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Early Intervention with Children at Risk of Emotional/Behavioral Disorders: A Critical Examination of Research Methodology and Practices

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**Early Intervention with Children at Risk of
Emotional/Behavioral Disorders:
A Critical Examination of Research
Methodology and Practices**

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Abstract

Children's behavior problems pose challenges to families, schools, and society. The research literature argues that early detection/intervention is the most powerful course of action in ameliorating these problems in children at risk of emotional/behavioral disorders. However, specifying precisely what constitutes a quality program of early intervention is not a simple task. Current conceptualizations suggest that successful early intervention cannot be unidimensional in nature, but must consist of a complex series of interactions and transactions that synergistically serve to nurture and enhance both the development of the child and family. In this paper, we reviewed the accumulated research to learn more about the critical elements of early intervention. Specifically, we examined three major areas addressed in the literature. First, we describe literature search procedures and criteria for study inclusion, along with methods for analyzing these early intervention studies. Second, we examine the conduct of the intervention, including characteristics of study participants, types of interventions, types of measures, age of onset and length of intervention, treatment fidelity, and social validity measures. Finally, we draw upon that review to offer recommendations for future research.

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Children's behavior problems can pose tremendous challenges to families, schools, and society. Once established, problem behavior tends to persist (e.g., Campbell & Ewing, 1990; Loeber & Dishion, 1983; Patterson,

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Capaldi, & Bank, 1989; Webster-Stratton, 2000). Left untreated, children's behavior problems typically multiply, intensify, and diversify over time (Campbell & Ewing, 1990), thus putting the child at increased risk for academic failure, social isolation, and peer rejection. These, in turn, accelerate the likelihood of school avoidance, alcoholism and drug abuse, and lifespan antisocial behavior (Asher & Coie, 1990; Dodge, 1993; Kazdin, 1993; Loeber & Dishion, 1983; Walker & Severson, 1990). Given the pernicious effects of children's behavior disorders, early intervention to prevent the development of such disorders is a judicious alternative to intervening after the behavior is well entrenched (e.g., Dodge, 1993; Kaiser & Hester, 1997; Kauffman, 1999; Kazdin, 1993; Webster-Stratton, 2000).

By most accounts, early detection/intervention is the most powerful course of action in ameliorating life long problems associated with children at risk for emotional/behavioral disorders (cf. Hester & Kaiser, 1998; Kauffman, 1999; Serna, Nielsen, Lambros, & Forness, 2002). Indeed, a growing body of empirical research supports the positive impact of early intervention (e.g., Del'Homme, Kasari, Forness, & Bagley, 1996; Forness et al., 1998; Kaiser & Hester, 1997; Kamps & Tankersley, 1996; McEvoy, Davis, & Reichle, 1993). Moreover, recent legislation, such as the No Child Left Behind Act, The Good Start, and the Grow Smart initiatives, has reemphasized the critical role that early intervention plays in promoting the social/emotional development of young children.

Notwithstanding the unanimity of support for early intervention, specifying precisely what constitutes a quality program of early intervention is not a simple task (Bailey, Aytch, Odom, Symons, & Wolery, 1999). Most experts agree that prevention of children's emotional/behavioral disorders requires intervention in multiple environments, by multiple agents over time, with continued intervention, support, and transition services as children move from setting to setting (Hamblin-Wilson, & Thurman, 1990; Hester & Kaiser, 1998; Rule, Fietchl, & Innocenti, 1990; Rous, Hemmeter, & Schuster, 1994). For example, effective intervention might include intervention in the home environment, as well as the school and community, with a focus not only on child behavior, but intervention with parents, teachers, and peers. Child characteristics, parent characteristics, the dynamics of the interaction between the parent and child, and how that relationship is influenced by economic, cultural, and social circumstances (Conduct Problems Prevention Research Group, CPPRG, 1992), all impinge on the development of children. The long-term efficacy of that intervention process is dependent largely on its continuity and consistency across persons, across settings, and over time. Various authorities assert it is the complex interplay between child and child-partner (parent/teacher/peer), along with variables within the context of the setting that shape the quality of behavior. The complexity of these variables is depicted in Figure 1. Moreover, collaboration between previous and future teachers, along with in-

