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Attrition from School-Based Behavioral Parent Training Programs A Meta-Analytic Review

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Attrition from School-Based Behavioral Parent Training Programs

A Meta-Analytic Review

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DEDICATION

I would like to dedicate this to my mom and papa. Without their constant support in all aspects of my life I would not be where I am at today. La vie est belle.

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Abstract

Currently, very little is understood regarding the effectiveness of school-based Behavioral Parent Training (BPT) programs or associated attrition rates. The goal of the current study is to examine the effectiveness of school-based BPT programs, associated attrition rates, and possible moderator variables related to attrition. Searches within the databases EBSCOhost were conducted to find BPT programs located at schools as well as the associated attrition rates for each individual study. Mean associated attrition rates were calculated using the software Comprehensive Meta-Analysis. The mean weighted attrition rate across all trials of school-based studies was 42.2%. Significant moderators were also found to increase the risk of attrition in this study. For instance, interventions that were preventative or delivered at a Tier I level, were individually delivered, involved participants from non-disadvantaged backgrounds and targeted behaviors classified as mixed/comorbid. Additionally, the number of sessions and the average age of child/parent moderated the weighted associated attrition rate. Insignificant results were found for program provider and caregiver attending. Comparisons between results from this study and the clinic-based literature are discussed as well as directions for future research.

Keywords: behavioral parent training, schools, school-based, attrition, attrition rates

Attrition from School-Based Behavioral Parent Training Programs: A Meta-Analytic Review

In a given year approximately 13-20% of children will be diagnosed with a mental health disorder (Perou, et al., 2013) and among those children, the most prevalent disorders are Attention-deficit/hyperactivity (8.8 %) or a behavior disorder (6.3%) (Blanchard, Gurka, & Blackman, 2006). Early identification of these disruptive behaviors is crucial to halt the trajectory toward more severe behavior problems. Clinic-based behavioral parent training (BPT) provides this opportunity by teaching parents behavior modification techniques to effectively manage and reduce maladaptive behavior in children (Barlow & Stewart-Brown, 2000; Kaminski, Valle, Filene, & Boyle, 2008). Even though BPT has consistently demonstrated success as an intervention for disruptive behavior disorders, most programs to date have been clinic-based and yielded attrition rates ranging from 40-to-60% (Armbruster, & Kazdin, 1994; Chacko et al., 2016; Kazdin, 1996). Furthermore, clinic-based programs are often plagued with certain barriers to treatment (i.e. accessibility to services), making it difficult for in-need families to receive vital services. However, to overcome this challenge, an emerging body of research has demonstrated that schools can provide mental and behavioral health services to those who would not have received it otherwise (Owens et al., 2005). Utilizing schools as an avenue to provide mental health services can be beneficial for early intervention given that school-age is often when behavior problems become atypical (Campbell, 1995; Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007). Additionally, parents and teachers can more readily access training for addressing mental and behavioral health in schools because of the relative ease accessing services.

Adverse Outcomes Related to Untreated Challenging Behaviors

Research suggests that untreated problem behavior can affect a range of youth functioning including but not limited to persistence of challenging behaviors into adulthood (Baillargeon et al., 2007; Campbell, 1995), social instability (Powell, Dunlap, & Fox, 2006), academic delays (Brennan, Shaw, Dishion, & Wilson, 2012), interpersonal problems (Keane, & Calkins, 2004), mental health concerns (Odgers et al., 2007), unstable working careers, as well as increased risk for criminal behavior and arrest in adulthood (Messer, Maughan, Quinton, & Taylor, 2004; Odgers et al., 2008; Pulkkinen & Pitkänen, 1993). In addition to the harmful impact disruptive behavior can have on the individual, behavioral problems can cause stressors, including a financial and emotional burden within the family unit. For example, preschool children with behavior problems are removed from early childhood programs 34 times more often than children in elementary or high school (Breitenstein et al., 2007). Removal from early childhood settings is not only disruptive to the child's learning but also poses challenges for working parents who must find alternative placements while the child is excluded from school due to problem behavior (Breitenstein et al., 2007). Often parents are forced to stay at home themselves, taking an unnecessary absence from work leading to a loss in needed income or, worse, termination from employment (Breitenstein et al., 2007).

Untreated challenging behaviors in youth can become even more costly to parents in later years. It is estimated that older children with behavioral problems meeting criteria for Conduct Disorder can cost parents up to $14,000 in income loss over a six-year period due to paying for special services (inpatient or outpatient mental health centers) or infractions with the police (Foster & Jones, 2005). The costs of these youth are associated with a heavy financial burden to society estimated to be 10 times more (primarily due to criminal activity as well as educational,

health, or social services) than those without significant challenging behaviors (Scott, Knapp, Henderson, & Maughan, 2001).

Additionally, research suggests that these youths later struggle with relationships by potentially being involved in domestic violence or divorce, may be at greater risk for chronic health issues, and may be more likely to engage in criminal acts – all of which increase fiscal impacts on society (Scott et al., 2001). When examining criminal behaviors alone, there are an estimated five to six billion dollars spent annually on juvenile detention centers (Justice Policy Institute, 2009). Unfortunately, these programs often do not remediate problem behavior, and these youths go on to be further at-risk for recidivating or later entering the prison system in adulthood (Cottle, Lee, & Heilbrun, 2001). Given the high stakes involved with behavior problems going untreated, it becomes imperative that BPT programs are accessible for families and that those who enter the programs realize the full potential benefits.

The Developmental Trajectory of Challenging Behaviors in Youth

Even though frequent and intensive behavior problems can act as a prerequisite for developing more serious conditions such as Attention-Deficit/Hyperactivity Disorder (AD/HD), Conduct Disorder (CD), and Oppositional Defiant Disorder (ODD), a parent should recognize that challenging behaviors in the early childhood years are an important facet for developmental learning and are often considered relatively normative (Campbell, 1995; Hong, Tillman, & Luby, 2015; Loeber, Green, Lahey, Frick, & McBurnett, 2000). For instance, a spike in problem behavior occurs around the age of three, resulting from the child attempting to gain independence from caregivers (Peng et al., 2016), and a misunderstanding on the part of adults of what is considered normative may result in unrealistic expectations of child behavior (Kaler & Kopp, 1990; Tremblay, 2010). These challenging behaviors for a majority of younger children

become atypical over time due to the natural maturation of learning prosocial alternative actions throughout development (Broidy et al., 2003; Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Tremblay, 2010). As an example, Côté et al. (2006) found 52.2% of children who occasionally participated in physically aggressive behaviors in toddlerhood displayed occasional use by 11 years old compared to the small 16.6% of children who followed more of a high stable trajectory.

Understanding the developmental trajectory of challenging behaviors can be critical in identifying the deeper underlying explanations for families that leave BPT programs prematurely. Children establish their behavioral repertoires and histories after receiving reinforcement from external sources in which parents are the primary influence (Maccoby, 1992). It stands to reason that, as children develop, their history of reinforcement for problem behaviors as well as the parents' own history of managing challenging behaviors will become further established and possibly more challenging to change. As such, it may be more difficult for caregivers of older youth to change not only their child's challenging behaviors but the parent's own habits related to managing these behaviors. This further underscores the need for early intervention as well as ensuring all children in need can gain access to services.

Risk Factors for Challenging Behaviors in Youth

Identifying certain risk factors commonly associated with the development of more problematic challenging behavior is imperative so that researchers can provide the most appropriate intervention. Generally, risk factors can be classified into the categories: the caregiver relationship, child attributes, and socioeconomic/demographic characteristics (Loeber, Burke, & Pardini, 2009; Stormont, 2002).

Although several risk factors have been identified, research has noted the most common risk factor in the development of child behavior problems is parent behavior. The parent-child bond is the first relationship a child will experience during early development and plays a vital role in how the child learns to properly behave. Parent disposition is linked to parental response to challenging behaviors. Specifically, parents with a negative affect (i.e. hostility, irritability) are prone to using harsh parenting strategies, causing a strain in the parent-child relationship, and promoting the development of disruptive behavior problems in the child (Gershoff, 2002; Gershoff, et al., 2012; Heberle, Thomas, Wagmiller, Briggs-Gowan, & Carter, 2014; Rueger, Katz, Risser, & Lovejoy, 2011). Children who engage in disruptive behavior in response to this type of parenting and parents who continue to practice these disciplines fall victim to mutually reinforcing one another's negative behavior (Lerner, Lewin-Bizan, & Warren, 2011; Pardini, Fite, & Burke, 2008; Patterson, 1986). Caregivers who are a part of certain sociodemographic classifications (i.e. sex of parent, age, single parent), are afflicted with personal psychopathology, have chronic stress, or live in a disadvantaged situation are more prone to utilizing problematic parenting strategies to reduce child behavior problems (Brody, Murry, Kim, & Brown, 2002; Conger & Donnellan, 2007; Harvey, Stoessel, & Herbert, 2011; McLoyd, 1998). In addition to treatment outcome, these factors influence attrition rates associated with BPT programs. Assessing for and monitoring these risk factors can be imperative for professionals who implement BPT to support families in staying in treatment through the end.

