



Risk factors for attrition from an evidence-based parenting program: Findings from the Netherlands



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ABSTRACT

Parent management training programs for the treatment of childhood conduct problems are increasingly being transported from their country of origin to international settings. Family interactions, however, may be influenced by different cultural expectations and children's mental health problems may be addressed within different systems. Demonstrating reductions in symptoms within the new population is insufficient to support the wide-scale transport of a treatment model. Implementation outcomes such as the rates of treatment retention and factors related to treatment attrition must also be considered. We explored predictors of attrition in families from the Netherlands referred to the evidence-based parenting program Parent–Child Interaction Therapy (PCIT). Participants included 40 children with conduct problems (2–7 years; 68% boys) and their caregivers. Attrition (40%) was somewhat lower than findings with similar community samples in the US. Significant predictors of attrition were child age and maternal levels of internalizing symptoms. Low parental demandingness and high child compliance before start of treatment were related to early attrition within twelve treatment sessions. Meeting the needs of families at risk for attrition is an important goal for parent management training programs within and outside the US if families in need of services are to benefit from them.

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1. Introduction

1.1. Background

Parent management training (PMT) programs are considered best practice interventions for the treatment of childhood conduct problems (Eyberg, Nelson, & Boggs, 2008; Kaminski, Valle, Filene, & Boyle, 2008). Based on social learning theory, the PMT approach teaches parents strategies to reduce children's disruptive behaviors and to increase prosocial behaviors using techniques such as modeling, shaping, and social reinforcement (Patterson, 2002). Robust evidence for the efficacy of these interventions has led to increasing dissemination within the US and internationally. With broader dissemination, however, has come an increasing need to assess the success of PMT programs in other settings and cultures.

To date, research on the implementation of PMT programs in countries outside of the ones in which they were developed is still sparse and has primarily focused on client outcomes (e.g., Leung, Tsang, Sin, & Choi, 2015; Posthumus, Raaijmakers, Maassen, van Engeland, & Matthys,

2012). A recent meta-analysis found that effect sizes for the reduction of childhood conduct problems remained similar when transporting evidence-based parenting interventions from one Western culture to another (Gardner, Montgomery, & Knerr, 2015). However, additional factors that might influence the long-term effectiveness and sustainability of programs in their new settings, such as rates of treatment retention and attrition, were not considered. Studies on the transport of PMT programs within the US indicate that when implemented within different populations from the one with which they were originally developed, attrition may be higher (Fernandez, Butler, & Eyberg, 2011; McWey, Holtrop, Wojciak, & Claridge, 2015) and satisfaction may be lower (e.g., Parra Cardona et al., 2012). Evidence of symptom reduction alone is therefore insufficient to define an intervention as effective and compatible within a new population. It is also necessary to investigate implementation outcomes such as treatment retention and the factors related to retention (Proctor et al., 2011).

1.2. Implementation outcomes of PMT programs across other cultures and countries

Few studies have examined the implementation outcomes of evidence-based PMT interventions across cultures. A review of 610 studies on the cross-cultural implementation of PMT programs found only two of those studies to systematically evaluate implementation

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(Baumann et al., 2015), making it impossible to draw firm conclusions about the success of these programs outside the culture or country in which they were originated. Although we do not yet know much about how treatment retention and factors related to retention may differ from a program's country of development to other countries, much evidence exists from within the US that demonstrates significant problems with treatment retention (i.e., high attrition) among PMT programs, particularly in everyday clinical practice, such as community mental health settings, with attrition rates as high as 75% (e.g., Lavigne et al., 2010; Lyon & Budd, 2010). These high rates of attrition not only limit the feasibility of implementing PMT within clinical and community populations, they can lead to negative outcomes for children and families. Although information about long-term outcomes for children who drop out of treatment is limited (Boggs et al., 2004), research on the long-term effects of untreated or insufficiently treated conduct problems in children shows that these children are at higher risk for the development of serious difficulties in broad areas of functioning, including difficulties in family, peer, school, and community interactions (Broidy et al., 2003). Thus, if a PMT program is to be successfully transported to another country, where family interactions may be influenced by different cultural expectations and children's mental health problems may be addressed within different systems, it is important to evaluate the level of treatment attrition and identify factors related to treatment retention within the new setting prior to wide-spread adoption.

1.3. Parent–Child Interaction Therapy

We explored factors related to treatment attrition in a sample of families participating in the evidence-based PMT program Parent–Child Interaction Therapy (PCIT; Eyberg & Funderburk, 2011; Niec, Gering, & Abbenante, 2011; Zisser & Eyberg, 2010). PCIT was developed to treat the families of children two to seven-years-of-age with serious conduct problems. In two phases of treatment, parents are coached by therapists via an in-ear microphone while playing with their child. In the first phase of treatment, Child-Directed Interaction (CDI), parents are taught child-centered interaction skills to enhance their relationships with their children. During the second phase of treatment, Parent-Directed Interaction (PDI), parents learn healthy, effective discipline strategies. In PCIT, successful treatment completion is clearly defined. Parents who successfully complete PCIT have reached mastery of a defined skill set (e.g., child-centered interaction skills, effective discipline skills) in both phases of treatment, children's conduct problems are reported within the normal range, and parents express confidence in their ability to manage their children's behaviors (Eyberg & Funderburk, 2011). These assessment-driven criteria mean that PCIT is not time-limited and treatment completion equals treatment success. Attrition, thus, is defined as the decision by parents to discontinue the intervention prior to meeting criteria for completion (Wierzbicki & Pekarik, 1993).