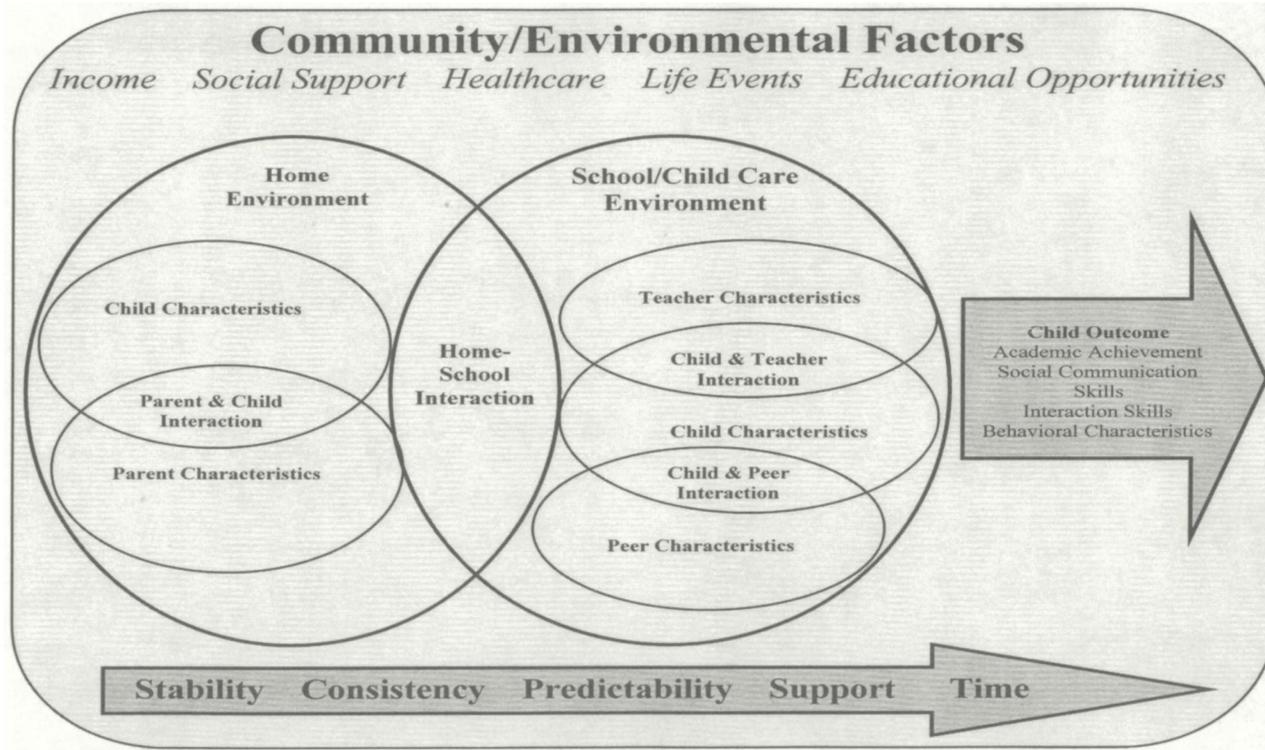


Figure 1. Multiple factors that impact a child's development and the critical role that others play in achieving positive outcomes for a child overtime.

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 put from parents could facilitate a successful transition for a child. This conceptualization highlights the need for teachers, researchers, and other professionals to look beyond the child for effective intervention strategies.

Given the broad support for early intervention for children with emotional/behavioral disorders, we examined the methodology and results of the accumulated research to learn more about the critical elements of these early interventions and how these elements are implemented. Our intent was threefold: (1) to examine the selection criteria for identifying participants; (2) to compare the research methodologies within and across preventive intervention studies; and (3) to document the assessment of prevention/intervention efforts. Our discussion is divided into three parts. First, we describe literature search procedures and criteria for study inclusion, along with methods for analyzing these early intervention studies. Second, we examine the conduct of the intervention, including characteristics of study participants, types of interventions, types of measures, age of onset and length of intervention, treatment fidelity, and social validity measures. Finally, we draw upon that review to offer recommendations for future research.