Additionally, the child's specific temperamental attributes (i.e. fearlessness and poor emotional regulation) have been identified as risk factors for disruptive behaviors (Barker, Oliver, Viding, Salekin, & Maughan, 2011; Trentacosta & Shaw, 2009). Difficulties with self-regulation becomes a challenge for children to cope with stressful situations leading to explosive

behavior (Barker et al., 2011). While fearlessness, characterized by heightened boldness in new situations and lack of sensitivity to punishment, can increase the propensity for conduct problems later in life (Barker et al., 2011). Lastly, there is evidence that the age of onset for child disruptive behavior can indicate future behavioral problems (Thompson et al., 2011; Tolan, Gorman-Smith, & Loeber, 2000). Literature has not identified a set critical point to distinguish the age of onset by which behaviors become symptomatic of a more chronic, life-course persistent path. However, typically a "spike" in challenging behaviors occurs around the age of 4 then declines and affects only a small portion of the population once the child begins formal schooling (Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Odgers et al., 2008; Thompson et al., 2011). The current literature recommends that parents and professionals closely monitor children whose challenging behaviors have an early onset demonstrating a rapid progression of these factors, as it may be associated with a more chronic developmental path for challenging behaviors (Tolan et al., 2000).

Lastly, a cumulative risk model is helpful when examining broader systems-level factors associated with risk for developing challenging behaviors (Shaw & Shellebey, 2014). Evans (2004) details the damaging effects adverse environmental situations (i.e., chaotic households, little social support) have on a child's physical, socioemotional and cognitive well-being. In relation to the development of disruptive behavior, living in a disadvantaged or low-resource neighborhood can exponentially increase the risk of developing challenging behaviors when paired with parent-reported family disadvantage (sociodemographic factors), exposure to violence/conflict, parents with depressive symptoms, and negative parenting behavior (Briggs-Gowan, Carter, Skuban, & Horwitz , 2001; Heberle et al., 2014).

Behavioral Parent Training Programs

As discussed previously, the continuation of disruptive behavior in children is reinforced by the escalation of harsh disciplinary actions on the part of the caregiver (Patterson, 1986). To address this constructed negative parent-child relationship, BPT programs were designed to educate parents with more effective techniques to manage and reduce a child's disruptive behavior. Parents who are engaged in BPT are taught to encourage the social/emotional development of children, as well as how to utilize non-physical disciplinary techniques aimed at restoring the parent-child bond (Kaminski et al., 2008; Webster-Stratton, Reid, & Hammond, 2001). The empirical background that justifies this approach to discipline is grounded in the principles of social learning theory and behavior modification such that child behaviors are viewed as resulting from interactions with parents who act as mediators in this functional relationship (O'Dell, 1974; Sameroff, 2010).

In addition to reducing challenging behavior in children, there is evidence to suggest that these programs may offer other corollary benefits including stress reduction for parents and improved confidence in personal parenting abilities (Kaminski et al., 2008). This can be beneficial since higher stress levels can be associated with increased use of negative parenting techniques increasing the risk of dropping out of treatment (Conger et al., 2002; Ingoldsby, 2010). Finally, BPT programs have demonstrated effectiveness in addressing a range of challenging behaviors including Attention-Deficit/Hyperactivity-Disorder (Gerdes, Hack, & Schneider, 2012), antisocial behavior (Barrera et. al., 2002) and conduct problems (Barrera et al., 2002; Eyberg, Nelson, & Boggs, 2008).

Previous Meta-Analytic Reviews Examining Effectiveness of BPT

Despite consistently demonstrated positive effects for clinic-based BPT programs, studies examining the effectiveness of BPT programs often do not report attrition rates of programs or examine why families are leaving BPT programs. The paucity of research in this area suggests caution in interpreting the results of such programs and limitations in our understanding of who is currently benefiting most from this programming and what families' practitioners are struggling to reach with our interventions. Previous meta-analytic reviews in this area (see Lundahl, Risser, & Lovejoy, 2006; Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; Serketich & Dumas, 1996) provide limited clarity regarding the effectiveness of BPT programs as well as possible moderators that influence the effectiveness of these programs.

Serketich and Dumas (1996) performed a meta-analytic review of BPT programs that aimed to modify child antisocial behavior that occurred within the home and school yielding an overall child outcome effect size of $d = 0.86$. The focus of this meta-analysis was specifically for preschool and/or elementary school aged children who demonstrated at least one antisocial behavior (i.e. aggression, temper tantrums or noncompliance). The overall results of this review suggest that parents who participate in BPT programs enjoy significant improvements in child behavior and parenting skills compared to families in the control condition (Serketich & Dumas, 1996). Notably, BPT programs were seen to reduce child antisocial behavior from clinically significant levels to relatively normative levels of challenging behaviors (Serketich & Dumas, 1996). Moderation analyses were not conducted in this particular meta-analysis. However, older children (with a mean age of 10.1 years old) were seen to benefit more from BPT programs. Finally, the authors of this meta-analysis note that the results of their review should be

interpreted with caution given the lack of information on the number of participants who prematurely terminated from the program prior to completion.

Similarly, Maughan, Christiansen, Jenson, Olympia, and Clark's (2005) meta-analysis examined the generalized effect of BPT in addition to conducting moderation analyses. Weighted effect sizes were reported as $d = 0.3$ for between-subjects design studies and $d = 0.68$ for within-subjects design studies. This discrepancy in effect sizes relative to the Serketich and Dumas (1996) meta-analysis appears to be due to the difference in statistical comparison since Maughan et al.'s (2005) study performed separate analyses for between-subjects designs, within-subjects designs, and single-subject designs as well as different inclusion criteria was used within both studies.More specifically, Maughan et al. (2005) limited the scope of their meta-analytic review to BPT only, while Serketich and Dumas (1996) also included studies similar to BPT in their analysis. In addition to examining overall effectiveness, Maughan et al. (2005) conducted moderation analyses to better understand variables influencing the overall effectiveness of the studies. Age of child, method of intervention (i.e. parent education, individual consultation, and controlled learning), and number of treatment sessions were identified as moderators (Maughan et al., 2005). When considering the age of the child whose parents participated in the intervention, studies that targeted children ages three-to-five and ages nine-to-eleven had the largest effect sizes among between-subject design studies, while the ages nine-to-eleven and six-to-eight years old yielded significant effect sizes for single-subject designs (Maughan et al., 2005). Method of intervention was identified as a moderator for between-subjects design and within-subjects design, in that studies that delivered the intervention via individual consultation or controlled learning were deemed as more effective for between-subjects design studies, but controlled learning and group education was more effective for within-subject design studies

(Maughan et al., 2005). Lastly, studies with one-to-five sessions yielded the highest effect size when examining between-subject design studies (Maughan et al., 2005). Overall, while the Maughan et al. (2005) review yielded lower overall effect sizes when compared to the Serketich and Dumas (1996) review, the effect sizes found suggest BPT is an effective intervention for reducing behavioral problems in children. Additionally, this meta-analytic review was the first to examine potential moderators that influence certain outcomes. It was suggested that the age of the child whose behavior is being targeted by the BPT program as well as the nature of the intervention (i.e., intervention length and delivery approach) may make a difference in who receives the maximum benefit of the intervention.

More recently, Lundahl, Risser, and Lovejoy (2006) examined not only the overall effectiveness of BPT programs but also drew comparisons to non-behavioral interventions aimed at reducing disruptive behavior in children. The immediate effects of parent training yielded similar effects on child behavior across behavioral (d = 0.42) and non-behavioral (d = 0.44) programs (Lundahl et al., 2006). The Lundahl et al. (2006) study concluded that BPT yielded positive long-term maintenance effects for improved child behavior, parent behavior and parental perceptions at the one-year follow-up period when compared to families who did not receive treatment. Because of the relatively few studies identified as non-behavioral (N = 9), moderation analyses were limited to behavioral programs only. The authors examined whether economically disadvantaged families, children with higher clinical significant symptoms prior to treatment, and delivery of intervention were found to influence treatment outcome (Lundahl et al., 2006). Although families from economically disadvantaged backgrounds did not enjoy the same benefits of treatment when compared to their non-disadvantaged counterparts, it appears that using individualized treatment delivery for disadvantaged families can reduce the difference in

treatment outcome benefit (Lundahl et al., 2006). While the Serketich & Dumas (1996) meta-analysis found a positive correlation between the behaviors of older youth (around 10 years old) and reductions in problem behavior, Lundahl et al. (2006) did not find the age of the youth targeted for intervention to influence outcome.

