attendance may not equal effective participation and treatment outcome in PT (e.g. Orrell-Valente et al., 1999). Fourth, although identified meaningful patterns of attendance from person-centered analyses, ethnicity did not predict membership in these groups. It is possible that the smaller sizes of these 2 clusters paired with the limited number of participants in each ethnic minority group restricted our power to identify associations. Future studies with a greater ethnic minority representation may help to clarify this finidng.

Study Two Method

Participants

Included in this part of the study is a sub-sample of 273 mothers who had provided data at baseline assessment, reported their ethnicity, attended at least one session, and whose session engagement data contained missing data that were not missing at random (discussed later in this section). In this sub-sample, 52.6% of participants were unpartnered, 26.3% had less than 12 years of formal education, and 85.8% received financial aid. Twenty-three percent of participants were ethnic minorities, including 28 African Americans (10.2%), 19 Hispanic Americans (9%), and 17 Asian Americans (6.2%). There were 209 Non-Hispanic White participants.

A total of 116 participants whose session engagement data were partially missing-at-random were excluded from this study. Data obtained from these participants contained two types of missing session-level engagement data: 1) not-missing-at-random – the participant did not attend the session; 2) missing-at-random – the participant attended the session but the data was not collected or was lost. Unfortunately, due to the lack of session-by-session attendance

information, we were unable to differentiate between these two types of missing data. As the handling of missing data is dependent on the nature of the missing data, the analysis only allows for one type of missing data. We did have total session attendance data for each participant, therefore, in the cases where the number of session-level engagement data points was equal to the total number expected based on the total number of sessions attended, we concluded that all missing session-level data could be attributed to non-attendance. Thus, participants whose data were partially missing-at-random were excluded from the study.

Measures

Parent-reported treatment attitude.

Following each parent group session, parents completed a brief 4-item inventory that asked the parents to rate the effectiveness of the leaders, group discussions, session content, and videotape vignettes. The HS sample rated these items on a 0 to 2 scale, in which 0 is "not helpful", 1 is "neutral", 2 is "good", while the CSAP sample rated these items on a 0-3 scale, in which 0 is "not helpful", 1 is "neutral", 2 is "good", and 3 is "very good". Parent reports on the 4 satisfaction ratings were internally consistent across the 8 sessions (alphas ranged between .89 and 92). Correlations amongst the four parent treatment attitude ratings (namely, the ratings on effectiveness of the leaders, group discussions, session content, and videotape vignettes) were found to be strong, their alphas ranging between .51 and .78 (Table 7). Due to the strong correlations amongst these four ratings, the mean of the four ratings was used as an index of parent treatment attitudes. In order to obtain meaningful scores for the combined sample, z scores were created for the mean score within each sample. These z-scores were used in the analyses for the combined sample.

Leader-rated quality of participation and attitude scores.

Following each parent group session, group leaders rated each parent's frequency of "active participation" in session with a "0" (seldom), "1" (sometimes), or "2" (frequent). Group leaders also rated their perception of each parent's "overall attitude" in each session with a 0-2 scale, in which 0 is "negative", 1 is "neutral", and 2 is "positive". The leader-rated participation and attitude scores were moderately correlated with each other (r = 35).

Sociodemographic data.

Parents were asked to report their ethnicity (Non-Hispanic White/ Hispanic/ African American/ Asian), the number of years of formal education received (variable dichotomized to more than 12 years [high school graduate or higher] versus 12 years or fewer), relationship status (unpartnered/ partnered), financial aid receipt (Yes/ No), and whether they reported a history of child maltreatment allegations that have been reported to child protective services (CPS reports) (Yes/ No).

Clinical characteristics of parents.

Two measures were administered to provide risk indicators at baseline: 1) CES–D Depression Scale (CES-D; Radloff, 1977; Radloff & Teri, 1986), a 20-item reliable and valid index of self-reported depressive symptoms. In the present study a single dichotomous score was used from this measure based on a cut-off on the CES-D scale score of 16 or above as an indicator of depressive affect. 2) Brief Anger-Aggression Questionnaire (BAAQ; Maiuro et al., 1987), a six-item measure developed for assessment of anger level. In the present study, a single dichotomous score was used from this measure based on a cut-off on the BAAQ score of 9 or above as an indicator of anger problems.

Patterns of Attendance and Missing Data

While 213 participants out of 273 (77.74%) attended at least half of the sessions, only 54 participants (19.71%) attended all sessions. The substantial amount of dropouts and missed sessions, while commonly seen in studies with repeated measures, led to a fair amount of missing data in the satisfaction and participation ratings of in the session-level (level-1) data. We conceptualized such missing data, due to non-attendance, as an indication of disengagement from the PT program.

In order to investigate and potentially correct for the impact that the missing observations (i.e. non-attendance of sessions) may have on the analysis of interest, a pattern-mixture model (Hedeker & Gibbons, 1997) was used. This method required first identifying patterns of missing sessions and including them as predictors in the analysis. It also requires examining interactions between the patterns of missingness and predictor variables, to confirm whether the pattern of missing sessions has a significant impact on the relationship between predictors and outcomes of interest.

In order to perform a pattern-mixture model, we first identified patterns of missing observations (i.e. missed sessions) using cluster analysis (as described in Study One). The variables to be clustered were the binary variables of availability of satisfaction ratings. A Ward's method of clustering was used, and the simple matching method was used to accommodate for the binary nature of the attendance variables. The resulting clusters were: 1) Drop-outs with some initial attendance (through the first 3 sessions in the HS sample or 5 sessions in the CSAP sample) (n = 57); 2) Inconsistent-attenders with good initial attendance followed by sporadic attendance (n = 45); 3) High-attenders (n = 170). (The Non-attenders cluster was not used in this analysis, as Study Two was focused on participants who attended at least one session and provided session engagement data necessary for this analysis.)

Data Analysis

Multilevel random coefficient modeling, also called hierarchical linear modeling (Raudenbush & Bryk, 2002), is commonly used to examine change in outcome variables over time. Random coefficient modeling is a flexible approach that is well-suited for longitudinal data with observations nested within individuals, as it accounts for non-independence between repeated measures. The multilevel model also allows for the use of Pattern-mixture modeling to analyze the effect of patterns of missing outcome data that are non-ignorable (Hedeker & Gibbons, 1997). In this study, all missing outcome data was due to non-attendance of treatment session – which were conceptualized as treatment disengagement and not "missing at random". The interaction terms between the predictor variables and the missing pattern variable tells us whether the missingness of the data has a significant effect on the relationship between predictors and outcome variables. In the absence of significant interactions, we can have some degree of confidence that the effects of the predictor variable on the outcomes of interest are not attributable to patterns of missing data that may covary with the predictor of interest.

Ideally, we would be able to conduct the pattern-mixture models with the three ethnic groups as dummy code predictors (African American; Hispanic American; Asian American). However, the pattern-mixture models were not successfully conducted, as breaking down ethnic minority participants into four ethnic groups resulted in missing cells in certain Ethnicity X attendance-pattern interaction terms. Thus, the pattern-mixture models (Models 1, 3, and 5) were run using a binary ethnic minority status variable instead. Additional models without the pattern mixture analysis (Models 2, 4, and 6) were run to examine how membership in each separate ethnic group predicted engagement outcomes.

All analytic models were run as two-level multilevel random coefficient models, in which level 1 contained treatment observations, and level 2 contained individual-level variables. A total of six models were run.

Model 1 was run with a binary ethnic minority status variable and attendance-pattern dummy codes predicting parent treatment attitude, with interaction terms between ethnic minority status and attendance-patterns. A binary variable indicating the trial in which the participant belonged to (HS versus CSAP trial) was also included. In addition, seven demographics variables and baseline mental health indicators that were previously shown to predict attendance and engagement were included as covariates. These variables were added to show whether minority status predicted parent-rated treatment attitudes, above and beyond the effects of predictor variables that were previously shown to impact engagement in PT.

Model 1:

Level 1:

Parent treatment attitude = $\pi_0 + \pi_1$(sessions)

Level 2:

Intercepts $\pi_0 = \beta_{00} + \beta_{01}$(Minority) + β_{02} (Trial group) + β_{03}(Drop-out) + β_{04}(Inconsistent) + β_{05}(Drop-out*Minority) + β_{06}(Inconsistent*Minority) + β_{07}(Single parent) + β_{08}(Low education) + β_{09}(Financial aid) + β_{10}(Parent-reported use of physical discipline) + β_{11}(Child externalizing) + β_{12}(Maternal Depression) + β_{13}(Maternal Anger) + r_{00}

Slopes $\pi_1 = \beta_{10} + \beta_{11}$(Minority) + β_{12} (Trial group) + β_{13}(Drop-out) + β_{14}(Inconsistent) + β_{15}(Drop-out*Minority) + β_{16}(Inconsistent*Minority) + β_{17}(Single parent) + β_{18}(Low education) + β_{19}(Financial aid) + β_{110}(Parent-reported use of physical discipline) + β_{111}(Child externalizing) + β_{112}(Maternal Depression) + β_{113}(Maternal Anger) + r_{10}

Model 2 used ethnicity dummy codes (African American; Hispanic American; Asian American) in replacement of the minority status variable in Model 1. Contrary to Model 1, these models were not conducted as a pattern-mixture model.

Model 2

Level 1:

Parent treatment attitude = $\pi_0 + \pi_1$(sessions)

Level 2:

Intercepts

$\pi_0 = \beta_{00} + \beta_{01}$(African American) + β_{02}(Hispanic American) + β_{03} (Asian American) + β_{04} (Trial group) + β_{05}(Drop-out) + β_{06}(Inconsistent) + β_{07}(Single parent) + β_{08}(Low education) + β_{09}(Financial aid) + β_{10}(Parent-reported use of physical discipline) + β_{11}(Child externalizing) + β_{12}(Maternal Depression) + β_{13}(Maternal Anger) + r_{00}

Slopes

$\pi_1 = \beta_{10} + \beta_{11}$(African American) + β_{12}(Hispanic American) + β_{13} (Asian American) + β_{14} (Trial group) + β_{15}(Drop-out) + β_{16}(Inconsistent) + β_{17}(Single parent) + β_{18}(Low education) + β_{19}(Financial aid) + β_{110}(Parent-reported use of physical discipline) + β_{111}(Child externalizing) + β_{112}(Maternal Depression) + β_{113}(Maternal Anger) + r_{10}

Models 3-6 had the same predictor variables and covariates as Models 1 and 2. The models differ only in the level-1 outcome variables. Models 3 and 5 are both pattern-mixture models using the same predictors as Model 1, predicting leader-rated participation scores (model 3) and leader-rated attitude scores (model 5) respectively. Models 4 and 6 are non-pattern-mixture models using the same predictors as Model 2. They predicted leader-rated participation

scores (model 4) and leader rated attitude scores (model 5) respectively.

