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Strategies to Engage Underrepresented Parents in Child Intervention Services: A Review of Effectiveness and Co-occurring Use

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Abstract
The purpose of this review was to estimate the impact of parent engagement strategies tested with underrepresented families of young children with social, emotional, or behavioral disorders, and describe the combinations in which these strategies are commonly used together. We conducted a systematic review using the PracticeWise Engagement Coding System to identify which strategies had the strongest empirical support for engaging underrepresented (i.e., minority race or ethnicity, or low income) families receiving psychosocial services for their children. Social network analyses were used to identify the frequency of strategy use and how strategies were combined to engage underrepresented families. Linear regression was used to estimate the impact of each strategy on parent engagement, using attrition as a proxy for non-engagement. Thirty-five studies met inclusion criteria. Parent attrition was predicted by larger sample sizes, lower maternal education, interventions that were more community or home-based, less therapist monitoring, positive reinforcement from therapists, and more pairing families with peers. Social network analyses suggested that more effective strategies were more frequently implemented alone and less effective strategies were commonly combined with each other. Our findings suggest that researchers and practitioners require guidance in selecting engagement strategies to reduce attrition of underrepresented families in treatment. Although we identified promising strategies for improving parent engagement in treatment for underrepresented children with social, emotional, or behavioral disorders, the frequent combining of engagement strategies in research means that there is little data on the independent effects of interventions to increase parent engagement for this population.

Keywords Parent engagement · Underrepresented parents · Attrition · Peer pairing · Social network analysis

Introduction

Effectively engaging parents in their child's treatment for social, emotional, and behavioral problems contributes to improvements in the child's symptoms, parent–child interactions, and family functioning (Dowell & Ogles 2010; Kazantzis, Whittington, & Dattilio 2010; Haine-Schlagel & Walsh 2015). We use the term "parent" herein to refer to any primary caregiver of a child, including biological parents, guardians, and other familial and non-familial caregivers. Engagement is particularly critical in the treatment of young children; the primary mechanism in many interventions for this population is to change parent behavior to reduce the child's symptoms (Eyberg 1988; Fabiano et al. 2009; Kazdin 1997). Parents often play a primary role in services via parent-mediated interventions; in fact, many evidence-based interventions for young children with autism spectrum disorder (Smith & Iadarola 2015), oppositional or disruptive behavior disorders (Kaminski & Claussen 2017), and ADHD (Evans, Owens, & Bunford 2014) incorporate parent-mediated treatment delivery.

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Engaging parents from traditionally underrepresented families is particularly important. We use the term underrepresented to describe families in which children with a social, emotional, or behavioral disorder are often missed or who receive services in disproportionately low numbers. These families often are of minority race or ethnicity, and/or live in poverty. Children and families from ethnic minority backgrounds are less likely to engage in services (Dickson, Zeedyk, Martinez, & Haine-Schlagel 2017; Gopalan et al. 2010), and retention in parent training programs is lower among parents from ethnic minority backgrounds or low income households (Chacko et al. 2016; Holden, Lavigne, & Cameron 1990; Kazdin & Whitley 2003; Reid, Webster-Stratton, & Beauchaine 2001; Zuckerman, Lindly, Sinche, & Nicolaidis 2015). Additionally, children from low socioeconomic status and/or racial and ethnic minority families are more likely to experience diagnostic delays for developmental and other social, emotional, or behavioral disorders (Daniels & Mandell 2013; Mandell, Listerud, Levy, & Pinto-Martin 2002; Mandell, Novak, & Zubritsky 2005; Morgan, Staff, Hillemeier, Farkas, & Maczuga 2013; Thomas et al. 2011), which can interfere with access to timely and sufficient services (Coker et al. 2016; Harrington & Kang 2008; Magaña, Lopez, Aguinaga, & Morton 2013). Improving parent engagement for these at-risk families would likely lead to timelier treatment access and ongoing participation in services.

The challenges of successfully engaging underrepresented families are magnified by the complexity and multi-faceted nature of parent engagement. Parent engagement has been operationalized in many ways, including both attitudinal engagement (e.g., beliefs about need for and effectiveness of treatment) and behavioral engagement (e.g., attendance, participation in sessions, homework completion, retention, and treatment completion) (Haine-Schlagel & Walsh 2015; Miller, Southam-Gerow, & Allin 2008; Nock & Ferriter 2005; Staudt 2007). A series of studies have identified strategies found to be effective in parent engagement, such as peer support (Reeves et al. 2015), culturally informed practices (Fung & Fox 2014), collaborative problem solving (e.g., Knoche et al. 2012), shared goal setting (e.g., Sheridan, Knoche, Edwards, Bovaird, & Kupzyk 2010), and incentives for participation (Gross et al. 2011). In a broad review of the use of parent engagement strategies in child mental health services, Lindsey et al. (2014) found that commonly-used and successful strategies included comprehensive pre-treatment assessment, accessibility promotion (e.g., accessible and flexible locations for treatment sessions), homework assignments, and appointment reminders. This was the first attempt to systematically examine which engagement strategies are associated with particular engagement outcomes, and provides important information about the effectiveness of engagement strategies across populations. However, it did not provide insight into which engagement strategies are most effective for parents who are most vulnerable to engagement challenges. Given the well documented challenges of engaging underrepresented families in treatment (Boyd & Corley 2001; Magiati, Charman, & Howlin 2007), information about which engagement strategies are most successful at these families is needed in order to improve parent engagement in this population.

