

## Parent-Implemented Behavioral Interventions for Challenging Behavior of Young Children with Developmental Disabilities: A Review of Effective Approaches<sup>†</sup>

*Addressing challenging behavior in young children with special needs is an important issue. This study analyzed the results of literature on parent-implemented behavioral interventions designed to manage the challenging behavior of children with developmental disabilities under 8 years of age. Seventeen relevant studies published in peer-reviewed English journals during the last 15 years were selected for review. The literature review showed that adequately trained parents can serve as a competent intervention agent, thereby making significant contributions to mitigating children's behavior problems. The reviewed studies also demonstrated that parents could play a variety of important roles such as informants and trainers in behavioral interventions. However, the conclusions on parent-implemented behavioral intervention may be tentative rather than conclusive due to previous research limitations including the lack of treatment integrity and social validity data. In addition, this review discussed several implications for practitioners, indicated the limitations of the reviewed studies, and presented suggestions for future research.*

Challenging behavior is a critical problem to be addressed through early intervention as it may restrict opportunities for children to develop interpersonal relationships and engage in academic

activities (Kaiser & Rasminsky, 2012). Moreover, challenging behavior in childhood has long-term influences on subsequent social adjustment (Dunlap *et al.*, 2006; Wicks-Nelson & Israel, 2006). Despite such serious consequences, challenging behavior has not been treated as an essential target for early intervention programs as much as language and pre-academic skills (Kaiser, 2007). As Kaiser argued, this may be due to an unclear definition or unspecified indicators for challenging behavior as well as due to the relatively few interventions to deal with the challenging behavior of young children.

The term challenging behavior in research literature has been universally used with different meanings and without an agreeable definition. For instance, it simply refers to a certain behavior problem such as tantrums and self-injurious behavior or indicates a wide range of maladaptive behaviors such as aggressive behavior, disruptive behavior, and noncompliant behavior (Kaiser & Rasminsky, 2012; Matson & Nebel-Schwalm, 2007). Furthermore, challenging behavior is often considered a form of nonverbal communication in that children with inadequate communication skills tend to express needs and obtain what they want by engaging in unacceptable behavior (Braithwaite & Richdale, 2000; Mancil, 2006). The lack of a commonly accepted definition for challenging behavior makes it difficult to identify effective ways to deal with challenging behavior and determine the effectiveness of relevant interventions.

Several researchers have recently constructed a

<sup>†</sup>This study was supported by a new faculty research seed money grant of Yonsei for 2012.

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*Key Words:* challenging behavior, parent-implemented intervention, developmental disabilities, young children

set of essential criteria to define challenging behavior. According to Kaiser and Rasminsky (2012), "challenging behavior is any behavior that interferes with children's cognitive, social, or emotional development; is harmful to the child, other children, or adults; and puts a child at high risk for later social problems or school failure" (p. 7). Along similar lines, Emerson (2001) defined challenging behavior as "culturally abnormal behavior (s) of such an intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behavior which is likely to seriously limit use of, or result in the person being denied access to, ordinary community facilities" (p. 3). These definitions characterize challenging behavior by young children as a pattern of behavior that inhibits the development and maintenance of reciprocal and positive relationships with significant others. Thus, challenging behavior can be defined as any stable behavior that is harmful to children and others that impedes the interactions of children with others and limits opportunities to learn.

With the effort to define challenging behavior, researchers have also developed interventions for challenging behavior. In particular, they recognized the importance of family context in children's development; subsequently, they have paid more attention to parental roles in planning and implementing interventions to decrease children's challenging behavior. This increased interest in parental intervention involvement is indicated in the Individuals with Disabilities Education Act (IDEA) that stipulates parental involvement and family support as a crucial component of services for young children (Dunlap *et al.*, 2006).

There are several practical reasons for the increased emphasis on parental roles in interventions for challenging behavior. First, the family is regarded as the most immediate and influential environment that most children initially encounter. Children spend a significant amount of their time at home due to developmental dependency during early childhood. Consequently, they learn and acquire a variety of behaviors from their family. In particular, parent-child interaction plays an important role in

contributing to the development of challenging behavior since everyday patterns of parent-child interaction are relatively consistent (Miller, 1998). This suggests that challenging behavior is often obtained under natural settings. Therefore, working with parents and families is vital to reduce the challenging behavior of young children.

Second, intervention costs by professionals are typically extensive (Maughan *et al.*, 2005). However, children can gain constant benefits from interventions without additional costs if parents are successfully taught to implement the same treatment provided by professionals. Moreover, the maintenance and generalization of behavior changes may be maximized when all adults, who regularly interact with children, consistently conduct same interventions for behavior problems (Kuhn *et al.*, 2003). Thus, it is necessary to involve parents as an essential part of interventions for children with challenging behavior.