In conclusion, although several meta-analyses investigating the effectiveness of BPT suggest improvements in child and parent behavior that is maintained over time, conclusions regarding moderator variables including child age, program delivery variables, and parent characteristics should be considered preliminary and warrant further investigation.

Behavioral Parent Training Programs Delivered in School Settings

Despite the positive treatment outcomes from clinic-based BPT programs, barriers to treatment (e.g. accessibility, distance to clinics, and more) are often cited as challenges for families seeking treatment (Dumka, Garza, Roosa, & Stoerzinger, 1997; Kazdin et al., 1997; Werba, Eyberg, Boggs, & Algina, 2006). Given these barriers in access to interventions in community settings, schools may serve as the ideal option for mental health service delivery. Schools are centrally located for families and have demonstrated the capability to serve as a critical conduit for the provision of mental and behavioral health services. For example, approximately 60% of children are first identified as needing a mental health service through school (Farmer, Burns, Phillips, Angold, & Costello, 2003), and around 75% of youth will receive mental health services within the school setting (Owens et al., 2005). Shepard and Carlson (2003) produced a review article on various school-based prevention programs that incorporated some form of parental involvement. In this preliminary analysis of school-based BPT programs, researchers discussed the success of having parent involvement within multidimensional school-based interventions (Shepard & Carlson, 2003). Similarly, Carlson and

Christenson's (2005) special issue referenced studies that demonstrated empirical support for school-based programs that effectively improve a child's academics and behavior while also enhancing collaboration between the family and school.

More recently, Raffaele Mendez, Ogg, Loker, & Fefer (2013) provided a more detailed review of the positive impact BPT programs have when delivered within the school setting. Raffaele Mendez et al. (2013) identified 39 interventions categorized by tiered levels of service delivery that revolve around prevention of substance abuse and reducing externalizing behavior problems. While this review did not evaluate the overall effect sizes of program outcomes similar to previous clinic-based meta-analyses, the review provided a condensed format of resources identifying specific interventions that practicing school psychologists can use. Within school-based interventions, most were group-based parent training, only focused on one level of service delivery (i.e. Tier I, II, or III), and were preventative in nature for middle school students (Raffaele Mendez et al., 2013). As part of the inclusion criteria, researchers examined studies from published journals to ensure that those provided in the review had undergone rigorous peer review. Regardless of the indicated support for school-based interventions, to date, no meta-analytic reviews exist examining the effectiveness of BPT programs in the school setting despite a growing number of studies in this area (see Bates & Carlson, 2005; Kern et al., 2007; Serketich & Dumas, 1996; Webster-Stratton, Reid, & Hammond, 2004).

School-based BPT programs provide a more encompassing solution for behavior problems by not only reducing common barriers to intervention that families face in community-based services, but by addressing challenging behaviors in the classroom. Many school-based BPT programs include a teacher training component with exposure to behavior modification material similar to what parents receive. Providing teacher training can be advantageous given

that teachers spend a significant amount of time with the children during the day and because it is estimated that approximately 20% of children in a classroom will engage in a disruptive behavior at a given time (Owens et al., 2005; Stefan & Miclea, 2013). Children who engage in disruptive behavior in the classroom can distract classmates from learning the intended material and the environment can worsen if the teacher is unable to effectively and efficiently manage the behavior. Teachers who are not equipped with the training necessary for managing behaviors in the classroom are likely to resort to using disciplinary techniques that remove the child from the classroom (i.e. detention, suspensions). Removing the child from the classroom may be an immediate solution to address the disruption, but research has illustrated that this approach not only means a loss of instructional time for the student, but that these discipline approaches are also unsuccessful at reducing future challenging behaviors in children (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005; Mowen & Brent, 2016). Furthermore, classroom management has been identified as a skillset teachers feel most unprepared for (Melnick & Meister, 2008). Yet, teachers are not being adequately supported with the necessary comprehensive training required to manage a classroom (Greenberg, Putman, Walsh, 2004), which can be problematic since dealing with disruptive students leads to high rates of burnout among teachers (Friedman 1995). Evidence is growing that illustrates school-based BPT programs may outperform clinic-based programs by not only playing a critical role in changing challenging behaviors in the home but may serve to address challenging behaviors in the classroom – a critical need in schools.

Attrition from Behavioral Parent Training Programs

Even with the noted success of BPT programs, attrition rates ranging from 40-60% in clinic-based studies are concerning especially given how little is understood about why so many families may be leaving treatment early (Chacko et al., 2016; Kazdin, 1996; Armbruster, &

Kazdin, 1994). Regardless of whether or how attrition is reported, families who leave before completing BPT programs do not reap the promised therapeutic gains of improved child behavior or parent-child relationships when compared to families who complete the treatment (Assemany & McIntosh, 2002: Kazdin, 1996; Maughan et al., 2005; Serketich, & Dumas, 1996). The benefits of treatment completion are many, including a greater positive change in child behavior, reduced parent-reported stress levels, improved internal locus of control over the child's behavior, as well as general satisfaction regarding participation in the program and the perceived outcome (Boggs et al., 2005).

It is noteworthy that attrition rates are often not reported, which can be limiting when trying to identify why individuals are leaving. Chacko et al. (2016) reported that the inclusion of attrition or engagement data was found in approximately 47.8% of studies. In our review of 24 school-based behavioral parent training studies, only 14 (58%) of these studies reported attrition rates.

Attrition or engagement data can be further broken down into three subsets: recruitment attrition (those who refuse to participate in screening for inclusion criteria or who met criteria but did not participate), attrition from BPT (those who dropped out before starting sessions or attended at least one session but did not complete full treatment), or attendance in BPT (sessions that were attended by the average participant). The various forms of evaluating attrition could potentially yield different engagement outcomes impacting the overall measurement of effectiveness and making it difficult to assess attrition given the lack of a consistent operational definition (Barrett et al., 2008). Importantly, universal agreement on an empirically based definition has yet to be achieved, but attrition has been broadly described as "premature" termination from treatment (Kazdin, 1996). Dropout during enrollment creates difficulties in

satisfactorily reaching the targeted populations, given that the data reported is then based on those who terminate the intervention before attending the first session. Though an important factor to consider, enrollment dropout does not necessarily have a direct impact on evaluating the effectiveness of an intervention, given that families never accessed any portions of the treatment. However, dropout reported in terms of attendance or participation in the intervention might lend itself better to exploring the reasons participants consider treatment acceptable or appropriate. For the purposes of the current study, attrition will be defined as participants leaving treatment prematurely after the first session.

Given the previously described deleterious outcomes associated with untreated behavior problems, it is essential that attrition rates be more consistently defined and reported and that research expands our understanding of when and why these interventions are likely failing to efficiently address the needs of the targeted population.

Factors That Contribute to Attrition

The meta-analysis conducted by Reyno & McGrath (2006) specifically reviewed predictors of efficacy within parent training programs and did correlational analyses of variables associated with attrition. Family income, education/occupation, barriers to treatment, marital satisfaction, maternal mental health, and parental stress yielded small effects in terms of influence on drop out and, notably, researchers did not review the direction of these associations (Reyno & McGrath, 2006). While further meta-analytic reviews are needed to clarify the nature of these relationships across studies, research has begun to explore these variables in greater depth. This literature can be divided into research examining individualized or family factors related to attrition as well as programmatic factors related to attrition.

Factors that Contribute to Attrition: Child and Caregiver Characteristic.