Little is known about which strategies are most effective in engaging underrepresented families, many of whom are at highest risk for poorer treatment outcomes. Further, information about how strategies are routinely combined to support parent engagement is still emerging (Michie et al. 2009), but could provide valuable insight into how engagement strategies can be delivered in combination to enhance parent engagement. The current systematic review of the parent engagement literature assesses which strategies are most commonly used and effective in engaging parents in underrepresented families of young children with social, emotional, or behavioral disorders. The goals are to inform clinicians and guide research aimed at engaging underrepresented families. This study seeks to answer three questions: 1) Which parent engagement strategies are most commonly used in studies with underrepresented families of children with social, emotional, and behavioral disorders? 2) Which strategies are most effective at improving parent engagement for this population? and 3) How are parent engagement strategies combined in interventions for this population?

Method

Search Strategy

The literature search was conducted using the electronic database PsycINFO. Search terms included: (parent* or mother* or father* or caregiver* or famil*) AND (engage* or involve* or participat* or collaborat*) AND (underserve* or underresource* or low resource* or poor or poverty or ethnic minorit* or low SES or low socioeconomic status or head start or foster care or medicaid) AND (randomi* or rct or single subject or multiple baseline or alternating treatments or revers* design). This search yielded 330 records. Abstracts were reviewed and included if they met the following study criteria: 1) specifically used parent engagement strategies (defined as: strategies intended to increase parents' participation, attendance, or collaboration in their child's treatment), 2) measured parent engagement outcomes (defined as an observable product of the engagement strategy such as attendance, retention, or homework completion), 3) children in the study were
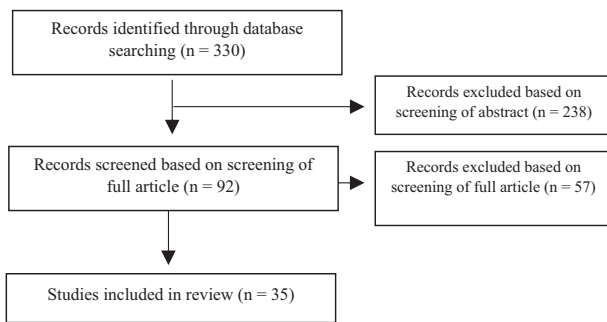
Fig. 1 Article screening and inclusion

identified as being diagnosed with or at-risk for a social, emotional, or behavioral disorder, 4) the study included children less than 8 years old, 5) the majority of participants were under-resourced (defined as receiving government assistance, such as WIC, SSI, or of low socioeconomic status), and/or were of ethnic minority backgrounds, 6) a randomized controlled trial or experimental single case design, 7) peer-reviewed, and 8) published after January 1, 2000 (to limit the search to more recent articles) and before July 31, 2016 (when data extraction was completed). After screening abstracts, two independent coders reviewed the full body of 92 articles for eligibility. The inter-rater reliability for article inclusion was 90%. Consensus coding was used to settle any disagreements. A total of 35 articles (noted in the reference section with **) met the inclusion criteria (see Fig. 1). Articles were most often excluded because they did not describe the sample as under-resourced or ethnic minority, did not include children with or at-risk of social, emotional, or behavioral disorders, or did not specifically measure parent engagement outcomes. Most articles included described an evaluation of structured protocols compared to treatment as usual. See Table 1 for a summary of the articles included in the review.

Coding Procedures

Articles were coded using a modified version of the PracticeWise Engagement Coding System (Lindsey et al. 2014), which is based on the PracticeWise Clinical Coding System. This instrument offers an objective method for identifying both practice elements (Chorpita and Daleiden 2009) and their associated outcome measures (Becker et al. 2015). A practice element is defined as a discrete strategy used as part of a larger intervention to engage families in treatment (Lindsey et al. 2014). The coding system consists of 26 practice elements, with six of the categories having sub-elements. The reviewed articles included all but four of these elements (crisis management, relationship mapping, self-monitoring and therapist response cost were not used). Additionally, translation of intervention materials was noted

in 11 of the articles viewed, and was not listed in the current coding system; therefore we added this element (resulting in a total of 23 practice elements coded). After coding, we edited the final practice element list for the purposes of our specific research questions and analysis plan (regression, network analyses); we grouped each of the six elements that had sub-elements, and eliminated seven practice elements that were not specifically designed to promote engagement (behavioral contracting, communication skills, modeling, psychoeducation, relationship mapping, relationship/rapport building: youth, role play/rehearsal) and the four elements that were coded in less than four articles (cognitive, monitoring, motivational interviewing and supportive listening). This resulted in 12 practice elements (see Table 2 for a list of the practice elements and definitions). Codes for engagement outcomes in each study included attrition (i.e., dropping out of service), participation and involvement (i.e., how much parents participated in sessions), homework completion, and intervention enrollment. All articles were coded by two independent raters. Mean inter-observer agreement across all codes within all articles was 90%. Any disagreements were resolved through consensus meetings with both coders.