Third, parents need to learn how to manage children's challenging behavior because behavior problems have a devastating effect on the everyday life of parents and family members (Moes & Frea, 2002). This issue is particularly critical for families of children with developmental disabilities. The results of a survey study by Dunlap *et al.* (1994) that involved the parents of children with autism spectrum disorders (ASD) indicated that parents experienced a high frequency of challenging behavior in their child and needed helpful resources to manage it. In fact, children's challenging behavior is the best predictor of parental distress (Plant & Sanders, 2007). Teaching parents how to deal with their children's behavior problems can help them manage stress and improve their interaction with children.

In general, parents can successfully learn behavioral strategies for children with developmental disabilities and be trained to conduct behavioral interventions that are helpful to reduce behavior problems (Lutzker & Steed, 1998; Symon, 2005). Nevertheless, it is necessary to review and analyze previous research on parent interventions in order to explore an effective approach that will help parents take an active role to improve children's behavior problems. Extensive literature exists on this topic; however, it remains difficult to draw a concrete

conclusion about the effects of parent-implemented interventions on the challenging behavior of young children with developmental disabilities. This might be significantly due to research diversity in terms of children's characteristics, what to teach parents, and how accurately they teach their child. In addition, it might be associated with insufficient information related to parent-implemented interventions such as treatment integrity and social validity.

There have been several recent attempts to synthesize studies in regards to the effect of parent-implemented interventions on children's behavior problems (Kaminski *et al.*, 2008; Maughan *et al.*, 2005; Reyno & McGrath, 2006). Using meta-analyses, these reviews qualified previous research and summarized the generalized effect size. Although these efforts contributed to integrating a large body of research on parental involvement in interventions for children, there were some limitations. First, these reviews focused on quantifying the magnitude of intervention effects without sufficient attention to analyzing differences and similarities among research in terms of what parents conducted, how they were trained, and other intervention details. Second, they reviewed studies without classifying preventive and remedial interventions, which made it less clear how effective parent-implemented interventions would be on improving children's challenging behavior that already exists. Third, it is crucial to provide interventions for challenging behavior as early as possible in order to address it effectively (Dunlap *et al.*, 2006). However, previous reviews included extensive research that involved a wide range of participants in terms of age from young children to adolescents. Therefore, it is salient to review the studies that targeted young children in order to better understand the effectiveness of parent-implemented interventions as early interventions.

Considering these shortcomings, the present study reviewed the literature on parent-implemented interventions for the challenging behavior of young children with developmental disabilities under the age of 8 and focused on the effectiveness of therapeutic interventions. Policy implications and future study suggestions were discussed based on the review.

## METHOD

### *Sources*

A literature search was conducted using several databases: Academic Search Complete, MEDLINE, PsycINFO, and Psychology and Behavioral Sciences Collection. Additionally, manual searches were implemented by reviewing the reference lists of research obtained from the database searching procedure. The key terms for the search were "parent-implemented," "parent training," "parent," "family," "challenging behavior," "behavior problem," "problematic behavior," "behavior disorder," "disruptive behavior," "early intervention," "young children," "infant," "toddler," and any combinations of these terms.

### *Inclusion and Exclusion Criteria*

This review focused on peer-reviewed English journal articles published in the last 15 years (between 1998 and 2013) that examined the effects of parent-implemented interventions on young children's challenging behavior. Studies that met the following criteria were included. (a) At least one behavioral strategy implemented by parents was included in the intervention. (b) The purpose of the study included addressing challenging behavior. (c) The target children were under 8 years of age, diagnosed with any developmental disabilities listed in the DSM-IV (American Psychiatric Association; APA, 2000), and engaged in challenging behavior. (d) The intervention agents were one of the parents, both parents, or other significant caregivers. (e) Research designs were single-subject designs, between-group designs, or within-group designs (e.g., pre-post designs).

The inclusion criteria did not include studies that targeted children who were at risk for challenging behavior. In addition, because the present review focused on early intervention any study that included at least one child over 8 years of age was excluded. However, this review did include studies in which the data of individual participants were available even though some of the participants did not meet the age criterion. In these cases, only the data of participants under 8 years of age were used for the review.

## RESULTS

Seventeen studies that met all the criteria were selected for this review. Table 1 summarizes the characteristics of children and parents, targeted challenging behavior, components of parent-implemented treatments, and the outcomes of interventions that include a generalization and/or maintenance of the positive effects. This review focused on describing the overall tendency of the selected studies due to the limited number of studies included and the disparities in the measurements used and procedures for each study.

