CHAPTER 5
A meta-analytic review on treatment dropout in child and adolescent outpatient mental health care

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Abstract

A large proportion (28% up to 75%) of the treatments in youth mental health care results in premature termination (dropout). It is important to gain knowledge of the determinants of dropout because it can have very severe consequences. The aim of our meta-analytic review was to provide an overview of findings from empirical studies on this subject. We structured the often contradicting results from two perspectives. First, we compared studies with efficacy and effectiveness designs. Second, we compared studies which used a dropout definition based on the opinion of therapists, with those that took the number of predetermined completed sessions as a criterion. Third, we studied three groups of predictors, i.e., pre-treatment child variables, pre-treatment family or parent variables, and treatment and therapist variables or treatment participation barriers.

The meta-analytic review showed that dropout percentages were strongly influenced by study design: Percentages were lower in efficacy than in effectiveness studies. Within effectiveness studies, the dropout percentages were lower when the therapist's opinion was used rather than when the number of sessions was used as a criterion. In efficacy studies on the contrary, the dropout percentages were similar for studies using the first or the second criterion. With respect to dropout predictors, results were less clear. Some of the dropout predictors were influenced by study design or dropout definition, but for most predictors this influence could not be analyzed because they were not studied in all groups of studies or because the effect sizes were small or non-significant. Treatment and therapist variables or experienced treatment participation barriers were overall stronger dropout predictors than the pre-treatment child variables and pre-treatment family or parent variables, although some strong predictive pre-treatment variables emerged as well.

Keywords: dropout predictors; dropout percentages; outpatient youth mental health care; efficacy studies; effectiveness studies; dropout definition.

Introduction

Due to psychiatric problems an estimated seven percent of the children and adolescents in western societies is limited in its functioning to such a degree that psychiatric treatment is recommended (Friedman et al., 1996; Rutter & Stevenson, 2008). However, only 2.5 percent of the young population finds its way to youth mental health care (YMHC) (De Haan et al., 2012; Meltzer et al., 2000; Zachrisson et al., 2006). Of the children and adolescents that do receive treatment, an estimated 28% up to 75% terminates psychotherapy prematurely (Baruch et al., 2009; Lai et al., 1998; Luk et al., 2001; Midgley & Navridi, 2006).

Although not all children benefit from psychiatric treatment, therapy certainly increases the likelihood that psychiatric problems get resolved. When children drop out of psychiatric treatment, their disorders might persist or even worsen later in life (Dulmus & Wodarski, 1996; Reis & Brown, 1999). For instance, children with untreated disorders are likely to grow up as adults who rely on mental health services, which has negative consequences for themselves, their surroundings and society (Dulmus & Wodarski, 1996; Kazdin, Mazurick, & Siegel, 1994; Kazdin & Wassell, 1998; Reis & Brown, 1999). Compared to children who do receive treatment, children with untreated behavioral problems (premature terminators or those who do not receive treatment at all) are more likely to leave school without a qualification, engage in delinquent activities, abuse drugs and alcohol and become unemployed (Lochman & Salekin, 2003; Moffitt et al., 2002). In addition, untreated, early-onset anxiety disorders often continue into adulthood (Dadds et al., 1999) and academic underachievement and substance dependence are likely to follow (Woodward & Fergusson, 2001). In order to prevent these negative consequences of treatment dropout, it is important to gain knowledge of its determinants. The prevention of dropout is likely to result in more (cost) effective care.

In contrast to adults, in most cases children do not seek treatment for themselves. Motivation for entering and remaining in treatment largely depends on others, like parents, teachers or referral agencies. Frequently, parents participate in their child's treatment and consequently, parent and family characteristics play a central role in continuation or termination of treatment (Armbruster & Kazdin, 1994). In the most recent review on dropout among child and adolescent patients, Armbruster and Kazdin (1994) concluded that no clear profile emerged regarding the characteristics of child and adolescent patients that dropout of treatment and the conditions under which dropout appears. Various potential dropout predictors had been studied until then, such as age, gender, child IQ, homelessness, source of referral, prior psychiatric

treatment, treatment modality, socioeconomic status, ethnic minority status, proximity to the mental health institution, parental stress and psychopathology. For all of these factors, results differed per study. The authors concluded that mere identification of the different static variables without conceptualizations of the underlying process of premature termination is unlikely to improve our understanding of dropout (Armbruster & Kazdin, 1994). Indeed, most studies focused on child or family and parent factors that are present prior to treatment and cannot be changed during treatment. They advised that, in order to reduce dropout, the focus should shift to factors that can be changed during treatment, such as the underlying processes of treatment and therapist variables. The first theoretical model on these processes was introduced; the barriers-to-treatment-participation model (Kazdin et al., 1997a; Kazdin et al., 1997b). This model proposes that families experience multiple barriers associated with participating in treatment and that these barriers increase the risk for dropping out. These barriers include stressors and obstacles that compete with treatment participation (such as conflict with a significant other about coming to treatment), treatment demands and issues (such as treatment being too costly or too long), perceived relevance of treatment (such as the perception that treatment is of little relevance to the child's problems), and the relationship with the therapist (such as little perceived support from the therapist). In addition, specific critical events such as moving to another city or death of a close relative, may lead to sudden treatment termination. Although such events might be more common in families who drop out, these events are not seen as the typical barriers that account for the high dropout rates in child and adolescent therapy. The absence of barriers might serve as a protective factor (i.e., for families with a high risk for dropping out, the perception of few barriers might attenuate the risk), while the presence of barriers could serve as a mediator by explaining how other (static) predictors operate to produce dropping out (Kazdin et al., 1997b).

Since 1994 no review on child and adolescent psychotherapy dropout has been published. Our aim is therefore to do a meta-analytic review of the studies on dropout in child and adolescent therapy published later than 1994 and calculate mean effect sizes for the dropout predictors that emerge from these studies. We will try to explain the variety in dropout percentages and dropout predictors across studies, taking two focal factors into account.

First, a generalization and comparison of results is dubious because the majority of studies on dropout from child and adolescent psychotherapy were efficacy studies conducted in randomized control trials (RCT's) with strict inclusion criteria (Dierker, Nargiso, Wiseman, &

Hoff, 2001; Kazdin et al., 1997a; Kendall & Sugarman, 1997; La Greca, Silverman, & Lochman, 2009; Pina, Silverman, Weems, Kurtines, & Goldman, 2003). Efficacy research tends to follow strict protocols and manuals, has a pre-ordained length of time, is conducted by highly trained staff, and treatment fidelity is guarded (Southam-Gerow, Weisz, & Kendall, 2003). Because of the selection procedures employed in randomized control trials, certain groups of patients are less likely to be included, e.g., the included patients are often Caucasian or European-American, of a high socioeconomic status and without comorbidity (Luk et al., 2001; L. M. Miller, Southam-Gerow, & Allin Jr., 2008). These strict standards are almost never met in clinical practice, where comorbidity is often the norm, and clinicians often tailor their treatment to the needs of the individual patient (Bickman, 2002; Southam-Gerow et al., 2003). It is therefore highly uncertain whether dropout determinants found in efficacy studies can be generalized to community based practice where effectiveness studies often use a naturalistic and quasi-experimental design.

Second, there is a variation in operational definitions of premature termination and classification of dropout status (Armbruster & Kazdin, 1994; Warnick et al., 2012; Wierzbicki & Pekarik, 1993). Many studies define dropout in terms of treatment duration or number of sessions completed, where clients attending less than the specified number of sessions are categorized as dropouts. An obvious problem with this approach is that both treatment completion and dropout can occur after any number of sessions (Wierzbicki & Pekarik, 1993). Some patients, although terminating treatment earlier than planned, can still be considered successful terminators because sufficient improvement in their mental health was achieved in a shorter than planned duration. Therefore not all premature terminators represent treatment failure. A definition based on a predetermined number of sessions will result in a dropout group comprised of a mixture of dropouts and appropriate premature terminators because some patients, though terminating treatment earlier than planned, can be considered successful (Johnson, Mellor, & Brann, 2008).

The two factors described above (i.e., study design and dropout definition) might be the main reasons as to why there is such variation in results across dropout studies. We will focus on these two factors in order to investigate whether they can indeed explain the variety in dropout percentages and dropout predictors across studies. The aim of our meta-analytic review is to provide an overview of the findings from empirical studies on premature termination in child and adolescent therapy of the studies published after 1994. In our review we will investigate and compare the dropout studies from this two perspectives. First, we will make a distinction

between studies with efficacy and effectiveness (or naturalistic) designs. And second, we will focus on the various definitions of dropout being used. We expect the results to become more structured when reviewing them along these lines, and we expect that these two perspectives will explain a part of the wide variation in results from dropout research. Third, we will focus on the three groups of predictors, i.e., pre-treatment child variables, pre-treatment family or parent variables, and therapist and therapy variables or treatment participation barriers.