Data Analyses

Determining the effectiveness of parent engagement strategies

Linear regression was performed to examine the effect of each engagement strategy on parent engagement using attrition (percentage of parents who dropped out of the intervention) as a proxy for engagement. Attrition was selected as the outcome measure of interest as it was the most common outcome measure used across (24 studies). Covariates included: sample size, total number of hours of intervention offered, maternal education (percentage of participants with maternal education more than high school, therefore higher values reflects higher education), and where intervention sessions were delivered (clinic, school/preschool/daycare or home). We used maternal education as a proxy for income because income was inconsistently reported across studies, and paternal education was not often reported. Race was originally included as a covariate (% non-white), but due to the differences in the social-cultural context of "non-white"/"white" across countries and many missing data points, this variable was ultimately not included in the analysis. See Table 3 for statistics on attrition and the study-related predictors.

To further minimize the number of PracticeWise elements entered as independent variables (given a total of 23 elements, 65 at the level of sub-elements coded across articles), after removing elements based on low relevance

Table 1 Summary of the articles reviewed

Author (year)	Child age range	Type of child social/emotional/behavioral disorder	Engagement strategies used	Engagement outcome measure	Intervention target for parents	Research design: RCT or single subject
Bradshaw et al. (2009)	Mean age: 6.2 years (range: 5.3–7.7)	Externalizing behavior problems	Collaborative, problem solving, accessibility promotion-other, assessment, therapist monitoring	Session attendance, attrition, participation and involvement, homework completion	Teaching and behavior management skills	RCT
Brotman et al. (2003)	Mean: 3.6 years (range: 2.5–5 years)	At high risk for behavior problems	Collaborative, support networking, accessibility promotion, assessment, cultural acknowledgement	Session attendance, attrition, intervention enrollment rate	Positive parenting practices	RCT
Brotman et al. (2013)	4 year old students in pre-k classrooms	At-risk for behavior problems	Collaborative, problem solving, accessibility promotion, cultural acknowledgement	Session attendance, attrition, intervention enrollment rate	Positive behavior support and behavior management	RCT
Canning & Fantuzzo (2000)	Mean: 3.3 years (range: 3 months to 29 years)	Head Start students (at-risk)	Collaborative, accessibility, cultural acknowledgement	Participation and Involvement	Participation in education sessions	RCT
Dawson-McClure et al. (2015)	Mean: 4.15 years old (SD = 0.28)	At-risk for behavior problems	Collaborative; goal setting; peer pairing, problem solving; support networking; accessibility promotion; cultural acknowledgement; therapist praise/reward	Session attendance	Positive behavior support and behavior management	RCT
Delaney and Kaiser (2001)	Range: 3 to 3.11 years	Language delays and behavior problems	Accessibility promotion	Participation and involvement, other	Communication and behavior support	Single subject design
DeLoatche et al. (2014)	Mean age = 4.69 years (SD = 0.53)	Head Start students (identified as at-risk)	Accessibility promotion	Homework completion	Early literacy intervention	RCT
Dionne et al. (2009)	Mean 6 years: (range: 3–11)	American Indian children (considered at risk population)	Goal setting; relationship/rapport building; assessment; cultural acknowledgement	Attrition	Positive parenting practices	RCT
Dishion et al. (2008)	Mean: 2.49 years (range: 2 years – 2 years 11 months)	At-risk for behavior problems based on: child behavior, family problems, and socio-demographic risk	Accessibility promotion; assessment; cultural acknowledgement	Attrition, participation and involvement	Positive behavior support	RCT
Dorsey et al. (2014)	Mean 9.57 years (range: 6–15 years)	Children had trauma histories and symptoms of PTSD	Problem solving, assessment	Session attendance, attrition	Involvement in trauma focused cognitive behavior therapy	RCT
Duggan et al. (2004)	Birth— 3 years (childbirth through 3 year follow-up)	Families were at risk for child abuse	Relationship/rapport building, accessibility promotion, assessment	Session attendance, attrition	Fathers' engagement in parenting activities	RCT

Table 1 (continued)