### *Characteristics of Participants*

The selected studies included 466 children who experienced parent-implemented interventions. Boy participants outnumbered girls with the exception of three studies (Fossum *et al.*, 2009; Matos *et al.*, 2009; Nixon *et al.*, 2004) in which no information about the participants' gender was available (see Table 1). As for the diagnosis of the participants, eight studies targeted children whose major disability was ASD, seven studies were conducted on children with oppositional defiant disorder (ODD), and the other seven studies included children with other developmental disabilities such as attention deficit hyperactivity disorder (ADHD) and mental retardation. The types of disabilities were diverse; however, all children who received parent-implemented interventions were reportedly engaged in a variety of challenging behavior that included aggressive, disruptive, self-injurious, stereotypic, non-compliant, and oppositional behavior.

With regard to the intervention agent, some studies (e.g., Nixon *et al.*, 2004; Webster-Stratton *et al.*, 2004) used the term "parents" or used it interchangeably with "mothers" when describing who conducted the intervention. It remains unclear if one or both parents were taught to use the intervention. In general, mothers acted as the primary intervention agent either alone or with significant others whereas no study trained only fathers to implement interventions. Nevertheless, it is improper to assume that the limited research on father involvement in interventions implies that

fathers do not make significant contributions to modifying young children's challenging behavior. Instead, as Fabiano (2007) argued, parent training programs to teach fathers how to conduct a behavioral intervention may not have been successful to meet the needs of fathers in terms of scheduling and settings, nor did the contents of programs fit fathers' typical roles in interacting with children.

### *Details of Parent-Implemented Interventions*

The details of parent-implemented interventions were reviewed based on three categories: intervention components, parental roles in interventions, and the treatment integrity of parent-implemented interventions.

### *Components of parent-implemented interventions*

Table 1 shows that the treatment conducted by parents varied across studies. MacKenzie and Hilgedick (1999) indicated that "Behavioral Parent Training (BPT) is a general term to describe interventions aimed at changing problematic child behavior by teaching parents how to act as behavior therapists for their children" (p. 23). Based on the definition, all selected studies in this review used a specific BPT since they taught parents to use behavioral strategies as an intervention agent, focusing on changing contingencies related to children's challenging behavior. The main strategies of parent-implemented intervention that each study adopted were behavioral; however, some of the reviewed studies (e.g., Fernandez *et al.*, 2011; Matos *et al.*, 2009; Nixon *et al.*, 2004; Webster-Stratton *et al.*, 2004) integrated a behavioral approach with the relationship enhancement approach to improve the parent-child relationship. Such interventions were based on the assumption that challenging behavior was maintained by contingencies of parent-child. Subsequently, a positive parent-child relationship resulted in behavioral improvements (Eyberg & Boggs, 1998).

Some studies have focused on communication training to replace the challenging behavior of young children with developmental disabilities. In particular, two studies (Moes & Frea, 2000, 2002) trained

Table 1. *Research Summary*

Citation	Characteristics of Participants			Parent-Implemented Behavioral Treatments	Treatment integrity	Maintenance/ Generalization	Social validity	Results
	Children		Caregivers					
	Age(N)/ Gender	Diagnosis / Challenging Behavior						
Axberg & Broberg (2012)	(Experimental) 4-8 (38)/ 31M 7F  (Control ) 4-8 (24)/ 21M 3F	Oppositional defiant disorder (ODD)/ Disruptive behaviors	Mother	- Incredible Years (IY) • Positive discipline strategies • Effective parenting skills	NA	- 1-year follow up data - Generalization probes: from the home to the school context	- Usefulness and acceptability of the program rated as high	- Children's disruptive behaviors were reduced and sustained at follow-up. - Significant improvement in the mothers' report of change in the parenting alliance after the intervention. - The improvement generalized over time from the home to the school context.
Buschbacher & Clarke (2004)	7 (1)/M	Autism & Landau-Kleffner syndrome/ Disruptive & aggressive behaviors	Mother	- Long-term supports - Teaching replacement skills - Using behavior consequence	NA	- 2, 4, and 12 month follow up data	- Acceptability, effectiveness, and practicability of the intervention rated as high	- After the intervention, challenging behavior and negative parent-child interaction decreased. - Child's engagement and positive parent-child interaction increased. - The effects were maintained during 1-year post-intervention probes.
Coolican et al. (2010)	2-5 (8) 7M 1F	Autism/ Disruptive behaviors	Mother & father	- Pivotal Response Training (PRT) • Motivational techniques	- High accuracy of parents' use of strategies	- 2 to 4 month follow up data.	- Whole training experience described as helpful	- Children's communication skills were significantly increased and maintained. - The effects were not large in disruptive behavior; only two children displayed behavior improvement.
Fernandez et al. (2011)	3-6 (18) 16M 2F	ODD, Conduct Disorders (CD), ADHD/ Disruptive behaviors	Mother	- Standard Parent Child Interaction Therapy • Strengthening parent-child • Behavior management strategies	- Accurate interaction skills of mothers	NA	NA	- After the intervention, children's disruptive behaviors were significantly improved but not in maternal depressive symptoms or parenting stress.