Procedures for the Review and Analysis of Early Intervention Research

Selection Procedures

This review focused on research on early intervention for the prevention of emotional/behavioral disorders. We relied on a number of strategies to locate potential studies for inclusion in the analysis. First, we identified studies through computerized bibliographic searches from abstract and citation archives (PsycINFO and Education Abstracts-ERIC) and reference lists from literature reviews. These searches were based on the following keywords and various combinations of these words: problem behavior; young children; risk/at-risk; early intervention; conduct disorder; prevention; longitudinal studies; resiliency; consumer satisfaction; parent/mother-child; teacher-child; treatment fidelity; treatment efficacy; attachment; outcome studies; parents; and emotional and/or behavioral disorders. These keywords were selected because they are prevalent in the literature, they have been established as critical factors in successful interventions, and they represent the evolving terminology in education legislation.

Initially, over 500 articles were screened. Because of the current legislative focus on early intervention and outcomes measurement through evidence based research, and to limit biases (Glass, 1976) and methodological flaws, we conducted our review according to preselected criteria and a standard coding protocol that reflected the legislative agenda. These criteria included: 1) studies published between 1990-2002 to focus on more current investigations; 2) evidence based research on early intervention; 3) interventions directed primarily at manifestations of child behavior and social functioning; 4) targeted participants who ranged in age from birth

through elementary school age at the onset of intervention; and 5) studies published in peer-reviewed journals. Using these parameters we identified 21 core studies for inclusion in our review. These studies, are identified with an asterisk in the References.

To insure accuracy of selection, two investigators independently identified the selected articles. Ideally, our review would include all significant empirical research reported during the time-period 1990-2002. We acknowledge that it may not be complete due to the reliance on journal articles (i.e., the omission of books, chapters, and dissertations), as well as oversight and error on our part. Studies that met our inclusion criteria were coded systematically according to specific characteristics that authorities have suggested focus on empirical support for early intervention for the prevention of emotional/behavioral disorders and the characteristics of the populations for whom these interventions were most efficacious (e.g. child's age at onset of intervention, intervention components) (Kaiser & Hester, 1997).

Analysis of Research Studies on Early Intervention

Analysis of the selected articles focused on three domains: 1) characteristics and selection criteria of the participants; 2) intervention implementation with regard to type and length of intervention, types of measures used, treatment efficacy, treatment fidelity, and social validity measures; and 3) longitudinal assessment. Each of these domains is addressed in the following discussion.

Characteristics and Selection Criteria

The way in which study participants are selected has critical implications on outcomes. If intervention results are to be informative, researchers need clearly to define the populations for which the treatment was designed (Chambless & Hollon, 1998). Intervention effectiveness may be applicable only to those participants who meet the stringent selection criteria for inclusion in a particular intervention. Unfortunately, there often is arbitrary use of diagnostic labels (e.g., emotionally disturbed, conduct disorder, behaviorally disordered), without strict adherence to diagnostic definitions. In other instances, there may be reluctance to affix a label(s) to young children and/or an absence of objective measures to support a particular classification. Upon review, four major areas of concern emerged with regard to participant selection: 1) variability in terminology used to describe participants and inconsistency in operational definitions; 2) variability among primary informants; 3) variability in assessment measures; and 4) researcher subjectivity.

The 21 studies that we reviewed contained a significant amount of vari-

ability regarding the terminology and/or operational definition used to identify participants. The discordance in selection criteria across studies poses a problem both in terms of comprehensively reviewing and accurately synthesizing early intervention/prevention efforts. The terminology used to identify the participants included, but was not limited to: at-risk, high-risk, conduct disorder, emotional disturbance, problem behavior, disruptive behavior, and emotional/behavioral disorder. The heterogeneity among participants also confounds efforts to replicate existing interventions, as intervention efficacy only applies to those studies using identical selection criteria (Sidman, 1960).

A common method to determine the presence/absence and the severity of specific problem behaviors in young children is the use of adult informant(s) (e.g., parent, teacher, childcare provider). Studies that relied on these types of measures contained considerable variability regarding individual child behavior, largely due to the subjective nature of these accounts. For example, Kaiser et al. (2002) found a link between level of teacher experience and reports of child behavior problems; that is, teachers with less than seven years of teaching rated children higher on total behavior problems than more experienced teachers. Further compounding this problem is the use of single versus multiple informants. In addition, the wide variety of assessment measures raises questions about the reliability and validity of assumptions regarding important attributes of the target population. We found little consistency in the measures applied (see Table 1). Measures included standardized and nonstandardized instruments, adaptations and subscales of standardized measures, and weighted/averaged standardized measures. In addition, a number of studies relied on various environmental characteristics, such as socioeconomic status and crime statistics, to determine at risk or high risk status of children.