Results

Trajectories of parents' treatment attitudes

Table 8 presents the fixed and random effects of Model 1, a pattern mixture model predicting parent-reported treatment attitudes as outcome. Minority status did not significantly predict either the intercepts of parental treatment attitudes (B = .298, SE = .210, n.s.) or the slope of trajectory (B = -.0002, SE = .024, n.s.). The two trials (HS versus CSAP) did not show significantly different intercept (B = .036, SE = .180, $p > .05$) or slopes (B = .024, SE = .023, $p > .05$) in parent treatment attitudes. Parents who had less than 12 years of education were shown to have significantly less growth in slope (B = -.040, SE = .019, $p < .05$). Parents who reported use of physical discipline had significantly more growth in slope (B = .048, SE = .022, $p < .05$). The other baseline covariates and attendance patterns did not significantly predict intercept or slopes of trajectories of parent attitudes. The Minority Status X Attendance-pattern interaction terms also did not predict intercept or slopes.

Table 9 presents the fixed and random effects of Model 2 without the pattern mixture modeling. In this model, the ethnic minority status variable was replaced by ethnicity dummy codes in order to examine possible differences between each ethnic minority group and Non Hispanic Whites. Hispanic Americans were shown to have a significantly higher intercept level of parent-rated satisfaction (B = .639, SE = .143, $p < .01$), while Asian Americans showed a significantly lower intercept level of parent-rated satisfaction (B = -.459, SE = .213, $p < .05$) than Non Hispanic Whites. The two trials (HS versus CSAP) did not show significantly different intercepts (B = -.125, SE = .156, n.s.) or slopes (B = .038, SE = .026, n.s.). Parents who had less than 12 years of education had significantly less growth in slope (B = -.046, SE = .020, $p < .05$).

Parents who reported use of physical discipline incidents had significantly more growth in slope (B = .048, SE = .024, p < .05) in treatment attitudes over the course of PT. The other baseline covariates and attendance patterns did not significantly predict intercept or slopes of parent attitudes.

Trajectories of leader-rated parent participation

Table 10 presents the fixed and random effects of Model 3, a pattern mixture model predicting slopes and intercepts of leader-rated parent participation trajectories over the course of PT. Ethnic minority status did not predict intercept or slope of the outcome (B = .039, SE = .123, p > .05). Parents who reported more child externalizing symptoms at baseline had a significantly higher intercept (B = .013, SE. 004, p < .01). Parents who reported more maternal depression at baseline had participation trajectories with significantly lower intercepts (B = -.014, SE = .004, p < .01) but more growth in slope (B = .001, SE = .001, p < .05). Compared to high-attending parents, parents who attended the first session but later dropped out had trajectories with lower participation scores at intercept (B = -.339, SE = .149, p < .05), and but were estimated to have more positive growth in slope (B = .124, SE = .056, p < .05). Parents who attended PT inconsistently were also rated to also have a significantly lower participation score at intercept (B = -.417, SE = .121, p < .01) compared to high attenders.

However, there was also a significant interaction effect between the Inconsistent pattern of attendance and Ethnic Minority status on the intercept term (B = .660, SE = .261, p < .05). Specifically, the relationship between Inconsistent pattern of attendance and participation rating intercept differed by ethnicity. While Non-Hispanic Whites in the Inconsistent group had a lower intercept (1.37) than those in the High-Attending group (1.79), Minority parents in the Inconsistent group had a higher intercept (2.07) compared to those in the High-Attending group

(1.83); in other words, inconsistent attendance was associated with lower intercept for Non-Hispanic Whites parents, but not for Minority parents.

Table 11 presents the fixed and random effects of Model 4. In this model, ethnic minority status was replaced by dummy codes for each minority group. Ethnicity did not predict intercept or slope of the outcome. Similar significant results as model 3 emerged in this analysis: Parents who reported more child externalizing symptoms at baseline had a significantly higher intercept (B = .014, SE. 005, $p < .01$). Parents who reported more maternal depression at baseline were rated with a significantly lower intercept (B = -.013, SE = .004, $p < .01$). Parents who attended the first sessions but later dropped out (B = -.332, SE = .131, $p < .05$) and those who attended PT inconsistently (B = -.280, SE = .108, $p < .05$) were rated to have a lower participation score at intercept.

Trajectories of leader-rated parent attitude

Table 12 presents the fixed and random effects of Model 5, a pattern mixture model predicting trajectories of leader-rated parent attitude over the course of PT. Ethnic minority status did not predict intercept (B = .040, SE = .071, n.s.) or slope of the outcome (B = -.008, SE = .011, n.s.). Parents who reported more child externalizing symptoms at baseline showed significantly less growth in slope in parent attitudes by therapist report (B = -.001, SE = .001, $p < .05$). Compared to high-attending parents, parents who attended PT inconsistently were rated to have a significantly lower attitude score at intercept (B = -.180, SE = .070, $p < .05$). The Minority X Attendance-pattern interaction terms did not significantly predict intercept or slope outcomes.

Table 13 presents the fixed and random effects of Model 6. In this model, Ethnic Minority status was replaced by dummy codes to contrast each minority group with Non

Hispanic Whites. Ethnicity did not predict intercept or slope of the trajectories of therapist rated parent attitudes. Similar to the results of Model 5, parents who reported more child externalizing symptoms at baseline showed significantly less growth in slope ($B = -.001$, $SE = .001$, $p < .05$). Also, compared to high-attending parents, parents who attended PT inconsistently were rated to have a significantly lower attitude score at intercept ($B = -.156$, $SE = .070$, $p < .05$).

Discussion

The current study sought to examine trajectories of parent engagement throughout PT in a sample of ethnically diverse families participating in a prevention trial. We focused on investigating differences in quality of participation between Non-Hispanic White, African American, Hispanic American, and Asian American parents, while controlling for the effects of demographic variables and baseline clinical indicators that have been previously shown to predict attendance in PT. In order to investigate and potentially correct for the impact that the missing observations (i.e. non-attendance of sessions) may have on the analysis, a pattern-mixture model (Hedeker & Gibbons, 1997) was used when we investigated ethnic minority status as a predictor of engagement trajectories. In addition, the same models were run with the separate ethnic groups as predictors, however it was not possible to examine differences between the separate ethnic minority groups while using pattern-mixture modeling due to limits of the sample. While previous research focused on therapist-rated quality of participation in PT, both parent-rated treatment attitudes and therapist impressions of parent participation and attitude were examined in this study.

In terms of our main research question concerning possible ethnic differences in engagement, our results showed that parental ethnic minority status predicted neither initial parent treatment attitudes at the outset of treatment, nor the slope of trajectory in attitudes

throughout PT in the pattern-mixture models. However, when the separate ethnic groups were examined, it appeared that while Hispanic American parents had more favorable attitudes to treatment compared to Non Hispanic Whites at the outset, Asian Americans had less positive attitudes as compared to Non-Hispanic White parents, even after controlling for other parent and family characteristics. It may be inferred that Asian American parents feel less in tune and more cautious with PT structure or content initially. This is consistent with documented clinical observations that Asian American parents who hold Confucian-based values concerning parent-child relations may object to some of the early content of PT training, particularly, the skills of verbal labeled praise and deferring to children's lead in play (Crisante & Ng, 2003; Ho et al., 1999, Lau, Fung, & Yung et al., 2010). Despite the challenges, however, it has been shown that Asian and Asian American parents do respond to PT when delivered in a culturally sensitive manner (Lau, Fung, Ho, Liu, & Gudino, 2011). East Asian origin parents may be most likely to benefit when provided increased rehearsal of skills and opportunities to explore and integrate their cultural concerns within the framework of PT (Lau et al., 2010; Lau et al., 2011). On the other hand, the current finding of Hispanic American parents showing more favorable attitudes to treatment is also consistent with previous research that has shown compatibility of early PT content for Latino families (Borrego, Ibanez, Spendlove, & Pemberton, 2007). In general, these findings were not consistent with study predictions concerning racial/ethnic disparities in acceptability of PT. Rather, the results are encouraging and suggest that once ethnically diverse families enter evidence based PT, they show similar openness to interventions presented.

We also examined whether there might be ethnic differences in therapist impressions of parental engagement over the course of PT. Across analyses, there were no significant associations between ethnicity and trajectories of therapist-rated parent participation and attitude.

These null findings were inconsistent with some previous research demonstrating racial/ethnic differences in parental engagement in PT. Although less is known about Hispanic and Asian American parent participation in PT, previous research has found African American parents to show lower level of interest and involvement (Orrell-Valente et al., 1999) and lower degree of session participation compared to Non Hispanic Whites (Nix et al., 2009). This difference in findings may be explained by the variation in the type of data collected in these studies. In the current study, leader-rated participation and attitude ratings were specifically focused on frequency of in-session participation and quality of attitude during sessions. However, quality of participation was defined in other studies to also include perceived interest in and acceptance of PT concepts displayed during sessions (Nix et al., 2009). It is possible that group leaders in previous trials may have been primed to be concerned that African American parents may not 'buy in' to PT. However, our data again provide more optimism examining impressions of active participation do not suggest racial disparities in this study.

Our findings suggest that once ethnic minority parents attend at least a single session of PT, the group leaders may be reasonably successful at encouraging in-session participation regardless of ethnicity or ethnic minority status. This may be the case, even in the context of lower treatment attitudes among Asian American parents relative to Non-Hispanic White parents. The fact that the lower initial parent attitudes were not reflected in the leader-rated engagement scores suggests that leaders may either not be sufficiently sensitive to Asian American parents' engagement cues, or alternatively, Asian Americans parents were still able to establish the same level of participation as other parents, despite being slower to warm or more wary about treatment content and process at the beginning of PT.