Table 1. *continued*

Citation	Characteristics of Participants			Parent-Implemented Behavioral Treatments	Treatment integrity	Maintenance/ Generalization	Social validity	Results
	Children	Diagnosis/ Challenging Behavior	Caregivers					
	Age(N)/ Gender							
Fossum et al. (2009)	(Group 1) 4-8 (47)/ Not specified  (Group 2) 4-8 (52)/ Not specified  (Control Group) 4-8 (28)/ Not specified	Oppositional defiant disorder (ODD) and Conduct disorder (CD)/ Aggressive or oppositional behaviors	Mother	- Incredible Years (IY) • Positive discipline strategies • Effective parenting skills  - Combined parent training with child training • Stress coping strategies and strengthening children's social skills	NA	- Generalization probes: from the home to day-care and school settings	NA	- Behavior problems were significantly reduced after treatment. - Changes in child behavior problems generalized to day-care and school settings were small. - Mother's negative parenting significantly decreased.
Freia & Hepburn (1999)	4 (2)/M	Autism/ Aggressive, self-injurious & other disruptive behaviors	Mother	- Functional assessment - Teaching alternative responses to disruptive behavior - Prompting the response	NA	NA	NA	- Providing mothers with both a manual and prompts or with a manual only decreased children's challenging behavior.
Koegel et al. (1998)	4 (2)/M, 5 (1)/F	Autism/ Aggressive behavior toward younger sibling	Mother	- Rearranging the environment related to the occurrence of aggressive behavior - Teaching appropriate replacement behavior for aggression	NA	- 4 months and 1 year follow up data for two participants	- Increase happiness in mothers and children	- After the treatment, children's aggression toward sibling significantly decreased whereas appropriate behavior increased, which lasted until 1-year for one child and 4-month follow-up for another child. - Both the mothers' and children's happiness level increased.
Kuhn et al. (2003)	4 (1)/M, 7 (1)/F, 11(1)/M	Mental retardation/ Stereotypic & non-compliant behaviors	Mother & other family members trained by mother	- Reinforcement - Extinction - Prompting - Feedback - Other strategies	-Very high accuracy of both primary & secondary caregivers	NA	NA	- For one participant, challenging behavior immediately decreased following treatments implemented both by mother and by the two other caregivers who were trained by the mother.
Lucyshyn et al. (2007)	5 (1)/F	Autism/ Disruptive or destructive behavior	Mother & father	- Setting event, antecedent, and teaching strategies - Consequence strategies	NA	- 6, 18, 36, 67 & 86 months follow up data	- Contextual fit of intervention rated as high	- Problem behaviors decreased to zero or near zero levels and maintained during follow-up period (6 months to 7 years). - Successful participation in routines showed a 75% increase.

Table 1. *continued*

Citation	Characteristics of Participants			Parent-Implemented Behavioral Treatments	Treatment integrity	Maintenance/ Generalization	Social validity	Results
	Children		Caregivers					
	Age(N)/ Gender	Diagnosis/ Challenging Behavior						
MacKenzie et al. (2004)	3-8 (21)/ Not specified (Majority male)	Majority was diagnosed with ODD/ Externalizing behaviors	Mother	- Patterson-model Behavioral Parent Training (BPT) program (Not specified)	NA	NA	NA	- Externalizing behavior problems were improved in frequency and intensity. - Treatment acceptability was positively correlated to improvements in children's behavior problems.
Matos et al. (2009)	(Experimental) 4-6 (20) Not specified  (Control) 4-6 (12) Not specified	ADHD/ Hyperactivity, aggressive and misconduct behaviors	Mother & father	- Standard Parent Child Interaction Therapy (PCIT) • Strengthening parent-child relationship • Behavior management strategies	- 98% accuracy during intervention sessions	- 3.5 month Follow-up data	NA	- Hyperactivity, inattention, aggressive and oppositional-defiant behavior significantly decreased. - Significant reduction parenting stress associated with their child's behavior and increasing adequate parenting practice.
Moes & Frea (2000)	3(1)/M	Autism & mood disorder/ Disruptive behaviors	Mother, Father, & siblings	- Prescriptive: Combination of FCT, extinction, and demand fading  - Contextualized : Combination of FCT and DRA	NA	- Generalization probes: during contextualized treatment phase - 3 month follow-up data	- Higher level of sustainability of contextualized treatment compared to that of a prescriptive treatment.	- During contextualized treatment, disruptive behavior decreased and was generalized into a non-trained setting. - On-task behavior and functional communication response increased. - No similar effects during prescriptive treatment phase.
Moes & Frea (2002)	3(3)/ 2M 1F	Autism/ Disruptive and aggressive behavior	- Mother (during S-FCT) - Mother, father, & siblings (during C-FCT)	- Standard-FCT: • Reinforcement • Extinction • Prompts  - Contextualized-FCT • Reinforcement • Extinction • Prompts	NA	- Generalization probes during S-FCT & C-FCT - 2-month follow up data	- Higher levels of sustainability of C-FCT than that of S-FCT	- During S-FCT phase, challenging behavior decreased and functional communication increased, but generalization was limited. - During C-FCT phase, challenging behavior was more reduced and a generalized effect was observed. - These effects were maintained during the 2-month follow-up period.