PCIT has demonstrated efficacy in reducing childhood conduct problems, enhancing parenting skills, and reducing parental stress and child abuse potential (Cooley, Veldorale-Griffin, Petren, & Mullis, 2014; Thomas & Zimmer-Gembeck, 2007, 2012). The accumulating evidence has led to an increasing implementation worldwide, where PCIT has demonstrated effectiveness among different cultures and countries. For example, in the US, PCIT has been found to be efficacious with Mexican-American families (McCabe, Yeh, Lau, & Argote, 2012) and with families from primarily ethnic minority backgrounds seen in an urban community clinic (Danko, Garbacz, & Budd, 2016). International implementations show evidence of efficacy across countries. PCIT has been successfully transported to Australia (Nixon, Sweeney, Erickson, & Touyz, 2004), China (Leung et al., 2015), Taiwan (Chen & Fortson, 2015), Puerto Rico (Matos, Bauermeister, & Bernal, 2009), Germany (Schimek, Walter, Bussing, & Briegel, 2014), and the Netherlands (Abrahamse, Junger, Van Wouwe, Boer & Lindauer, 2015).

1.4. Attrition in PCIT

Although the efficacy of PCIT has been established among families who complete treatment, as with other PMT programs, high attrition in US samples remains a concern. For instance, Pearl et al. (2012) found that most of the families (67%) receiving PCIT in a community setting were not able to complete both phases of treatment. A pilot evaluation of PCIT in an urban community found an attrition rate of 75% (Lyon & Budd, 2010). Among African American families, the attrition rate was as high as 56% (Fernandez et al., 2011). The attrition rates in these effectiveness studies, with families seeking treatment in community mental health center settings, are often higher than attrition rates reported from the primarily university-based investigations (18%–35%; Thomas & Zimmer-Gembeck, 2007), but even in the university clinic settings, more than a third of families presenting in need of services may not receive the full treatment. Not all studies of PCIT outside of the US report attrition rates. Those that do report rates range from 22% to 28% in Chinese, Taiwanese, and Dutch samples (Abrahamse et al., 2012; Chen & Fortson, 2015; Leung et al., 2015).

While attrition from PCIT in US community settings is consistently high, findings regarding the risk factors for attrition are mixed. Among US families, those with cumulative risk factors appear more likely to drop out than others, but inconsistent results exist regarding the individual factors that are the most predictive. For example, while family structure, minority status, and socioeconomic status have predicted attrition in some families (Bagner & Graziano, 2012; Fernandez et al., 2011), other findings have not supported the predictive value of demographic factors or child factors for attrition in PCIT (Werba, Eyberg, Boggs, & Algina, 2006). These findings instead suggest that parenting stress and parents' verbal criticisms to their children are associated with dropout. Recently, a Taiwanese sample found both maladaptive caregivers characteristics and demographic family factors including single parents and lower education level as predictors for treatment attrition (Chen & Fortson, 2015). In addition, therapist behaviors such as interview style and coaching techniques used during early treatment sessions have also been found to predict attrition in PCIT (Barnett et al., 2015; Harwood & Eyberg, 2004).

Cultural factors may play a role. Inconsistent findings regarding the risk factors for treatment attrition from PCIT and the widely varying attrition rates across samples suggest that the barriers for treatment success are at least in part specific to a population and the context in which the intervention is delivered, emphasizing the importance of investigating attrition rates when PCIT is transported to a new country. The investigations of attrition factors reported above included primarily US families; thus, much remains to be done to better understand factors impacting the implementation of PCIT outside the US.

1.5. Purpose of this study

As part of an evaluation of the dissemination of PCIT from the US to the Netherlands, we examined predictors of treatment attrition from PCIT in a sample of Dutch families. Delivery of the intervention in the Netherlands occurred within a community mental health center serving a primarily high-risk population of families (e.g., low socioeconomic status, high incidence of child maltreatment). Utilization of the mental health care services in the Netherlands is largely independent from financial constraints, because all Dutch children are covered by private health insurance. However, a recent study among children receiving psychotherapy in the Dutch child mental health care revealed substantial rates of dropout (23%; De Haan, Boon, Vermeiren, Hoeve, & De Jong, 2015). This study found similar risk factors (e.g., ethnic background and high levels of externalizing problems) for premature treatment termination and referral to other services as the international literature on treatment attrition. Although previous research revealed similar factors as predictors of attrition and the transportation PCIT was between two “Western” countries, differences between mental health

service systems still may impact the appropriateness and effectiveness of the transportation. Cultural norms and attitudes on parenting practices, and other factors such as political and religious factors, may influence the feasibility, acceptability, and effectiveness of the dissemination of PCIT in the Netherlands (Gardner et al., 2015; Palinkas et al., 2009). In addition, cultural differences are also relevant since many urban areas in the Netherlands become increasingly heterogeneous, emphasizing the need to study factors related to treatment attrition in families receiving PCIT in a Dutch community mental health setting.

2. Method

2.1. Participants

The present study included 40 children and their parents who were identified as potential candidates for PCIT when they were referred for conduct problems to a Dutch community mental health center in Amsterdam. This sample was part of a larger study on the effectiveness of PCIT in the Netherlands (reference withheld for blind review).

2.2. Measures

2.2.1. Anxiety Disorders Interview Schedule (ADIS)

The ADIS (Silverman & Albano, 1996) is a semi-structured interview used for diagnosing different DSM-IV disorders. Although the primary focus of the ADIS is anxiety, the interview is also used to assess clinically significant levels of child externalizing disorders (ADHD, ODD, and CD). Because the ADIS is commonly used within the community clinic in which the study took place and because of its strong psychometric properties, this interview was chosen above other assessment tools. In the current study only the questions for the externalizing behavior were used. Diagnoses are based on information about symptoms and their interference in daily life. Trained research assistants administered the ADIS to mothers. Interrater reliability was not evaluated in the current study. However, previous studies have found the ADIS to have

good-to-excellent interrater reliability ($k = .73$ to $.77$) for externalizing disorders (Lyneham, Abbott, & Rapee, 2007).