Socioeconomic factors, as well as family cohesion, have been previously identified as contributing factors related to premature termination (Armbruster & Fallon, 1994; Lundahl et al., 2006). It is important to clarify that socioeconomic status (SES) can be defined by a variety of factors (i.e., occupation, education level, income, marital status, gender, membership in a minority group), making comparisons across studies that examine this variable difficult. The most commonly used metric for SES is a combination of education/occupation level or income, and this combination has shown evidence for being a significant predictor for premature termination (Reyno & McGarth, 2006). It has been hypothesized that parents who have limited social support and come from lower resource backgrounds face a combined barrier to treatment (Baker, Arnold, & Meagher, 2011). It then stands to reason that parents who find themselves in these circumstances often do not have another caregiver to rely on for financial support or to assist with the scheduling/coordination of activities such as parent training. With significant economic pressures, families of low resource standing may need to prioritize other more pressing situations in their lives, thus influencing the decision to leave programs prematurely. On a related note, parents who work hourly jobs may not be able to take time off to participate in treatment sessions. In fact, time constraints including work schedule conflicts at the time of BPT sessions are often cited as the most common explanation for not attending a parent training session (Garvey, Julion, Fogg, Kratovil, & Gross, 2006). Studies have also found that parents who have less time constraints tend to benefit more from BPT programs, further supporting this claim (Dumas, Nissley-Tsiopinis, & Moreland, 2007). While many of these situational variables seem challenging to overcome, it is important that practitioners attend to these issues and create

plausible alternatives such as parent training in workplaces or offering childcare for families attending parent training sessions to increase treatment completion.

Research has also examined parent characteristics that may contribute to attrition rates, including caregiver age and psychological health. Previous literature suggests that maternal age may serve as a moderator for premature termination in clinic-based BPT studies, where older mothers are more likely to complete the intervention versus younger mothers (Kazdin et al., 1993; Kazdin & Mazurick, 1994; Werba et al., 2006). It is hypothesized that older mothers have been accustomed to various life experiences and learned techniques that protect them from certain stressors that could otherwise influence leaving a program before completion. Moreover, previous research has supported the notion that mothers who have higher anxiety or depression symptoms prior to treatment tend to be at greater risk for premature program termination (Abrahamse et al., 2016; Kazdin & Wassell, 2000). BPT interventions can be challenging and are not necessarily immediately reinforcing. Improvement is a slow process, which results in a need to manage caregiver expectations if instant results are not seen. However, it should be noted that though a parent's psychopathology can interfere with the ability to complete treatment, it does not hinder the ability to acquire the skills or exhibit a positive change after participating in a BPT intervention (Timmer et al., 2011). Finally, research also suggests that single parents (typically mothers who predominantly participate in BPT programs) are at a higher risk for premature termination in BPT programs, which is hypothesized to be the result of limited social support and personal psychological health problems (Cairney, Boyle, Offord, & Racine, 2003; Chacko et al., 2008; Kazdin &Mazurick, 1994).

In addition to caregiver variables, the research investigating potential moderators influencing the effectiveness of BPT programs also examines child characteristics that may relate

to premature termination from participation in BPT programs. Previous research suggests increased severity of child behavior problems prior to treatment can be a predictor of attrition (Kazdin, 1990; Kazdin & Mazurick, 1994). Earlier work by Kazdin (1990) found that mothers who leave BPT interventions prior to completion expressed frustration with the slow process of adjustment. This may be compounded by increased reporting of depression, a lack of confidence in parenting skills, as well as a lack of emotional connection with the child – all of which can be exacerbated when the child's behavior is severe (Kazdin, 1990). However, a more recent meta-analysis on the predictors of parent training efficacy (Reyno & McGrath, 2006) suggests that severity of child behavior is only a small effect in relation to attrition. Severity of child behavior symptoms may serve as a more salient predictor of attrition when considered in conjunction with a lack of social support or parents struggling with maintaining mental health. Finally, research has also explored the age of the youth whose challenging behaviors are being targeted as a potential moderator for premature termination from BPT programs. More specifically, Abrahamse and colleagues (2016) evaluated risk factors for attrition from a Parent Child Interaction Therapy (PCIT) program, suggesting that mothers with younger children are at a decreased risk for dropping out prematurely given that the PCIT program exercises are designed to match the cognitive development of younger children. In contrast, older children try to maintain a sense of independence from parents, thus making it more difficult for caregivers to be successful at implementing parenting skills taught in the PCIT program. Further research on various other programs utilizing BPT is needed to better understand how the age of youth being targeted for treatment may be impacting treatment participation.

In conclusion, while many parent and child variables have received preliminary examination in the literature many questions remain and hypotheses abound. Further research is

needed to elucidate how these variables moderate treatment engagement or premature termination and how practitioners may account for them in their treatment implementation.

Factors that Contribute to Attrition: Program Characteristics. Similar to research investigating child and caregiver characteristics, intervention or program-related variables associated with attrition from BPT have received relatively little attention in the literature. Research in this area has investigated how the format or method of treatment delivery (i.e. group-based or individual-based) and session length influence attrition rates. Practitioners designing or selecting BPT intervention programs are often faced with a challenging decision: whether an individualized program that can be tailored to the family's needs and may offer more flexibility (Chacko et al., 2012), which is preferred, or to a group-based delivered intervention which may be more efficient in meeting the needs of many without compromising effectiveness (Webster-Stratton, 1984). In schools, services are often classified as being delivered in tiers (i.e. Tier I, Tier II, or Tier III). Tier I programs are thought of as preventative in nature, composing of interventions that reach every child and family regardless of whether the child is exhibiting behavioral problems. Tier II programs are typically designed as group-based interventions for youth in the early stages of symptom development or whose needs are more significant than children at the Tier I level. Finally, Tier III programs are designed for children who exhibit clinically significant behavior problems and may utilize individualized treatment approaches. While the tiers are generally conceptualized in terms of intervention delivery, they may also serve as a proxy for the progression of youth problem behavior severity. Method of service delivery conceptualized in this way has yet to be examined as a potential moderator of premature termination from treatment. Although the nature of which format decreases premature dropout is not well understood, method of treatment delivery does appear to be associated with program

outcome (Lundhal et al., 2006; Maughan et al., 2005). Finally, the length of sessions has the potential to act as a factor to influence attrition rates given that interventions perceived as overly lengthy may appear demanding or intrusive resulting in reduced engagement (Heinrichs, Bertram, Kuschel, & Halweg, 2005). Session length, while hypothesized to influence treatment attrition, has yet to be examined in the literature as a potential moderator. Overall, there can be a multitude of different factors contributing to attrition within BPT programs. To address these perceived challenges, it is important to understand the nature of factors related to attrition so that programs can be improved to correct them.

Need for a Meta-Analysis

Meta-analyses examining clinic-based BPT programs have demonstrated effectiveness in reducing child behavior problems and the use of harsh parenting practices (Lundahl et al., 2006; Maughan et al., 2005; Serketich & Dumas, 1996). No meta-analytic reviews to date have examined the effectiveness of school-based BPT programs. As outlined throughout this paper, attrition from BPT programs also remains a concern for practitioners seeking to improve challenging behaviors in youth (Chacko et al., 2016; Kazdin, 1996; Armbruster, & Kazdin, 1994). Within the school-based studies domain, multiple reviews exist that examine mental health interventions involving parents within the school setting, yet none have quantified the effectiveness of these programs (Carlson & Christenson, 2005: Raffaele Mendez, Ogg, Loker, & Fefer, 2013; Shepard & Carlson, 2003). Limited research exists to inform variables that may influence attrition from clinic-based BPT programs, and no research to date has examined attrition or variables related to attrition from school-based BPT programs.

Current Study

Given the current limitations in the literature, a meta-analytic review of 14 school-based BPT programs was conducted to examine attrition rates from these studies. This study seeks to better understand the relationship between caregiver and child characteristics as well as program-related variables that may be related to attrition from school-based BPT programs. Based on the review of the literature, it is expected that programs classified as Tier III will be associated with higher attrition rates, as this level includes children with more severe behavior problems. It is also expected that associated attrition rates will be different for group-based interventions when compared to individually delivered interventions as well as lengthier treatments will be characterized with higher attrition rates. Finally, it is anticipated that non-mental health professional program providers will be associated with a higher attrition rate. Program providers are defined as those individuals who are implementing the actual training. This variable was broken down into mental health professionals (i.e. licensed psychologist, trained therapists/clinicians, professionals in a mental health field) and non-mental health professionals (i.e. parent group leaders, group facilitators, master/Ph.D. students, school personnel).

Related to child characteristics, it is hypothesized that older children (as defined by average age of children in programs) will be associated with higher attrition rates. Continuously the current study is interested in whether a certain target behavior (defined as the problematic behavior the intervention focuses on reducing) is associated with a higher attrition rate, as this has not been done before. Target behaviors from the current study fell into three categories: those diagnosed with ADHD, mixed/comorbid disorders (interventions that focused on reducing more than one specific disorder such as ADHD and OD or ADHD, ODD, and CD), or categorized as

general behavior problems (i.e. conduct problems, individualized behavior attributes or externalizing behavior).