Method

Literature search

An extensive search was carried out in PsycINFO, MEDLINE and Psychology and Behavioral Science Collection databases to locate journal articles on the subject of premature termination of therapy with children and adolescents. In addition, the articles located were inspected for further relevant references. The following key-words were used in the search:

- *premature termination* AND *therapy* OR *premature termination* AND *psychotherapy* OR *premature termination* AND *treatment*
- *dropout* AND *therapy* OR *dropout* AND *psychotherapy* OR *dropout* AND *treatment* OR *drop(-)out* AND *therapy* OR *drop(-)out* AND *psychotherapy* OR *drop(-)out* AND *treatment*
- *attrition* AND *therapy* OR *attrition* AND *psychotherapy* OR *attrition* AND *treatment*
- *unilateral termination* AND *therapy* OR *unilateral termination* AND *psychotherapy* OR *unilateral termination* AND *treatment*

The following limitations were added: The search results were limited to 'Peer Reviewed' articles and articles published between 'Publication Date' 1994 – 2012, 'Age': C*hildhood (birth – 12 yrs), All Child (0-18 yrs), Adolescence (13-18 yrs), School Age (6-12 yrs), Preschool Age (2-5 yrs), Child: 6-12 yrs, Adolescent: 13-18 yrs.* This initial literature search yielded an amount of 828 articles after removal of duplications.

From these articles the abstracts were studied. Subsequently the method sections, and when indicated (i.e., according to the inclusion criteria), the whole articles, were studied by the first author to select the articles that met the inclusion criteria. The second author independently checked whether the selected articles indeed met the inclusion criteria.

The inclusion criteria were: (a) peer-reviewed articles in the English language, (b) the studies had to be done in outpatient settings (not inpatient settings), and (c) the age of the subjects was between 0 and 20 years. Excluded were (1) studies limited to the treatment of

preventing recidivism (i.e., for sexual abusers, alcohol/drug abusers, forensic clients etc.), (2) studies limited to medication therapy settings (i.e., where dropout is defined as not adhering to the prescribed medication), (4) theoretical and qualitative articles, (5) studies that only focused on retention or number of visits without defining the status of termination (i.e., it was unclear whether someone was a dropout or a completer etc.), (6) studies that focused on internet therapy because this is too specific.

Focus of the meta-analytic review

The focus will lie on the two perspectives described in the introduction (i.e., study design and dropout definition). First, the first two authors analyzed all the included studies to determine whether an efficacy or effectiveness design was used. The goal was to find similarities and differences in dropout percentages and dropout predictors between the studies with an efficacy versus the studies with an effectiveness design. The dropout predictors were ordered according to the theory of barriers to treatment participation. The first group contains, static pre-treatment child variables, the second contains static pre-treatment parent or family variables, and the underlying processes of therapist and therapy variables or treatment participation barriers (that might be changed during therapy) were regarded as the third group of predictors.

Within these two groups of studies (efficacy and effectiveness), the first two authors studied the various dropout definitions that were used. A content analysis of these definitions was performed resulting in two categories based on similarity of intentions. All definitions could be assigned independently by the first two authors to these categories with a good inter-coder reliability (Krippendorff & Bock, 2008). Again, the goal was to find similarities and differences in dropout percentages and dropout predictors between the studies with the two categories of definitions.

In total, 48 articles were analyzed using the first perspective: this resulted in 30 effectiveness studies, 17 efficacy studies, and one study that used both designs. The same 48 articles were analyzed using the second perspective: in the result section it is described how the definitions were categorized in two groups.

Statistical analyses

For each predictor within each study, an effect size was calculated. We used Cohen's d to express the strength or the predictive value of a variable to predict dropout. A (positive or

negative) value of Cohen's d of 1.3 or higher is interpreted as a very large effect, a value between .80 and 1.29 is interpreted as a large effect, a value between .50 and .79 as a medium to large effect, a value between .20 and .49 as a small effect and a lower value is considered negligible (M. W.; Lipsey & Wilson, 2001). We used an effect size determination program (Wilson, 2001) to transform the test statistics chi2, F, t, or p values into Cohen's d. Or we used the information on means and standard deviation scores of the dropout and the completer groups for a specific variable, and transformed these values into Cohen's d with the effect size determination program. In some cases we had to construct a 2x2 cross-table in order to calculate a chi2 , using information about percentages and the distribution of dropouts and completers for the specific variable. If studies only reported that a certain relationship was non-significant, we applied conservative estimation procedures, i.e., we assigned a p value of 0.50 if a non-significant effect was reported (Mullen, 1989). For several studies it was not possible to calculate effect sizes because only multivariate analyses were done. The results of these studies will be described in the result section.

For each predictor within each of the four groups of studies, we conducted a meta-analysis. For the calculation of the mean effect sizes we used the SPSS macro MeanES of Lipsey and Wilson (2001). Significance tests were performed through fixed or random effects models, depending on the homogeneity of the study outcomes. When the effect sizes were homogenous (according to the within-class homogeneity statistic Q), fixed effect model tests were used. When the effect sizes were heterogeneous, more conservative random effect model tests were used. Independence of study results is desirable when conducting a meta-analysis in order to preclude that a particular study is weighted more strongly than the others (M. W.; Lipsey & Wilson, 2001). Dependence of effect sizes was prevented by combining the study results when for instance more than one result per study was taken in the calculation of an effect size. This produced only one mean effect size per predictor (in de calculation of the effect sizes per predictor per group of studies), or one mean effect size per study (in the calculation of overall effect sizes per predictor or overall effect sizes per predictor group) and this mean effect size was then taken in the further calculations.

Further, for each study we coded the dropout percentage and calculated an overall mean drop-out percentage, weighted by N. Some studies reported more than one dropout percentage because percentages for various dropout definitions (e.g., early vs. late dropout), or percentages for the different (ethnic or diagnostic) groups were given. In these cases, the dropout rate for

the study as a whole was calculated based on the number of the respondents in the different conditions (N). For instance, the dropout rate of 40 African Americans in a study was given twice the weight of the dropout rate of 20 Hispanic Americans in that same study. This weighted dropout rate was used in the calculations for the mean dropout rate across all studies. Mean dropout rates for a group of studies (e.g., the mean rate for studies with a certain design or using a certain dropout definition) were calculated based on the number of respondents in each study. For instance, when calculating an average dropout rate, the dropout rate of a study with 50 respondents was given five times more weight than the dropout rate of a study with 10 respondents.

Results

Results for dropout percentages

Perspective 1: Study design and dropout percentages

The dropout rates in the efficacy studies (N = 17) were relatively low (mean = 28.4%, range = 16 – 50%), while the dropout rates in the effectiveness studies (N = 30) were much higher (mean = 50%, range = 17 – 72%) (see table 1). The study that used both designs compared dropout percentages from a naturalistic design with a randomized control trial (Luk et al., 2001). The naturalistic design (effectiveness) in this study also had a much higher dropout percentage than the randomized control trial (efficacy).