2.2.2. Eyberg Child Behavior Inventory (ECBI)

The ECBI (Eyberg & Pincus, 1999) is a 36-item parent-report on disruptive child behavior including two scales. The ECBI Intensity Scale measures the frequency of disruptive behaviors along a 7-point scale, and the ECBI Problem Scale measures whether the parent perceives the specific behavior as problematic. Good reliability and validity have been established for both the English version and the Dutch translation (Abrahamse, Junger, Leijten, et al., 2015; Funderburk, Eyberg, Rich, & Behar, 2003). In this study, the internal consistencies (Cronbach's alpha) for the Intensity Scale were .92 for mothers and .93 for fathers. For the Problem Scale, internal consistencies for mothers and fathers were .89 and .88, respectively. The published cutoff raw scores for clinical behavior of the Intensity Scale are above or equal to 132 and above or equal to 15 for the Problem Scale.

2.2.3. Parenting Stress Index-Short Form (PSI-SF)

The Dutch translation of the PSI-SF (Abidin, 1995) is a 25-item parent-report which measures dysfunctional parent-child interaction, stress in the parent-child relationship and difficult behavior of the child with a 6-point rating scale. In the present study, the sum of all items was used as an overall scale of parenting stress, with an internal consistency of .94 for mothers and an internal consistency of .96 for fathers. The reliability and validity for the Dutch version were described as satisfactory and according the published norms, a sum score above 74 indicated a clinical level of parenting stress (De Brock, Vermulst, Gerris, & Abidin, 1992).

2.2.4. Adult Self-Report (ASR)

The ASR (Achenbach & Rescorla, 2003) was used to assess externalizing and internalizing psychopathology in the parents. This 123-item self-report has demonstrated good reliability and validity. It includes eight empirically based syndrome scales: 'Withdrawn', 'Somatic Complaints', and 'Anxious/Depressed' (together the Internalizing Scale); 'Rule-Breaking behavior', 'Aggressive Behavior', and 'Intrusive' (together the Externalizing Scale); 'Thought Problems' and 'Attention Problems'. Both Internalizing and Externalizing scales were included in this study. Internal consistency coefficients (alphas) for the Internalizing scale were .93 for mothers and .92 for fathers. For the Externalizing scale internal consistency coefficients were .85 for both mothers and fathers. Since maternal distress was found to be a predictor of attrition in earlier research (Fernandez & Eyberg, 2009), we included the percentage of mothers and fathers with clinically elevated levels on the Anxious/Depressed syndrome scale ($\alpha = .92$ for both mothers and fathers) as a separate variable. We used the clinical cutoff scores defined by Achenbach and Rescorla (2003): ≤ 13 (fathers) and ≤ 14 (mothers) for the Anxious/Depressed syndrome scale; ≤ 16 (fathers) and ≤ 19 (mothers) for the Internalizing Scale; and ≤ 13 (mothers) and ≤ 15 (fathers) for the Externalizing Scale.

2.2.5. Dyadic Parent-Child Interaction Coding System (DPICS)

The DPICS (Eyberg, Nelson, Ginn, Bhuiyan, & Boggs, 2013) is a behavioral coding system that measures the quality of the parent-child interaction during three 5-min structured situations: Child-Led Play (CLP), Parent-Led Play (PLP), and Clean-Up (CU), each of which requires an increasing order of parental direction and control. Children's and parents' verbal and nonverbal behavior were videotaped at the family's home and later transcribed verbatim by research assistants. Subsequently, the research assistants counted the frequencies for each specific DPICS category by observing the videotapes of the situation and reviewing the transcripts. Six composite categories were included in the present study based on previous PCIT attrition research (Fernandez & Eyberg, 2009; Werba et al., 2006). We included two child categories and four parent categories (see Table 1), derived from the comprehensive

Table 1
DPICS composite categories used in this study (based on Eyberg et al., 2014).

| Category | Equation* |
|---|---|
| Child Inappropriate Behavior (coded in all 3 situations) | $c_{NTA} + c_{NTO} + c_{YE} + c_{WH}$ |
| % Child Compliance (coded in PLP and CU only) | $c_{CO} \div [p_{DC} + p_{IC} - c_{NOC}]$ |
| % Parent positive following (coded in CLP only) | $[p_{BD} + p_{RF} + p_{LP} + p_{UP}] \div p_{TV}$ |
| % Parent Negative Leading (coded in CLP only) | $[p_{DC} + p_{IC} + p_{QU} + p_{NTA}] \div p_{TV}$ |
| Parent praise (coded in all 3 situations) | $p_{LP} + p_{UP}$ |
| Parent Demandingness (coded in all 3 situations) | $p_{DC} + p_{IC}$ |
| Total parent verbalizations (TV) (denominator for % categories) | $p_{NTA} + p_{DC} + p_{IC} + p_{QU} + p_{BD} + p_{RF} + p_{LP} + p_{UP} + p_{TA}$ |
| *Abbreviations of individual DPICS categories in the Equation column | |
| Negative Talk (NTA) | Negative Touch (NTO) |
| Direct Command (DC) | Compliance (CO) |
| Indirect Command (IC) | No Opportunity for Compliance (NOC) |
| Labeled Praise (LP) | Yell (YE) |
| Unlabeled Praise (UP) | Whine (WH) |
| Question (QU) | |
| Reflection (RF) | |
| Behavior Description (BD) | |
| Neutral Talk (TA) | |

Note. CLP Child-Led Play, PLP Parent-Led Play, CU Clean Up. The subscripts c and p indicated child and parent categories, respectively.

DPICS manual for research and training (Eyberg et al., 2013) and based on Eyberg, Boggs, and Jaccard (2014).