Table 1. *continued*

Citation	Characteristics of Participants			Parent-Implemented Behavioral Treatments	Treatment integrity	Maintenance/ Generalization	Social validity	Results
	Children		Caregivers					
	Age( <i>N</i> )/ Gender	Diagnosis/ Challenging Behavior						
Nixon et al. (2004)	(Group 1) Preschool-aged (17)/ 14M 3F	ODD/ Oppositional behavior	Parents	- Standard Parent Child Interaction Therapy (PCIT) • Strengthening parent-child relationship • Behavior management	NA	- 1 and 2 year follow-up data	NA	- Both the standard PCIT and abbreviated form of PCIT resulted in children's behavior problem improvements. - Intervention effects were maintained at 1- and 2-year follow-up phases in both conditions with little difference.
	(Group 2) Preschool-aged (20)/ 13M 7F			- Abbreviated PCIT (Same contents as Standard PCIT)				
	(Control group) Preschool-aged (17)/ 11M 6F			- No intervention				
	(Social validation comparison group) Preschool-aged (21)/ 15M 6F			- No intervention				
Symon (2005)	2 (1)/M, 3 (1)/M, 5 (1)/M	Autism/ Disruptive, aggressive & self-injurious behavior	Mother & father or other caregiver	- Pivotal Response Training (PRT) • Motivational techniques (e.g., clear instruction, immediate reward)	- 90% accuracy for primary caregivers and 80% for second caregivers	- 2 weeks to 2 month after follow up probes	NA	- Functional verbal utterance improved when children were with their mothers and with other significant caregivers. - Appropriate behavior improved and was maintained at follow-up. - Mothers successfully taught other caregivers the treatment procedures.
Webster-Stratton et al. (2004)	4-8 (159) Not specified (Majority male)	ODD/ Non-compliance, aggression & oppositional behavior	Parents	- Incredible Years (IY) • Positive discipline strategies • Effective parenting skills	NA	- 1-year follow up data	- Parental satisfaction with treatment rated as high	- Parent training (PT), parent plus teacher training (PT + TT), child training (CT), CT + TT, PT +CT + TT all slightly reduced conduct problems compared to control conditions. - Mothers in all PT conditions showed less negative and more positive parenting. - Less negative parenting for fathers



Table 1. *continued*

Citation	Characteristics of Participants			Parent-Implemented Behavioral Treatments	Treatment integrity	Maintenance/ Generalization	Social validity	Results
	Children		Caregivers					
	Age(N)/ Gender	Diagnosis/ Challenging Behavior						
Webster-Stratton et al. (2011)	(Experimental) 4-6 (49)/ 35M 14F	ADHD, ODD/ Hyperactive, inattentive behavior	Mother & father	- Incredible Years (IY) : revised 2008 <ul style="list-style-type: none"><li>• Problem solving</li><li>• Strategies to build family support, reduce depression and manage anger</li></ul>	NA	- Generalization probes: from the home to school settings.	- Very high level of satisfaction for mothers  - Moderate level of satisfaction for fathers	- Children’s externalizing, hyperactivity, inattentive and oppositional behaviors decreased while emotional regulation and social competence increased.  - Significant change appropriate parenting practices for mothers, but not for fathers.
	(Control) 4-6 (50)/ 39M 11F							

<sup>a</sup>. Data on this child were excluded for the review due to the age inclusion criterion (i.e., over 8 years of age).