Author (year)	Child age range	Type of child social/emotional/behavioral disorder	Engagement strategies used	Engagement outcome measure	Intervention target for parents	Research design: RCT or single subject
Dumas et al. (2010)	Mean 4.37 years (range: 2.62–6.93 years)	At-risk for behavior problems	Accessibility promotion; therapist praise/reward	Session attendance, attrition, intervention enrollment rate	Positive parenting practices	RCT
Eisner and meidert (2011)	Children entering primary school	Externalizing problem behaviors	Accessibility promotion, cultural acknowledgement, translation	Session attendance, homework completion	Positive parenting practices	RCT
Fantuzzo et al. (2007)	Mean: 5.03 years	Head start students (at-risk)	Peer pairing; relationship/rapport building; support networking; accessibility promotion; cultural acknowledgement	Session attendance; intervention enrollment rate	Social contact with peers	RCT
Fung & Fox (2014)	Mean 3.89 years (SD: 1.11)	Child referred for a significant mental health concern such as aggression, self-injury, hyperactivity, or separation anxiety	Problem solving; relationship/rapport building; accessibility promotion; assessment; cultural acknowledgement; translation; therapist monitoring	Attendance; attrition	Positive parenting practices and behavior management	RCT
Gross et al. (2011)	Range: 2–4 years	At-risk for behavior problems based on parent socio-demographic information	Problem solving; accessibility promotion; cultural acknowledgement; therapist praise/reward	Session attendance; participation and involvement; intervention enrollment rate	Child management techniques	RCT
Hancock et al. (2002)	Range: 3.1–4 years	At-risk for language delays and behavior problems.	Cultural acknowledgement; therapist praise/reward	Satisfaction	Communication and behavior management skills	Single subject design
Heinrichs (2006)	Mean 4.4 years (range:2.6–6 years)	Children attending a preschool in a socially disadvantaged area	Goal setting; accessibility promotion; cultural acknowledgement; therapist praise/reward	Session attendance; attrition; intervention enrollment rate	Positive parenting practices	RCT
Hurwitz et al. (2015)	Mean: 3.4 years (range: 6 months- 5 years)	Head Start (low SES/at risk)	Accessibility promotion; therapist praise/reward	Participation and involvement; homework completion; parent reported satisfaction	Parent–child activities	RCT
Jung & Stone (2008)	Mean: 3.38 (SD: 4.49)	At-risk for behavior difficulties	Accessibility promotion	Participation and involvement	Parental responsivity	RCT
Kjøbli et al. (2013)	Mean 8.56 years (range: 2–12 years)	Conduct problems	Role play/rehearsal	Session attendance; attrition; intervention enrollment rate	Positive parenting skills	RCT
					Positive parenting skills	RCT

Table 1 (continued)

Author (year)	Child age range	Type of child social/emotional/behavioral disorder	Engagement strategies used	Engagement outcome measure	Intervention target for parents	Research design: RCT or single subject
Knoche et al. (2012)	Mean: 10.3 months (range: 1.8 –24.5 months)	Enrolled in early head start (at-risk for academic, socio-emotional, and behavioral difficulties)	Collaborative; goal setting; monitoring;accessibility promotion; cultural acknowledgement; therapist praise/reward	Session attendance; attrition; participation and involvement		
Lees and Ronan (2008)	Mean: 7.75 years (range: 6–9 years)	ADHD	Goal setting; monitoring; accessibility promotion; therapist monitoring;therapist praise/reward	Session attendance; other	Positive parenting skills and behavior management	Single subject design
McDonald et al. (2015)	range: 6–7 years	Enrolled in Title I schools (at risk)	Peer pairing; relationship/rapport building; support networking; accessibility promotion; cultural acknowledgement	Session attendance	Positive parent–child interactions	RCT
Mejia et al. (2015)	Mean: 8.49 years (range: 3–12 years)	Parent-rated behavioral difficulties with Eyberg Child Behavior Inventory	Accessibility promotion; translation; therapist monitoring	Session attendance; attrition	Positive parenting practices	RCT
Mendez (2010)	Mean: 4 years (range: 2.75–5.75 years)	Enrolled in head start (low SES/at risk)	Relationship/rapport building; support networking; accessibility promotion;cultural acknowledgement	Session attendance; participation and involvement; parent–teacher relationship	Reading and educational activities	RCT
Mian et al. (2015)	Mean: 2.9 years (range: 0.91–5.91 years)	Enrolled in WIC (low SES/at risk)	Accessibility promotion; translation; assessment; cultural acknowledgement	Session attendance	Child anxiety prevention strategies	RCT
Pears et al. (2015)	Mean: 5.27 years (range: 5–6 years)	Developmental disabilities; behavioral difficulties	Peer pairing; accessibility promotion	Session attendance; attrition	Effective discipline skills	RCT
Pratt et al. (2015)	Mean: 4.08 years (range: 2.75–5.97 years)	Enrolled in head start (low SES/at risk)	Collaborative; accessibility promotion; assessment	Session attendance; participation and involvement	Positive parenting skills	RCT
Sheridan et al. (2010)	Mean: 3.59 years (range: 3.0–4.38 years)	Enrolled in head start (low SES/at risk)	Collaborative; goal setting; monitoring;accessibility promotion; therapist praise/reward	Attrition; participation and involvement	Warmth and sensitivity; active participation in learning	RCT
Sheridan et al. (2011)	Mean: 3.59 years (range: 3.0–4.39 years)	Enrolled in head start (low SES/at risk)	Collaborative; goal setting;problem solving; relationship/rapport building;	Attrition	Warmth, sensitivity, and responsiveness;	RCT