The independent coders received extensive training in the coding system and were trained to 80% agreement with the first author, a PCIT researcher that translated the DPICS manual into Dutch and also trained to mastery by a PCIT master trainer. All observations were transcribed to facilitate coding. In every video observation, a minimum of one random situation (CLP, PLP, or CU) was coded twice to estimate reliability. High interrater reliability (intraclass correlations) was established, ranging between .66 (Direct Commands) and .98 (Questions) for the parent categories and .68 (Yell) and .91 (Negative Talk) for the child categories.

2.3. Procedure

Potential candidates for PCIT were informed about the research project on the effectiveness of PCIT and were invited to participate during the agency's intake procedure. A medical ethics committee approved this study, and when parents agreed to participate, they signed an informed consent form. For the present study, we used the baseline assessment only. Families were visited at their homes where they completed the questionnaires. The ADIS was administered to mothers and the mother and child participated in the DPICS behavioral observation. Fathers who were involved in treatment were also invited to participate in the study and to complete questionnaires, which were included in the analyses. Because of time and resource constraints, interviews and behavioral observations were conducted only with children's primary caregivers. In all families, this was the mother. In addition to the standardized measures described above, parents completed a questionnaire to obtain background information on caregivers' and children's age, gender, ethnicity, and education level, as well as family income and structure. When a family completed or terminated PCIT, therapists informed the research team of the number of sessions completed. In case of a family's premature termination, they also provided the reason for dropout.

2.4. Treatment integrity

In the Netherlands, PCIT was first implemented in clinical practice in 2007. Therapists completed the initial 40-hour training workshop and followed the detailed PCIT treatment manual current at the time (Eyberg & Child Study Lab, 1999). All therapists had a higher educational background in the mental health fields and received additional supervision. For the present study, most sessions were videotaped for treatment integrity checks. One random session for each participating family was coded by a research assistant for treatment integrity. Unfortunately, due to practical reasons (e.g., lost videotapes or problems with the recording system) videos were available for only 55% of the participating families in our sample. Adherence with the PCIT protocol was on average 78%. Another research assistant independently coded 73% of the videos a second time. Interrater reliability for the fidelity coding (interclass correlations) was .88.

2.5. Statistical analyses

All analyses were performed in SPSS version 19 or 21. Missing data was treated according to the professional manual for each standardized measure. Because of the small sample size, a discriminant function analysis (DFA) was conducted instead of logistic regression (Tabachnick & Fidell, 2007). This analysis identifies uncorrelated linear combinations of the predictor variables. To identify potential predictor variables for inclusion in the DFA, demographic characteristics and baseline scores on the ECBI, PSI-SF, ASR, and DPICS were compared for treatment completers and dropouts using independent samples *t*-tests or chi-square tests. Predictor variables that differed between the completer and the

dropout group at $p < .05$ were included as independent variables to predict group membership (treatment completer versus dropout).

3. Results

3.1. Descriptive statistics

Participants were 40 children (68% boys) and their parents who had been referred for treatment of child conduct problems between 2009 and 2012. Children ranged in age from 2.8 to 7.7 years ($M = 5.2$, $SD = 1.2$). All families had been referred through the usual community channels; the largest group, 13 families (33%) were referred by child protection services. Twelve families (30%) were referred by another child mental health service, nine families (23%) were internal referrals from other departments of the community mental health center, and six families (15%) were referred by a general practitioner.

According to the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV; American Psychiatric Association, 2000) and based on a structured interview (ADIS) conducted with mothers at the pretreatment assessment, 47% of the children met criteria for Attention Deficit Hyperactivity Disorder (ADHD); 34% met criteria for Oppositional Defiant Disorder (ODD); and 24% met criteria for Conduct Disorder (CD). In 32% of the children there were comorbid symptoms (ADHD and/or ODD and/or CD). Although all children were referred for conduct problems in the home or school setting, for 37% of the children, mothers did not report sufficient symptoms to meet criteria for ADHD, ODD, or CD.

Based on the classification criteria for ethnic background of Statistics Netherlands (2015a), 70% of the children had a Dutch ethnicity, 10% had another Western background (for example Australian or Russian), and 20% had a non-Western background (Turkish or Surinamese/Antillean). Biological mothers participated in treatment for all children. Forty-five percent of the children were living in a single-parent family. Mothers' mean age was 36.1 ($SD = 6.2$) and maternal education, based on the criteria of Statistics Netherlands (2015b), for 3% of the sample was categorized as low (no education or primary education), 62% as middle (secondary education) and 32% as high (some higher academic education). Additionally, 21% of the families had an income lower than €1000 (\$1150) per month. Based on the criteria of Barnett, Manly, and Cicchetti (1993) using the Maltreatment Classification System (MCS), 65% of the children had been exposed to a subtype of child maltreatment, including physical abuse, sexual abuse (non-parent perpetrator), emotional maltreatment, physical neglect of basic needs or physical neglect with lack of supervision. Thus, the sample included a large proportion of high-risk families.