A final concern that stemmed from our review related to researcher bias and subjectivity, both of which can be highly influential in determining treatment outcomes. Foremost was that the selection of "cut" scores on various instruments to determine inclusion or exclusion of children from the various studies may result in Type 1 and Type 2 errors (Campbell, 1994). When either interpreting extant data or replicating an intervention, one must keep in mind the ideographic characteristics of study participants. Studies that appear to target the same population in fact, may not do so.

Table 1
Frequency and Percentage of Study Characteristics

| Characteristic | <i>f</i> (N=21) | <i>P</i> |
|---------------------------------------|-----------------|----------|
| Experimental Design | | |
| Group | | |
| Randomized | 15 | 71 |
| Nonrandomized | 1 | 5 |
| Universal | 4 | 19 |
| Single Subject | 1 | 5 |
| Group Assignment | | |
| Treatment vs. Control | 12 | 57 |
| Treatment vs. Normative | 1 | 5 |
| Both Normative and Control | 4 | 19 |
| Treatment Only | 4 | 19 |
| Age of Child at Onset of Intervention | | |
| Birth | 1 | 5 |
| 1-4 years old | 4 | 19 |
| Kindergarten | 5 | 24 |
| Elementary School | 7 | 33 |
| Multiple Categories | 4 | 19 |
| Length of Intervention | | |
| 1 month | 1 | 5 |
| 1 – 4 months | 8 | 38 |
| 5 – 11 months | 2 | 10 |
| 12-23 months | 2 | 10 |
| 24-35 months | 5 | 24 |
| 36 months | 2 | 10 |
| Unknown | 1 | 5 |
| Intervention Components | | |
| Child | 3 | 14 |
| Parent | 5 | 24 |
| Teacher | 0 | 0 |
| Child/ Parent | 7 | 33 |
| Child/ Teacher | 1 | 5 |
| Parent/ Teacher | 1 | 5 |
| Child/Parent/Teacher | 4 | 19 |

*Table 1 (continued)**Frequency and Percentage of Study Characteristics*

| Characteristic | <i>f</i> (N=21) | <i>P</i> |
|--|-----------------|----------|
| Data Source | | |
| Direct Observation | 2 | 10 |
| Parent Report/ Teacher Report | 1 | 5 |
| Parent Report/ Direct Observation | 2 | 10 |
| Teacher Reports/ Direct Observation | 2 | 10 |
| Child Report/ Parent Report/ Teacher Report | 2 | 10 |
| Child Report/ Parent Report/ Direct Observation | 1 | 5 |
| Child Report/ Parent Report/ Official Record | 1 | 5 |
| Child Report/ Teacher Report/ Official Record | 1 | 5 |
| Parent Report/ Teacher Report/Direct Observation | 4 | 19 |
| Child Report/ Parent Report/ Teacher Report/ Direct Observation | 4 | 19 |
| Child Report/ Parent Report/ Teacher Report/ Peer Rating/ Official Record | 1 | 1 |
| Length of Longitudinal Assessment | | |
| No Post-treatment assessment | 4 | 19 |
| < 1 month | 1 | 5 |
| 1-6 months | 4 | 19 |
| 7-12 months | 4 | 19 |
| 13-24 months | 3 | 14 |
| 25- 60 months | 2 | 10 |
| 61- 120 months | 0 | 0 |
| 120 months | 1 | 5 |
| Ongoing | 2 | 10 |
| Fidelity Assessment | | |
| None | 9 | 43 |
| Content Only | 3 | 14 |
| Process Only | 1 | 5 |
| Both Content and Process | 8 | 38 |
| Social Validity Assessment | | |
| Consumer Satisfaction | 6 | 29 |
| Clinical Significance | | |
| | 7 | 33 |

Intervention Implementation: Critical Variables

Experimental designs of early intervention. In a controlled investigation, researchers must demonstrate treatment efficacy to conclude that benefits observed are due to the effects of the treatment and not to chance or con-

founding factors (e.g., time, measure variations, participant variability, treatment fidelity) (Campbell & Stanley, 1963; Chambless & Hollon, 1998). Efficacy is best demonstrated in group design studies in which participants are randomly assigned to treatment/comparison/control conditions or to carefully controlled single subject designs (Chambless & Hollon, 1998). Replication by an independent research team also helps to protect against investigator bias or aberrant findings (Chambless & Hollon, 1998). Finally, Cohen (1988) and others argue that controlled investigations need a sufficient number of participants to detect possible differences among treatments by means of a statistical test of significance.