M: male, F: female

NA: Information is unavailable.

parents with functional communication training (FCT) to improve children's behavioral problems. This was because children's challenging behavior often served as a communication modality (Carr & Durand, 1985). Thus, parents were generally trained to ignore challenging behavior and teach children alternative responses to challenging behavior that used prompting, modeling, reinforcement, and so forth.

*Parents' roles in interventions* The topics for the selected studies were related to the effectiveness of behavioral interventions conducted by parents. Therefore, as for the parental roles in interventions, parents of all the studies were taught how to implement behavioral strategies and conduct them with children. In addition to learning and implementing behavioral strategies, parents were asked to participate in the identification of routines associated with challenging behavior (e.g., Koegel *et al.*, 1998; Moes & Frea, 2002) or perform functional assessments to determine the function of children's challenging behavior, either by themselves or with professionals (e.g., Buschbacher & Clarke, 2004; Frea & Hepburn, 1999; Lucyshyn *et al.*, 2007). All the aforementioned roles were typically performed by behavioral therapists. In addition, as a key informant, parents also provided professionals with crucial information necessary to plan an intervention (Buschbacher & Clarke, 2004; Koegel *et al.*, 1998; Moes & Frea, 2000).

Noticeably, while most research regarded parents as trainees who could be taught by experts, two studies (i.e., Kuhn *et al.*, 2003; Symon, 2005) expanded on parental roles by requiring them to serve as trainers who teach other caregivers to implement behavioral interventions. For instance, the study by Kuhn *et al.* (2003) investigated if parents could act as a trainer in a more systematic way. Using the pyramidal training model (i.e., one person learns how to conduct an intervention and then teaches others how to implement it), the researchers first trained the primary caregivers (i.e., mothers) on how to conduct an individualized behavioral intervention. Subsequently, mothers were trained to teach two family members by mock

training that involved verbal and written instructions, role-playing, and feedback. The results indicated that primary caregivers could serve as a successful trainer with a high accuracy when trained appropriately.

*Treatment integrity of parent-implemented interventions* Treatment integrity data that demonstrated that parents conducted interventions in an accurate way as taught were available in only five studies (Coolican *et al.*, 2010; Fernandez *et al.*, 2011; Kuhn *et al.*, 2003; Matos *et al.*, 2009; Symon, 2005). The studies reported satisfactory levels of accuracy in parent-implemented interventions. It is difficult to make any firm conclusions about the accuracy of parent-implemented interventions due to the limited treatment integrity data. To draw reliable conclusions about the effects of parent-implemented interventions, it is vital to analyze how rigorously the intervention was implemented by parents. Thus, future research that provides treatment integrity data is warranted.

#### *Effects of Parent-Implemented Interventions*

Table 1 demonstrates that almost all the reviewed studies indicated that parent-implemented interventions had positive influences on children, either decreasing challenging behavior or increasing alternative appropriate behaviors. In addition to the improvements in children's challenging behavior, a few studies (i.e., Moes & Frea, 2000, 2002; Symon, 2005) reported concomitant positive outcomes that showed that children's communicative skills increased during or after parent-implemented intervention phases. This supported assumptions on the communicative function of challenging behavior of children with disabilities (Durand, 1999). In other words, the acquisition of appropriate communication skills by children seemed to help reduce challenging behavior.

Moreover, eleven of the reviewed studies demonstrated that the positive influences of parent-implemented interventions on children's behavior and communication skills were maintained during follow-up probes, most of which ranged from several months to one or two years (see Table 1). Markedly, Lucyshyn *et al.* (2007) conducted a 10-year study

with a 5-year-old child with autism, and found that parent-implemented positive behavior support almost eliminated the child's challenging behavior and increased her participation in community activities (e.g., going to the park, attending church, and accompanying a parent to the grocery store). More importantly, these behavioral improvements lasted across a 6-month to 7-year follow-up period. The majority of the reviewed studies reported that parents were taught to implement behavioral interventions successfully, thus reducing children's challenging behavior. In particular, one study (Nixon *et al.*, 2004) used a social validation comparison group to determine if children's compliant behavior differed from children without disabilities after intervention. Data revealed that the compliant behavior of children in both treatment groups (i.e., standard PCIT and abbreviated PCIT) significantly decreased to the same level of children in the social validation comparison group. This suggested that parents could act as an effective intervention agent with even children who had severe challenging behavior. Despite these optimistic findings, however, it is unclear which components of parent-implemented interventions were responsible for children's improvement since each study used an intervention program package comprised of a variety of behavioral strategies. Future research should identify specific aspects of a parent-implemented intervention that reduce children's challenging behavior.