3.2. Treatment attrition

According to the information provided by therapists subsequent to treatment completion or termination, 24 families (60%) successfully completed PCIT, including achieving mastery criteria for the CDI and PDI interaction skills and reporting scores of child conduct within the normal range (Eyberg & Funderburk, 2011). In Fig. 1, the number of sessions each family attended is presented before treatment completion or dropout. On average, parents attended 18 sessions ($SD = 7.6$) before completing treatment, with means of 9 CDI sessions ($SD = 4.6$) and 8 PDI sessions ($SD = 3.5$). Sixteen families (40%) dropped out before meeting PCIT completion criteria, with means of 11 sessions ($SD = 9.6$). Two families dropped out after the first CDI session and another eight families dropped out during the CDI phase. During the PDI phase, six families dropped out of PCIT. There were several reasons why families terminated treatment before completing the PCIT treatment protocol. Six families (38%) dropped out because parents felt their children's behaviors improved enough or parents felt treatment was no longer necessary due to limited motivation. In five cases (31%), PCIT was discontinued because life or family stressors interfered, such

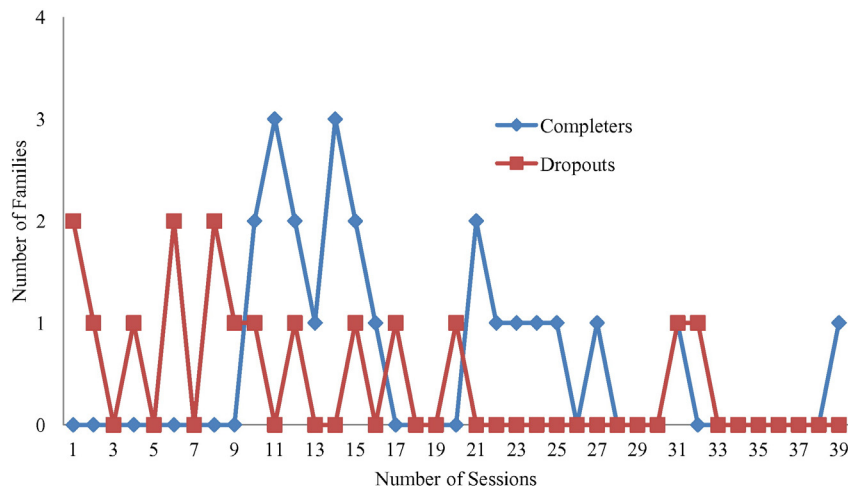


Fig. 1. Number of sessions that families attended before completing or dropping out PCIT.

as parental mental health problems. In one case, signs of sexual abuse emerged in the child, with the participating parent being the suspected perpetrator. Sexual abuse is not typically considered as a contraindication for PCIT, unless the parent in treatment is thought to be the perpetrator. In two families (13%), more intensive treatment was started before completing the treatment protocol due to stagnation of treatment progress and three (19%) families stopped attending due to mothers' pregnancy or the family moving out of the area.

3.3. Differences between treatment completers and dropouts

Table 2 shows the percentages and means of families who completed treatment and families who dropped out before meeting the pre-established mastery criteria. Significant differences between groups ($p < .05$) were found for child age, the percentage of positive parental following (DPICS), and the percentage of clinically elevated maternal anxiety/depressed symptoms (ASR). Additionally, the child's maltreatment history, family status, and parental demandingness (DPICS) were found significant at a level of $p < .10$. These differences indicated that families who did not complete PCIT had older children and included mothers having elevated levels of internalizing psychopathology. In addition, a trend was observed that children in the dropout group were more often exposed to some subtype of child maltreatment and lived in a single-parent family. In addition, mothers in this group showed both less positive parenting behavior and less demanding behavior before start of treatment during the interactions with their child. No differences were found regarding the treatment integrity of the therapists between the treatment completer group and the treatment dropout group. The videos available for treatment integrity coding (55%) were equally distributed among groups including 50% availability for the treatment completers group and 56% in the dropout group. No significant difference in adherence to the protocol was found between groups.

3.4. Predictors of treatment completion and dropout

A DFA was conducted to identify if the significant independent variables were also predictors of group membership (treatment completer or dropout). DFA requires normal distributed data for the predictor variables. However, data of DPICS Percentage of Parental Positive Following was positively skewed and therefore a log transformation was conducted for this variable. Because log transformation is not possible for 0 values, three cases with a 0 score were adapted to 0.01.

The analysis included child age, Positive Parenting Behavior, and maternal clinical level of Anxious/Depressed symptoms (0 = below clinical cutoff, 1 = above clinical cutoff) and the discriminant function

was significant, Wilk's $\lambda = 0.62$, $\chi^2(4) = 16.80$, $p = .001$. Analysis of the structure matrix coefficients revealed that when controlling for the remaining predictors, child age and a clinical level of mothers' anxious/depressed symptoms were both the best predictor of group

Table 2

Differences on demographic and baseline variables between treatment completers and dropouts.

| | Mean (SD) or percentages | |
|---|---------------------------|---------------------------|
| | Completers (n = 24) | Dropouts (n = 16) |
| Child characteristics | | |
| Age (years) | 4.8 (1.1) | 5.6 (1.2)** |
| Ethnicity (% non-Western background) | 16.7 | 25.0 |
| Maltreatment history (% reported in client file) | 54.2 | 81.3* |
| No ADHD, ODD, or CD diagnosis (%) | 30.4 | 46.7 |
| ADHD diagnosis (% significant symptoms) | 52.2 | 46.7 |
| ODD diagnosis (% significant symptoms) | 34.8 | 26.7 |
| CD diagnosis (% significant symptoms) | 21.7 | 13.3 |
| ECBI Intensity Scale (mother) | 150.3 (28.0) | 139.4 (35.3) |
| ECBI Problem Scale (mother) | 18.6 (6.2) | 15.3 (9.0) |
| ECBI Intensity Scale (father) | 158.5 (18.2) ^a | 148.0 (48.1) ^b |
| ECBI Problem Scale (father) | 20.6 (6.3) ^a | 17.1 (9.3) ^b |
| DPICS Inappropriate behavior | 17.5 (16.8) | 14.8 (14.6) |
| DPICS % Compliance | 51.0 (24.4) | 59.8 (22.1) |
| Family characteristics | | |
| Mother age (years) | 37.2 (6.1) | 34.4 (6.2) |
| Father age (years) | 38.9 (6.1) ^a | 36.8 (8.1) ^b |
| Family status (% single parent) | 33.3 | 62.5* |
| Father involvement (% involved in treatment) | 41.7 | 31.3 |
| Educational level (% low education) | 4.5 | 0.0 |
| Family income (% < €1.000 per month) | 11.8 | 33.3 |
| PSI Parenting stress (mother) | 87.8 (22.5) | 82.9 (26.5) |
| PSI Parenting stress (father) | 99.1 (19.8) ^a | 83.8 (33.8) ^b |
| ASR Internalizing Behavior Scale (mother) | 17.1 (9.8) | 22.5 (15.7) |
| ASR Externalizing Behavior Scale (mother) | 9.5 (6.4) | 12.9 (6.4) |
| ASR Anxious Depressed (% clinical level) (mother) | 9.1 | 43.8*** |
| ASR Internalizing Behavior Scale (father) | 13.0 (9.0) ^c | 10.9 (10.1) ^b |
| ASR Externalizing Behavior Scale (father) | 11.0 (7.4) ^c | 8.3 (5.9) ^b |
| ASR Anxious Depressed (% clinical level) (father) | 7.1 ^c | 12.5 ^b |
| DPICS % Positive Following | 12.0 (10.4) | 7.0 (4.4)** |
| DPICS Total Praise | 11.0 (8.3) | 6.7 (6.3) |
| DPICS % Negative Leading | 40.4 (18.1) | 42.1 (10.6) |
| DPICS Demandingness | 33.9 (17.8) | 26.1 (13.9)* |