Typically, research designs are divided into two broad categories—group and single-subject designs. Ninety-five percent ($n=20$) of the studies we reviewed relied on group design, whereas, 5% ($n=1$) used single subject methodology (Musser, Bray, Kehl, & Jensen, 2001). Of the studies utilizing a group design, 24% ($n=5$) compared treatment effects to a normative sample of children (August, Realmuto, Hektner, & Bloomquist, 2001; Braswell et al., 1997; Kamps, Tankersley, & Ellis, 2000; Shelton et al., 2000; Tremblay, Pagani-Kurtz, Masse, Vitaro, & Pihl, 1995) (see Table 1).

Age of child participants at preintervention assessment. The earlier intervention begins the more effective it will be (Kamps & Tankersley, 1996; Kauffman, 1999) and the less likely that secondary complications will arise (e.g., Guralnick & Bennett, 1987). In the studies reviewed, the initial age of preintervention assessment ranged from birth through elementary school. However, only 24% ($n=5$) of the studies identified children prior to kindergarten (Barkley et al., 2000; Eckenrode et al., 2001; Sanders, Markie-Dadds, Tully, & Bor, 2000; Serna, Nielsen, & Forness, 2000; Webster-Stratton, 1998) (see Table 1).

Type of intervention. As indicated previously, there is growing sentiment that multidimensional intervention is essential for success in early intervention/prevention (Dodge, 1993; Kaiser & Hester, 1997; CPPRG, 2000). Our review indicated that 38% ($n=8$) of the available studies included a single component. By comparison, 43% ($n=9$) included two intervention components, while only 19% ($n=4$) included three intervention components (see Table 1).

Length of intervention. The persistence of early behavioral problems suggests that longer term interventions are likely to be more effective than brief or episodic treatment (McConaughy, Kay, & Fitzgerald, 2000). In the studies reviewed, the intervention period varied widely, ranging from less than one month to 36 months. Forty-three percent ($n=9$) of the interventions fell within the one to four month range (see Table 1). However, due to inconsistent reporting regarding the frequency and duration of intervention, we were unable to capture a more complete picture of the duration of intervention efforts.

Types of measures. In order to demonstrate that a treatment is efficacious

for a particular problem, assessment needs to consist of rigorously applied, reliable, and valid methods. That assessment must focus specifically on the presence of intervention components and later child outcomes. According to Bennett, Lipman, Racine, and Offord (1998), it should include assessment of 80% or more of the original subject population and rely on sound statistical analysis, as appropriate. Furthermore, multiple methods of assessment are preferable to single measures, particularly if investigators use self-report (Bailey et al., 1998). Of the studies reviewed, 90% (n=19) used two or more data sources to assess treatment outcomes, with 43% (n=9) relying on three sources. Of the studies we reviewed, CPPRG (2002) reported data from five sources, which exceeds the number of data sources reported by other studies included in this review. Although this study included data from the child, parent, teacher, peer, and official records, the researchers reported they were unable to collect direct observational data due to time and resource constraints (see Table 1).

Treatment implementation. The actual implementation of the intervention plan poses challenges to researchers working in applied settings. Implementing multicomponent interventions further exacerbates the situation when it comes to recruitment and retention of participants (Hester & Kaiser, 1998; Ikeda, Simon, & Swahn, 2001), as well as monitoring and maintaining treatment fidelity (Ikeda et al., 2001; Prinz & Miller, 1991). Not surprisingly, the majority of studies we reviewed contained problems in one or more of these areas.