Of the caregiver or family characteristics of interest, it is expected that families in the economically disadvantaged category will be more likely to terminate from treatment prematurely. This variable was dichotomized into either disadvantaged or non-disadvantaged similarly to the methods used by Leijten, Raaijmakers, de Castro, and Matthys (2013) as most studies do not use a common manner of reporting. Additionally, it is expected that younger parents (defined as caregiver age) will be associated with higher attrition rates. It is also expected that caregivers attending training alone will be more likely to terminate treatment prematurely when compared to mother/father dyads who attend training together.

Methods

Search Procedures and Inclusion Criteria

Databases via EBSCOhost were searched using the keywords "parent training", "behavioral parent training", "parent management training", and "parent-child interaction therapy." Only articles that had come from peer-reviewed academic journals were used. Due to the primary goal of examining the issue of attrition, studies that did not report attrition were not included. Interventions within this review only included programs that focused on externalizing behaviors (i.e. oppositional behavior, aggressive behavior, conduct problems) as opposed to internalized (i.e. social withdrawal, fearfulness, feelings of loneliness). It is also noteworthy that this review was paired along with a similar meta-analysis involving clinic-based interventions. However, for this current study only school-based treatments were included while the other treatments were in a separate analysis. To be considered school-based, the parent training had to be held at the physical school or at a day care's location.

After the initial computer search, the reference section of previously published meta-analyses and reviews of BPT were inspected for additional studies. In total, only 24 studies were classified as school-based BPT programs with 14 studies (58%) reporting attrition data.

Study Coding

Studies that met the inclusion criteria were then coded on variables such as school or clinic-based; Tier I, Tier II, or Tier III; intervention delivery (group-based or individualized sessions); target behavior; sex of caregiver attending; average age of child; average age of parent; gender; number of sessions; family SES; attrition rate; reason for drop-out (if available); measures used; and program provider. Means and standard deviations were also pulled from outcome measures of child externalizing behavior. Primarily these were measures such as the Child Behavior Checklist (CBCL), Teacher Report Form (TRF), Eyberg Child Behavior Inventory (ECBI), and Conners Parent Rating Scale.

Statistical Analysis

The software Comprehensive Meta-Analysis was used to conduct a meta-analysis. A fixed effects model was chosen due to the theoretical assumption that there is one true effect size. A point estimate was chosen as an effect size measurement as it represents a measurement of an event frequency. A fixed effects model was utilized as it assumes that there is a theoretical true effect size. BPT programs tend to follow a uniform format across studies thus, why researchers chose this model. The "goodness-of-fit" statistic represented as $Q_{between}$ was applied to inform about the possibility of heterogeneity's presence. The I^2 statistic was reviewed as well to better understand the degree of heterogeneity within the analysis. To better understand any variance moderation analyses were conducted for categorical variables and meta-regression analyses for continuous variables.

Results

Overall Attrition

Based on a fixed-effects model, the mean weighted attrition rate across all trials was 42.2%. Further, variability in effect sizes was greater than what would be expected due to chance, $Q(15) = 251.471$, $p < .01$, suggesting the presence of possible moderator factors contributed to this effect size. Results also indicated considerable variability (I^2=94.035), suggesting that observed heterogeneity may be related to differences between studies. Separate moderation analyses were conducted to test hypotheses regarding the factors related to the overall associated attrition rate. Due to the small sample size of these studies (N= 14), it is best to consider the moderator analyses within this current study as preliminary and to interpret findings with caution. Two studies contained multiple parent training treatment groups, thus two different attrition rates were pulled, creating 16 studies for the analysis. Associated statistical data are provided in Table 1 (*see appendix).*

Level of Intervention

Three separate moderation analyses were conducted so that two groups were being compared at a time. The level of treatment was found to be a significant moderator at each level of comparison, except between Tier I versus Tier II. The results suggest that Tier I-based studies are predominately more associated with higher attrition rates, and Tier III-based studies are the least associated. When making comparisons between service delivery at Tier I and Tier II, analyses did not reveal a difference in attrition rates, $Q_{between}(1) = 0.60$, $p = 0.439$**.** The mean weighted attrition rate was higher for trials in which participants were from Tier I studies at 45.6%, relative to the rate for Tier II studies, 43.3%. When making comparisons between service delivery at Tier I and Tier III, analyses revealed a difference in attrition rates,

$Q_{between}(1)=25.13$, $p <. 01$**.** The mean weighted attrition rate was higher for trials in which participants were from Tier I studies at 45.6% relative to the rate for Tier III studies, 22.3%. When making comparisons between service delivery at Tier II and Tier III, analyses revealed a difference in attrition rates, $Q_{between}(1) = 20.01$, $p <. 01$. The mean weighted attrition rate was higher for trials in which participants were from Tier II-based studies at 43.2%, relative to the rate for Tier III studies, 22.3%.

Intervention Delivery

One study (Weiss, Harris, Caltron, & Han, 2003) identified a combined method (i.e. had individual and group-based delivered treatments) and was removed due to its inability to contribute to the analysis. Intervention delivery was found to moderate attrition rates, $Q_{between}(1) = 13.88$, $p < .01$, as the mean weighted attrition rate was higher for trials that were individually delivered, 54.9%, relative to those trials that were delivered in a group format, 40.3%. Again, caution should be taken when examining the results since only two studies were included in the individually delivered category, and thirteen were categorized as group delivery.

Program Provider

Program provider was not seen to moderate the attrition rate, $Q_{between}(1) = 3.10$, $p = 0.08$, as the mean weighted attrition rate for professionals was 44.4%, compared to non-professionals, 39.3%. Again, caution should be taken as ten studies were coded as mental health professionals. and six were coded as non-mental health professionals.

Average Age of Child

A meta-regression was conducted to examine if the average age of the child was associated with attrition rates. A meta-regression was used as opposed to a moderation analysis due to the continuous nature of the data. Analysis revealed that the average age of the child was

found to moderate attrition rate, $Q(1)= 37.63$, $p<0.01$. Based on the scatterplot (see figure 1 in appendix*)*, the results followed a positive relationship, indicating that children with an older average age were associated with higher rates of attrition.

Average Age of Parent

A meta-regression was conducted to examine if the average age of the parent was associated with attrition rates as well. Analysis revealed that the average age of the parent was found to moderate attrition rate, $Q(1) = 59.58$, $p < 0.01$. The scatterplot (see figure 2 in appendix) indicated a positive association, in that interventions with older parents were associated with higher rates of attrition.

Number of Sessions

A meta-regression was conducted to examine if length of an intervention, measured by number of total sessions, was associated with attrition rates. One study was excluded (Weiss et al., 2003) due to their lack of specifying the number of sessions within their study. The number of sessions was seen to moderate the rate of attrition, $Q = 6.24$, $p = 0.01$. The scatterplot, (see figure 3 in appendix), indicates a slight positive incline, suggesting that as the number of sessions increase, the associated attrition rates do as well.

Target Behavior

One study, Braswell et al., 1997, was removed as it was the only study coded for the mixed/comorbid category and would not contribute to the analysis. The only two categories that had studies were ADHD and general behavior problems as those were the only codes used. Analysis revealed a difference in attrition rates, $Q_{between}(1) = 14.84$, $p < 0.01$. The mean weighted attrition rate was higher for trials in which participants were from the general behavior category, 38.9%, relative to the rate for ADHD, 11.7%. However, only two studies were categorized as

ADHD, and 13 studies were categorized as general behavior problems. Thus caution should be taken when examining the results.

Socioeconomic Status

Socioeconomic status was found to moderate attrition rate, $Q_{between}(1) = 86.56$, $p < .01$, as the mean weighted attrition rate was higher for trials in which participants were from non-disadvantaged backgrounds, 62.9%, relative to studies in which participants were from disadvantaged backgrounds, 33.9%. However, results should be noted with caution, as 12 studies were classified as disadvantaged and three as non-disadvantaged.

Participating Caregivers

This factor was not seen to moderate the attrition rate, $Q_{between}(1) = 0.021$, $p = 0.88$, as the mean weighted attrition rate for trials in which mothers were the sole participant was 41.5%, relative to trials where mothers and fathers participated together, 42.0%. One study (Helfenbaum-Kun & Ortiz, 2007) identified as solely fathers attending. Thus, it was removed since it could not contribute to the analysis. Again, caution should be taken as six studies were categorized as mothers only, and nine studies were categorized as mothers and father.