Additionally, two selected studies (i.e., Koegel *et al.*, 1998; Webster-Stratton *et al.*, 2004) evaluated the influence of parent-implemented interventions on parents. The findings indicated an increased level of parental happiness over time and positive changes in parenting practices, suggesting that parent-implemented intervention benefit parents as well as children. Given that parents are more likely to interact with children positively when they have self-confidence and are satisfied with their roles (Belsky, 1984), the positive effects of parent-implemented interventions on parents can contribute to improvements in children's behavior.

#### *Social Validity of Parent-Implemented Interventions*

According to Baer *et al.* (1987), one of the essential

ways to evaluate the effectiveness of an intervention is assessing the extent to which the consumers of an intervention prefer it, which is called social validity. Parents are likely to discontinue using the intervention even though it improves their children's undesirable behaviors if they are dissatisfied with the relevance and acceptability of goals or procedures for a behavior intervention for their children. In this sense, it is critical to evaluate social validity data when reviewing the effectiveness of parent-implemented interventions.

Only nine of the reviewed studies provided evidence on social validity (e.g., Axberg & Broberg, 2012; Frea & Hepburn, 1999; Kuhn *et al.*, 2003; Webster-Stratton *et al.*, 2011); however, all of them showed that parents evaluated the intervention they implemented as feasible, acceptable, having a contextual fit, and sustainable. Parents reported that the behavior intervention they conducted was easy to implement as well as suitable to family routines and they were willing to continuing the intervention. Furthermore, MacKenzie *et al.* (2004) provided additional empirical data that demonstrated that social validity was significantly related to children's outcome. Children whose mothers were satisfied with the behavioral intervention were likely to show a decrease in challenging behavior. It may be plausible that mothers comfortable with the behavioral intervention conducted it more frequently and consistently in their daily settings, which in turn contributed to the behavior change in their children.

Baer *et al.* (1987) pointed out that assessing social validity based exclusively on self-reports by parents might cause biased outcomes; therefore, future studies should make an effort to include more objective and reliable measures on social validity.

## DISCUSSION

This study reviewed the recent literature on parent-implemented interventions designed to address the challenging behavior of young children with developmental disabilities. Overall, the findings of this review revealed that parents, as an intervention agent, could make significant contributions to

improving children's challenging behavior if they were trained appropriately and sufficiently. This result was in line with previous reviews which reported that parents could serve as behavior therapists for their children (Kaminski *et al.*, 2008; Maughan *et al.*, 2005; Reyno & McGrath, 2006), and provided additional implications for practitioners and researchers.

The results of this review emphasized that parents represent an important part in interventions designed to address young children's challenging behavior. In reality, however, some practical barriers may have prevented practitioners from encouraging parents to play an active role in interventions as a partner. For instance, they may have recognized that working with parents required additional time, effort, and strong interpersonal skills. It is necessary to understand that the most desirable behavior change is likely to be obtained within the context of parent-professional collaboration (Lucyshyn *et al.*, 2002). Training parents as intervention agents is one type of parent-professional partnership. Brookman-Frazee (2004) suggested that practitioners working with parents should essentially acknowledge the importance of shared expertise and responsibilities to establish and maintain a partnership.

Unfortunately, practitioners may often find it difficult to secure sufficient personnel to train caregivers on how to conduct behavioral interventions (Kaiser, 2007). Thus, comprehensive service centers for practitioners to learn how to teach parents to conduct behavioral treatments should be developed to expand the use of parent-implemented interventions. One possible method to solve the issue for personnel to train parents would be the use of telecommunications technology. Home visiting sessions were arranged to train parents in many of the studies included in this review. This might be convenient for parents; however, it may not be time-efficient for practitioners. Combining home visiting with distant instruction through the Internet and computer technology will increase the opportunity and efficiency of parent training that teaches parents how to serve as an intervention partner. Another practical strategy would be through pyramidal training as described by Kuhn *et al.* (2003). Training

one caregiver would make it possible to educate multiple family members with less time and effort.

In addition, the findings of this review provided important suggestions for further research to draw conclusions that are more cogent on the effect of parent-implemented interventions on children. First, as presented in Table 1, limited number of studies adequately described interventions procedures in detail for future researchers to replicate them, and only five studies (e.g., Kuhn *et al.*, 2003; Symon, 2005) provided data on the treatment integrity of parent-implemented interventions. Studies should have verified that parents conducted all intervention procedures as planned to determine if the beneficial outcomes in children's behavior changes were truly the function of parent-implemented interventions. Rhymer *et al.* (2002) showed relevant evidence for this issue, examining the relation between the treatment integrity of teacher-implemented time-out procedures and changes in children's aggressive behavior. It was found that higher levels of treatment integrity corresponded with more stable improvements in aggressive behavior. This highlights the importance of treatment fidelity to determine the effectiveness of an intervention. Future studies need to provide evidence on the extent to which parents implement interventions with fidelity. Additionally, all other aspects of interventions such as specific behavioral strategies included in the intervention, instructional methods, length of parent training, and social validity should be more clearly described.