Fidelity refers to the demonstration that an experimental manipulation is conducted as planned, thereby insuring that each of its intervention components is delivered in a comparable manner to all participants over time (Dumas, Lynch, Laughlin, Smith, & Prinz, 2001). There is mounting recognition that fidelity of intervention is fundamental to the evaluation, comparison, and dissemination of effective treatment (Dumas et al., 2001; Moncher & Prinz, 1991). In looking at the research results, readers seek assurance that the effects of treatment (regardless of directionality) stem from the intervention rather than failure to deliver all components of an intervention according to the intervention protocol (content fidelity) or failure to deliver the intervention as designed throughout the intervention period (process fidelity). To assess treatment fidelity, investigators might write intervention protocols, introduce content fidelity checklists that align with intervention components, and assure that intervention agents are trained, supervised, and monitored to promote consistent implementation of the intervention over time (Dumas et al., 2001). In group design studies, outcomes of statistical analysis may be compromised by lack of adherence to protocol content and process (Dumas et al., 2001; Kazdin, 1986). Accordingly, it is incumbent on researchers to demonstrate to readers that their interventions were implemented with satisfactory levels of fidelity. Unfortunately, we did not find this to be the case.

Of the studies reviewed, only 38% (n=8) reported content and process fidelity. The absence of treatment fidelity reports makes it extremely difficult to judge whether standardization in content or implementation of an intervention was assessed or if this information was simply not reported. On the other hand, studies that do not address adequately the fidelity with which the intervention was conducted cannot determine if a nonsignificant outcome is the result of an ineffective intervention or the result the failure to implement the intervention as it was intended.

Social Validity. Parent satisfaction with child services is an essential component of program evaluation because parents typically rate services for the child as their highest priority (Bailey et al., 1998). This information can provide insight into issues of participant attrition/retention, strategies for recruiting future participants, developing programs that more effectively meet participant needs (McNaughton, 1994), as well as informing policy makers and funding agencies about the relationship between program effectiveness and consumer satisfaction (Wolery, 1987). Nonetheless, only six (29%) of the studies in our review mentioned assessment of social validity. Moreover, there are a number of methodological challenges in measuring parent satisfaction. For example, little is known about the reliability and validity of the various instruments used to assess parent satisfaction, the manner in which participants are recruited to complete questionnaires, or the time frame in which the evaluations were completed (McNaughton, 1994).

Longitudinal Assessment of Early Intervention

In prevention/intervention research it is important to know whether various treatment effects differ over time and whether treatment has an enduring effect (Chambless & Hollon, 1998). By assessing child outcomes longitudinally, we are able to contribute more substantially to the prevention/intervention literature. In that long term assessment of treatment effects pose special challenges to researchers (Tremblay et al., 1995), it is not surprising that the majority of studies with young children had no follow up data (Kazdin, 1993). Available follow up data are difficult to interpret in that researchers are unable to account for all intervening variables. Lack of participant retention over time also limits the validity of treatment effects. However, if participant loss is not random and those children at highest risk for behavior problems are lost to follow up, any researcher estimates of predicative accuracy will be biased (Bennett et al., 1998).

Although studies have begun to incorporate follow up assessments, the majority (62%) of studies in this review contained only limited follow up data (less than one year). Nineteen percent of the studies had no longitudinal assessment (n=4). Of those studies that included a longitudinal assessment, two reported on child outcomes five years post intervention

(Ialongo, Poduska, Werthamer, & Kellam, 2001; Tremblay et al., 1995) and one 10 years post intervention (Eckenrode et al., 2001) (see Table 1).

Discussion

In the current review, we identified a number of issues critical to understanding the variation found within early intervention research methodology. The degree of variability in the methodology across studies and the absence of detailed descriptions of procedures were particularly evident in three domains: 1) participant selection criteria, 2) implementation issues, and 3) treatment effects. Accordingly, we will focus on those areas, as well as possible ways to strengthen our collective understanding of early intervention for the prevention of emotional/behavioral disorders.

Participant Selection Criteria

As evidenced in our review, there is no standard definition and/or criteria for identifying emotional/behavioral disorders, compounding the difficulty in identifying children for inclusion in research studies. Further complicating the situation is the wide variability in the types of measures used by researchers to identify children in both the clinical and sub clinical range. Researchers used standardized measures (e.g. CBCL, BASC, SSRS, and TOCA), subscales of standardized measures, and modified scales of standardized measures. Items included in the adaptations of standardized measures are seldom reported, resulting in reliability and validity issues which often are ignored but pose a significant barrier to replicating research findings. To achieve reliable, effective interventions, it is essential that we develop standardized terminology and measures in order to identify the target population precisely (August, Realmuto, Crosby, & MacDonald, 1995; Ayoub & Jacewitz, 1982).