Discussion

This is the first meta-analytic review examining the associated attrition rates in school-based behavior parent training programs as well as identifying potential moderators. Results indicated that the mean weighted attrition rate across all trials was 42.2% for school-based BPT programs. This rate can be considered in the lower range of typical attrition rates seen within the clinic or community-based BPT, estimated to fall between 40-60% (Armbruster, & Kazdin, 1994; Chacko et al., 2016; Kazdin, 1996; Wierzbicki and Pekarik 1993). However, a concurrent meta-analysis identified the associated attrition rates for clinic and community-based BPT to be

26.2% (Mann, in press). Increased risk for attrition in this study appears to be for interventions that were preventative or delivered at a Tier I level, were individually delivered, involved participants from non-disadvantaged backgrounds and targeted behavior classified as mixed/comorbid. Additionally, the number of sessions and the average age of child/parent were seen to moderate the weighted associated attrition rate. Nonsignificant results were found for program provider and caregiver attending.

With each level of intervention (i.e. Tier I, Tier II, and Tier III) the progression of symptoms for problem behavior intensifies, suggesting that each level works with children exhibiting increased externalizing behavior compared to the last. In clinic-based BPT interventions severity of externalizing behaviors has been linked to certain attrition rates. Thus it was assumed this study would yield similar findings with regards to level of intervention delivery (Kazdin, 1990). However, contrary to those previous findings, results here suggested that Tier I studies are associated with higher attrition rates, which does not support this study's hypothesis. Yet it should be noted that there were no statistically significant differences in associated attrition rates between Tier I and Tier II studies. A possible explanation for why higher attrition rates are associated with Tier I and Tier II studies could be that these families may not feel as compelled to continue with prevention or treatment if the child is not currently demonstrating significant symptomology. In contrast, parents who participate in interventions at Tier III are likely attempting to address intense and frequent behavior problems, thus having a greater investment in an intervention that offers a solution.

From reviews of clinic-based BPT programs, families with young children were generally more likely to complete the intervention (Abrahamse et al., 2016; Armbruster & Fallon, 1994; Armbruster & Kazdin, 1994). The current study was consistent with these findings and supported

the current hypothesis in that older children had higher rates of attrition. A possible explanation is that as youth age, their challenging behavior becomes more established along with the parents' negative parenting practices for managing these behaviors, thus making it more challenging to change both parent and child behaviors (Ruma, Burke, & Thompson, 1996). Children with more established behavioral histories may require a longer treatment time than parents expect, which can be perceived as slow improvement or an ineffective program. Perception of program ineffectiveness from parents leads to impatience and dissatisfaction, influencing premature termination (Armbruster & Kazdin, 1994). Additionally, within clinic-based studies parent age indicated a small moderation effect (Reyno & McGrath, 2006). Within the literature younger mothers leave programs prematurely at a higher rate than older mothers (Kazdin et al., 1993; Kazdin & Mazurick, 1994; Werba et al., 2006). Incorporating father's age would be beneficial, but there is little research due to the commonness of mothers participating in BPT programs more. Contrary to the literature, results from this study did not support our hypothesis but instead suggested older parents are associated with higher attrition rates. A possibility for the difference in results could be that parent age for this study was taken regardless of the sex of the parent. Data collected from this variable was taken from studies that labeled it as "parent age."

Socioeconomic status (SES) is a common risk factor for premature termination in clinic-based studies (Fernandez & Eyberg, 2009; Lavigne et al., 2010). However, results from this study indicated that non-disadvantaged families were associated with higher attrition rates, which did not support our hypothesis. Despite the difference in findings, results strengthen the assumption that school-based studies can provide access to mental health service to disadvantaged families by removing certain barriers to treatment (i.e. as location of services). Again, caution should be taken because of the variability in defining SES within the studies

gathered. Studies defined SES based on education level, income, Hollingshead index, occupational status, and unemployment. Although dichotomizing this variable made the current analysis easier, future analyses may be interested in reviewing associated attrition rates by each SES measurement method.

Research on the association between attrition rates and intervention delivery strategy (group vs. individual) is scarce within clinic-based literature. The current study's results indicated a higher associated attrition rate for interventions that were delivered individually, yet this is because only two studies were classified as such. However, the results did support the study's hypothesis. Chacko and researchers (2016) did suggest that group-based BPT may provide social support for families to encourage higher attendance rates (and possibility lower attrition rates), which can be used as a possible explanation for these results. School-based programs are predominantly group-based, though, and therefore having lower associated attrition rates is encouraging.

Increased number of sessions was seen to influence associated attrition rates, supporting the previous findings that interventions perceived as demanding and intrusive result in lower attendance rates (Heinrichs et al., 2005). This preliminary finding can be of benefit as recent research has suggested a minimum of 11 to 13 sessions need to be completed before benefit is gained (Hansen, Lambert, & Forman, 2002). Even though this study did not focus on attrition rates and effectiveness within BPT programs, professionals implementing BPT programs should be aware when designing the number of sessions. Even though these results supported the current study's hypothesis, it will be of benefit for future analyses to evaluate the "magic number" of sessions that provides therapeutic gain but that is not demanding enough to influence attrition. Lastly, the aimed target behavior in the intervention is another new potential moderating

factor. Results revealed that our hypothesis was supported in that interventions that focused on general behavior problems were associated with higher attrition rates compared to programs that concentrated on reducing ADHD symptoms. Unfortunately, this finding does not provide much insight due to the variability that is "general behavior problems." Future researchers should be more precise when defining type of target behavior to gain a better understanding of this influence.

Given the results yielded here, it is critical that researchers consider novel advancements for increasing engagement, commitment, and improving mindfulness. Despite recent attention in the literature of attrition in BPT programs, few researchers have looked into reducing this limitation. Specifically, only 12 studies with the goal of increasing attendance/adherence were identified as controlled trials of child therapies with a parent training component (Nock & Ferriter, 2005). Within the 12 studies, Nock & Ferriter (2005) categorized these methods as being implemented during the beginning of treatment or those that continued to adjust strategies throughout the entire time of a treatment. The common theme among the 12 studies was to improve parent expectations prior to beginning therapy. This can be extremely beneficial for reducing attrition rates within BPT programs if parents do not fully understand the time and effort that is required throughout the therapeutic process. Placing parents in an orientation meeting that provided more insight on the intervention did lead to better receptivity (Bonner & Everett, 1986), higher attendance at the intake appointment (Wenning & King, 1995), and fewer missed appointments/cancellations of sessions (Day & Reznikoff, 1980). However, the issue with these strategies was the inability to keep families in treatment after the first session. One successful method was in programs that employed a payment system where parents had to pay a

deposit but were reimbursed for each session/homework that was completed (Aragona, Cassady, & Drabman, 1975; Fleischman, 1979).

A practical issue with the response-cost based strategy (parents pay a deposit) can be limiting for families without much additional disposal income. It can be important for researchers to review strategies that can be plausible for all families in need regardless of socioeconomic standing. Parents from groups considered at-risk for attrition were interviewed for possible methods to increase participation, and common suggestions included: treat children and parents together during sessions, provide refreshments, address community issues (i.e. drug use or gang violence), hold meetings close to home, provide child care for younger children, and encourage social support (cooperation with other parents in similar situations) (Dumka et al., 1997). One specific example of a successful strategy is from The Participant Enhancement Intervention (Nock & Kazdin, 2005), in which psychoeducation was incorporated as an intervention for parents regarding the importance of remaining engaged in the intervention, prompting self-motivational statements within treatment, and collaborating with parents to overcome barriers. The results showed significant improvements in parental motivation to engage in treatment (Nock & Kazdin, 2005). Similarly, Chacko and colleagues (2012) found that families in the traditional BPT intervention were sixteen times more likely to drop out compared to the improved program Strategies to Enhance Positive Parenting (STEPP). Success within the STEPP program was due to the combined effort of a traditional group-based intervention for parents and one for children, while also individualizing each family's needs by assessing potential barriers to treatment, the mother's expectations for the program and her cognitions regarding her own parenting behavior during an intake session.

A last and important new advancement in the work of enhancing BPT retention within programs revolves around improving parents' attributions/personal cognitions. There is value in programs that incorporate intervention strategies that revolve around teaching parents to recognize personal negative thoughts to eliminate feelings of incompetence since parental confidence, knowledge and belief in a program can lead to higher involvement (Solish & Perry, 2008). The addition of a cognitive behavioral component for parents has demonstrated the potential to reduce normally high attrition rates without deterring the effectiveness of BPT programs (Durand, Hieneman, Clarke, Wang, & Rinaldi, 2013). A big strength of this program was that only parents who measured high on parental pessimism were included, and participants were never given feedback throughout the program. The lack of feedback illustrates the power of the cognitive behavioral component to serve as an internal support system for parents who may get discouraged easily. These new enhancements demonstrate promising improvements for combating the rising issues with engagement and retention in BPT programs. It is critical that practitioners plan for attrition and consider building in these enhancements at the onset of treatment to ensure success for all families attempting to address challenging behaviors in children.