Table 1: Description of the included studies

Study	N (age)	Treatment type and Diagnostic group	Definition of dropout	Dropout percentages
Effectiveness studies & Definition referring to opinion of therapist				
1. Armbruster & Fallon (1994)	304 (0-18)	Oppositional, aggressive, antisocial behavior	Failure to attend, repeated cancellations resulting in no further contact, or open refusal of recommendations for further evaluation or treatment.	d.o. = 45%
2. Kazdin & Mazurick (1994)	257 (4-13)	Cognitive problem-solving skills training and Parent management training Oppositional, aggressive, antisocial behavior	Premature termination on the basis of a unilateral decision by parent or family, while inadvisable and against advice of clinical team. Early d.o.: completed 6 or fewer treatment weeks (1 session per week), late d.o.: termination form 7 to 14 weeks of treatment.	Early d.o. = 29,2% Late d.o. = 18,3% Total = 47,5%
3. Kazdin et al. (1994)	75 (4-13)	Cognitive problem-solving skills training and Parent management training Oppositional, aggressive, antisocial behavior	Premature termination based on the unilateral decision by parent or family, while inadvisable and against advice of clinical team. 3 constructed groups (for each N = 25): dropouts, matched completers, unmatched completers.	No dropout percentages
4. Kazdin et al. (1995)	279 (3-13)	Cognitive problem-solving skills training, Parent management training Oppositional, aggressive, antisocial behavior	Premature termination based on the unilateral decision by parent or family, while inadvisable and against advice of clinical team.	d.o. Black children (N = 99) = 59,6% d.o. White children (N = 180) = 41,7% Mean = 48,1%
5. Kazdin et al. (1997)	242 (3-14)	Cognitive problem-solving skills training, Parent management training Oppositional, aggressive, antisocial behavior	Premature termination based on the unilateral decision by parent or family, while inadvisable and against advice of clinical team. It occurred when parent noted explicitly that they did not wish to continue or when they did not come for at least 3 consecutive weeks.	d.o. = 39,7%
6. Lai et al. (1997)	235 (6-14)	All	Unilateral termination of treatment without the psychiatrist's agreement.	d.o.= 27,2%
7. Venable & Thompson (1998)	85 (3-18)	All	Caretakers whose children attended fewer than 10 counseling sessions and the children did not meet therapeutic goals (in the judgment of counselors).	d.o. = 21%
8. Kazdin & Wassell (1998)	304 (3-13)	Cognitive problem-solving skills training, Parent management training Oppositional, aggressive, antisocial behavior	Premature termination that was based on the unilateral decision by parent or family, while inadvisable and against advice of clinical team. At least one session had to be completed.	d.o. = 38%

9. Lai et al. (1998)	235 (6-14)	All	Unilateral termination of treatment without the psychiatrist's agreement. Early d.o.: failure to return after initial assessment Late d.o.: unilateral termination after returning as least one after initial assessment	Early d.o.= 9,4% Late d.o.= 17,9% Total = 27,2%
10. Pelkonen et al. (2000)	297 (12-22)	Eclectic treatment	Treatment did not continue after the evaluation phase, or the key problems had not been worked through and need for care was still evident. Early d.o.: only one or two appointments.	Early d.o. = 11,1% No percentages given for other dropout groups
11. Dierker et al. (2001)	117 (0-18)	All	Went through the (SRT) service review team process, but excited before goals were met and/or before the child was linked to external services. Refusers: were never served by the system.	d.o. = 20.5% Refusal = 46,2%
12. Nock & Kazdin (2001)	405 (2-15)	Cognitive problem-solving skills training, Parent management training Oppositional, aggressive, antisocial behavior	Parents stated explicitly that they did not want to continue treatment or they failed to appear for at least three consecutive weeks and failed to return after direct contact.	No dropout percentages
13. Luk et al. (2001)	RCT: 32 Naturalistic: 46 (5-16)	Cognitive behavioral therapy, Conjoint family therapy, eclectic treatment Conduct problems	The family failing to turn up for appointments and not returning to continue with treatment, despite invitation to do so.	d.o. RCT = 31,3% d.o. naturalistic = 48%
14. Garcia & Weisz (2002)	344 (7-18)	All	Clinic record information: statements that termination was 'against therapist advice' or 'premature' were used to indicate dropout. Early d.o.: five treatment sessions or less. Late d.o.: six sessions or more.	d.o. = 61,6%
15. Lamb et al. (2002)	445 (6-12)	All	Non-attenders early d.o.: attended only once late d.o.: attended more than once but treatment unilaterally terminated by family	Non-attendance Bangladeshi = 39,4% Non-attendance natives = 26,9% Early and late d.o. both groups = 36,4%
16. Lau & Weisz (2003)	343 (7-17)	A reported history of maltreatment	Discontinuing without the consent of the therapist. Early d.o.: discontinuing before receiving the median number of sessions (eight).	No dropout percentages
17. Hawley & Weisz (2005)	65 (7-16)	All	Level of therapist concurrence with termination decision, rated from complete disagreement to complete agreement.	No dropout percentages
18. Halliday-Boykins et al. (2005)	1711 (6-18)	Multisystemic therapy	Reasons for discharge reported by therapists (i.e., successful vs. not successful)	d.o. = 33%

19. Stevens et al. (2006)	186 (5-17)	All	Therapist indication that treatment goals had not been at least partially met.	No dropout percentages were given
20. Johnson et al. (2008)	520 (6-18)	All	Unilateral decision of the client to terminate treatment, through stating their desire to discontinue and not making any more appointments or by failing to attend sessions even when followed up.	d.o. = 49%
21. Jensen-Doss & Weisz (2008)	197 (7-17)	All	Treatment termination without concurrence of the clinician.	d.o. = 59,4%
22. Johnson et al. (2009)	520 (6-18)	All	Unilateral decision of the client to terminate treatment, through stating their desire to discontinue and not making any more appointments or by failing to attend sessions even when followed up.	d.o. = 49%
23. Gonzales et al. (2011)	197 (5-18)	Clinically significant anxiety	Clinician-rated d.o. (CR) (this determined who was seen as a dropout): youths/families who unilaterally decided to terminate and discontinued contact with clinic (terminations for reasons beyond ones control were seen as non-d.o.) The dropouts were further delineated by number of sessions → Phase of treatment d.o. (PT): pre-treatment (0-1 sessions), early (2-6 sessions), late (> 6 sessions)	d.o. CR = 51,3% (= total dropout) d.o. PT: pre-treatment = 12,7%, early = 14,2% late = 24,4%
24. Warnick et al. (2012)	1098 (5-18)	All	Three definitions 1. Clinician judgment: youths were classified as dropouts based on the clinician coded reason for discharge 2. Missed last appointment: youths were classified as dropouts if they did not attend their last scheduled appointment 3. Dose: attending less than 12 sessions within 4 months	d.o. def 1 = 63,1% d.o. def 2 = 56,6% d.o. def 3 = 88,1% → d.o. with def 'opinion of the therapist' = 63,1%
Effectiveness studies & Definition referring to completing a certain number of sessions				
25. Yeh et al. (1994)	4616 (6-17)	All	Clients not returning to the mental health facility after the first session. Length of treatment (total number of sessions) was taken into account.	No dropout percentages
26. Baruch et al. (1998)	134 (12-24)	Psychoanalytic psychotherapy	Early d.o.: Dropping out after the first session and before the sixth session. Late d.o.: Dropping out after the fifth session and before the 21st session	Early d.o. = 30,6% Late d.o. = 29,1% Total = 59,7%
27. McCabe (2002)	50 (6-12)	All	Parents who did not return after completing the intake or one session beyond the intake.	d.o. = 29%
28. Peters et al. (2005)	75 (3-10)	Parent management training (PMT) Oppositional-defiant disorder, Conduct disorder	Attending less than 50% of the ten offered sessions of group PMT or individual PMT when a groups PMT sessions could not be attended	d.o. = 52%

29. Friars & Mellor (2007)	18 (11-17)	Behavioral management program groups ADHD, oppositional defiant disorder, or Conduct disorder	Those who commenced treatment but dropped out attending less than four sessions.	Never started = 38,9% d.o. = 54,5%
30. Miller et al. (2008)	447 (2-17)	All	Those who attended only one (intake) appointment.	d.o. = 17%
31. Baruch et al. (2009)	882 (12-21)	Psychoanalytic psychotherapy	Dropping out before the 21st session on basis of unilateral decision made by the young person without agreement of therapist.	d.o. = 69%
24. Warnick et al. (2012)	1098 (5-18)	All	Three definitions 1. Clinician judgment: youths were classified as dropouts based on the clinician coded reason for discharge 2. Missed last appointment: youths were classified as dropouts if they did not attend their last scheduled appointment 3. Dose: attending less than 12 sessions within 4 months	d.o. def 1 = 63,1% d.o. def 2 = 56,6% d.o. def 3 = 88,1% → d.o. with def 'number of sessions' = 72,4%
Efficacy studies & Definition referring to opinion of therapist				
32. Kendall & Sugarman (1997)	190 (8-14)	Cognitive-behavioral treatment Anxiety disorders	Starting treatment but unilaterally decide to terminate before the end of the time-limited treatment. Refusers: were evaluated and offered treatment but never received it.	d.o. = 23%
13. Luk et al. (2001)	RCT: 32 Naturalistic: 46 (5-16)	Cognitive behavioral therapy, Conjoint family therapy, eclectic treatment Conduct problems	The family failing to turn up for appointments and not returning to continue with treatment, despite invitation to do so.	d.o. RCT = 31,3% d.o. naturalistic = 48%
33. Pina et al. (2003)	137 (6-16)	Exposure-based treatment Phobic and anxiety disorders	Beginning to attend treatment sessions but unilaterally terminate the treatment program.	d.o. = 22,6%
34. Harwood & Eyberg (2004)	22 (3-6)	Parent-child interaction therapy Oppositional deficit disorder	Attending at least one treatment session and then discontinuing treatment before reaching graduation criteria. Dropout occurs unilaterally and is classified as treatment failure.	No dropout percentages (selection of 11 dropout families and 11 completer families)
35. Fernandez & Eyberg (2009)	99 (3-6)	Parent-child interaction therapy (PCIT) and Maintenance treatment (MT) or Assessment only (AO) during 2-year follow-up Oppositional deficit disorder	With PCIT: discontinuing treatment at any point after attending the first treatment sessions and before meeting the treatment completion criteria (parents reaching pre-set skill levels) With MT and AO: not participating in the final 2-year assessment.	d.o. PCIT (N = 99) = 36,4% (= total dropout) d.o. AO (N = 32) = 53% d.o. MT (N = 31) = 39%
Efficacy studies & Definition referring to completing a certain number of sessions				
36. Prinz & Miller (1994)	147 (4-9) only boys	Standard family treatment (SFT, N =75) vs. Enhanced family treatment (EFT, N = 72) Conduct problems and aggression	Families who attended some treatment sessions but did not complete the entire protocol.	d.o. SFT = 46,6%. d.o. EFT = 29,2% Mean = 38,1%