Along with importance of consistent terminology in establishing a reliable target population, the issue of consistency regarding the source of information used to identify the target population also is a critical factor in conducting high quality research. Even though research suggests strongly that parents and teachers do not identify the same children as high risk (Kaiser, Cai, & Hancock, 2002; Offord et al., 1996), in our review studies continue to rely on informant accounts rather than direct observations to make these identifications. However, four studies in this review used direct observational measures in addition to behavior reports from the parent, child, and teacher (Barkley et al., 2000; Braswell et al., 1997; Shelton et al., 2000; Webster-Stratton, 1997). While use of indirect assessment is more efficient and cost effective, direct observation yields far more reliable information (Bailey et al., 1998) and should probably be the mainstay of early intervention research.

Another issue regarding early intervention research is a possibility of false positives among the pool of participants (August et al., 1995). Research suggests that behavior problems manifest in the preschool years often persist over time (e.g., Campbell & Ewing, 1990, Lober & Dishion, 1985), but this is not the case for all children with early problem behaviors. For example, Van Acker (2003) identifies two categories of aggressive children, those that manifest aggressive behavior in childhood and those that manifest aggressive behavior in adolescence. It is those children with early onset aggression that are likely to engage in aggressive behavior throughout the lifecourse. One might argue that prevention intervention efforts should begin when early warning signs arise and target those children who are more likely to display more aggressive behaviors throughout their lives. At the same time, we would seek to avoid inappropriately intervening with children who display a developmentally appropriate behavior that is likely to diminish with time (Campbell, 1994; Walker, Colvin, & Ramsey, 1995). Despite the focus on early identification, the majority of studies (76%) in this review identified children only after they entered elementary school.

Implementation Issues

Our review and the work of others support the proposition that there is increasing emphasis on multi dimensional interventions—interventions in multiple domains over time, as indicated by the variation in intervention components included in this review: child/parent; child/teacher; teacher/parent; child/peer; as well as combinations of three or even four of these partners. For example, five of the studies in this review intervened in two or more domains for two or more years (August et al., 1995; Braswell et al., 1997; CPPRG, 2002; Kamps, Tankersley, & Ellis, 2000; Tremblay et al., 1995). On the other hand, it is the complexity of these interventions that makes it difficult to identify the most salient aspects of a particular intervention.

As interventions become increasingly complex and multidimensional, it becomes even more important to address the issue of treatment fidelity. It is essential that all participants receive all components of the intervention protocol and that the protocol is delivered as prescribed in order to evaluate intervention efficacy appropriately. Readers often assume that interventions are implemented according to research protocols, but our review indicates that some researchers offered reports of treatment fidelity, while others made no mention of either process or content fidelity. We acknowledge that space limitations in many journals often impact the length and complexity of manuscripts. It is possible that some authors were unable to provide the detail needed to describe all aspects of an investigation due to issues of space. On the other hand, it is possible that the

absence of treatment fidelity discussions reflects a deficiency in the research designs to adhere to content and process protocols. Despite space limitations in journals, it is imperative that researchers report both process and content fidelity as well as the procedures necessary for effective and consistent implementation of treatment components (Dumas et al., 2001).

Treatment Effects

In that early intervention does not occur in a vacuum (Bailey et al., 1999), researchers have begun to focus on interactions of child behavior with others (parents, teachers, peers) and the quality of these interactions across time. However, few studies have addressed the supportive aspects of others in the maintenance and generalization of child behavior (Bailey et al., 1999). The burden of intervention effectiveness usually rests with the child; that is, the child behavior is the major focus of post intervention assessment. Absent are data on the environmental context(s) and the individuals with whom the child interacts and the intensity and quality of those interactions when follow up data are collected. Because of the multiple factors that contribute to emotional/behavioral disorders, if a child has support in one or more domains, he/she may be protected from some of that risk (Coie et al., 1993).

Accumulated research indicates that responsiveness (Kaiser & Goetz, 1993), engagement (Hart, 2000), stability, and predictability provide the foundation for a positive relationship between the child and others (Bronfenbrenner & Morris, 1998). If teachers in preschools and childcare centers were trained to support child learning in these ways, a corridor for prevention intervention would be available for all children during their earliest school experiences. As Kauffman (1999) suggests, if early intervention is to be successful, it is imperative that we provide young children at risk with environments that both directly teach and actively support adaptive behaviors. Our review underscores the need for multidimensional interventions, interventions which incorporate all characteristics of children at risk and the multiple settings in which they live and learn.