Table 2 Practicewise elements and definitions as indicated in the practicewise engagement codebook

Element	Brief definition (full definitions available from the author)
Accessibility promotion	Any strategy used to make services convenient and accessible, e.g., appointment reminders, child care, free services, flexibility with location and time of appointments, catching a caregiver up on missed materials, transportation, or offering food during sessions
Translation	Translation of materials or services in participants' primary language
Cultural acknowledgement	Specific use of strategies explicitly designed to acknowledge or explore the client's culture, socioeconomic status, or education level (e.g. reading ability). Examples include modifications to treatment setting, session length, sequencing of elements, who is involved in treatment style, verbal and nonverbal behavior (and intervention content. Also includes translation
Peer pairing	Pairing of a parent/caregiver with another parent/caregiver or group of parents/caregivers to allow for reciprocal learning, skills practice, or the development of supportive networks
Support networking	Inclusion of informal helpers (relatives, friends, neighbors, faith community members, etc.) in service planning and delivery
Collaboration and relationship/rapport building	*Collaborative*: Provider conveys a sense of shared power and responsibility between the therapist and the parent in the decision-making *Relationship/rapport building*: Strategies aimed to increase the quality of the relationship between the therapist and caregiver/family
Goal setting, assessment and problem solving	*Goal setting*: The explicit selection of a therapeutic goal for the purpose of working toward achieving that goal *Assessment*: Assessment of treatment barriers used to facilitate family engagement *Problem solving*: Training in the use of techniques, discussions, or activities designed to bring about solutions to targeted problems, usually with the intention of imparting a skill for how to approach and solve future problems
Therapist monitoring and therapist praise reward	*Therapist monitoring*: Therapist's repeated review of a target process or behavior (e.g., alliance, treatment relevance, attendance, satisfaction) for the purpose if increasing parent engagement *Therapist Praise Reward*: The administration of reinforcers by the therapist to promote a desired behavior in the caregiver (e.g., monetary rewards; food; social reward)

Table 3 Descriptive statistics of study characteristics

	Min	Max	*M* (SD)	Article frequencies
Attrition dosage (% of intervention sample)	0	73.08	26.33 (19.22)	24
Total intervention hours (recommended dosage)	0.25	90	19.70 (21.13)	25
Intervention sample size	4	1500	209.83 (171.98)	35
Maternal education (% more than high school)	0	92.30	66.98 (23.48)	25
Intervention setting[a]	0	1		35
Clinic				4
School, preschool or daycare				17
Homeb[b]				14

[a]Two studies were based at both community clinics and schools (coded in clinic) and one was based at both schools and home (coded in schools)

[b]Includes two studies that were text/phone based

to attrition and/or low frequency (resulting in 12 PracticeWise elements, as above), seven elements were then grouped by theme into three categories: collaboration with relationship/rapport building, problem solving with goal setting and assessment, therapist monitoring with therapist praise reward. With the remaining five elements (accessibility promotion, translation, cultural acknowledgement, peer pairing and support networking), this resulted in eight categories (see Table 2 for definitions of each element). The eight identified elements were included in 34 of the 35 articles. We contacted authors for any missing information (with response rate of 66.67%); articles still missing information were eliminated from the analysis, resulting in 21 studies. Variables were then analyzed for skewness, kurtosis and outliers using the method outlined in Tabachnick and Fidell (1996), with a critical value set at ±3.29. Total intervention hours were skewed due to two outliers (90 and 72 h), so a +1 on next non-outlier value transformation was performed. All variables were then normally distributed (all critical values under ±3.13); therefore, parametric tests were used in all analyses.

Fig. 2 A sociogram representing co-implementation of elements
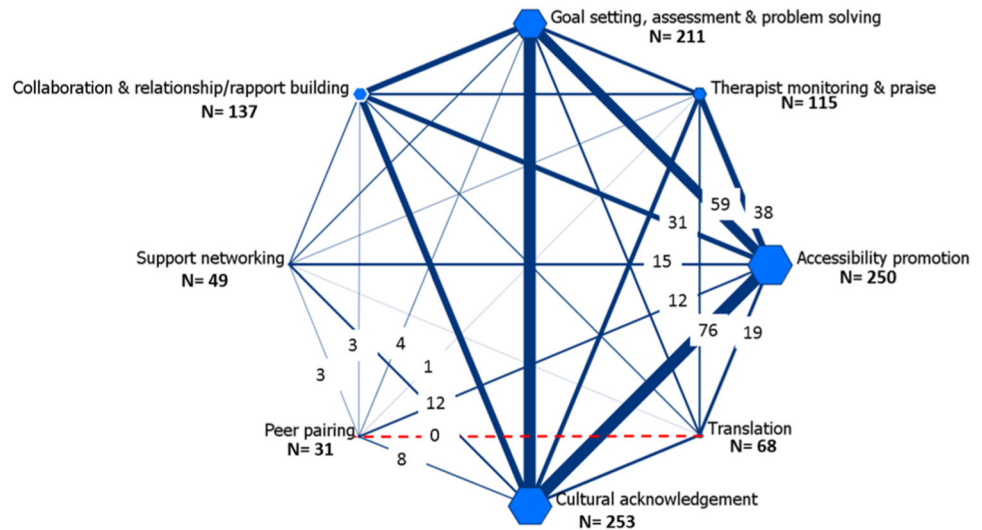
Social network analysis of parent engagement strategies