We also aimed to understand the role of attendance in PT in trajectories of engagement among diverse parents. Attendance patterns were not significantly associated with trajectories of parental treatment attitudes. However, we did find that parents who dropped out or attended inconsistently were rated by leaders as having poorer initial participation. This finding is consistent with previous studies that found that therapist impressions of parent participation in the first half of an intervention can predict later retention patterns (Coatsworth et al., 2006b). This finding does suggest that PT leaders can be generally effective in identifying families that are more likely to dropout or attend inconsistently based on their degree of participation in the initial session. Based on early ratings of parent participation, engagement interventions may target parents who appear at risk of dropping out to provide support and improve engagement in order to prevent attrition (see Nock & Ferriter, 2005). For example, motivation enhancement techniques that have been shown to be effective in improving therapy engagement for adults – developing empathy for concerns with therapy and eliciting motivations for therapeutic change – may be utilized to support parents' persistence in PT (e.g. Miller & Rollnick, 2002). Similarly, the literature shows that parents are more likely to engage in PT when therapists were supportive and facilitating, rather than assuming a purely didactic role or being confrontational (e.g. Patterson & Forgatch, 1985). Supportive phone calls to these parents between sessions may also be helpful to build rapport and provide a space to explore individual parent's concerns with PT.

The pattern mixture model showed that the pattern of non-attendance interacted significantly with ethnic minority status to predict intercepts of therapist ratings of parent participation. Inconsistent attendance was associated with lower initial participation for Non-Hispanic Whites parents, but not for ethnic minority parents. In fact, ethnic minority parents who showed an inconsistent attendance over the course of PT were rated by therapists as participating

the most at the beginning of PT, even compared to parents who later established high consistent attendance. One possible interpretation is that ethnic minority parents may participate more to voice their opinions when PT materials and structure do not resonate with them or are contrary to their beliefs. This illustrates a different challenge that therapists may face in identifying ethnic minority families at risk of disengagement. Group leaders may benefit from increased cultural sensitivity when addressing ethnic minority parents' questions and comments at the beginning of PT, and find opportunities to incorporate their concerns with PT skills within the treatment framework.

There are limitations of this study that require some consideration. First, the engagement indices examined in this study may have been subjected to a ceiling effect or restricted range. The majority of participants endorsed the highest level of treatment attitude on the rating scales. Parents also tended to receive high participation and attitude ratings from the group leaders on the whole. Thus, there may have been insufficient variability to detect group differences in our analyses. Future research may benefit from measurement development that increases sensitivity perhaps by using scales with a wider range, and with descriptive anchors that help to prevent a ceiling effect. However, it is important to note that this group of participants who provided session engagement ratings was a select group of parents whose motivation for PT allowed for successful enrollment and participation, while many other parents did not choose to enroll or dropped out before the first session. Thus, to some extent, it may be expected that these parents would show more limited variability in treatment attitude and active participation. Second, the measurement of in-session engagement was solely reliant on group leaders' subjective observations. Since we did not have multiple raters and a scoring system, and videotapes were not available, there was no way to assess inter-rater reliability. Thirdly, only those participants

who enrolled and attended at least one session were included in this study. Also, a substantial number of participants (n=116) whose session engagement data contained mixed missing session-level engagement data were excluded from this study due to data analysis and interpretive restrictions. Participants whose data were included in this study only contained missing session-level engagement data that were not missing-at-random, indicating non-attendance of particular sessions and used as an indicator of disengagement. However, data obtained from the excluded participants contained both missing data that were missing-at-random and non-missing-at-random – some of which indicate non-attendance, while the rest indicate data that were lost or not collected for logistical reasons. Attrition analysis showed that these parents for whom data were partially uncollected/lost and excluded from this study were more likely to be ethnic minorities, less likely to have had previous CPS child abuse reports, and less likely to have had significant anger management problems at baseline (Table 14). This may suggest that group leaders were more likely to lose or fail to collect engagement data from ethnic minority parents, as well as from parents who appeared to have lower needs. The fact that engagement data of ethnic minority parents were more likely to be uncollected/lost by group leaders may be another indication of disengagement between group leaders and ethnic minority participants. Thus, the results of this study may possibly overestimate engagement of ethnic minority parents, due to the exclusion of these data. Lastly, pattern mixture models were not run in models contrasting the separate ethnic minority groups because empty cells in the interaction terms between ethnic groups and attendance patterns precluded these analyses. Further, despite the large scale scope of the study, given the size of the ethnic groups in these analyses we had limited power to detect racial/ethnic differences in engagement.

Conclusion

In summary, the current study examined ethnic minority parents' treatment attitude and participation quality trajectories throughout PT. Quality of participation was found to be generally high for ethnic minority parents and comparable to Non-Hispanic White parents, once they have attended at least one session. While group leaders were found to be effective in identifying parents that were vulnerable to attrition early on in the course of PT, there was also some evidence that additional support and training may be helpful for leaders to be able to identify disengagement cues shown by some ethnic minority parents.

Study Three Method

The same participant pool from Study Two was used for this third study of the dissertation. A sub-sample of 236 mothers who had provided data at baseline and post-treatment assessment, reported their ethnicity, attended at least one session, and whose session engagement data contained missing data that were not missing at random (i.e. missing session engagement data in this study indicate missed session, not merely missed data collection) were included in the study analysis. In this sub-sample, 52.6% of participants were unpartnered, 26.3% had less than 12 years of formal education, and 85.8% received financial aid. Twenty-three percent of participants were ethnic minorities, including 28 African Americans (10.2%), 19 Hispanic Americans (9%), and 17 Asian Americans (6.2%). There were 209 Non-Hispanic White participants. A total of 116 participants whose session engagement data were partially missing-at-random from the overall pool of participants were excluded from this study. In addition, a subsample of 37 parent subjects were excluded from this study due to missing post-treatment data.

Measures

The same measures from Study Two on baseline participant characteristics, attendance patterns, and session engagement were used in this study. In this study, we examined patterns of parent engagement in PT as predictors of parenting practices and child behavioral outcomes of the intervention at post-treatment. As such, we examined membership in attendance clusters (Dropouts, Inconsistent Attenders, and High Consistent Attenders) and parameters from each parents' engagement trajectory (intercepts and slopes of parent treatment attitudes, therapist-rated participation and attitude) across the course of PT as potential predictors of treatment outcomes. Thus, in addition to these predictor variables, we utilized the following treatment outcome measures. Table 15 displays the mean pre- and post- levels of treatment outcome variables by ethnicity.

Parenting Practices Interview (PPI). This questionnaire was adapted from the Oregon Social Learning Center's (OSLC) Discipline Questionnaire and was revised for preschoolers (WebsterStratton, 1998; Webster-Stratton & Hammond, 1998). Within the HS trial, two subscales were used, including Harsh and Inconsistent Discipline. On a 3-point scale (include response options) parents reported the frequency with which they used 7 harsh discipline practices (e.g., raise voice, yell, slap, spank, or whip). Parents also rated 16 items on 4-point scale (insert response options) concerning their use of inconsistent discipline (e.g., not following-through with a consequence, letting child get around the rules, checking to make sure child complies with command, punishment depends on mood). Internal consistencies were moderate to good, ranging from .63 for Harsh Discipline to .87 for Inconsistent Discipline. The PPI was revised for use in the CSAP trial. The Harsh Discipline scale included 14 items rated on a 7-point scale (e.g., raise voice, hit, threaten, spank, and slap) and the Inconsistent Discipline scale

included six items rated on a 5-point scale (e.g., letting child get away with things, not following through, punishment depends on mood). Alphas were .75 for Harsh Discipline and .62 for Inconsistent Discipline. Thus, while the content of the Harsh and Inconsistent Discipline Scales was similar across the two trials, the raw scores were based on different numbers of items and different rating scales. In order to obtain meaningful scores for the combined sample, z scores were created for the Harsh and Inconsistent Discipline Scales within each sample. These z-scores were used in the analyses for the combined sample.

Dyadic Parent–Child Interactive Coding System Revised (DPICS-R). The DPICS-R (Robinson & Eyberg, 1981; Webster-Stratton, 1985) is a thoroughly researched observational measure developed specifically for recording behaviors of children and their parents while at home. Validity of the DPICS-R is supported by convergence with informant reports of parental and child behavior, and that expected changes observed following intervention (Webster-Stratton,1988; Webster-Stratton et al., 1989; Webster-Stratton & Fjone, 1989). The same staff member trained DPICS-R coders for both the HS and CSAP trials, and 50% of the total home visits across studies were completed by research assistants who conducted observational coding for both projects. In both studies, mothers were observed interacting for 30 min with their child at home. Observations were conducted when all family members were in view of the observer. No telephone calls could be made, and no visitors were allowed to be present. Aside from these changes in family routine, parents are asked to do what they would normally do at the time of the observation. For each study, approximately eight observers were trained in the DPICS-R system (four observers coded for both studies). Observers were considered reliable after achieving inter-observer agreement rates of at least 75% with an already reliable observer on two consecutive

occasions. For both studies, reliability data were collected on approximately 30% of home observations.

Three summary variables were extracted for parent practices: Total Commands (sum of direct and indirect commands given by a parent); Positive Parenting (sum of positive affect, praise, and physical positives); and Total Critical Statements. Intraclass correlation coefficients (ICCs), which were calculated as a measure of interrater reliability, were .80 for Total Commands, .77 for Positive Parenting, and .77 for Total Critical Statements. Alphas were also adequate at .71, .52, and .73, respectively. One summary variable on disruptive child behaviors was used in this study: the sum of Total Deviance, Noncompliance, and Oppositional behaviors (sum of frequency of whine, cry, physical negative, smart talk, yell, destructive, noncompliance). The ICC assessing interrater reliability was .87.

Coder Impression Inventory (CII). The CII was adapted from the OSLC's Impression Inventory and describes parenting style and child affect and behavior. Coders completed the CII following the 30-minute home observation. Two summary scores were used: (1) Harsh/Critical Scale (consisting of 12 items characterizing a lack of acceptance, condemnation and disregard for the child, criticisms, sarcasm, neglect and lack of acknowledgement of child's abilities) and (2) Discipline Competence Scale (consisting of 15 items pertaining to the parent's ability to gain compliance utilizing a variety of discipline techniques, clear limit setting, realistic expectations, consistent follow through, and general confidence). Each scale demonstrated acceptable reliability, with alphas ranging from .84 to .91. Interrater reliability was also adequate, with ICCs ranging from .70 to .97. The measure also has two child behavior variables of interest, including Child Positive Affect (e.g., physical or verbal affection and cooperation), which yielded an alpha of .67, and Overall Poor Conduct (no alpha, as it is a single item).