^a n = 15.

^b n = 8.

^c n = 14.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

Table 3
Differences on demographic and pre-test variables between families completing treatment or attended 12 or more sessions and dropouts according PCIT protocol criteria.

| | Mean (SD) or percentages | |
|--|---|----------------------------|
| | Completers or attended ≥ 12 treatment sessions ($n = 30$) | Dropouts ($n = 10$) |
| Child characteristics | | |
| Age (years) | 5.1 (1.2) | 5.4 (1.3) |
| Ethnicity (% non-Western background) | 20.0 | 20.0 |
| Maltreatment history (% reported in client file) | 60.0 | 80.0 |
| No ADHD, ODD, or CD diagnosis (%) | 28.6 | 60.0* |
| ADHD diagnosis (% significant symptoms) | 53.6 | 40.0 |
| ODD diagnosis (% significant symptoms) | 39.3 | 10.0* |
| CD diagnosis (% significant symptoms) | 21.4 | 10.0 |
| ECBI Intensity Scale (<i>mother</i>) | 150.2 (27.7) | 133.3 (38.7) |
| ECBI Problem Scale (<i>mother</i>) | 17.4 (7.4) | 16.8 (8.4) |
| ECBI Intensity Scale (<i>father</i>) | 158.0 (21.1) ^a | 143.4 (57.0) ^b |
| ECBI Problem Scale (<i>father</i>) | 20.1 (5.8) ^a | 16.6 (12.1) ^b |
| DPICS Inappropriate behavior | 18.3 (16.6) | 10.7 (12.4) |
| DPICS % compliance | 49.9 (23.0) | 72.4 (21.3) ^{***} |
| Family characteristics | | |
| Mother age (years) | 37.1 (6.0) | 33.0 (6.0) |
| Father age (years) | 39.5 (6.4) ^a | 33.3 (6.3) ^b |
| Family status (% single parent) | 36.7 | 70.0* |
| Father involvement (% involved in treatment) | 43.3 | 30.0 |
| Educational level (% low education) | 3.8 | 0.0 |
| Family income (% < €1,000 per month) | 14.3 | 37.5 |
| PSI Parenting stress (<i>mother</i>) | 89.7 (22.4) | 74.7 (26.3) |
| PSI Parenting stress (<i>father</i>) | 97.6 (18.5) ^a | 79.8 (43.8) ^b |
| ASR Internalizing Behavior Scale (<i>mother</i>) | 19.2 (13.0) | 19.8 (12.5) |
| ASR Externalizing Behavior Scale (<i>mother</i>) | 10.8 (7.1) | 11.6 (4.9) |
| ASR Anxious Depressed (% clinical level) (<i>mother</i>) | 17.9 | 40.0 |
| ASR Internalizing Behavior Scale (<i>father</i>) | 12.6 (8.8) ^c | 11.0 (11.7) ^b |
| ASR Externalizing Behavior Scale (<i>father</i>) | 10.4 (7.3) ^c | 8.8 (6.0) ^c |
| ASR Anxious Depressed (% clinical level) (<i>father</i>) | 5.9 ^c | 20.0 ^b |
| DPICS % Positive Following | 10.8 (9.9) | 7.2 (3.9) |
| DPICS Total Praise | 10.3 (8.2) | 6.1 (5.4) |
| DPICS % Negative Leading | 42.0 (17.1) | 38.3 (8.9) |
| DPICS Demandingness | 34.0 (16.7) | 21.0 (12.5) ^{**} |

^a $n = 18$.

^b $n = 5$.

^c $n = 17$.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

membership (0.55), followed by Positive Parenting Behavior (-0.26). It is recommended to use 0.3 as a cutoff value for interpreting predictor variables, indicating that child age and a clinical level of anxious/depressed symptoms were the only predictors for treatment dropout and had together a $R^2 = .39$. Using a jackknife procedure, which accounted for potential sample bias, we obtained a cross-validation estimate of the outcome classification. Based on this procedure, 68.4% of

the families were correctly classified as treatment completer or dropout. More specifically, among treatment completers 17 of 22 (77.3%) were classified correctly, and for dropouts, 9 of 16 (56.3%) families were classified correctly.