37. Gilbert et al. (1994)	65 (13-17)	Social skills training or therapeutic support group (both group therapy) Depressive disorders	Those that attended fewer than two-thirds of the therapy sessions	d.o. = 30,8%
38. Robbins et al. (2003)	34 (12-18)	Functional family therapy Drug abuse and/or behavior problems	Attending less than eight sessions and being identified by the therapist as unsuccessful termination	No dropout percentages
39. Wintersteen et all. (2005)	600 (12-18)	Motivational enhancement therapy, Individual behavioral therapy, Multidimensional family therapy Substance abusers	Attending less than two-thirds of the indented treatment sessions	d.o. ethnic match (N = 379) = 21% d.o. no ethnic match (N = 163) = 45% Mean = 28,2%
40. Shelef et al. (2005)	91 (12-18)	Multidimensional family therapy	Completing less than eight sessions	d.o. = 18,7%
41. Pereira et al. (2006)	41 (12-18)	Family therapy Anorexia Nervosa	Participating in less than 80% of the assigned therapy (i.e., 8 sessions for the short term treatment and 16 sessions for the longer course treatment).	d.o. = 24,4%
42. Lock et al. (2006)	86 (11-18)	Family based therapy Anorexia Nervosa	Participating in less than 80% of the assigned therapy (i.e., 8 sessions for the short term treatment and 16 sessions for the longer course treatment).	Total d.o. = 16% d.o. long treatment = 23,8% d.o. short treatment = 9,1%
43. Robbins et al. (2006)	30 (12-18)	Multidimensional family therapy Drug abusers	Completing less than eight sessions and being classified by the therapist as a dropout	No dropout percentages
44. Chasson et al. (2008)	99 (5-19)	Exposure-based cognitive behavioral therapy. Trauma victims.	Terminating treatment before completing a post-treatment assessment packet (this marks the end of treatment for all patients) → dropouts attended nearly 15 sessions fewer on average than completers.	d.o. = 41%
45. Flicker et al. (2008)	86 (13-19)	Functional family therapy Substance abuse or dependence	Not completing all therapy sessions for which they were scheduled	d.o. Hispanic = 48,8% d.o. Caucasian = 34,9% Total d.o. = 41,9%
46. Gunnersdottir et al. (2011)	84 (7-13)	Family-based behavioral treatment Childhood obesity	Not completing the full treatment regimen (18 weeks)	d.o. = 27,4%
47. Cordaro et al. (2012)	58 (14-19)	Guided Self-Change (GSC) therapy Alcohol or drug abuse	Not completing the full GSC treatment regimen (but after having completed the first or second therapy session)	No dropout percentages (29 dropouts and 29 completers were selected from a larger sample)
48. Saxe et al. (2012)	20 (7–18)	Trauma systems therapy (TST) vs. Care as Usual (CAU) Exposure to a traumatic event	Terminating treatment before the 3-months reassessment	d.o. TST (N = 10) = 10% d.o. CAU (N = 10) = 90% Mean = 50%

Perspective 2: Definition of dropout and dropout percentages

Many variations in definitions were found. After a content analysis, the definitions were divided in two main groups. Within the first group of studies, the judgment of the therapist was the decisive factor in the dropout definition: it was the therapist that decided who was to be regarded as a dropout (definition (i)). In the second group of studies, dropout was defined as termination before a certain number of sessions, or before all the predetermined sessions of the treatment regimen were completed or when the last scheduled session was not attended (definition (ii)). One study used three different definitions (two of which can be mingled in one group) and described dropout percentages and dropout predictors for each definition (Warnick et al., 2012) (study 24). This study will therefore be described in both the first group of articles (i) and in the second group of articles (ii). Another study used one definition (i) to obtain a group of dropouts, but thereafter further delineated the dropouts by using a second definition (ii) (Gonzalez, Weersing, Warnick, Scahill, & Woolston, 2011) (study 23). This article will only be described in the first group of studies though, because the decision as to who was a dropout, was made according to definition (i).

Definition (i): This type of definition was used within 28 studies (see table 1). Sometimes the therapists were asked whether they agreed with the decision of the patient to terminate treatment. In other cases, previously set goals or graduation criteria (by the therapist) were used as the reference. When the therapist did not agree with the decision of the patient or parent to terminate, or when patients decided to terminate 'before goals were met' or 'before reaching graduation criteria', these patients were seen as dropouts. Dropout percentages in these studies varied from 20 to 63 (mean = 35,8%). Some of the aforementioned studies (study 2, 10, 11, 32) also used the number of sessions to differentiate between various drop-out groups (e.g., early vs. late drop-outs).

Definition (ii): This type of definition was used within 21 studies (see table 1). There was a wide variation in dropout percentages from 16 to 72% in these studies (mean = 44,5%). These percentages depended on the number of sessions that was used to define dropout. In the studies where dropout was defined as not completing the full pre-ordained length of treatment, dropout percentages varied from 27 to 47. When dropout was defined as termination before the sixth session, the percentages varied from 16 to 31. When dropout was defined as termination somewhere after the sixth session (e.g., completing fewer than 2/3rd of the

treatment regimen, completing less than 80% of the treatment regimen, completing less than 21 sessions), the dropout percentages varied from 18 to 69. The study of Warnick et al. (2012) compared the dropout rates between the definitions 'missing the last scheduled appointment' and 'completing less than 12 sessions in four months'. Using the first definition, the dropout percentage was 56,6%, while the dropout percentage was 88,1% when the second definition was used.

The average dropout percentages of the studies within group (i) were lower than the average dropout percentages of the studies within group (ii) (i.e., 35,8% vs. 44,5%). This finding was similar to the findings of Warnick et al. (2012) (an effectiveness study). In this study, three dropout definitions were used and dropout percentages were compared for each condition. When regarding the definition that belonged to group (i), the dropout percentage was indeed lower (i.e., 63,1%) than the average dropout percentage when regarding the two definitions that belonged to group (ii) (i.e., 72,4%). In addition, some differences were found between the studies within group (i) and (ii) when the study design was taken into consideration. Twenty-three of the twenty-eight studies which took the opinion of the therapist as the criterion for dropout (definition i) were effectiveness studies (mean dropout % = 45,3), four studies were efficacy studies (mean dropout % = 26,4), and one study used both designs (Luk et al., 2001). Thirteen of the twenty-one studies that defined dropout as terminating before a predetermined number of sessions was attended (definition ii) were efficacy studies (mean dropout % = 29,2) and nine of them were effectiveness studies (mean dropout % = 59,8). Within the efficacy studies, the specified number of sessions that had to be completed was often derived from theoretical frameworks about the specific treatment. Within the effectiveness studies, it was less clear why a certain number of sessions had been chosen, other than 'based on previous experience'.

Results for dropout predictors

We combined the two perspectives (study design and dropout definition) to describe the results for the dropout predictors. This resulted in four sections in which the dropout predictors will be described: 1) effectiveness studies using definition (i), 2) effectiveness studies using definition (ii), 3) efficacy studies using definition (i), and 4) efficacy studies using definition (ii). The effect sizes of all predictors are displayed in table 2. The predictors that had medium to large or

stronger effect sizes and were also significant will be further described in the four subsequent sections. Although caution should be held when these significant effect sizes are based on the results of only one or two studies.