Eyberg Child Behavior Inventory (ECBI). The ECBI (Robinson et al., 1980) is a 36-item inventory of conduct-problem behaviors for children ages 2–16 years. This inventory correlates well with independent observations of children's behavior, and differentiates clinic-referred from nonclinic populations. Reliability coefficients for the ECBI scales range from .86 (test-retest) to .98 (internal consistency). The ECBI was administered in both trials, with the primary scale of interest being the Intensity score, an indicator of the frequency with which conduct problems occur.

Results

Parenting behaviors as outcomes

Table 16 displays results from a set of seven separate multiple regression models which examined the associations between baseline demographic variables, baseline clinical indicators, engagement indices and seven different post-treatment parenting indices – DPICS Total Commands, Total Critical, and Total Positive subscores; CII Harsh and Competent subscores; PPI Inconsistent and Harsh subscores. In the first step of the models, mother's ethnicity (Non-Hispanic White mothers as reference group), sociodemographic variables and baseline clinical indicators that have previously been shown to predict treatment outcome were entered as predictors. In addition, the time 1 variable that corresponds with the time 2 dependent variable of each model was also entered as a predictor to control for pre-treatment level of parenting behaviors. In the second step of each model, several parent engagement variables were added. Two dummy codes were used to index the parent's pattern of attendance – Dropouts and Inconsistent-Attenders contrasted against the reference group of High-Attenders. In addition, we entered the intercepts and slopes of three parent- and therapist-rated engagement indices – parent treatment attitude, leader-rated participation and attitude. Thus, we examined the relationships

between parent engagement indices and parenting behavior outcomes, while controlling for ethnicity and other sociodemographic variables and clinical indicators.

DPICS-R Parenting Outcomes

Three models were run to examine the impact of ethnicity and parent engagement on changes in parenting as indexed by the DPICS-R. Analyses revealed that African American mothers were rated to have higher scores on DPICS Total Commands at post-treatment ($B = 17.15$, $p < .01$), and Asian American mothers were rated to have lower scores on DPICS Total Positive ($B = -14.27$, $p < .05$). Both of these results suggest poorer parenting outcomes relative to Non-Hispanic White parents at post-treatment controlling for pre-treatment parent. However, none of the other variables significantly predicted these outcome variables. Also, no significant predictor emerged for DPICS Total Critical.

CII Parenting Outcomes

Two models were run to examine whether ethnicity and parent engagement predicted parenting outcomes as indexed by the CII. There were no associations between ethnicity and CII parenting outcomes. However, some covariates were associated with outcomes in these models. Mothers who self-reported higher maternal anger level at baseline were rated higher on CII Harsh at post-treatment ($B = .15$, $p < .05$). Mothers who reported higher child externalizing problems at baseline were rated to have lower CII Competent scores at post-treatment ($B = -.15$, $p < .05$). In addition, there was some evidence that patterns of parental engagement did predict parenting competence outcomes assessed by the CII. Parents who received higher participation scores from group leaders at outset of PT ($B = .29$, $p < .05$) and those who were rated with more growth in their participation over the course of PT ($B = 3.33$, $p < .05$) received higher CII Competent scores from observers controlling for baseline parenting.

PPI Parenting Outcomes

Two models were run to determine associations between self-reported parenting outcomes on the PPI and ethnicity and parent engagement indices. There were no ethnic differences in these parenting outcomes. And there were no significant predictors Inconsistent parenting outcomes as reported on the PPI. However, in terms of Harsh Parenting outcomes, parents who endorsed more favorable treatment attitudes at the outset of PT ($B = -.33$, $p < .05$) and those who endorsed more growth in satisfaction over the course of PT ($B = -5.49$, $p < .05$) reported less Harsh parenting behaviors on the PPI at post-treatment controlling for pre-treatment levels.

Child behaviors as outcomes

Table 17 displays results from a set of four multiple regression models that examined the associations between baseline demographic variables, baseline clinical indicators, engagement indices and the four child behavior outcomes – DPICS negative behaviors, CII poor conduct and positive affect, and ECBI intensity score. The same predictor variables from the above analyses were used in these models. In the first step of the models, mother's ethnicity, sociodemographic variables and baseline clinical indicators were entered as predictors. In addition, the time 1 variable that corresponds with the time 2 dependent variable of each model was also entered as a predictor to control for pre-treatment level of child behaviors. In the second step of the models, several engagement variables were added. Two attendance pattern dummy codes – Dropouts and Inconsistent-attenders – were entered, as well as the intercepts and slopes of three parent- and leader-rated engagement indices – parent treatment attitude, leader-rated participation and attitude – to examine the relationships between engagement indices and child behavior

outcomes, while controlling for ethnicity and other sociodemographic variables and clinical indicators.

On the ECBI, Asian American mothers reported a lower intensity score at post-treatment compared to Non-Hispanic White mothers ($B = -21.27$, $p < .01$) controlling for pre-treatment problem intensity. In addition, mothers who endorsed a higher depression level at baseline reported higher intensity score on the ECBI ($B = 6.25$, $p < .05$) at post-treatment. None of the attendance and engagement indices significantly predicted scores on ECBI.

In predicting child behavior outcomes assessed by the CII, children whose mothers reported higher externalizing symptoms at baseline were rated by observers to have higher CII Poor Conduct score at post-treatment ($B = .60$, $p < .05$) controlling for pre-treatment levels. In addition, children whose mothers endorsed use of physical discipline at baseline were rated to have lower Positive Affect on the CII at post-treatment ($B = -.22$, $p < .01$) controlling for baseline levels. Again, none of the attendance and engagement indices emerged as significant predictors of CII child outcomes.

Lastly, none of the variables entered in the model predicted levels of child Negative behaviors as assessed by the DPICS-R.

Discussion

The current study aimed to examine how various aspects of parental engagement may predict clinical outcomes in PT. Attendance patterns, parent-reported treatment attitude, and leader-rated participation and attitude score trajectories were used in combination to provide a more comprehensive assessment of PT engagement. Sociodemographic variables – including ethnicity – and baseline clinical indicators were also included in the analysis to control for their effects on treatment outcome. Outcome measures were mother-reported and observer-reported

maternal parenting practices and child behaviors at post-treatment, controlling for levels of outcome at pre-treatment.

In terms of possible ethnic differences in outcomes, ethnic minority parents showed overall comparable levels of positive changes in child behaviors and parenting behaviors as Non-Hispanic Whites parents at post-treatment. Of the models predicting change in child behaviors, only one out of four analyses showed a significant ethnic difference – Asian American parents reported more improvement in intensity of child behavior problems compared to Non-Hispanic Whites. Hispanic and African American mothers did not differ from Non-Hispanic White mothers on child behavior outcomes. In addition, ethnicity did not predict levels of observer-reported positive or negative child behaviors at post-treatment.

As for the models predicting change in parenting behaviors, ethnicity did not predict disparities in outcomes of parent-reported harsh or inconsistent parenting practices, or observer-reported variables on parenting harshness, competence, or total critical statements. Of the seven models predicting change in parenting practices, there were only two instances when ethnicity predicted significant differences in treatment outcome. Specifically, African American mothers were observed to show less improvement in terms of reducing the number of commands to children and Asian American mothers were observed to have improved less in positive parenting behavior, compared to Non Hispanic White parents. Pre-treatment levels of these parenting observations showed that African American parents gave the most commands and Asian American parents showed the least positive parenting behaviors before treatment (see Table 15); at post-treatment, they showed no improvement in these areas respectively, while mothers of other ethnicities showed varying degrees of improvement. These two instances may reflect specific elements of PT intervention practices that were found to be less culturally acceptable for

particular ethnic groups (McCabe et al., 2005, Hsu, 1985; Crisante & Ng, 2003). On the other hand, there were only two instances of disparities in treatment outcomes out of 11 models. This is consistent with previous reports from these data suggesting few disparities in treatment outcome that may not exceed chance levels (Reid et al., 2001). Overall, the results showed general parity in child behavior and parenting behavior outcomes between ethnic minority families and Non-Hispanic Whites in this evidence-based PT preventive intervention.

These findings continue to support the notion from studies 1 and 2 that although ethnic minority families are more likely to not attend any session, once they are enrolled and participating in PT, they are likely to benefit from the program as much as Non-Hispanic White parents. This is consistent with a number of randomized controlled trials in the literature that found PT to be generally effective in strengthening parenting practices and reducing child conduct problems across racial/ethnic groups (Bjorknes & Manger, 2013; Huey & Polo, 2008; Lau et al., 2011; McCabe, Yeh, Lau & Argote, 2012). The parity in outcomes also mirrors the general similarity of engagement indices observed in Study Two across the ethnic groups in this study.

We also sought to understand whether indicators of parental engagement in PT predict treatment outcomes. We found some evidence that parents who endorsed more favorable attitudes to treatment either at the outset or increases in positive attitudes over the course of PT had better outcomes as indexed by parent report of harsh parenting. In addition, parents who were rated by group leaders to have participated more actively in the first sessions and those who were rated to more steeply increase their participation across sessions showed better parenting outcomes as measured by independent observer ratings of competent parenting in home observations. These findings are consistent with previous studies that have found therapist-rated

quality of participation to significantly predict better treatment outcome in terms of parental perceptions and parenting behaviors (Nix et al., 2009). Using different analytic methods, another study included a different subsample of families from the same large dataset used in this study and also found that parent engagement was associated with reduced harsh and ineffective styles of parenting, and increased positive parenting (Baydar et al., 2003). Active participation in sessions allows participants to learn through a facilitation model rather than a more didactic approach to teaching, and results in better learning of novel parenting behavior (Patterson & Forgatch, 1985). Some group leaders have observed and documented that PT participants who were difficult to engage may respond better with a greater emphasis on in-session role-play and extended discussion about their attempts to rehearse new and culturally foreign parenting skills (e.g. Lau, Fung, & Yung et al., 2010).

The current study differs from previous studies, in part, in its measurement of parental engagement. Previously, engagement ratings were either averaged across sessions (Nix et al., 2009; Baydar et al., 2003), or collected at the end of the PT (Garvey et al., 2006). Also, most studies focused on therapist-rated rather than participant-reported engagement indices. The current study showed that parent-endorsed treatment attitude and participation ratings in initial PT sessions may help to predict some treatment outcomes in terms of parenting styles and behaviors; specifically, reducing parent-perceived harsh parenting and increasing observed competent/positive parenting. These findings suggest group leaders may be able to identify which parents are less likely to respond to treatment as early as at the end of the first session, by using simple measures on parent treatment attitude and participation ratings. One of the stated limitations in a previous study was the concern that group leaders may have simply rated the participants who appear to be improving with higher participation scores (Garvey et al., 2006).