3.5. Additional analyses for dropouts with fewer than 12 sessions

In this study, six of the sixteen families who dropped from treatment attended 12 or more PCIT sessions (up to 32 sessions; see Fig. 1), but were considered to have dropped, because they did not meet criteria for treatment completion due to the previously mentioned reasons (e.g., parental mental health problems, stagnation in treatment progress, and other life/family stressors). These six families received more treatment sessions than the 12 treatment sessions found effective in previous effectiveness trials using a time-limited abbreviated version of PCIT (Nixon et al., 2004; Thomas & Zimmer-Gembeck, 2012). When families attend 12 or more treatment sessions, termination before completing the PCIT treatment protocol may be no consequence of limited engagement of the parents. Treatment dropout after attending the number of treatment sessions (≥ 12) associated with effectiveness may imply that families are not able to reach criteria for treatment completion. To distinguish these families from other families that dropped out analyses were conducted to identify differences between families that completed the PCIT treatment protocol or attended ≥ 12 treatment sessions ($n = 30$) and dropouts who attended less than 12 sessions ($n = 10$). Table 3 shows the percentages or means for this group distribution at pretreatment assessment. Again significant differences were found between families who completed PCIT or attended ≥ 12 treatment sessions and dropouts. The level of parental demandingness (DPICS) was significantly lower and the percentage of child compliance (DPICS) was significantly higher for families who terminated treatment before attending 12 sessions and reached mastery criteria. Additionally, the percentages of the variables family status, no ADHD, ODD or CD diagnosis, and significant ODD symptoms significantly differed between groups at a level of $p < .10$.

A DFA was repeated for the distribution of families who completed PCIT including the dropout families who attended 12 or more treatment sessions compared to families who did drop out treatment before attending 12 sessions. The DFA included Child Compliance and Parental Demandingness as independent predictor variables. Because Parental Demandingness was positively skewed, a log transformation was conducted for this variable. The discriminate functions revealed a significant association between groups and both predictors, Wilk's $\lambda = 0.79$, $\chi^2(2) = 8.73$, $p = .013$. In addition, the predictor variables were significantly correlated ($-.44$). The predictors accounted for 21.0% (R^2) of the between group variability. Closer analysis of the structure matrix revealed that Child Compliance was the best predictor of group membership (0.85), followed by Parental Demandingness (-0.84). Using the jackknife procedure in this analysis, 77.5% of the families were correctly classified. For the families that completed PCIT or received ≥ 12 treatment sessions, 28 of 30 (93.3%) were classified correctly, and among dropout families attending less than 12 sessions 4 of 10 (40%) were classified correctly.

4. Discussion

The present study investigated attrition factors as part of an evaluation of the implementation of Parent-Child Interaction Therapy in a Dutch community mental health setting serving primarily high-risk families. Findings contribute to the understanding of factors influencing treatment completion when PCIT is disseminated outside the US. Using the PCIT completion criteria, 40% of the families who started treatment dropped out before they reached mastery of the parenting skills, before they reported their child's conduct problems within the normal range, and before they expressed confidence in their ability to manage their children's behaviors. The percentage found for attrition in this study is

higher than attrition rates reported in studies conducted in university clinic settings (18%–35%; Thomas & Zimmer-Gembeck, 2007), but slightly lower than the attrition rates found in studies conducted in US community settings (above 50%; e.g., Danko et al., 2016; Lanier et al., 2011; Pearl et al., 2012). The difference in the attrition rates may be explained by differences between the Dutch and US system. For example, financial difficulties are often mentioned as a barrier for treatment participation in US studies (e.g., Koerting et al., 2013; Lyon & Budd, 2010), but in the Netherlands, mental health care services are largely independent from financial barriers, because all children are covered by private health insurance. Also, in contrast to the situation in the US, no association between help-seeking behavior and socioeconomic status was found in Dutch families (De Haan et al., 2015; Zwaanswijk, Verhaak, Bensing, Van der Ende, & Verhulst, 2003). In addition, differences in Dutch parents' general attitude toward receiving mental health services might account for differences in attrition rates. In the Netherlands, research on attitudes and barriers-to-care for mental health services is limited, but a study among young Dutch adults revealed that problem perception is often a barrier for treatment (Vanheusden et al., 2008).

4.1. Factors related to treatment attrition

The findings of the present study showed that mothers with younger children and mothers who were not anxious or depressed were more likely to reach mastery criteria for treatment completion. With regards to the child's age, many PCIT research studies included children in the age between 2 and 7 years (Gallagher, 2003). In our study, however, all three families with a seven-year old child did not complete the treatment protocol. The standard PCIT protocol was developed and validated with children aged 2 years to 6 years 11 months (e.g., Eyberg & Funderburk, 2011; Herschell, Calzada, Eyberg, & McNeil, 2002). However, PCIT therapists are encouraged to use their clinical judgment if a seven-year-old child could benefit from PCIT in its standard form (McNeil & Hembree-Kigin, 2010). This can be the case for smaller and less mature children that can be still carried to a time-out chair and who enjoy the Child-Directed Interaction. For other seven-year-old children the communication skills used in CDI are not longer suitable to their cognitive development and they may be too large or aggressive to safely use the time-out procedure during Parent-Directed Interaction (McNeil & Hembree-Kigin, 2010). In future clinical practice it is important for therapists to use their clinical judgment in choosing for PCIT or another evidence-based treatment approaches for older children (Patterson, 2005). In addition, this finding emphasizes the need for early screening and identification of child conduct problems in order to refer children in need for effective treatment at an age where treatment gains are generally higher (Heckman, 2006).