As stated, the first two groups of predictors were the pre-treatment variables. These were static variables: child factors, and family or parent factors. The third group of dropout predictors were the underlying processes of treatment or therapist variables or the experienced barriers to treatment participation. Some of the therapist and treatment variables were analyzed by, or could be assigned to, one of the specific groups of barriers as suggested by the Barriers to Treatment Participation Scale (BTPS) (Kazdin et al., 1997b), while some other barriers were not mentioned in this specific scale. For instance, the number of years of experience of the therapist, an ethnic match with the therapist, or treatment modality, were not mentioned in the BTPS but they can certainly interfere with the child or family staying in or dropping out of therapy. The experienced barriers were most often analyzed by looking at the reasons that the parents or children gave as to why they had dropped out of therapy (e.g., by completing the BTPS or another questionnaire at the end of therapy). In other cases, the quality of the therapeutic relationship was rated by an observer during a certain therapy session, or the wait time or the presence of an ethnic match between therapist and patient were determined by the researchers.

Table 2: Dropout predictors and effect sizes

	Effectiveness + def 1			Effectiveness + def 2			Efficacy + def 1			Efficacy + def 2			Overall		
Predictor	k	n	Mean ES	k	n	Mean ES	k	n	Mean ES	k	n	Mean ES	k	n	Mean ES[1]
Pre-treatment child characteristics															
Gender (male)	7	1852	0.10	5	6255	0.06	2	159	0.11	4	300	0.20**	17	7558	0.12***
Age (older)	6	1891	0.16	5	2637	-0.21	2	159	-0.29	5	447	0.28**	17	4036	0.05
Minority status	8	2489	0.37***	3	1680	0.33*	3	349	0.39*	1	100	0.25	14	3520	0.36***
Lower acculturation	-	-	-	1	50	0.18	-	-	-	-	-	-	1	50	0.18
Child IQ (lower)	3	487	0.45***	-	-	-	-	-	-	-	-	-	3	487	0.45***
Child academic functioning (lower)	3	660	0.16	2	1016	0.35	-	-	-	1	65	0.56**	6	1741	0.28*
Higher number of diagnoses (th)	3	292	0.36*	2	1330	0.20***	3	349	0.08	1	86	0.27*	9	2057	0.22***
Diagnosed with externalizing disorder (th)	9	2047	0.35***	2	1026	0.45***	1	22	0.28	2	165	0.55	14	3260	0.39***
Diagnosed with internalizing disorder (th)	5	1082	0.05	-	-	-	1	22	-0.74*	-	-	-	6	1104	-0.04
Diagnosed with adjustment disorder (th)	1	127	0.39	1	448	0.42*	-	-	-	-	-	-	2	575	0.41***
Diagnosed with psychotic disorder (th)	2	189	-0.05	-	-	-	-	-	-	-	-	-	2	189	-0.05
More contact with deviant peers (p)	3	741	0.66***	1	11	0.55*	-	-	-	-	-	-	4	752	0.65***
Referral source	3	1670	0.23	4	2199	0.30**	-	-	-	1	147	0.48*	7	2918	0.35**
On (psychotropic) medication	1	127	0.43*	-	-	-	1	22	0.19	-	-	-	2	149	0.40***
More total problems (p & t)	4	1632	0.26	4	5768	0.31	-	-	-	2	233	0.10	9	6535	0.28**
Lower social functioning (p & t)	4	1709	0.38***	2	1109	0.03	-	-	-	-	-	-	5	1720	0.38***
More internalizing problems (p & t)	1	50	0.63**	1	11	0.39	2	327	-0.07	-	-	-	4	388	-0.04
More externalizing problems (p & t)	5	1033	0.50***	3	1037	0.32***	2	327	0.09	2	177	0.03	12	2574	0.36***
More internalizing problems (s)	1	197	0.10	1	882	0.27	2	327	-0.06	1	30	-0.87**	5	1436	-0.09
More externalizing problems (s)	3	374	0.27***	2	1026	0.40**	-	-	-	1	30	-0.76**	6	1430	0.22*
Overall child characteristics													29	10917	0.26***
Pre-treatment parent or family characteristics															
Lower socioeconomic status	11	2730	0.42***	5	6256	0.26***	3	188	0.73*	3	317	0.41***	20	8393	0.38***
Mother's age (younger)	5	1033	0.53***	1	75	0.71*	2	51	0.88*	1	84	0.24	9	1243	0.58***
Single parent household (no father)	9	2657	0.53**	3	2055	0.12***	3	349	0.38***	1	86	0.15	15	4026	0.39***
Non-biological head of household	4	1662	0.25	1	1098	0.41*	-	-	-	-	-	-	4	1662	0.29**
Homelessness	-	-	-	1	882	0.82**	-	-	-	-	-	-	1	882	0.82**
Higher number of siblings	2	366	0.32***	-	-	-	-	-	-	-	-	-	2	366	0.32***
More parent total problems	6	1082	0.20***	1	11	0.28	2	212	0.06	1	147	0.37	10	1452	0.20***

More parent internalizing problems	3	403	0.08	1	75	0.28	2	327	0.14*	1	147	0.36	7	952	0.19***
More parent externalizing problems	5	1032	0.39***	-	-	-	-	-	-	-	-	-	5	1032	0.39***
More negative life events	4	853	0.27*	1	11	0.92	-	-	-	-	-	-	5	864	0.32**
Poor parenting	5	1110	0.45***	2	86	0.99*	-	-	-	2	233	0.23***	9	1429	0.43***
Mother knowing the diagnosis (vs not knowing)	-	-	-	1	75	0.52*	-	-	-	-	-	-	1	75	0.52*
Parent feeling guilty about child's problems	-	-	-	1	50	0.54	-	-	-	-	-	-	1	50	0.54
Parent having low confidence of doing well in parenting	-	-	-	-	-	-	-	-	-	1	84	1.02**	1	84	1.02**
Overall parent and family characteristics													24	9586	0.37***
Treatment and therapist factors or treatment participation barriers															
No ethnic match	1	167	0.35**	2	4634	0.34***	-	-	-	1	452	0.58**	4	5253	0.37***
No gender match	-	-	-	-	-	-	-	-	-	1	571	0.24**	1	571	0.24**
More cancellations or no-shows	1	304	0.92**	-	-	-	-	-	-	1	146	1.78***	2	450	1.35**
More often being late	1	304	0.30*	-	-	-	-	-	-	1	146	0.39*	2	450	0.33***
Longer wait time	1	1098	0.01	1	1098	0.08	1	190	0.58**	-	-	-	2	1288	0.24
Non-urgent intake	1	1098	0.13	1	1098	0.13	-	-	-	-	-	-	1	1098	0.13
BTPS Total barriers (p)	1	242	0.88**	1	50	0.68**	-	-	-	-	-	-	2	292	0.85***
BTPS Total barriers (th)	1	242	1.56**	-	-	-	-	-	-	-	-	-	1	242	1.56**
BTPS More stressors-obstacles (p)	3	765	0.58***	-	-	-	-	-	-	1	147	1.13***	4	912	0.70***
BTPS More stressors-obstacles (th)	2	546	1.24***	-	-	-	-	-	-	-	-	-	2	546	1.24***
BTPS More treatment demands (p)	2	546	0.14**	-	-	-	-	-	-	-	-	-	2	546	0.14**
BTPS More treatment demands (th)	2	546	0.58***	-	-	-	-	-	-	-	-	-	2	546	0.58***
BTPS Lower perceived relevance of treatment (p)	3	592	0.80***	100	50	0.77**	1	29	1.32***	1	147	0.53**	5	818	0.81***
BTPS Lower perceived relevance of treatment (th)	2	546	1.55***	-	-	-	-	-	-	1	147	0.42**	3	693	1.18***
BTPS Lower therapeutic relationship (p)	3	765	0.37***	-	-	-	-	-	-	1	147	0.45**	4	912	0.39***
BTPS Lower therapeutic relationship (th)	2	546	0.57***	-	-	-	-	-	-	-	-	-	2	546	0.57***
BTPS More critical events (p & th)	1	242	0.20	-	-	-	-	-	-	-	-	-	1	242	0.20
Therapist: care. concern. communicative. facilitative. charisma. supportive (p)	1	46	-0.43**	-	-	-	2	51	-0.92***	-	-	-	2	97	-0.72***
Therapist: directive. controlling.	1	46	0.29	1	50	0.53*	2	51	0.54***	-	-	-	3	147	0.45***