Limitations and Future Directions

In summary, these results suggest that school-based BPT programs are associated with similarly high attrition rates seen in clinic studies as well as the existence of certain moderators. The current study is a good addition to the literature, as there has not been any examination of associated attrition rates for school-based BPT programs. Despite these novel findings, some limitations should be reviewed. First, a small sample size was reported and should be examined with caution, which was contributed by the general lack of reporting attrition within studies.

Second, this study found that only 58% of studies reported attrition data, yet those studies that did report attrition were not always precise and clear, due to the lack of an operational definition (Barrett et al., 2008). Attrition is broadly defined as participants who leave the intervention before completing it in full, but without a distinct definition, researchers utilize various methods to report attrition, which can influence the results differently. For instance, differing attrition rates were found when using the definitions of no-show (36%), judged by a therapist (48%), or number of sessions attended before ending treatment (48%; Barrett et al., 2008). It may be beneficial if concern is placed on participants who leave programs before receiving the therapeutic gain. It appears even with claims that a minimum of 11 to 13 sessions are required to perceive an "adequate dose" (Hansen et al., 2002), researchers instead utilize a "conventional wisdom" of defining completers as those who participate in 50% of sessions as the criterion for being considered reaching benefit (Myers et al., 1992). In the current study, to avoid any complication, attrition was defined as attending at least one treatment session and terminating before completing the final session. As mentioned briefly before, inaccurately reporting the number of participants lost to attrition can lead to unreliable results. To reduce the possibility of inaccuracy, future studies need to implement strategies that can statistically control for attrition. The intent-to-treat analysis is a common strategy, as it creates a more conservative estimate of the effects of the intervention even though all participants in the sample are used in the analysis regardless of dropout status. Fifty-seven percent of the studies included in this review statistically controlled for attrition by using the intent-to-treat analysis or simply excluded data from the analysis. Forty-two percent of the studies included in this review did incorporate certain strategies to increase retention as well (e.g. offer make-up sessions, child care services, evening sessions, pay participants to complete measures, and offer transportation services as

needed). Going forward, researchers should execute strategies that statistically control for these issues so that dependable results can be obtained.

Due to the preliminary nature of the current study, future analyses may find benefit in examining certain interactions among treatment programs. For instance, it is important to consider that level of intervention may indirectly measure how attrition rates are associated with severity of child behavior. Each tier is primarily geared toward matching a certain level of intensity to the needs of the family. Tier III interventions are modeled for a more intensive delivery for individuals with clinically significant problems, thus insinuating that children who are placed in this tier will have more severe behavior problems. Future studies should consider interactions between different moderators to add clarity to any possible missed associations with attrition rates as this the current study was not able to do so. Finally, it is noteworthy that none of the school-based intervention studies reviewed in this meta-analysis examined school discipline data. Future studies should consider expanding outcome variables to include this data to ascertain how BPT may be impacting reductions in child-challenging behaviors across environments. If decreased disciplinary action is found to be associated with school-based BPT programs, this bolsters the case for administering interventions in the school environment.

Considering the current limitations in the attrition literature, it may be valuable for researchers to be more thorough in reporting attrition, make attempts to gain an understanding why certain participants are leaving, and use appropriate statistical methods (intent-to-treat analysis) to ensure the findings are valid School-based BPT programs have displayed the ability to reduce certain barriers to treatment and provide mental health services, but are still plagued with high attrition rates similar to clinic-based studies. Given the current study's preliminary analysis, more work needs to be done to evaluate the benefits of using schools as a mental health

resource hub to provide for all families. The future focus needs to be placed on proper reporting of attrition, creating a commonly accepted operational definition, as well as endorsing new advancements in retention methods to reduce high rates of attrition.

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Appendix

Table 1

Associated Statistics

Meta Analysis

Study name	Event rate	Lower limit	Upper limit	Z-Value	p-Value
Barkley et al., 2000a	0.350	0.218	0.510	-1.844	0.065
Barkley et al., 2000b	0.310	0.187	0.468	-2.340	0.019
Braswell et al., 1997	0.730	0.659	0.791	5.774	0.000
Helfenbaum-Kun & Ortiz, 2007	0.700	0.489	0.851	1.862	0.063
Jones, Daley, Hutchings, Bywater, & Eames, 2007	0.120	0.055	0.242	-4.578	0.000
Matsumoto, Sofronoff, & Sanders, 2007	0.019	0.001	0.244	-2.753	0.006
Myers et al., 1992a	0.600	0.505	0.688	2.055	0.040
Myers et al., 1992b	0.490	0.389	0.592	-0.191	0.849
Reid, Webster-Stratton, & Hammond, 2007	0.110	0.060	0.194	-6.171	0.000
Scott et al., 2010	0.250	0.157	0.373	-3.715	0.000
Webster-Stratton, 1998	0.220	0.176	0.271	-9.020	0.000
Webster-Stratton, Reid, & Hammond, 2001	0.570	0.504	0.633	2.093	0.036
Weiss, Harris, Catron, & Han, 2003	0.040	0.012	0.129	-4.904	0.000
Williford & Shelton, 2008	0.640	0.511	0.752	2.121	0.034
Hoath & Sanders, 2002	0.100	0.014	0.467	-2.084	0.037
Gross et al., 2003	0.267	0.203	0.343	-5.526	0.000
	0.422	0.394	0.451	-5.299	0.000