Our finding that mothers with elevated levels of anxious and depressed symptoms were more likely to prematurely terminate PCIT was similar to previous research studies that identified maternal internalizing psychopathology as a barrier for engagement in PMT programs (Kazdin & Wassell, 2000). For mothers with depressive symptoms, cognitive perceptions, fatigue, and concentration problems could interfere learning the PCIT communication skills, which makes it harder to reach mastery criteria for treatment completion (Timmer et al., 2011). At the same time, results of the study of Timmer et al. (2011) also indicated that depressive mothers completing PCIT showed reductions in their depressive symptoms. Based on these findings, the therapist's ability to encourage these mothers to continue treatment seems to be critical to obtain substantial treatment gains for this group.

4.2. Factors related to treatment attrition before 12 sessions

Additional analyses on the group of families who completed PCIT including the dropout families who attended 12 or more treatment sessions and the group of families who did drop out treatment before

attending 12 sessions revealed that lower observed child compliance and higher observed parental demandingness were related to longer engagement in PCIT for at least 12 sessions. Although no relation was found between the severity of the child's problem behavior and whether families completed or dropped out PCIT, higher child compliance during the pre-treatment parent-child interaction was related to dropout before a family attended 12 treatment sessions. A possible explanation may be that parents were less motivated to start the second phase of PCIT (PDI), because this phase focusing on discipline and child compliance was less necessary for their highly compliant child. This finding also suggests that parents feel treatment only necessary for their non-compliant child. Additionally, the mothers in the group attending less than 12 sessions before dropout already used less commands during the parent-child interaction at pretreatment assessment. Given the significant correlation (-0.44) between parental demandingness and child compliance, these characteristics of the parent-child interaction are an interesting direction for additional research on the motivation of parents entering a parent-training intervention. Parents who have limited motivation to participate in treatment, because they were referred for other reasons than child conduct problems only (e.g., child maltreatment), may benefit from a motivational component before entering PCIT (Chaffin, Funderburk, Bard, Valle, & Gurwitch, 2011). An additional component on the motivation of families could be helpful to keep them engaged in treatment and to help reaching mastery leading to more substantial treatment gains.

4.3. Implications for clinical practice

In contradiction to US findings, demographic variables related to a low socioeconomic status (e.g., educational level, ethnicity, and family income) were not related to treatment attrition (Bagner & Graziano, 2012; Fernandez et al., 2011). Nevertheless, the marginally significant percentage of single-parent families in the dropout group (63%) suggests that there may be other practical difficulties that caused premature termination of treatment, such as transportation difficulties to the community mental health center and childcare for the other children. To help these families to overcome practical barriers, adaptations of the PCIT protocol are suggested to better meet the individual need of families at risk for dropout. For instance, home-based PCIT (e.g., Galanter et al., 2012) and/or a time-limited PCIT protocol (12 sessions; e.g., Thomas & Zimmer-Gembeck, 2012) could lower the threshold to stay engaged in PCIT and improve treatment retention. Another important challenge is reaching the families who could benefit the most from intervention. Although therapists can help families to overcome barriers when they are already in treatment, for most families the primary decision to seek help for their child's conduct problems lies with the parents. Similar to the US, there is an overall underutilization of the mental health care services among Dutch families, especially for families with an ethnic minority background (Abe-Kim et al., 2007; De Haan, Boon, Vermeiren, & De Jong, 2012; Garland et al., 2005; Zwaanswijk et al., 2003). In order to provide PMT programs to families in need for help and reach them effectively, future research should not study the factors related to treatment attrition only, by also focus on the role of parents, teachers, and professionals (e.g., general practitioners) in the help-seeking process.

Another challenge of particular interest with the transportation of PCIT into a new country is the treatment fidelity. The treatment fidelity in this study was found to be slightly lower than in other PCIT studies. This may be a consequence of starting the research study shortly after the implementation of PCIT at the Dutch community mental health center. If the international dissemination of PCIT is to be successful, extensive and thorough training and additional supervision of clinicians is important. When training and supervision are sensitive to the specific needs of the therapists in the new setting, higher treatment fidelity can be achieved leading to better skilled therapists, which also could help to lower treatment attrition.

4.4. Strengths and limitations

This study contributes to the literature on the transportation of PMT programs to new environments. Our findings suggest that treatment attrition is a challenge for the effectiveness of PCIT in the Netherlands. Risk factors found in this study are comparable to risk factors for attrition identified in US studies, but our results also suggest that barriers for treatment success are in part specific to the population and the context in which the intervention is delivered. This study had a number of limitations that must be considered. For example, although specific trends in our data seemed clear, our small sample size limited the number of predictor variables that could be tested statistically. Our results may be unstable and limit the generalizability. Also, for a significant number of families no videos were available to code treatment integrity. This limited the information on the protocol adherence of the PCIT therapists. Finally, it should be noted that the predictor variables included in this study were better able to account for families' treatment completion than their treatment attrition. Thus, there is still work to be done to determine how we might better reach families who are in need of services.

5. Conclusion

Parent management training programs are considered best practice interventions to treat childhood conduct problems. The broad dissemination of PMT programs within the US and other countries has increased the need to assess their success in other settings and cultures. An important part of the evaluation of the transport of PCIT to the Netherlands was to investigate factors related to treatment attrition, because treatment effectiveness hinges upon the extent to which families attend treatment (Reyno & McGrath, 2006). Our findings suggest that the delivery of PCIT in the Netherlands has comparable challenges with regard to treatment attrition and risk factors as similar samples in the US. However, findings in this study also suggest that risk factors may be context specific. For example, in the Netherlands, socioeconomic factors were mostly unrelated to treatment dropout. To overcome general barriers (e.g., in-home intervention, increasing therapy integrity), it is necessary to address specific risk factors per family (e.g., maternal internalizing psychopathology) to help them remain in treatment. This is especially important in community mental health settings where families often have multiple, complex problems and include more heterogeneous populations. Meeting the needs of families at risk for treatment attrition is an important goal for PMT programs within and outside the US to improve treatment effectiveness among families in different populations and cultures.

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