confronting (p)														
Focus of therapy (cognitive. behavioral. interpretative) and treatment modality	1	46	0.60	1	144	0.35	1	29	0.79**	1	20	2.67***	3	239	1.21*
Therapy: less well organized (p)	1	46	1.20***	-	-	-	1	29	1.25***	-	-	-	1	75	1.22***
Expecting the child to recover quickly (p)	-	-	-	1	50	0.63**	-	-	-	-	-	-	1	50	0.63**
Therapist: less years of experience	-	-	-	1	448	0.25	-	-	-	-	-	-	1	448	0.25
Unbalanced alliance parent/child (o)	-	-	-	-	-	-	-	-	-	2	120	0.78***	2	120	0.78***
Higher unbalanced alliance father-child (o)	-	-	-	-	-	-	-	-	-	1	34	4.15***	1	34	4.15***
Higher unbalanced alliance mother-child (o)	-	-	-	-	-	-	-	-	-	1	34	2.50***	1	34	2.50***
Lower child alliance (o)	-	-	-	-	-	-	-	-	-	3	161	0.41***	3	161	0.41***
Lower parent alliance (o)	-	-	-	-	-	-	-	-	-	3	161	0.46***	3	161	0.46***
Reduction in adolescent alliance (o)	-	-	-	-	-	-	-	-	-	1	30	1.55***	1	30	1.55***
Reduction in parent alliance (o)	-	-	-	-	-	-	-	-	-	1	30	2.19***	1	30	2.19***
Overall treatment and therapist factors													23	9611	0.53***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

k = number of studies. n = number of subjects. Mean ES = Mean Effect Size. (p) = parent. (t) = teacher. (s) = self. (th) = therapist. (o) = observer. BTPS = Barriers to Treatment Participation Scale

[1] The overall effect sizes per predictor were indicated bold when 1) the predictors were found in more than one of the four groups of studies and the effect sizes were strong and significant. or 2) the predictors were found in at least 10 studies with a high number of total respondents and the effect sizes were small but significant.

Note: Q statistics and p-values are available upon request.

1) Effectiveness studies using the therapist judgment as criterion for dropout (definition i)

There were seven child pre-treatment factors with significant small effect sizes and three predictors with significant medium to large effect sizes (see table 2). This indicates that these ten child pre-treatment factors were significant dropout predictors, especially higher pretreatment levels of externalizing or internalizing problems according to the parent or teacher (study 2, 4, 5, 3, 8), and having more contact with deviant peers (study 2, 4, 8).

Eight family or parent pre-treatment factors significantly predicted dropout (see table 2). Of these eight variables, six had significant small effect sizes and two had significant medium to large effect sizes. Dropout is thus mainly predicted by a situation with a younger mother, and a single caregiver household where the father is not present (study 1, 2, 3, 4, 5, 8, 10, 11, 23, 24).

Within the third group of predictors (i.e., treatment and therapist factors or treatment participation barriers), there were four predictors with significant small effect sizes, eight predictors with significant medium to large or large effect sizes, and two predictors with very large effect sizes (see table 2). There was one predictor with a significant, but negligible small effect size. Patients with more cancellations of sessions or no-shows, had a significantly higher chance to drop out (study 8). Parents or patients perceiving therapy as less well organized had a significantly higher chance to drop out as well (study 13). Four studies analyzed the reasons that parents or children had given as to why they dropped out of therapy, two of these studies analyzed these reasons according to the barriers-to-treatment-participation model. All the types of experienced barriers in these studies (i.e., experiencing more stressors and obstacles to participate, more treatment demands, lower perceived relevance of treatment, and a lower quality of the relationship with the therapist), were significant predictors for dropout (study 5, 8, 13, 14). Comparison of the effect sizes indicates that therapists were better in judging the experienced barriers of the parent and patient than the parents themselves. In two of these studies that thus focused on the underlying processes of dropout by using the BTPS, it was also found that the experience of barriers was not accounted for by the more static pre-treatment variables, and that among families with a high risk for dropping out (i.e., according to the presence of several predictor pre-treatment variables), the perception of fewer barriers served as a protective factor.

The results of study 6, 12, 16, 17, 18, 19, and 21 are not displayed in the table, because in these studies only multivariate analyses were performed, or the dropouts were asked about their reasons for dropout but no information on the completer group was given, and therefore

effect sizes could not be calculated. In these studies the following reasons for dropout were given: the child did not want to come to treatment, parents did not think that the child had a psychiatric problem, or parents believed there was no problem at all. Also, having moderate expectancies of the results of therapy (as opposed to very high or very low expectancies), were risk factors for dropout. Several studies that studied the therapeutic alliance between therapist and parent or therapist and patient (and measured this in another way than with the BTPS), found that showing less alliance and bonding to the therapist or problems in the therapeutic relationship were risk factors for dropping out, but only for parent-therapist alliance and not for youth-therapist alliance. An ethnic match between the parent and the therapist was associated with continuation, and parents' disagreement with the therapist's opinion on for instance the problem that should be treated, also predicted dropout.

2) Effectiveness studies using a preset number of session as criterion for dropout (definition ii)
Within the first group of pre-treatment child predictors, eight significant predictors of dropout were found (see table 2), but only one predictor had a significant medium to large effect size. Having more contact with deviant peers was thus the most important dropout predictor in this group of studies (study 29).

With respect to family factors, four predictors with significant medium to large or large effect sizes were found. Three other predictors were also significant, but the effect sizes were small or even negligible (see table 2). Having a younger mother (study 28) and being homeless (study 31) significantly predicted dropout. In only one study the parent's knowledge about the diagnosis of the child was studied. In this study, parents that knew the diagnosis, were compared to parents not knowing the diagnoses, and it appeared that this last group had a lower chance to drop out of therapy (study 28). Poor parenting (i.e., more critical comments, more expressed negative emotions, and more hostility towards the child etc.) was a significant risk factor for dropout (study 28, 29) as well.

Within the third group of predictors, the experience of treatment participation barriers (in particular a lower perceived relevance of treatment) was a significant risk factor for dropping out, and that the perception of fewer barriers served as a protective factor (study 27). In addition, expecting the child to recover quickly and the therapist being directive, controlling, and confronting, were significant dropout predictors (study 27). One other factor was significant (i.e., an absence of an ethnic match between therapist and patient) but its effect size was small.

3) Efficacy studies using the therapist judgment criterion for dropout (definition i)

Within this third group of studies, one significant predictor had a small effect size and only one other predictor was significant and had a medium to large effect size (see table 2). This factor predicted continuation though, i.e., the child being diagnosed with an internalizing disorder was a significant predictor for therapy continuation (study 34).

With respect to parent and family factors, a significant relationship (and a medium to large effect size) between lower socioeconomic status and dropout was found (study 13, 33, 34). Also, having a younger mother was a significant dropout predictor with a large effect size (study 13, 34). Two other predictors were significant but had small or negligible effect sizes (see table 2).

Within the group of treatment and therapist factors or treatment participation barriers, all the six significant predictors had medium to large, large or even very large effect sizes (see table 2). Thus, a longer wait time prior to therapy and perceiving the therapy as less well organized were significant risk factors for dropout (study 13, 32). According to one study on treatment participation barriers, a lower perceived relevance of treatment, was a significant dropout predictor also (study 13). In addition, the therapist being directive, controlling, and confronting predicted dropout, while the therapist showing care and concern, and being communicative and supportive, enhanced the chance for the patient to continue therapy (study 13, 34). The focus of therapy (i.e., whether it was cognitive, behavioral or interpretative) also significantly enhanced or reduced the chance to drop out of therapy (study 13).

4) Efficacy studies using a preset number of sessions as criterion for dropout (definition ii)

Within this group of studies, three significant child pre-treatment variables had a medium to large or large effect size, and four predictors had a small effect size (see table 2). Having more internalizing or externalizing disorders according to the patient himself predicted continuation of therapy (study 43). The child having lower academic functioning significantly predicted dropout (study 37).

With respect to pre-treatment family factors, only one predictor had a large effect size. The effect sizes of the other two significant predictors were small (see table 2). The parent having little confidence of doing well in treatment (study 46) was thus the most important family or parent dropout predictor in this group of studies.

Within the third group of dropout predictors, ten of the sixteen significant predictors had medium to large or (very) large effect sizes. Factors such as more cancellations of sessions (study 36) and the absence of an ethnic match with the therapist, predicted dropout (study 39). Again, several experienced barriers to treatment significantly predicted dropout and had medium to large or large effect sizes: more stressors and obstacles according to the parent, and a lower perceived relevance of treatment according to the parent (study 36). A very large effect size was found for the variable focus of therapy (study 48). Several studies focused on the strength of the therapeutic alliance as measured by an observer (study 38, 41, 43, 45). All of these predictors were significant, and most had medium to large or (very) large effect sizes. A reduction in parent-therapist alliance or patient-therapist alliance was found to be a important predictor of dropout. The largest effect sizes were found for an unbalanced alliance (i.e., parent-therapist alliance minus adolescent-therapist alliance) between the father and the child, and in a lesser extend for an unbalanced alliance between the mother and the child.