By examining the initial engagement indices, the current finding suggests active participation at the beginning of PT – before group leaders had a chance to evaluate response to PT over time – prospectively predicted better treatment outcomes. Also, as rating improvements throughout the course of PT can predict better treatment outcomes, group leaders may find it helpful to obtain and track weekly engagement ratings. Identifying disengagement in a timely manner will likely help group leaders determine when it is helpful to process concerns regarding particular parenting skills with participants who may benefit from the additional support.

When interpreting the current findings, it is important to be mindful of the limitations of the findings. While the significant findings are consistent with previous research, only 2 out of 7 analyses on parenting practices showed in-session engagement indices as significant predictors. The limited support may be partially due to limitations of the current study, namely, ceiling effects of engagement indices and needing to remove a substantial number of subjects from the study pool. To date, only a handful of PT trials have included assessment of participation quality in their treatment outcome studies. Future research may help to confirm the effect of participation quality on various aspects of treatment outcomes in PT.

It is important to note however that while parent engagement indices predicted certain outcomes in parenting, we found no evidence that greater parental engagement resulted in improved child behavior outcomes at post-treatment. This can be contrasted to previous research which suggested significant negative correlations between parent engagement and child behavior problems at post-treatment (Garvey et al., 2006). As treatment outcomes were measured at completion of PT, and because only the parents received PT intervention, it may take additional time after treatment to allow child behavior outcomes to improve subsequently. Some studies have found that child behavior changes may emerge only after a considerable amount of time

(e.g. one year) after PT – a phenomenon known as "sleeper effect" (Barrera et al., 2002; Tremblay et al., 1995). This is particularly relevant to prevention trials when families are enrolled in PT prior to children exhibiting behavior problems in an attempt to halt the development of problems before they begin. As such, it may not be entirely surprising that parental engagement in a prevention trial does not predict variance in the ultimate child behavior outcomes measured immediately post-treatment. Although the current dataset collected follow-up data at 6 months after PT, missing data (as much as 30-40% missingness) in the follow-up wave precluded a good evaluation of this hypothesis. Future research with the capacity of collecting longer term follow-up outcome data will help to confirm whether the changes in parenting behaviors would later translate into gains in prevention of development of child behavior problems.

Although there was modest support for parent engagement trajectories in predicting treatment outcomes, there was no evidence that attendance patterns were related to outcomes. This finding diverges from some previous research that has found that attending less than half of PT sessions were linked to poorer treatment outcome (August et al., 2001; Lavigne et al., 2008). However, in this study, neither the parents who dropped out after the initial sessions nor those who attended sessions sporadically showed significantly different treatment outcomes from parents who attended consistently. On the other hand, other studies that examined both attendance and engagement indices in their analysis likewise found therapist-rated quality of participation was a better predictor of treatment response than attendance. In fact, both comparable studies (Garvey et al., 2006; Nix et al., 2009) found engagement ratings to improve both child and parent outcomes, but concluded that attendance had no relationship with outcomes in their studies. The current findings converge to suggest that that once controlling for parents'

treatment attitudes and levels of participation, attendance may not independently predict treatment outcomes. Instead of merely attending sessions, parents benefit most from PT by being actively engaged in the intervention.

The interpretations of findings from this study are limited by several considerations, some of which had also impacted Study Two findings and were discussed earlier – specifically, concerns with ceiling effect of engagement indices that may have led to insufficient variability for the analyses, measures of engagement was heavily reliant on group leaders' impressions of unknown reliability, and the limits of the sample. In addition, a subsample of 37 parent subjects were excluded from this study due to missing post-treatment data. However, attrition analysis showed no significant difference between the included and excluded subjects in terms of demographics, baseline clinical characteristics or baseline treatment outcome variables (Table 18). Moreover, although it appears that quality of participation predicted treatment response, it is unclear which aspects of participation were most important. For instance, some parents may be participating in ways that were relevant with session material, while other parents may be tangential and share information or anecdotes that diverge from session concepts. Thus, it is unclear whether the therapists were rating on-task behavior versus verbosity or some other non-specific type of participation. The therapist-rated engagement indices used in this study were unable to differentiate the two types of participation. Future research on quality of engagement may benefit from measuring various aspects of session participation to identify the modes of participation most beneficial to treatment effectiveness.

In sum, the current study examined how various aspects of parental engagement may impact clinical outcomes in PT. The results shows ethnic minority parents' to have benefited from PT treatment in similar ways as Non-Hispanic White parents, further supporting the current

literature regarding the effectiveness of PT across ethnic groups. In addition, our findings suggests that group leaders may be able to identify parents who are less likely to respond to treatment after just one PT session with the group, and that in-session parental engagement may be a better predictor of treatment outcome than mere patterns of parental attendance. Interventionists would likely benefit from implementing strategies to identify parents who are vulnerable to disengagement and provide additional support to encourage active participation in PT.

Integrative Conclusion

The dissertation aimed to examine ethnic minority parents' overall engagement in PT – as measured by session attendance and trajectories of parental engagement – and their impact on treatment outcome in a preventive intervention.

Study One focused on investigating differences between Non-Hispanic White and ethnic minority parents in the patterns of attendance in PT. Initially, we found that all three ethnic minority groups are more likely than Non Hispanic White mothers to never attend a session after enrolling in the trial. While these ethnic differences may in some instances be mediated by group differences in parental education and socioeconomic status, the disparity remained significant for African American participants after controlling for other baseline variables known to impact treatment participation. However, the findings also revealed that once ethnic minority parents participated in at least one session, their subsequent attendance did not significantly differ from that of Non-Hispanic White participants. This finding raises the question however concerning the representativeness of the ethnic minority families who ultimately make it into the randomized controlled trials that constitute the evidence base on PT.

Study Two examined ethnic minority parents' satisfaction and participation quality

trajectories throughout PT, compared to Non-Hispanic White parents. We found that once ethnic minority parents joined a PT session, their subsequent participation ratings were generally high and comparable to that of Non-Hispanic White participants. Findings suggested that group leader impressions of early engagement were in some instances helpful in identifying parents that were vulnerable to dropping out or attending inconsistently. However, there was also some suggestive evidence that therapists' impressions of early parent participation were more sensitive in identifying Non-Hispanic Whites who would later disengage from PT, whereas this relation did not hold in assessments of ethnic minority parent attendance. This suggests the potential need for better training in sensitivity to distinct patterns of signs of early disengagement in ethnic minority parents in PT.

Lastly, Study Three examined how attendance and session engagement may predict treatment outcomes of parenting practices and child behavior problems. The results showed ethnic minority parents appeared to benefit from PT treatment to a similar extent as Non-Hispanic White parents. In addition, our findings provided some limited evidence that group leaders were able to identify parents who are less likely to respond to treatment very early in the course of PT by evaluating their in-session participation. Finally, the data suggested that indices of in-session engagement may be a better predictor of variability in treatment outcomes than patterns of attendance.

Taken together, these findings suggest that the main barrier for ethnic minority parents to benefit from PT as a preventive intervention appear to be at the recruitment stage and just prior to entry into PT. African American parents are particularly vulnerable to never attending a session of PT, even after successful enrollment in a trial. This is consistent with previous research documenting that ethnic minority and families with higher risk factors are frequently

underrepresented in trials of preventive interventions (e.g. Biglan & Metzler, 1999), due to various factors such as mistrust in the system, logistical barriers due to poorer access to resources, and low perceived utility of the programs. These factors are especially salient in prevention programs, in which engagement is less driven by mental health needs than in clinical treatment programs. However, our findings suggest that once ethnic minority parents attend at least one session of PT as a preventive intervention, their overall patterns of attendance, engagement and treatment outcome in PT are generally comparable to that of Non-Hispanic White parents. As such, researchers and service providers would benefit from strategies designed to increase trust and alliance between providers and target communities, such as building trusting partnerships with respected members of the community and contacting families who may benefit from the program through them, and holding PT at existing service-providing agencies that are familiar to members of the community.

On the other hand, our findings also showed some evidence that group leaders may face some challenges when gauging session engagement for ethnic minority parents. Considering the research and documented clinical observations that have shown effective ways to bridge the gap between cultural parenting beliefs and evidence based PT, providers would likely benefit from implementing culturally-informed strategies to reflect parenting preferences and values of the target community within the PT program curriculum, in order to support engagement and active participation.

It is also important to note that the ethnic minority parents in this study who had the resources and trust in mainstream professionals to participate in preventive PT may not be representative of ethnic minority parents in the community. So although it is good news that engagement, ongoing attendance and outcomes do not reveal significant disparities, it remains

unclear that PT is equally likely to reach ethnic minority families who need the interventions the most. Further, it is unclear whether remedying problems at early stages of entry into care would render samples of ethnic minority parents who would similarly benefit from PT. That is to say, our evidence base may represent a highly select group of ethnic minority parents.

Figure 1. Multiple steps of engagement in PT.