Although directly teaching adaptive behaviors increases short term intervention efficacy, behavior rarely maintains without training participants for generalization across time and setting. Most individuals do not change their behavior without consistent feedback and support, yet it appears that researchers expect children with emotional/behavioral disorders to maintain treatment effects over time without continued, systematic support. Research suggests that treatment effects are more likely to be maintained if intervention is scheduled at regular intervals over time. These booster sessions should be more frequent immediately post intervention with a plan for systematically fading them as targeted behaviors are maintained

at criterion levels for specified periods of time. The booster sessions should be an integral part of the post intervention protocol for all study participants—not just the child participants (Gable, Hendrickson, & Van Acker, 2001; Kaiser & Hester, 1997).

Our review raises questions regarding treatment effects and their clinical or functional significance. While statistical significance indicates a change or difference in groups that is mathematically meaningful, it may have little relevance unless the treatment effects result in a discernable reduction in problem behavior to an acceptable level (Chambless & Hollon, 1998). Assessing such clinical significance also can be accomplished by establishing a normative comparison group as a part of the research design. As we discussed, few studies have utilized both a normative comparison group and a control group. The inclusion of the three groups would allow researchers to compare the effects of the intervention to a similar population that did not receive the intervention, as well as provide researchers with the ability to compare the treatment progress to that of a normative group.

Another factor that influences outcome data has little to do with the effects of treatment, but rather with the source and continuity of research funds. For example, obtaining grants for research requires researchers to develop innovative approaches to old problems, rather than conducting a replication of previous interventions, which would serve to strengthen our knowledge of effective intervention. Funding agencies often have to make decisions that hinder the very research that is needed to address the efficacy of early intervention for the prevention of emotional/behavioral disorders. Moreover, the length of follow up assessments (or lack thereof) usually is based on the longevity of funding, rather than a researcher's commitment to assessing treatment effectiveness over time. Funding cycles range from one to five years—limiting longitudinal assessments. If we are to make advances in the field, we need to examine carefully the effectiveness of particular intervention components and rigorously adhere to the slow meticulous method of systematic research (Sidman, 1960). That commitment will require slowly building a research base and identifying significant intervention components, careful adherence to content and process protocol, precise measurement, direct/systematic replication of results, and discussion of results that were not significant, for it is often through our mistakes and failures that we can make the most advances. Funding agencies also must consider funding research over longer periods of time, providing funding for replication studies and other research that addresses issues of standardization of criteria for research participants, measures, fidelity, and longitudinal assessments.

Limitations

It is reasonable to indicate limitations of our research in order to improve upon reviews of this nature in the future. First, in reviewing the terms used to identify studies in the initial literature, we acknowledge that the term "aggression" was not included as one of our keywords in the computerized bibliographic search. As discussed previously, the issue of variability with regard to terminology is critical to identifying a target population. While this is a limitation, it underscores the wide ranging criteria by which participants are being identified. Additionally, our focus on journal articles served to narrow the scope of our review, but reduced the comprehensiveness perhaps necessary for a complete understanding. Finally, while we did explore the variation in assessment procedures and sources of information, we did not explore the variations with regard to the type of measurements utilized.

Conclusion

While we acknowledge the aforementioned limitations, we also recognize the importance of this review. Much of the research on prevention/intervention focuses on the efficacy and outcome of intervention. However, as discussed in our review, it is extremely difficult to compare intervention effects across studies without first addressing the variation found in research designs. Given the lack of consistency across these interventions, it is impossible to determine what variables, either singularly or in combination, will result in the amelioration of problem behavior in young, at risk children.

In all, we feel that this review raises a number of questions regarding research on early intervention. It causes us to reflect on those aspects of empirical inquiry that tend to hinder the very work we seek to accomplish. In particular, benefits likely would accrue from standardization of participant selection criteria and measurement tools, use of protocols to assure fidelity, the direct assessment of significant others with whom the child interacts over time, and a more precise explication of the research limitations. We trust that future research will allow us to more precisely identify issues associated with effective intervention and to determine which variables work best singularly or in a synergistic fashion to ameliorate risk factors in children.

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*Studies included in the review