Because every study implemented multiple practice elements concurrently, we used social network analysis methods to systematically estimate how the elements were used together. The social network analysis included 34 articles in a two-mode $N \times M$ network (8 element categories $\times$ 34 articles), where each cell x_{ij} equaled the number of sub-elements that were used in each study. We then derived a one-mode, element-to-element network from the $N \times M$ two-mode network using projection (Breiger 1974). We multiplied the $N \times M$ matrix by its transpose to create an $N \times N$ matrix, where each cell x_{ij} equaled the number of times each pair of elements were used together. We manually changed the diagonal to be 0, since our analysis was about co-implementation among different elements. We then illustrated the transposed matrix as a sociogram (Fig. 2). We used a circle layout to display the network data using ORA, a social network analysis software package (Carley and Jeff 2004). The hexagon nodes represent each element and the lines connect elements used together.

Results

Results are organized to answer the three research questions stated above, briefly: 1) Which parent engagement strategies are most commonly used? 2) Which strategies are most effective at improving parent engagement? 3) How are these strategies combined?

PracticeWise Elements Frequency

Accessibility promotion was the parent engagement strategy used most frequently across studies, followed by goal

Table 4 Descriptive statistics of practicewise elements[a]

Article frequencies[b]	PracticeWise elements	Min	Max
30	Accessibility promotion	0	4
22	Goal setting, assessment and problem solving	0	5
18	Collaboration and relationship/ rapport building	0	2
18	Cultural acknowledgement	0	7
16	Therapist monitoring and therapist praise reward	0	2
11	Translation	0	1
6	Support networking	0	1
4	Peer pairing	0	1
3	Motivational interviewing	0	1
3	Monitoring	0	1
2	Supportive listening	0	1
2	Cognitive	0	1

[a]PracticeWise elements not in table were not coded for the articles reviewed

[b]One or more articles used the PracticeWise element in their intervention

setting, assessment and problem solving. Supportive listening and cognitive strategies were used least frequently across studies (Table 4).

Most Effective PracticeWise Elements

Regression results for attrition are presented in Table 5, with the unadjusted column showing the adjusted and unadjusted effect of each PracticeWise element on parent engagement. Only PracticeWise elements with an unadjusted statistical association of $p \leq .20$ were entered into the

Table 5 Effect of practicewise elements on percentage of parents who dropped out of the intervention (Attrition), $n = 21$ studies

	Unadjusted		Adjusted	
	B	p	B	p
PracticeWise elements				
Accessibility promotion	−2.4	.535		
Translation	17.4	.049	2.0	.798
Cultural acknowledgement	3.9	.102	2.2	.361
Support networking	−10.2	.429		
Collaboration and relationship/rapport building	7.8	.212		
Peer pairing	−20.8	.168	−18.2	.093
Goal setting, assessment and problem solving	3.7	.409		
Therapist monitoring and therapist praise reward	9.9	.115	11.4	.026
Study-related predictors				
Sample size	−.0	.096	-.0	.063
Total intervention hours	−.4	.312	.3	.475
Maternal education (higher values = higher)	.1	.570	.5	.005
Intervention setting				
Clinic				
Preschool	−21.8	.011	−36.3	.032
Home	11.1	.169	−35.0	.006

Table 6 Implementation patterns for practicewise elements

	Total pairings (#)	PracticeWise element used (% studies)
Frequently implemented elements		
Cultural acknowledgement	253	53%
Accessibility promotion	250	88%
Average implemented elements		
Goal setting, assessment and problem solving	211	65%
Collaboration and relationship/rapport building	137	53%
Therapist monitoring and therapist praise/reward	115	47%
Translation	68	32%
Infrequently Implemented elements		
Support networking	49	18%
Peer pairing	31	12%

adjusted model (Hosmer and Lemeshow 2000). The adjusted model showed that less parent attrition in the intervention group was predicted by interventions that: were community/home-based (rather than clinic-based), used less therapist monitoring and therapist praise/reward, and used more peer pairing (sample size and maternal education were also significant/near-significant but beta coefficients were small). Interventions located at home/preschools had, on average, more than a third (35–36%) less parent attrition than clinic-based interventions. Intervention that used less monitoring and reinforcement by therapists were associated with 11% more parent attrition, whereas interventions that adopted peer pairing as parent engagement strategy were associated with 18% less parental attrition.