The results of study 44 and 47 are not displayed in the table, because in these studies only multivariate analyses were done. In study 47 it was found that low ratings of therapeutic alliance, working alliance, and client involvement variables were predictive of treatment dropout (study 47). Also, more immediate distress and symptom severity measured just before termination (as opposed to symptom severity measured pretreatment) (study 44), predicted dropout.

Conclusion and discussion

The aim of this meta-analytic review was to present an overview of the results of studies regarding premature termination in child and adolescent therapy, and to offer explanations for the wide variety in dropout percentages and dropout predictors across these studies. In advance we assumed that two main factors were plausible contributors to the inconsistency in findings: study design and dropout definition. We therefore chose to structure our meta-analytic review along these two perspectives. We differentiated between studies with efficacy and effectiveness designs (first perspective), and between studies with various dropout definitions (second perspective). First, we compared the dropout percentages within the first perspective, i.e., we made comparisons between effectiveness and efficacy studies. Within the second perspective we compared the dropout percentages of studies in which the definition of dropout was based on the opinion of the therapist (definition i) with studies that used the number of completed

sessions as the criterion for dropout (definition ii). We thereafter compared the dropout predictors between the various studies for which we decided to use a combination of both perspectives. This resulted in four sections: 1) effectiveness studies using definition (i), 2) effectiveness studies using definition (ii), 3) efficacy studies using definition (i), and 4) efficacy studies using definition (ii). The dropout predictors were divided in three groups: pre-treatment child characteristics, pre-treatment parent or family characteristics, and therapist and treatment factors or treatment participation barriers.

With respect to dropout percentages, the first perspective shows that percentages in the efficacy studies were much lower than the percentages in the effectiveness studies. This indicates that one of the causes for the large variety in dropout percentages can be attributed to the study design. This can be explained by the fact that in efficacy studies patients are often included after strict selection procedures and therefore might be more motivated to complete the treatment The percentage of patients that will drop out is thus partly influenced by these selection procedures. Also, in efficacy studies, the treatment itself tends to follow more strict protocols (with respect to both contents and length), than treatment in effectiveness studies. This might aid patients to complete therapy because they know what to expect. This last aspect can be used to prevent dropout in general mental health care (effectiveness studies) by offering more strict treatment protocols. Because in effectiveness settings all potential patients that need help should be able to receive it, it is not desirable to work with selection criteria like in efficacy studies.

The second perspective shows that some differences were found in dropout percentages between the studies within the two groups of dropout definitions. Both groups of definitions were used in efficacy as well as in effectiveness studies. However, definitions that used the opinion of the therapist as the most important criterion, were found more often in effectiveness studies, while definitions that used a prefixed number of completed sessions as criterion, were more common in efficacy studies that often have a pre-ordained length of time and number of sessions.

Within both groups of definitions, the dropout percentages showed large variations between studies. With respect to the group of studies using the predetermined number of sessions criterion, dropout percentages were understandably higher when the number of sessions that had to be completed was set to be higher. In effectiveness studies, the dropout percentages were lower when the therapist's opinion definition was used, rather than when the

number of sessions definition was used (i.e., 45,3% vs. 59,8%). Interestingly, Warnick et al. (Warnick et al., 2012) compared dropout percentages between three conditions based on different definitions in an effectiveness study using the same group of respondents. The results from this study underscore our conclusion that dropout percentages are lower when dropout is defined according to the opinion of the therapist than when dropout is defined according to completing a certain number of sessions or the last scheduled session. In efficacy studies on the contrary, the dropout percentages were similar for studies using definition (i) or (ii) (i.e., 26,4% vs. 29,2%). An explanation might be that because the patients are more motivated in efficacy trials, dropout percentages are lower anyway and the dropout definition has less effect on these percentages. Also, in these trials, the therapist definition and the number of sessions definition will resemble each other more, because for instance, therapists work with strict protocols and will indicate that someone is a dropout when the protocol (e.g., completing a certain number of sessions) is not followed.

The two perspectives were combined into four sections to compare the study results on three major groups of dropout predictors and effect sizes for the predictors were calculated. The first two groups of predictors were pre-treatment variables. These were static variables: Child factors, and family or parent factors. Some child variables were only analyzed within one or two groups of studies which makes it difficult to compare the results. Most variables however, were analyzed within three or four groups of studies. The predictive value of some of the child characteristics was clearly higher within one group of studies than in the other groups. But most of the effect sizes did not reach significance or the effect sizes were only small or negligible. The overall effect sizes indicate that fourteen pre-treatment child variables are significant predictors in general. Only one predictor (more contact with deviant peers) had a medium to large effect size. The other effect sizes were small or even negligible, but three of these variables were analyzed within a substantial number of studies (i.e., more than ten), with a large number of respondents, and within all four groups of studies, and had significant (but small) effect sizes. These predictors for dropout were ethnic minority status, being diagnosed with an externalizing disorder, and having more externalizing problems according to the parent or teacher. Although this last variable was clearly a less strong predictor in the efficacy studies than in the effectiveness studies.

With respect to the pre-treatment parent or family factors, thirteen were found to be significant overall dropout predictors. Four of these predictors also had medium to large or large

effect sizes, i.e., having a younger mother, being homeless, the mother not knowing the diagnosis, and the parent having low confidence of doing well in treatment. The last three predictors were all only found in one study though, so in general, the results indicated that having a younger mother was the most important overall dropout predictor. A lower socioeconomic status, living in a single parent household with no father, and the parent having more (psychiatric) problems in general, were three other important variables (i.e., the overall effect sizes were significant (but small), they were analyzed in ten studies or more across all four groups of studies, and for a high number of respondents). The parent having more problems was clearly a less strong predictor in the efficacy studies with definition (1) than in the other three groups, while living in a single parent household was clearly a less strong predictor in studies with definition (ii) than in the other two groups.

Of the treatment and therapist variables or treatment participation barriers, twenty-six were significant overall dropout predictors. Eighteen predictors also had medium to large or (very) large effect sizes. These were mainly factors related to the several scales of the BTPS, and factors related to the relationship with the therapist (measured in other ways than by the BTPS). More specifically, a reduction in this relationship or a difference in the experience of this relationship between the child and the parent, significantly predicted dropout. The most important barriers, were a lower perceived relevance of treatment according to the parent and therapist relationship variables. Unfortunately, none of the variables were analyzed in more than five studies and only two variables were analyzed in all four groups of studies. This makes it harder to compare the results with respect to the influence of study design and dropout definition. Some of the studies in this third group analyzed the barriers according to the BTPS and as possible moderating variables as to why some high or low risk families (i.e., they were at high or low risk for dropping out because of the presence or absence of certain pre-treatment predictor variables), ultimately did or did not drop out. It was found that this moderating effect was indeed present, i.e., the experience of barriers can increase the risk for dropping out, while not experiencing barriers can reduce the risk for dropping out.

In general, from our meta-analytic review we can conclude that one of the reasons that dropout percentages differ across studies can be found in the variation of study designs being used. Within effectiveness studies, dropout percentages seem to be influenced by the dropout definition that is used as well. The results on some of the dropout predictors also differed by study design or dropout definition, although this conclusion should be drawn with caution

because most of the effect sizes were small or non-significant. There were not enough studies available to compare to the influence of study design and dropout definition on the treatment and therapist variables. The very small differences found between study designs might indicate that the distinction between efficacy and effectiveness research is not as strict as we expected, and that predictors found in efficacy studies might also account for effectiveness studies and vice versa. Indeed, La Greca et al. (2009) already stated that treatment research is more accurately viewed as varying along a continuum of internal and external validity, and that it is the continuum between (or blending of) efficacy/internal validity and effectiveness/external validity that will ultimately lead to research that informs practice, and practice that informs research. The present review treats efficacy and effectiveness as categorical (and not continuous) variables though, because most research is still done in efficacy or effectiveness settings and the goal was to analyze whether this affected the outcomes of dropout studies. We agree with La Greca et al. (2009) that research should move beyond efficacy and effectiveness and that research and practice will inform each other, but the differences in dropout percentages (and in some dropout predictors) between efficacy and effectiveness settings indicate that treatments and patient groups in the one setting still structurally differ from the treatments and patient groups in the other setting.