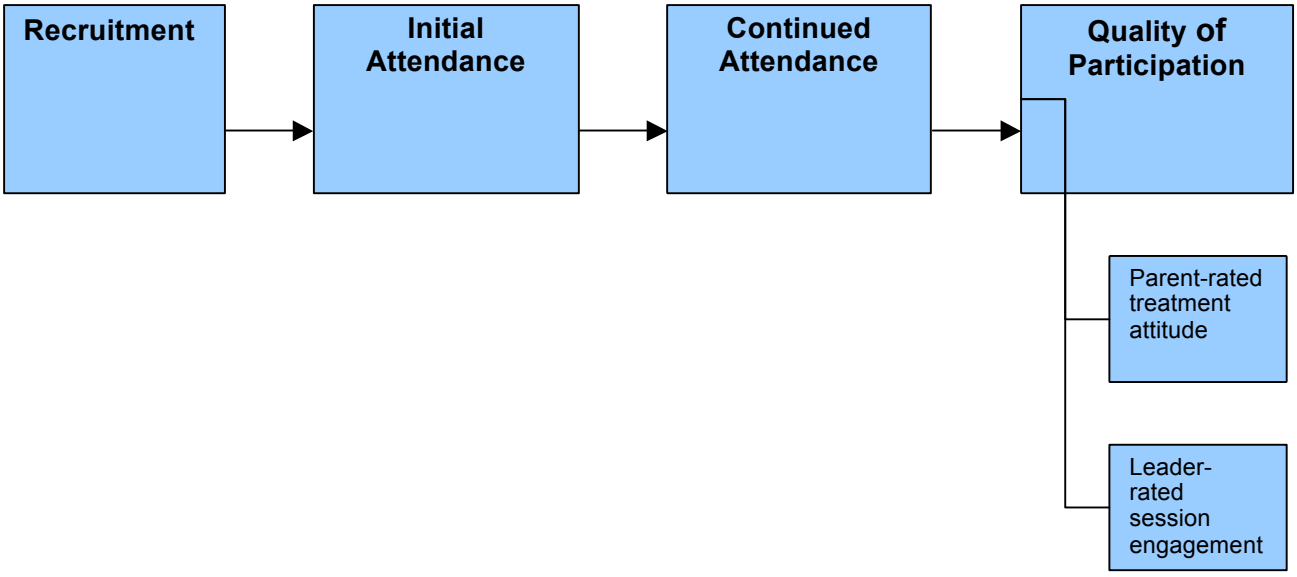

Table 1. Corresponding sessions from HS trial and CSAP trial.

HS trial (8 sessions)	CSAP trial (12 sessions)	PT contents
Session 1	Session 1	Introduction and Play
Session 2	Session 2 Session 3	Child-directed Play
Session 3	Session 4 Session 5	Praise
Session 4	Session 5 Session 6	Tangible Rewards
Session 5	Session 7 Session 8	Limit Setting
Session 6	Session 9 Session 10	Time Out
Session 7	Session 8	Ignoring
Session 8	Session 11	Logical Consequences and Problem solving

Table 2. Percentage of attendance, baseline demographic variables and maternal mental health indicators descriptives by ethnicity.

	African Am.		Hispanic Am.		Asian Am.		Caucasian Am.	
Attendance (attended sessions/total sessions)	36%		47%		40%		57%	
Single parent	75.6%		29.6%		54.7%		56.8%	
Parent low education (<12 years)	16%		60.4%		64.2%		23%	
Financial aid	84%		96.2%		88.5%		85.1%	
Presence of CPS reports	4%		4.1%		5.4%		20.8%	
Parent-reported use of physical discipline	24.4%		33.3%		9.6%		26.2%	
	M	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
Maternal depression - CESD score (cutoff: >16)	15.38	(11.18)	13.31	(11.54)	19.73	(9.60)	16.33	(10.88)
Maternal Anger – BAAQ score (cutoff: >9)	6.00	(4.12)	4.65	(4.13)	4.02	(3.28)	7.31	(3.77)
CBCL internalizing	47.17	(8.97)	49.40	(10.73)	53.55	(9.53)	50.23	(9.03)
CBCL externalizing	50.97	(10.33)	51.32	(11.39)	53.27	(9.42)	55.25	(9.77)

Table 3. Regression analysis with mother's ethnicity and demographic variables as predictors of percentage of PT attendance.

	Percentage of attendance		
Predictors	*B*	*SE*	*β*
Model 1			
Constant	.57	.02	
Mother's ethnicity			
African American	-.21	.05	-.18**
Hispanic	-.10	.06	-.07
Asian American	-.17	.06	-.12**
R^2		.040**	
Model 2			
Constant	.54	.06	
Mother's ethnicity			
African American	-.21	.05	-.18**
Hispanic	-.09	.07	-.06
Asian American	-.12	.07	-.09†
Covariates			
Single parent	-.04	.04	-.05
Low parental education	-.10	.04	-.11*
Financial Aid	.09	.05	.07
Parent-reported use of physical discipline	.01	.05	.01
Maternal depression	-.02	.04	-.02
Maternal Anger	-.02	.05	-.02
CBCL externalizing	.02	.04	.02
R^2 change		.02†	

† p < .10 * p < .05 ** p < .01

Table 4. Mediation analysis using parental education as mediator in the regression of attendance predicted by Asian parent ethnicity.

Step 1. Perc. of attendance as outcome			
	B	SE	β
Asian American	-.13	.06	.09*
Step 2. Low parental education as outcome			
	B	SE	exp(B)
Asian American	1.64	.30	5.15**
Step 3. Perc. of attendance as outcome			
	B	SE	exp(B)
Asian American	-.09	.06	-.07
Low parental education	-.09	.04	-.09*

* $p < .05$ ** $p < .01$

Table 5. Ethnicity, Sociodemographic, and baseline clinical indicators predicting Categorical Attendance.

	Attendance								
	none			Less than 50%			Likelihood ratio tests		
Predictors	B	SE	exp(B)	B	SE	exp(B)	-2 Log Likelihood	$\chi 2$	df
Model 1									
Mother's Ethnicity									
African Am	1.22	.27	3.39**	.34	.38	1.41			
Hispanic	.65	.33	1.92*	.32	.41	1.37	36.47	28.24**	6
Asian Am	1.01	.32	2.74**	.03	.48	1.03			
Model 2									
Mother's Ethnicity									
African Am	.99	.31	2.7**	.12	.45	1.13			
Hispanic	.51	.39	1.67	.07	.53	1.08			
Asian Am	-40	.48	1.49	.09	.64	1.09			
Covariates									
Single parent	.12	.24	1.13	.03	.29	1.03	839.56	32.85†	22
Parent low education	.46	.26	1.58†	.36	.33	1.43			
Financial aid	-.46	.32	.63	-.45	.39	.64			
CPS reported child abuse	-.58	.35	.56	-.18	.39	.84			
Maternal Depression	-.01	.01	1.00	-.004	.02	1.00			
Maternal Anger	-.03	.03	.98	.06	.04	1.06			
CBCL externalizing	-.02	.02	1.01	-.01	.02	.99			

Reference category: Attendance > 50%

† p < .10 * p < .05 ** p < .01

Table 6. Ethnicity, Sociodemographic, and baseline clinical indicators predicting clustered patterns of attendance.

	Clusters											
Predictors	Non-attendance (n = 192)			Drop-outs (n = 78)			Inconsistent (n= 74)			Likelihood ratio tests		
Model 1	B	SE	exp(B)	B	SE	exp(B)	B	SE	exp(B)	-2 Log Likelihood	$\chi 2$	df
Mother's Ethnicity												
African Am	1.32	.29	3.76**	.52	.40	1.68	-.25	.52	.78			
Hispanic	.70	.34	2.01*	.21	.47	1.23	.23	.46	1.25	87.10	35.50**	9
Asian Am	1.12	.34	3.08**	.03	.53	1.03	.05	.53	1.05			
Model 2												
Mother's Ethnicity												
African Am	1.14	.33	3.14**	.24	.47	1.27	-.20	.55	.82	1082.85	56.58*	36
Hispanic	.51	.40	1.67	-.23	.62	.79	-.52	.62	.60			
Asian Am	.10	.51	1.10	-.06	.74	.94	-.53	.67	.59			
Single parent	1.8	.24	1.2	.31	.32	1.36	-.03	.31	.97			
Parent low education	-70	.28	2.01*	.34	.37	1.40	.85	.35	2.34*			
Financial aid	-.28	.33	.76	-.26	.43	.77	.56	.52	1.75			
CPS reports	-.62	.37	.54+	-.11	.41	.90	-.28	.41	.75			
Parent-reported physical discipline	-.52	.30	.60+	.15	.36	1.17	-.77	.39	.47+			
CESD	-.003	.01	1.00	.002	.02	1.00	.02	.02	1.02			
BAAQ	-.02	.04	.98	.04	.05	1.04	.01	.05	1.01			
CBCL internalizing	-.02	.02	.98	-.02	.02	.98	-.003	.02	1.00			
CBCL externalizing	.02	.02	1.02	-.01	.02	.99	.01	.02	1.01			

Reference cluster group: High attendance group (n = 263)

†p < .10* *p < .05 **p < .01

Table 7. Correlations between means of parent-reported treatment attitude and means of leader-rated participation and attitude scores.

		Means of parent-reported treatment attitude scores across the 8 sessions				Means of leader-rated scores across the 8 sessions	
		Content	Video	Leader	Discussion	Quality of participation	Attitude
Parent-reported treatment attitude	Content	1.00					
	Video	.69**	1.00				
	Leader	.78**	.77**	1.00			
	Discussion	.69**	.51**	.58**	1.00		
Leader-rated scores	Quality of participation	.10	.06	.08	.11	1.00	
	Attitude	.21**	.20**	.21**	.17**	.35**	1.00

**p < .01

Table 8. Minority status and attendance-patterns predicting parent session satisfaction across PT in a pattern-mixture model (Model 1), controlling for baseline demographic and clinical characteristics.

	df	β	SE
Model			
Fixed Effects			
β00	252	-.082	.250
Minority	252	.298	.210
HS vs CSAP (HS = 1)	252	.036	.180
Single parent	252	-.190	.137
Low Education	252	-.051	.155
Financial Aid	252	-.091	.188
Parent-reported use of physical discipline	252	-.139	.175
CBCL externalizing	252	-.006	.008
Maternal depression	252	-.007	.007
Maternal anger	252	-.002	.019
Clusters			
Drop-outs	252	.013	.260
Inconsistent	252	.004	.204
Interactions			
Minority* Drop-outs	252	-.142	.605
Minority* Inconsistent	252	-.218	.447
Random Effects			
β10	252	.021	.031
Minority	252	-.0002	.024
HS vs CSAP (HS = 1)	252	.024	.023
Single parent	252	.003	.017
Low Education	252	-.040*	.019
Financial Aid	252	-.005	.023
Parent-reported use of physical discipline	252	.048*	.022
CBCL externalizing	252	-.0002	.001
Maternal depression	252	-.0002	.001
Maternal anger	252	.002	.002
Clusters			
Drop-outs	252	.137	.101
Inconsistent	252	.026	.027
Interactions			
Minority* Drop-outs	252	.040	.212
Minority* Inconsistent	252	-.013	.057
Random Effects		Variance	SD
r00		.792**	.890
r10		.003**	.057

* p < .05 ** p < .01

Table 9. Ethnicity and attendance-patterns predicting parent session satisfaction across PT, controlling for baseline demographic and clinical characteristics (Model 2).