Second, it was also unclear which aspects of the interventions resulted in improvements in children's behavior. This may be because all the studies included in this review used combinations of a variety of behavioral strategies and no study conducted a systematic component analysis to delineate the functional relation between a specific component and a behavioral change. However, it is necessary to identify what would be responsible for the observed outcomes because component analyses can increase the efficiency of an intervention by discriminating necessary versus superfluous components when multiple treatments are introduced as a package (Kennedy, 2005). Clarifying the components of a parent-implemented intervention that are

effective would elucidate the most effective strategy to improve a specific behavior problem. This analysis will enable researchers to remove ineffective components and focus on successful components when training parents as an intervention agent.

Third, although more than half of the selected studies included follow-up probes, the follow-up data were mostly limited to one or two years while only one study (Lucyshyn *et al.*, 2007) evaluated the longitudinal effects of parent-implemented behavioral intervention on children's behavior over approximately 7 years. Challenging behavior in early childhood has long-term effects on later development; therefore, it is critical to collect long-term follow-up data to ensure lasting effects and overall improvements in the quality of life. Moreover, longitudinal follow-up measures can help determine if supplementary parent training or supervision sessions are required to assist parents to conduct interventions consistently and appropriately. This is particularly important because young children's challenging behavior is typically related to parental behavior and thus changes in adult's behavior should be maintained for a long time in implementing behavioral interventions (Kaiser, 2007). Therefore, researchers need to generate more information on the influence of the durability of parent-implemented intervention on children's challenging behavior.

Fourth, most of the reviewed studies indicated that mothers were trained to implement the interventions. However, it was reported that the positive interaction between a father and child resulted in fewer problem behaviors (Amato & Rivera, 1999). Future research needs to explore a fathers' potential contribution to planning and implementing interventions on children's challenging behavior. The involvement of both parents in the intervention will most likely expose children to more consistent treatment at home. The reviewed studies also indicated that parents played a variety of important roles in behavioral interventions to address their children's challenging behavior. In particular, the findings implied that parents could be trained as intervention agents as well as trainers. One important issue to address in future studies is how to motivate parents to continue to perform

those roles.

Finally, this review showed that few studies (*i.e.*, Koegel *et al.*, 1998; Webster-Stratton *et al.*, 2004) investigated how parent-implemented intervention influenced parents and other family members. The ultimate goal of training parents as an intervention agent is the reduction or elimination of inappropriate behavior and increased alternative positive behavior in children. However, parents and other family members can be influenced by parent-implemented interventions. This may include increased parental efficacy and behavior changes in the siblings of the target child. The corollary effect on parents and other family members would be as important as the influence on target children in that such benefits can encourage parents to be actively involved in interventions for their children. More attention should be paid to the effects of parent-implemented interventions on other family members as well as parents themselves in order to better understand the possible advantages of parent-implemented interventions.

Despite the aforementioned issues to be settled in future research, the findings of this review showed suggested that parents could take pivotal roles in improving children's challenging behavior as an intervention agent. This review also implied that parent-implemented interventions could be more effective through the involvement of as many family members as possible in the intervention, teaching parents acceptable and practicable interventions, and helping parents implement interventions with fidelity.

This review focused on outlining research agenda and practical implications in regards to parent-implemented interventions by comparing previous studies in terms of components of behavior strategies, parental roles in the intervention, treatment integrity, social validity, and behavior changes vis-à-vis interventions rather than quantifying the generalized effect size. Therefore, a rigorous meta-analytic strategy will be able to provide detailed conclusions on the effect of parent-implemented interventions for children's challenging behavior. In addition, the reviewed studies included children with diverse developmental disabilities such

as ASD, ODD, and ADHD; consequently, caution is advised when summarizing the outcomes of parent-implemented interventions because the effects could vary according to the type of developmental disabilities.

In conclusion, researchers need to further investigate the specific training components and obtain more empirical evidence about factors facilitating generalization and maintenance effects in order to strengthen the previous evidence on the advantageous effects of parent-implemented treatments for children's challenging behavior. Further efforts will help develop best practices for parent-implement interventions on behavior problems, thereby substantially contributing to effectively addressing the challenging behavior of young children with developmental disabilities.

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Received October 10, 2013

Revised November 20, 2013

Accepted November 30, 2013