Study design and dropout definition indeed seemed to influence the strength and significance of some of the dropout predictors. This is similar to the results of the study of Warnick et al. (2012) based on one group of patients where dropout percentages and (some of the) dropout predictors varied for three different dropout definitions. Not many structural differences in dropout predictors were found though, but several variables seem to be robust overall predictors for dropout (i.e., the predictors were found in more than one of the four groups of studies and the overall effect sizes were significant and strong, or the effect sizes were significant and small but the predictors were found in a high number of studies with a high number of respondent). These predictors are: the child having more contact with deviant peers, ethnic minority status, being diagnosed with an externalizing disorder, having more externalizing problems according to the parent or teacher, a lower socioeconomic status, having a younger mother, living in a single parent household with no father, the parent having more (psychiatric) problems in general, poor parenting, experiencing more treatment participation barriers in general, experiencing a lower quality of the therapeutic relationship, having more cancellations or no-shows, a lower perceived relevance of treatment, experiencing more stressors-obstacles,

the therapist being directive, controlling and confronting, the therapist not showing care and concern, and the focus of therapy.

In each group of predictors, the overall effect sizes were measured for at least 23 studies and at least 9500 respondents and it is therefore warranted to compare the three overall effect sizes. This indicated that the treatment and therapist variables were overall stronger dropout predictors (i.e., its overall effect size was medium to large according to the rules of Cohen) than the pre-treatment child and family or parent variables (i.e., these overall effect sizes were small according to Cohen), which is in accordance with the theory of barriers to treatment participation. Indeed, in this theory it is proposed that families experience multiple barriers interfering with participating in treatment and that these experiences increase the risk for dropping out. Important practical implications for reducing therapy dropout can be deducted from our findings and this theory. It is hard to influence or change the static pre-treatment child and parent or family characteristics, but it is possible to influence treatment and therapist variables or experienced participation barriers. For instance, when the parent or patient experiences little relevance of treatment, the therapist could reflect on this and change some aspects of the therapy in order to make in more relevant for the patient and parent and reduce the chance of them dropping out. Or there could be a change in therapists when the patient or parent experiences a bad relationship with the present therapist. Our finding that treatment and therapist variables are the most important dropout predictors thus implicates that there are ways to reduce the chance of dropping out in the future.

Limitations of this meta-analytic review

The first limitation is that we only included peer-reviewed published studies in the English language. Studies published in other languages could have provided us with information about therapy with youth in countries outside the US and England. We also did not report on therapy in inpatient settings, because this was beyond our scope. Our results can therefore not be generalized to these types of settings nor can they be generalized to other settings such as forensic treatment, alcohol or drug treatment, internet therapy etcetera.

Second, the youth population that participated in the included studies was rather heterogeneous. For instance, some of the studies specifically focused on youth with anorexia nervosa, youth with conduct disorders, or youth with anxiety disorders, while some other studies focused on youth with a wide range of problems without given specifications. In

addition, the type of treatment differed per study as well. Some studies focused on family therapy, or social skills training, or exposure-based treatment, or did not give any specification for the type of treatment that was investigated. These variations in study population or in type of treatment could have influenced some of the differences or lack of differences found in our review.

Third, we did not include articles on methods and strategies to reduce dropout and enhance therapy attendance and adherence. Much work has already been done in this area. Our goal was to specifically focus on dropout percentages and dropout predictors in order to give an explanation for the wide variety in results. Focusing on studies that analyzed methods and strategies to reduce dropout is an important next step, but it was beyond the scope of this review. Several authors have already reviewed the studies on strategies for reducing dropout in psychotherapy with adults (Ogrodniczuk, Joyce, & Piper, 2005; Reis & Brown, 1999). In the area of child therapy, studies that focused on enhancing therapy engagement of the parents or of the whole family also have been reviewed (Gopalan et al., 2010; McKay & Bannon Jr., 2004; Morrissey-Kane & Prinz, 1999; Nock & Ferriter, 2005). However, contrary to child patients, adolescent patients decide for themselves whether to continue therapy in stead of the parents, and we were not able to find articles on strategies focusing on enhancing engagement of adolescent patients.

Future directions

It is useful to study pre-treatment variables and create a profile of the types of patients that have a higher risk of dropout. Based on these risk profiles, strategies to enhance engagement can be introduced from the start of therapy. Our review revealed that there are several robust pre-treatment variables that predict dropout. These pre-treatment variables should be studied together with the barriers experienced during treatment. Only then will we get a complete picture on the profile of who is at risk of dropping out, and of which barriers should be diminished. Studying the barriers experienced during treatment is useful because these are the variables that can be changed while it is hard to influence or change the static pre-treatment child and parent or family characteristics. Our finding that treatment and therapist variables are the most important dropout predictors thus implicates that there are ways to reduce dropping out in the future. For instance, a therapist can ask the parents at several points during the treatment whether they think that their child still needs the treatment, or whether they think

the relationship with the therapist is adequate. Analyzing the treatment participation barriers according to the Barriers to Treatment Participation Scale (BTPS) (Kazdin et al., 1997b) seems to be sufficient. Most overall significant predictors in this category were covered by this questionnaire (e.g., experiencing a lower quality of the therapeutic relationship, a lower perceived relevance of treatment). Some overall significant predictors (e.g., having more cancellations or no-shows, the focus of therapy), or predictors that had significant effect sizes in a little amount of studies (e.g., ethnic match, an unbalanced therapist alliance between parent and child) were not analyzed by the BTPS. Therefore it is advisable to include these possible predictors in future research and then extend the BTPS with scales on the topics that appear to be overall significant. Such an extended version of the BTPS can be used by YMHC institutions to study their dropouts and thereafter reduce the dropout rates. Another way of dropout reduction (in general mental health care) might be the introduction of more strict treatment protocols. In efficacy studies where the treatment tends to follow more strict protocols (with respect to both contents and length), the dropout percentages were clearly lower than in effectiveness studies. This might aid patients to complete therapy because they know what to expect. The study of Luk et al. (2001) supports this line of thinking; parents that experienced therapy as less organized had a higher chance at dropout.

With respect to one important treatment participation barrier, i.e., the quality of the relationship, most studies on the therapeutic relationship only investigated the parents' perceptions and not the child's perception. Only a few studies compared the quality of the relationship between the therapist and the patient with the quality of the relationship between the therapist and the parents and its influence on dropout. Different instruments were used to measure the therapeutic alliance. In all effectiveness studies, the parents and in one study, the child) rated the quality of the alliance on a short questionnaire after therapy had ended (e.g., on a subscale of the BTPS or by another questionnaire). In all efficacy studies where the therapeutic alliance was studied, an observer rated the quality of the alliance using video tapes of one of the first sessions. It is unclear, whether observers can correctly indicate what the child or parent actually thinks of the therapeutic relationship, or whether parents can recall afterwards what they thought of the therapeutic relationship during therapy. It is therefore advisable to use an instrument that gives session-to-session information on the therapeutic relationship, such as the Session Rating Scale (B.L.; Duncan et al., 2003; S. D. Miller & Duncan, 2004; S. D. Miller, Duncan, Brown, Sorrell, & Chalk, 2006), in the future. In addition, it is advisable to use both the parent

version and the child version of this or a similar instrument, in order to get both the child's or adolescent's and the parent's perspective on the quality of the therapeutic relationship. It appears that in general, there is a lack of studies on the child's perception of therapy. In therapy with children, the parent might indeed be the one who decides whether to continue therapy. But in therapy with adolescents, especially the older ones, parents are often only involved in certain elements of therapy or are not involved at all. As follows, in these cases adolescents might be the ones who decide whether to continue therapy. As our meta-analytic review shows, the adolescent patient is hardly used as a potential informant. We therefore advise that there is a focus on adolescent patients in therapy dropout studies in the future.

With respect to the dropout definition being used, it is really important for researchers to be aware of the impact of the chosen definition. Indeed, the results on the barriers experienced during treatment indicate that parents might have different ideas to the therapist on whether their child has already benefited enough from therapy. For instance, when the parent thinks the child does not need therapy anymore, but the therapist thinks that additional therapy is needed, it is uncertain whether these patients should be counted as dropouts or completers. In most studies until now, these patients were seen as dropouts because the opinion of the therapist was used as the criterion in the dropout definition. It might therefore be interesting to use both the opinion of the therapist, as well as that of the parent and adolescent patient to define dropout in future studies. When this is done in combination with an instrument to measure the increase or decrease in psychiatric problems, or it is taken into account whether therapy goals are reached, a more accurate assessment of who is a 'real' dropout and who is not will be created.