	df	β	SE
Model			
Fixed Effects			
β00	252	.083	.216
African American	252	.228	.195
Hispanic American	252	.639**	.143
Asian American	252	-.459*	.213
HS vs CSAP (HS = 1)	252	-.125	.156
Single parent	252	-.146	.130
Low Education	252	.026	.151
Financial aid	252	-.147	.160
Parent-reported use of physical discipline	252	-.133	.180
CBCL externalizing	252	-.004	.007
Maternal depression	252	-.006	.007
Maternal anger	252	-.008	.016
clusters			
Drop-outs	252	-.012	.190
Inconsistent	252	-.051	.198
Random Effects			
β10	252	.008	.032
African American	252	-.005	.027
Hispanic American	252	-.025	.021
Asian American	252	.053	.037
HS vs CSAP (HS = 1)	252	.038	.026
Single parent	252	.001	.017
Low Education	252	-.046*	.020
Financial aid	252	-.001	.022
Parent-reported use of physical discipline	252	.048*	.024
CBCL externalizing	252	-.0004	.001
Maternal depression	252	-.0004	.001
Maternal anger	252	.002	.002
clusters			
Drop-outs	252	.130	.067
Inconsistent	252	.024	.029
Random Effects		Variance	SD
r00		.756**	.870
r10		.003**	.055

* p < .05 ** p < .01

Table 10. Minority status and attendance-patterns predicting leader-rated participation ratings across PT in a pattern-mixture model, controlling for baseline demographic and clinical characteristics (Model 3).

	df	β	SE
Model			
Fixed Effects	258		
β00	258	1.79**	.146
Minority	258	.039	.123
HS vs CSAP (HS = 1)	258	-.029	.104
Single parent	258	.053	.080
Low Education	258	.017	.091
Financial Aid	258	-.199†	.110
Parent-reported use of physical discipline	258	-.107	.102
CBCL externalizing	258	.013**	.004
Maternal depression	258	-.014**	.004
Maternal anger	258	.011	.011
Clusters			
Drop-outs	258	-.339*	.149
Inconsistent	258	-.417**	.121
Interactions			
Minority* Drop-outs	258	.038	.300
Minority* Inconsistent	258	.660*	.264
Random Effects			
β10	258	.011	.02
Minority	258	.001	.016
HS vs CSAP (HS = 1)	258	.006	.015
Single parent	258	-.010	.011
Low Education	258	-.004	.013
Financial Aid	258	.026†	.015
Parent-reported use of physical discipline	258	-.002	.014
CBCL externalizing	258	-.001†	.001
Maternal depression	258	.001*	.001
Maternal anger	258	.001	.002
Clusters			
Drop-outs	258	.125*	.056
Inconsistent	258	.024	.018
Interactions			
Minority* Drop-outs	258	-.083	.102
Minority* Inconsistent	258	-.072†	.038
Random Effects		Variance	SD
r00		.274**	.523
r10		.002**	.049

† p < .10 * p < .05 ** p < .01

Table 11. Ethnicity and attendance-patterns predicting leader-rated participation ratings across PT, controlling for baseline demographic and clinical characteristics (Model 4).

	df	β	SE
Model			
Fixed Effects			
β00	258	1.805**	.152
African American	258	.222	.137
Hispanic American	258	.038	.163
Asian American	258	.019	.195
HS vs CSAP (HS = 1)	258	-.042	.113
Single parent	258	.008	.080
Low Education	258	.019	.095
Financial aid	258	-.192†	.113
Parent-reported use of physical discipline	258	-.117	.103
CBCL externalizing	258	.014**	.005
Maternal depression	258	-.013**	.004
Maternal anger	258	.011	.011
clusters			
Drop-outs	258	-.332*	.131
Inconsistent	258	-.280*	.108
Random Effects			
β10	258	.005	.021
African American	258	-.024	.020
Hispanic American	258	-.001	.023
Asian American	258	.015	.029
HS vs CSAP (HS = 1)	258	.011	.016
Single parent	258	-.006	.011
Low Education	258	-.006	.014
Financial aid	258	.027†	.016
Parent-reported use of physical discipline	258	-.001	.014
CBCL externalizing	258	-.001†	.001
Maternal depression	258	.001†	.001
Maternal anger	258	.001	.002
clusters			
Drop-outs	258	.094	.047
Inconsistent	258	.009	.016
Random Effects		Variance	SD
r00		.285**	.534
r10		.003**	.052

† p < .10 * p < .05 ** p < .01

Table 12. Minority status and attendance-patterns predicting leader-rated attitude ratings across PT in a pattern-mixture model, controlling for baseline demographic and clinical characteristics (Model 5).

	df	β	SE
Model			
Fixed Effects	258		
β00	258	1.872**	.084
Minority	258	.040	.071
HS vs CSAP (HS = 1)	258	-.028	.060
Single parent	258	-.021	.046
Low Education	258	.033	.053
Financial Aid	258	.033	.064
Parent-reported use of physical discipline	258	-.040	.059
CBCL externalizing	258	.005†	.003
Maternal depression	258	-.002	.002
Maternal anger	258	.009	.006
Clusters			
Drop-outs	258	.104	.088
Inconsistent	258	-.180*	.070
Interactions			
Minority* Drop-outs	258	-.186	.177
Minority* Inconsistent	258	.098	.153
Random Effects			
β10	258	.002	.013
Minority	258	-.008	.011
HS vs CSAP (HS = 1)	258	.013	.009
Single parent	258	.005	.007
Low Education	258	-.001	.008
Financial Aid	258	-.004	.010
Parent-reported use of physical discipline	258	.013	.009
CBCL externalizing	258	-.001*	.000
Maternal depression	258	.001	.000
Maternal anger	258	-.001	.001
Clusters			
Drop-outs	258	-.012	.034
Inconsistent	258	.021	.011
Interactions			
Minority* Drop-outs	258	.057	.061
Minority* Inconsistent	258	-.003	.025
Random Effects		Variance	SD
r00		.082**	.286
r10		.001**	.032

† p < .10 * p < .05 ** p < .01

Table 13. Ethnicity and attendance-patterns predicting leader-rated attitude ratings across PT, controlling for baseline demographic and clinical characteristics (Model 6).

	df	β	SE
Model			
Fixed Effects			
β00	258	1.848**	.086
African American	258	-.014	.078
Hispanic American	258	.041	.093
Asian American	258	.176	.111
HS vs CSAP (HS = 1)	258	.112	.064
Single parent	258	-.026	.046
Low Education	258	-.058	.054
Financial aid	258	.029	.064
Parent-reported use of physical discipline	258	-.042	.059
CBCL externalizing	258	.005†	.003
Maternal depression	258	-.003	.002
Maternal anger	258	.010	.006
clusters			
Drop-outs	258	.059	.076
Inconsistent	258	-.156*	.061
Random Effects			
β10	258	.007	.013
African American	258	-.003	.012
Hispanic American	258	.001	.014
Asian American	258	-.029	.018
HS vs CSAP (HS = 1)	258	.007	.010
Single parent	258	.006	.007
Low Education	258	.002	.009
Financial aid	258	-.005	.010
Parent-reported use of physical discipline	258	.013	.009
CBCL externalizing	258	-.001*	.000
Maternal depression	258	.001	.000
Maternal anger	258	-.001	.001
clusters			
Drop-outs	258	.005	.028
Inconsistent	258	.020	.010
Random Effects		Variance	SD
r00		.080**	.284
r10		.001**	.032

† p < .10 * p < .05 ** p < .01

Table 14. Attrition analysis comparison of baseline demographic and clinical characteristics between subjects included and excluded from study 2.

		Subjects included in study 2		Subjects excluded from study 2		
	df	n	%	n	%	$\chi 2$
Mother's Ethnicity						
African Am.	1	27	9.9%	55	19.3%	9.85**
Hispanic	1	18	6.6%	36	12.6%	5.82*
Asian Am.	1	17	6.2%	36	12.6%	6.65*
Caucasian Am.	1	211	77.3%	158	55.4%	29.72**
Single parent	1	145	53.1%	171	60%	2.86
Parent low education	1	72	26.4%	91	31.9%	2.00
Financial aid	1	233	85.3%	244	85.6%	.16
CPS reported child abuse	1	50	18.3%	28	9.8%	7.77**
	df	M	*(SD)*	M	*(SD)*	t
Maternal Depression - CESD (cutoff:> 16)	519	16.56	(10.77)	15.88	(11.12)	.71
Maternal Anger - BAAQ (cutoff: >9)	520	7.34	(4.04)	5.79	(3.78)	4.52**
CBCL externalizing	523	54.78	(9.71)	53.32	(10.47)	1.66

* $p < .05$ ** $p < .01$

Table 15. Pre- and post-treatment values of treatment outcome variables by ethnicity.

	African American				Hispanic American				Asian American				Caucasian American			
	pre		post		pre		post		pre		post		pre		post	
Dependent Variables	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*
PPI Inconsistent	3.28	.93	3.26	.71	2.77	.95	2.58	.88	2.79	.80	2.66	.57	2.88	.64	2.73	.68
PPI Harsh	2.66	.72	2.71	.79	2.96	.91	2.22	.67	2.54	.86	2.43	.61	2.40	.74	2.18	.64
CII Harsh	1.46	.52	1.27	.26	1.24	.25	1.22	.26	1.29	.33	1.16	.14	1.49	.50	1.33	.40
CII Competent	2.22	.42	2.36	.36	2.35	.32	2.51	.24	2.14	.45	2.41	.28	2.25	.44	2.40	.38
DPICS Total Commands	51.50	28.12	52.42	45.30	31.88	25.87	27.82	24.34	28.85	34.79	15.25	11.99	42.88	26.94	31.44	19.22
DPICS Total Critical	24.42	25.83	15.20	15.70	11.44	9.58	10.47	19.54	5.85	7.05	3.83	4.13	20.10	18.75	11.66	13.17
DPICS Total Positive	27.81	17.26	28.67	21.57	23.75	21.62	34.29	29.84	14.38	18.43	9.91	11.60	21.92	15.71	31.18	19.53
ECBI Intensity	96.48	25.97	91.04	21.80	97.68	25.85	94.21	29.60	80.89	33.82	65.15	25.30	114.77	30.51	106.68	29.03
DPICS Negative Behaviors	41.27	35.59	35.79	40.52	23.56	19.74	19.35	21.01	25.31	31.75	9.33	8.68	39.57	26.33	26.65	19.69
CII Poor Conduct	3.24	1.36	2.58	1.10	2.89	1.08	2.25	.78	2.46	.87	2.44	1.01	3.39	1.38	2.78	1.43
CII Positive Affect	2.16	.49	2.30	.46	2.51	.36	2.55	.38	2.39	.42	2.36	.41	2.27	.47	2.43	.46

Table 16. Ethnicity, attendance and engagement indices predicting parent practices at post-treatment, controlling for sociodemographic variables and baseline clinical indicators.