PracticeWise Element Combinations

Certain elements were combined with other strategies more frequently than others (see Table 6). Accessibility promotion was paired 250 times with other elements and 88% of the 34 studies used it as a strategy for parent engagement. Cultural acknowledgement was also paired frequently (253 times), but was implemented in fewer studies (53%). We characterize both as 'frequently implemented elements' because the total number of times each element was paired with other elements was one standard deviation above the

mean number of pairings (mean = 139.25, SD = 89.35). Four other elements, including goal setting, assessment and problem solving, collaborative and relationship/rapport building, therapist monitoring and therapist praise/reward and translation were characterized as 'average implemented elements' because the total number of pairs for each element was within one standard deviation of the overall mean. Support networking and peer pairing were characterized as 'infrequently implemented elements', with the total number of pairs for each element more than one standard deviation below the mean. Peer pairing was paired only 31 times with other elements and implemented in 12% of studies.

All elements were combined with all other elements in at least one study, except peer pairing and translation, which were paired with all other elements except each other. The sociogram (Fig. 2) illustrates this finding with a red dotted line, which represents zero pairs. The thickness of the lines represents the number of times each pairing occurred, with a thick line indicating frequent pairings and a thin line representing infrequent pairings. Results indicate that (1) cultural acknowledgment, (2) accessibility promotion and (3) goal setting, assessment and problem solving are frequently paired together. Across the 34 studies in the network sample, twelve studies implemented five or more parent engagement elements and only four studies implemented one parent engagement element. Each study included an average of four engagement elements.

Discussion

Parent engagement is a critical component of interventions for underrepresented families with children who have or are at-risk for social, emotional, and behavioral disorders,

especially among families from traditionally disadvantaged groups. Our search of the recent parent engagement literature for this population asked three questions: 1) Which parent engagement strategies are most commonly used? 2) Which strategies are most effective at improving parent engagement? 3) How are these strategies combined? The search yielded eight categories of engagement strategies most often used to engage parents with children who have or are at-risk for social, emotional, and behavioral disorders from underrepresented groups, the most frequent being accessibility promotion followed by goal setting, assessment and problem solving. Attrition, our measure of parent engagement, was significantly associated with the use of particular engagement strategies. Specifically, less parent attrition was predicted by interventions that were community/home-based (rather than clinic-based), and higher rates of attrition were predicted by interventions that used therapist monitoring and the delivery of praise or rewards. Additionally, use of peer pairing was marginally associated with less parent attrition. The analyses also found that engagement strategies for this population are commonly combined with other strategies, rather than implemented in isolation. All engagement strategies were combined with other strategies in each study reviewed.

A noteworthy finding is that interventions located at home/preschools had, on average, more than a third less parental attrition than clinic-based interventions. This was unsurprising, given that transportation is a well-documented barrier to engagement in outpatient treatment (Mohr et al. 2006; Owens et al. 2002). In addition to addressing logistical barriers, meetings held in the home or community may help to promote trust and reduce the power differential that is a common barrier in therapy and in research studies, and that is particularly salient for underrepresented families (Snell-Johns, Mendez, & Smith 2004; Staudt 2007; Thompson et al. 2007). Although this finding is not novel within the engagement literature, it warrants attention as it is especially relevant to the engagement of underrepresented families. Delivering interventions in community settings that are more accessible is likely a critical element for improving and maintaining parent engagement for underrepresented families.

Results also indicated that therapist monitoring and therapist's use of praise and reward were associated with higher attrition, which contrasts with some previous findings that therapist reinforcement predicted quality of caregiver engagement (Foster et al. 2009) and effective (vs. ineffective) treatments (Lindsay et al. 2014). However, other research has supported our findings and suggests that there may be limits of therapist reinforcement; for example, in one youth-mediated adolescent treatment, therapist praise was found to be unrelated to positive treatment outcomes (Dishion, Poulin, and Burraston 2001). Additional research

is needed to learn about the circumstances in which therapist's use of praise are most likely to be associated with improved treatment outcomes, especially for underrepresented groups.

Interventions that adopted peer pairing as parent engagement strategy were associated with 18% less parental attrition, which was marginally significant. Parents of children with special healthcare needs often highlight the importance of hearing information from other parents with similar experiences (Law, King, Stewart, and King 2002). In addition, shared experience can reduce commonly-reported feelings of isolation (dosReis, Barksdale, Sherman, Maloney, and Charach 2010; Woodgate, Ateah, and Secco 2008), and social support acts as a protective factor against stress (Lovell et al. 2012). The impact of peer pairing on retention may highlight the importance of the relationship with the person delivering the intervention. Despite the potential efficacy of peer pairing in promoting engagement, our network analysis indicated that it was the strategy that was the least likely to be used. This finding mirrors those reported by Lindsey et al., wherein peer pairing was associated with positive outcomes, but not used with high frequency. It is unclear why this strategy has been relatively unexplored in the engagement literature, however this may be related to the challenges and potential burden associated with establishing peer training interventions. There are significant costs associated with hiring, training, and supervising additional staff, which may limit the feasibility and acceptability of implementing a peer pairing intervention.