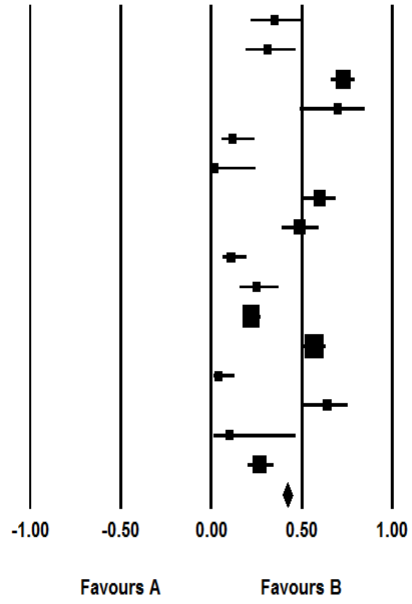


Figure 1

Scatterplot for Average Age of Child

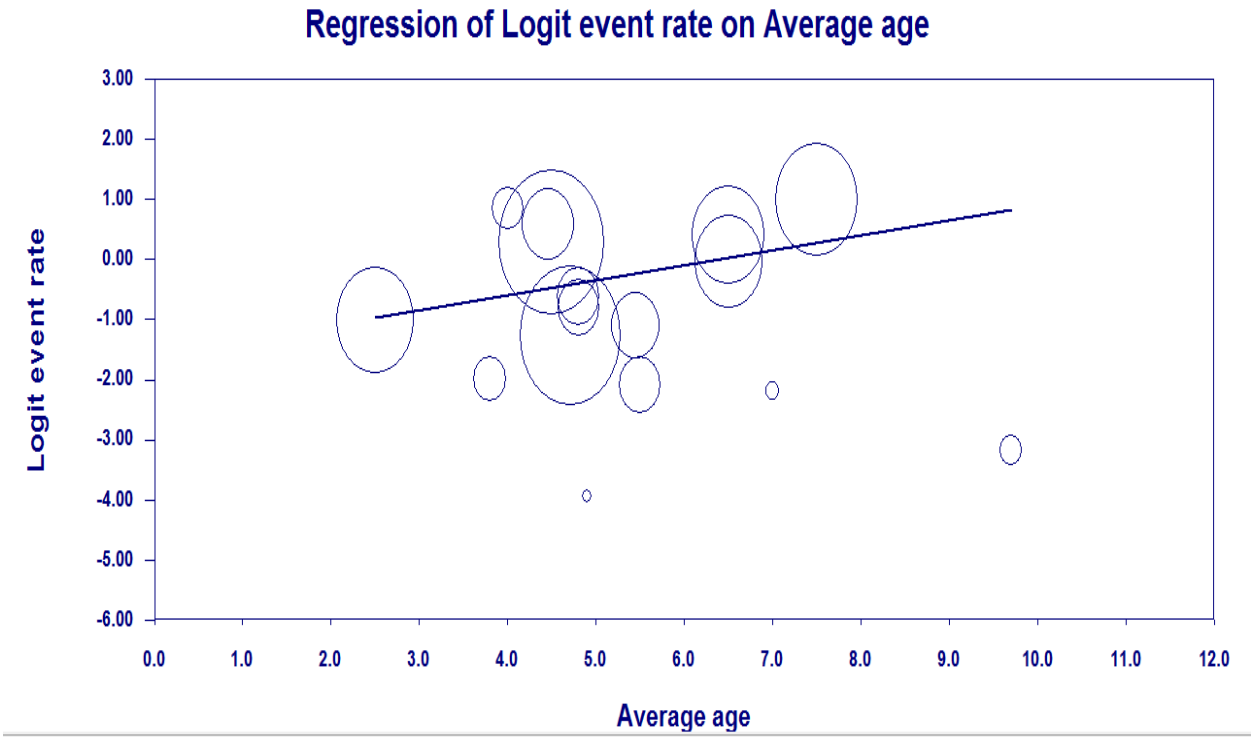


Figure 2

Scatterplot for Average age of Parent

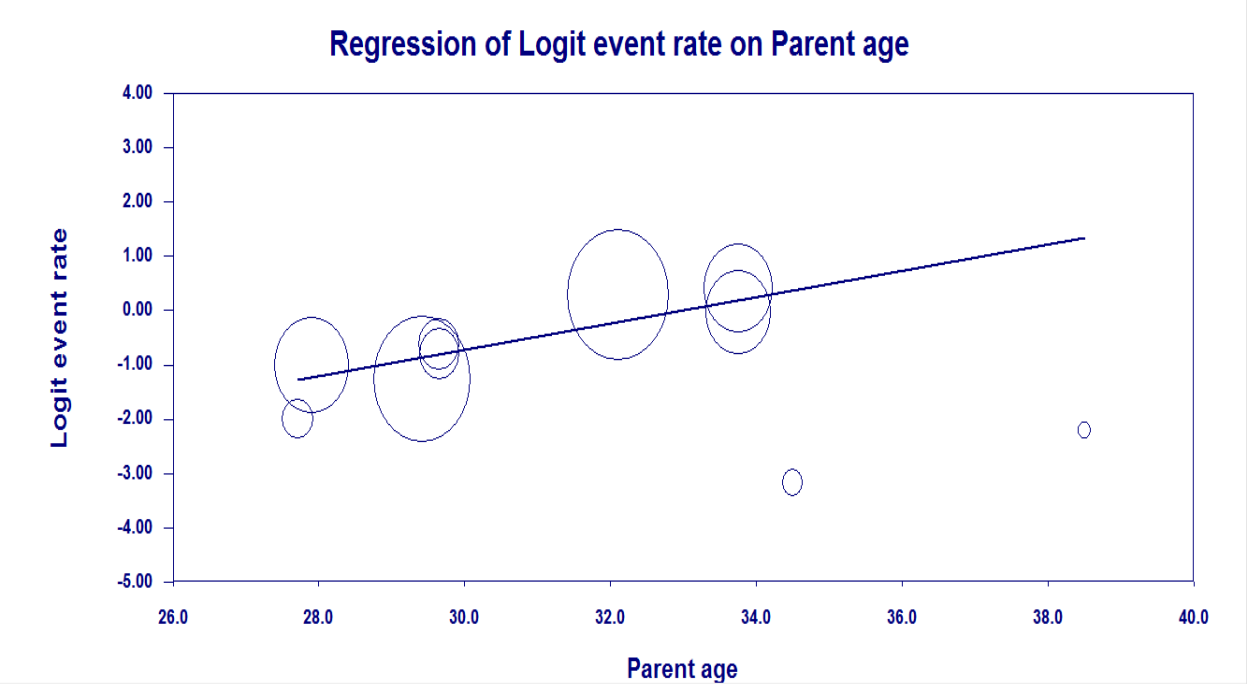
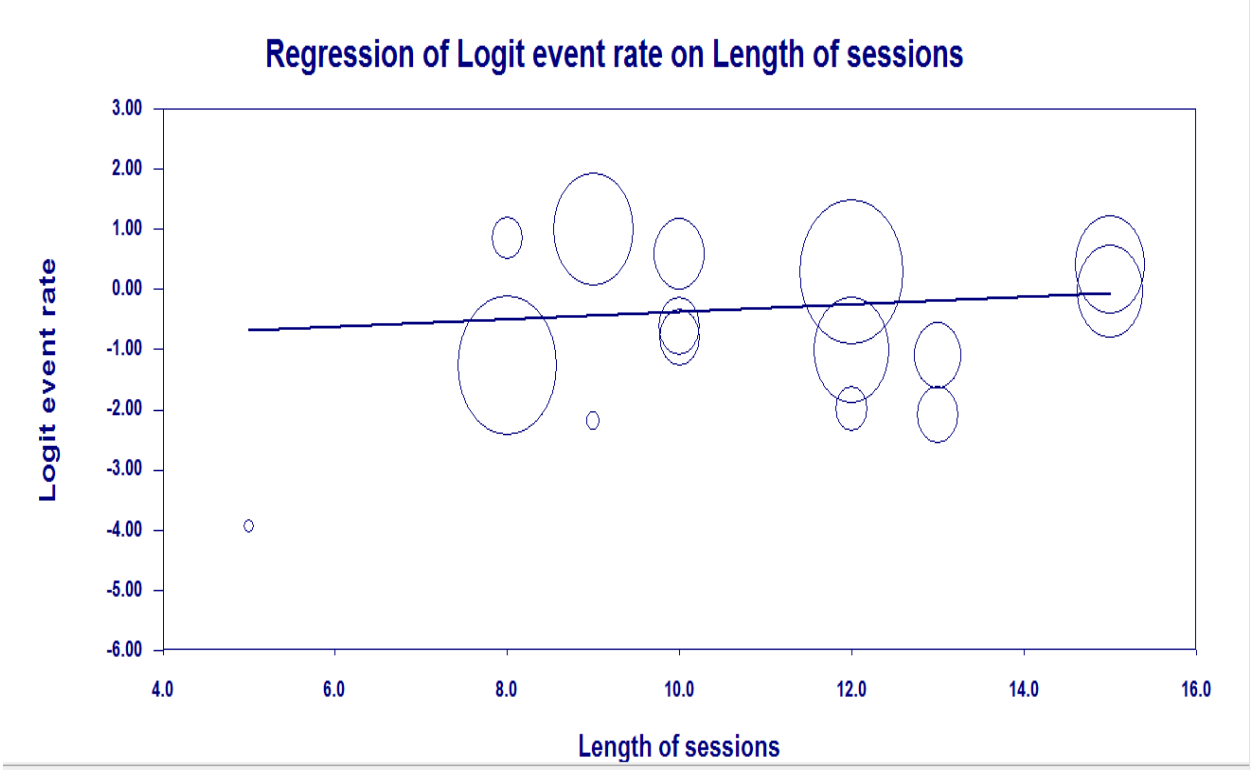


Figure 3

Scatterplot for Number of Sessions



Vita- Dominique Levert

EDUCATION

University of Florida, Gainesville, FL

B.S. Psychology, 2015

University of North Florida, Jacksonville, FL

M.S. General Psychology, 2017

PROFESSIONAL EXPERIENCE

Teaching Assistant (Practicum class), Fall 2016

Assessment Associate at Beacon Pediatric Behavioral Health 08/2015-04/2017

Intern at Guardian Ad Litem Spring 2016

Academic Coach (Abnormal Psychology), 08/2015-04/2016

Personal Tutor Fall 2015

RESEARCH EXPERIENCE

University of North Florida, Jacksonville, FL

PRESENTATIONS

Levert, D., Michael, B., & Mann, A. (2016, November). *ESSA & measuring school climate.*

Paper presented at the annual conference of the Florida Association of School Psychologists.

Levert, D., Michael, B., DeLuca, N., & Mann, A. (2016, November). *Attrition rates in behavioral parent training programs*. Paper presented at the annual conference of the Florida Association of School Psychologists.

Levert, D., Michael, B., DeLuca, N., & Mann, A. (2016, September). *Attrition rates in behavioral parent training programs.* Poster presented at the annual conference of the Florida Association for Behavior Analysis.

Levert, D., Michael, B., DeLuca, N, & Mann, A. (2016, April). *Attrition rates in behavioral parent training programs.* Poster presented at the annual conference of Showcase of Osprey Advancements in Research & Scholarship at the University of North Florida.