IVs	Dependent Variables: PPI Inconsistent		PPI Harsh		CII Harsh		CII Competent		DPICS Total Commands		DPICS Total Critical		DPICS Total Positive	
Model1	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
DV at time 1	.49**	.07	.47**	.07	.30**	.05	.25**	.06	.17**	.06	.28**	.05	.47**	.08
Mother's ethnicity														
African American	.21	.23	.37†	.22	-.02	.08	-.07	.08	17.15**	6.04	2.98	2.82	-6.23	4.75
Hispanic American	.16	.26	.26	.27	-.02	.10	.05	.10	-3.60	6.79	-1.58	3.40	5.13	5.65
Asian American	.20	.27	.28	.30	-.04	.13	-.05	.11	-7.66	7.46	-1.38	3.89	-14.27*	6.54
Covariates														
Single mother	.13	.12	.07	.13	.03	.05	.01	.05	-.12	3.42	1.51	1.72	-1.15	2.82
Low education	.23	.14	.16	.16	.05	.06	-.004	.07	-1.16	4.68	.37	2.10	-2.60	3.65
Financial aid	-.09	.19	-.12	.18	-.03	.07	.02	.07	-4.90	4.66	-.92	2.39	-3.12	3.94
Parent-reported use of physical discipline	.20	.16	.01	.16	.07	.06	-.04	.06	1.08	4.27	1.58	2.23	1.55	3.49
Maternal depression	.02	.16	.13	.15	.01	.05	.003	.06	-2.20	3.67	.26	1.90	-.04	2.97
Maternal anger	.26	.17	.19	.18	.15*	.06	-.09	.06	.96	3.99	3.83†	2.01	-2.83	3.48
CBCL externalizing	-.10	.14	-.01	.16	.03	.06	-.15*	.06	2.08	3.85	1.15	2.09	.34	3.18
Model2														
DV at time 1	.50**	.07	.48**	.07	.30**	.06	.28	.06	.17**	.06	.27**	.05	.50**	.08
Mother's ethnicity														
African American	.20	.24	.37	.22	-.03	.08	-.05	.08	17.14**	6.25	2.77	2.91	-5.27	5.04
Hispanic American	.20	.27	.34	.27	-.03	.10	.06	.10	-3.21	7.01	-1.66	3.47	6.01	5.80
Asian American	.18	.28	.22	.31	-.07	.13	-.03	.11	-8.36	7.65	-1.75	4.03	-14.31*	6.60
Covariates														
Single mother	.11	.12	.05	.13	.04	.05	.02	.05	-.43	3.56	1.34	1.75	-.76	2.83
Low education	.17	.15	.10	.16	.07	.06	-.02	.07	-.56	4.94	.87	2.21	-2.67	3.81
Financial aid	-.10	.19	-.14	.18	-.03	.07	.03	.07	-5.11	4.75	-1.04	2.40	-3.64	4.03
Parent-reported use of physical discipline	.24	.17	.06	.17	.06	.06	.01	.07	-.05	4.54	.88	2.33	2.02	3.66
Maternal depression	-.01	.17	.08	.15	.02	.06	.01	.06	-2.46	3.77	.13	1.96	-.63	3.07
Maternal anger	.25	.18	.18	.18	.14*	.06	-.09	.07	1.02	4.11	3.74+	2.06	-2.25	3.51
CBCL externalizing	-.09	.15	.01	.16	.02	.07	-.15*	.06	1.89	3.92	1.10	2.13	.47	3.26
Attendance														
Dropouts	.19	.15	.21	.18	.07	.06	-.11†	.06	2.82	5.14	2.96	2.37	-4.88	4.12
Inconsistent attenders	.05	.19	-.20	.18	.02	.07	-.01	.07	.54	4.69	1.45	2.46	-3.04	3.86
Engagement indices														
Parent satisfaction intercept	-.19	.13	-.33*	.14	.04	.05	-.03	.05	.76	3.61	1.30	1.80	-.97	2.92
Parent satisfaction slope	-3.99	3.10	-5.49*	3.31	1.07	1.24	-1.44	1.26	66.08	88.47	56.35	43.98	.83	70.46
Participation score intercept	.02	.27	.19	.31	.02	.11	.29*	.11	-4.97	7.71	-1.13	3.96	3.60	6.18
Participation score slope	.02	3.96	3.11	4.31	.69	1.60	3.33*	1.63	-47.07	112.37	-6.44	54.76	82.10	88.72
Attitude score intercept	-.50	1.42	-.72	1.49	-.15	.59	-.21	.58	6.85	40.13	8.69	20.43	-26.66	32.49
Attitude score slope	-3.80	13.64	-5.58	14.44	-3.73	5.65	-.39	5.58	4.64	386.44	41.71	195.87	-222.70	312.06

† $p < .10$ * $p < .05$ ** $p < .01$

Table 17. Ethnicity, attendance and engagement indices predicting child behaviors at post-treatment, controlling for sociodemographic variables and baseline clinical indicators.

IVs	Dependent Variables							
	ECBI		DPICS Negative behaviors		CII Poor conduct		CII Positive Affect	
Model1	B	SE	B	SE	B	SE	B	SE
DV at time 1	.64**	.06	.17**	.06	.25	.07	.08	.07
Mother's ethnicity								
African American	.86	4.96	8.51	5.76	-.09	.31	-.15	.11
Hispanic American	-3.41	5.84	-3.72	6.30	-.25	.37	-.07	.13
Asian American	-21.27**	6.53	-6.43	7.49	.10	.42	-.16	.18
Covariates								
Single mother	-1.18	2.69	-.12	3.12	.18	.18	-.08	.07
Low education	3.43	3.51	-2.62	4.18	-.11	.21	.06	.07
Financial aid	-1.62	4.02	-7.89†	4.31	-.26	.26	.03	.09
Parent-reported use of physical discipline	1.69	3.61	5.62	3.97	.28	.23	-.22**	.08
Maternal depression	6.25*	3.10	-4.70	3.26	-.44†	.23	.03	.07
Maternal anger	-4.57	3.34	3.33	3.75	.24	.26	-.08	.08
CBCL externalizing	3.15	3.78	5.27	3.91	.60*	.24	-.12	.08
Model2								
DV at time 1	.64**	.06	.18**	.06	.25	.07	.08	.07
Mother's ethnicity								
African American	1.09	5.21	8.80	6.04	-.14	.32	-.11	.11
Hispanic American	-3.24	5.96	-3.09	6.49	-.25	.37	-.08	.13
Asian American	-20.87**	6.69	-7.41	7.59	.02	.42	-.14	.18
Covariates								
Single mother	-1.62	2.74	-.39	3.20	.17	.18	-.07	.07
Low education	2.09	3.68	-2,34	4.41	-.15	.22	.08	.08
Financial aid	-2.23	4.09	-8.29†	4.36	-.25	.26	.02	.10
Parent-reported use of physical discipline	2.66	3.76	4.69	4.13	.30	.24	-.22**	.08
Maternal depression	5.30	3.23	-5.12	3.42	-.45†	.24	.03	.08
Maternal anger	-4.43	3.42	3.65	3.87	.21	.26	-.07	.08
CBCL externalizing	4.03	3.94	5.23	3.93	.59*	.24	-.12	.08
Attendance								
Dropouts	2.21	3.78	1.93	5.03	.27	.25	-.17	.10
Inconsistent attenders	3.58	3.87	-.947	4.48	.17	.25	-.08	.09
Engagement indices								
Parent satisfaction intercept	-3.22	3.03	.77	3.32	-.04	.20	.01	.07
Parent satisfaction slope	-96.29	74.92	24.25	81.43	-1.34	4.65	.27	1.59
Leader-rated participation intercept	3.50	6.36	-7.23	7.18	-.38	.41	.19	.14
Leader-rated participation slope	78.54	90.57	-59.47	103.14	-5.84	5.90	3.30	2.01
Leader-rated attitude intercept	1.17	33.43	-6.12	37.24	-2.77	2.15	.82	.76
Leader-rated attitude slope	40.38	319.64	-118.20	358.21	-28.37	20.69	7.37	7.18

† $p < .10$ * $p < .05$ ** $p < .01$

Table 18. Attrition analysis comparison of subjects excluded from study 3 analysis due to missing post-treatment data.

		Subjects with post-treatment data		Subjects missing post-treatment data		
	df	n	%	n	%	χ 2
Demographics						
Mother's Ethnicity						
African Am.	1	24	10.2	3	8.1	.15
Hispanic	1	17	7.2	1	2.7	1.05
Asian Am.	1	12	5.1	5	13.5	3.9†
Caucasian Am.	1	183	77.5	28	75.7	.06
Single parent	1	123	52.1	22	59.5	.69
Parent low education	1	64	27.1	8	21.6	.56
Financial aid	1	203	86.0	30	81.1	.73
CPS reported child abuse	1	43	18.2	7	18.9	.01
Clinical characteristics at baseline	df	M	(SD)	M	(SD)	t
Maternal Depression	252	16.51	10.88	16.91	10.15	.21
Maternal Anger	252	7.32	4.01	7.53	4.31	.27
CBCL externalizing	253	54.94	9.83	53.73	8.92	-.72
Parenting treatment outcome variables at baseline						
CII Harsh	263	1.46	.50	1.47	.47	.03
CII Competent	263	2.26	.44	2.17	.43	-1.14
DPICS total commands	261	42.21	27.91	43.59	26.41	.27
DPICS total critical	261	19.17	18.82	20.26	21.41	.27
DPCIS total positive	261	22.26	16.80	22.13	14.26	-.05
Child treatment outcome variables at baseline						
ECBI intensity	253	111.10	32.12	99.85	24.94	-2.3†
DPICS Negative behaviors	261	37.73	26.88	40.52	32.78	.45
CII overall poor conduct	260	3.28	1.38	3.41	1.19	.54
CII positive affect	263	2.29	.48	2.24	.47	-.59

† $p < .10$ * $p < .05$ ** $p < .01$

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