The frequent use of accessibility promotion and assessment to engage families found in this review is consistent with previous research citing the regular use of these engagement strategies across a broader population (Lindsey et al. 2014). Strategies to enhance the accessibility of interventions, such as the provision of child care transportation, appointment reminders are commonly used to promote engagement in treatment (Canning and Fantuzzo 2000; Delaney and Kaiser 2001; DeLoatche et al. 2015). However, we did not see a relationship between attrition and the use of strategies to promote access to the intervention. This null finding is notable given accessibility promotion was one of the most frequently used engagement strategies and these strategies have been linked to positive outcomes in other studies (Lindsey et al. 2014). Thus, we might expect accessibility promotion to reduce barriers we know are salient for underrepresented families. One explanation for the finding in this review is that parents who would have benefited from accessibility promotion did not sign up for programs that did not employ these strategies, thereby limiting attrition in these studies. Alternatively, it may be that when we separated intervention setting (a component of accessibility promotion) and evaluated it

independently, we diluted the predictive value of accessibility promotion on its own (intervention setting was included in accessibility promotion in the Lindsey et al. review). Further research is needed to determine how combinations of elements interact with one another.

The network analysis revealed that many elements were commonly used together. In fact, combining strategies rather than implementing one individual strategy was the norm. Additionally, some elements were more commonly used in combination (cultural acknowledgement and accessibility promotion) than others (peer pairing and support networking). Some pairings of specific elements were also especially frequent. For example, peer pairing, a strategy we found to marginally predict lower attrition rates among parents in interventions, was infrequently used as an engagement strategy across the 34 studies. However, it was always co-implemented with promoting access to intervention and cultural responsiveness. These highly paired elements were actually composites of multiple strategies (e.g., child care, flexible scheduling, transportation, etc. were all included under accessibility promotion), making it difficult to isolate the influence of individual strategies. The network findings allow us to further contextualize our understanding of how key elements are implemented to improve parent engagement in interventions, and suggest the necessity for evaluating how the combining of engagement strategies can improve parent engagement efforts.

Few articles explicitly reported on parent engagement strategies and outcomes. Therefore, our analyses were restricted to the use of one outcome (i.e., attrition) because other outcome measures were used too infrequently in the literature. Although attrition is a commonly-used outcome in the engagement literature, other variables such as participation in sessions, homework completion, and early engagement (e.g., attending the first treatment session) may provide valuable information about parent engagement that we were not able to capture in this review. Parent engagement in treatment is strongly associated with positive child outcomes and, to a lesser extent, parent outcomes (Kasari, Gulsrud, Wong, Kwon, and Locke 2010). This relationship underscores the need for future parent-mediated intervention studies to report on parent engagement outcomes in addition to primary child/parent outcomes (Gulsrud, Hellemann, Shire, and Kasari 2015; Pickles et al. 2015), especially when attempting to improve parent engagement for traditionally underrepresented families.

Our analytic approach offers an innovative method for evaluating the use and effectiveness of parent engagement strategies. Given the variability in use of strategies and the combination of strategies across studies, we were unable to aggregate the studies or make weighted comparisons across the studies based on quality and homogeneity or heterogeneity. However, the use of regression and network analyses

allows us to overcome this limitation and explore the relative effectiveness and use of individual engagement strategies.

Traditional engagement strategies may not be optimally effective for improving parent engagement in families from underrepresented groups, as these strategies may not account for the unique and complex needs of under-resourced or ethnic minority families. Our results indicated that strategies such as translation and the use of culturally informed approaches were not associated with improved engagement, and imply the need for engagement strategies designed to meet the multi-faceted needs of this population. Researchers have called for the development of engagement strategies that are specifically tailored for families from underrepresented groups (Yusai et al. 2017), yet engagement strategies specifically designed for this population, and studies of their effectiveness, are lacking. This study highlights the importance both of using engagement strategies to reduce attrition and promote better outcomes for children and families from underrepresented communities, and of measuring outcomes related to parent engagement. Interventions that embed parent engagement strategies directly into the intervention itself have shown promise for engaging under-resourced parents of children with disruptive behavior disorders in treatment sessions (Chacko et al. 2015). Future directions include the need to replicate these findings with a focus on linking specific strategies, such as the use of therapist praise or peer pairing, to attrition in order to gain a better understanding into which engagement strategies matter for optimal outcomes. This study provides preliminary evidence that interventions with under-resourced, high risk families should include the delivery of interventions in community, rather than clinic-based settings, as an essential engagement strategy that may exert positive effects on outcome.

These findings also point to the need for more community-based intervention trials that explicitly report on measures of engagement, development of implementation measures to better characterize the quality of engagement strategies, and the need to better understand how income and education level may interact with the use of engagement strategies and outcomes. Further, multiple aspects of parent engagement (e.g., participation, attendance, retention) should be examined as potential mediators and moderators of treatment outcome. Lastly, as parent-mediated intervention techniques are becoming more common, there is an urgent need to explicitly measure and discuss the contributions of combining parent engagement strategies and practices.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

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