

An Emotion-Focused Early Intervention for Children with Emerging Conduct Problems

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Abstract This paper evaluates the real-world effectiveness of an emotion-focused, multi-systemic early intervention combining an emotion socialization parenting program with a child and school socio-emotional intervention for children with emerging conduct problems. Schools in lower socioeconomic areas of Victoria, Australia were randomized into intervention or wait-list control. Children in the first 4 years of elementary school were screened for behavior problems and those in the top 8 % of severity were invited to participate in the intervention. The study sample consisted of 204 primary caregivers and their children ($Mage=7.05$, $SD=1.06$; 74 % boys). Data were collected at baseline and 10 months later using parent and teacher reports and direct child assessment. Measures of parent emotion socialization, family emotion expressiveness, and children's emotion competence, social competence and behavior were administered. Results showed intervention parents but not controls became less emotionally dismissive and increased in empathy, and children showed

better emotion understanding and behavior compared to control children. These outcomes lend support for an emotion-focused approach to early intervention in a real-world context for children with conduct problems.

Keywords Emotion coaching · Emotion socialization · Emotion competence · Behavior problems · Parenting · Early intervention · Multi-systemic intervention

Disruptive behavior problems in young children are a risk factor for conduct disorder, later substance abuse, poor peer relations, delinquency and violence which add substantial costs to society on a social and economic level (Moffitt 1993; Sawyer et al. 2000). The first years of school are an important time for identifying children at risk and intervening before these problems become intractable (Webster-Stratton and Reid 2004). Successful interventions include multi-systemic components for lasting effects such as parent, child and school-based programs (Sanders et al. 2000). Typically, multi-systemic interventions include behavioral parent training based on social learning principles, which have also been found effective as stand-alone interventions for reducing children's behaviour problems (for a meta-analysis see Thomas and Zimmer-Gembeck 2007). Up to one third of families who receive this type of parenting intervention, however, do not benefit (Dumas 2005; Webster-Stratton and Hammond 1997) and behavioral parent training has been found less effective when there are attachment problems, when parents have difficulties regulating emotions, or when there is maternal depression or marital conflict (Assemany and McIntosh 2002; Dumas 2005; Scott and Dadds 2009). Further, behavioral parenting programs do not integrate mounting empirical and theoretical evidence about the role of parents' emotion socialization practices in the development of children's emotion competence and behavior problems (Southam-Gerow and

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Kendall 2002). Multi-systemic interventions that incorporate a parenting program targeting parent emotion socialization (responses to emotions in oneself and one's child), in combination with a child intervention, which focuses on improving emotional competence (e.g., skills in understanding and regulating emotions), are yet to be evaluated. The current study is a real-world effectiveness trial of a multi-systemic intervention with early school-age children with emerging conduct problems using an emotion-focused approach. In conducting this evaluation we sought to widen the scope of available evidence-based early interventions and simultaneously test a new theoretical model that demonstrates how strengthening emotion socialization and children's emotion competence can reduce children's conduct problems.

Background

A substantive body of research has established a relationship between poor emotional competence in children, specifically problems in understanding and regulating emotions, and behavior problems. Inaccuracies in understanding one's own and other's emotions and a propensity to see other's as angry and hostile have been found in children with behavior difficulties (Eisenberg et al. 2001; Trentacosta and Fine 2010). These children have also been found to have poor emotion regulation, social skills difficulties (Morris et al. 2010; Olson et al. 2011; Trentacosta and Shaw 2009) and greater negative emotionality (Eisenberg et al. 2005). These deficits place children with behavior problems at risk for conduct disorder and anti-social behavior in adolescence and adulthood (Trentacosta and Shaw 2009). Identification and early intervention are believed to be the most effective course of action to alter this developmental course (Domitrovich and Greenberg 2004).

Parenting plays an important role in shaping children's emotional competence and behavior. Parents' modeling of emotional expression and regulation, reactions to children's emotions, and coaching and teaching about emotions all influence children's understanding and regulation of emotions (Eisenberg et al. 1998; Gottman et al. 1997). One core component of emotion socialization is the way parents react to and teach children about emotions, known as emotion coaching. Emotion coaching includes parents' being aware and accepting of their own and their children's emotions and teaching children how to understand and regulate feelings before seeking solutions to problems and setting limits (Gottman and DeClaire 1997). This style of parenting has been found to assist children in developing skills in self-soothing, inhibiting negative affect, and focusing attention in order to achieve their goals (Gottman et al. 1997). Conversely, parenting that is emotionally dismissive, disapproving and critical of children's emotions has been linked to children having higher physiological arousal, emotional dysregulation,

and poorer social and behavioral functioning (Eisenberg et al. 1999; Gottman et al. 1997; Ramsden and Hubbard 2002).

Teaching children skills in understanding and regulating emotions and social problem solving are often an effective component of early intervention with children with behavior problems (e.g., Conduct Problems Prevention Research Group 2002; Webster-Stratton et al. 2001). Increasing emotional literacy enables children to better understand their emotional experience, more accurately judge other's emotions and develop skills in adaptive emotion regulation (Pons et al. 2004). School-based interventions that build emotional awareness and social competencies have been found to produce significant changes for children with behavior problems and learning difficulties (e.g., PATHS, Greenberg et al. 1995). Stand-alone child-focused or school-based interventions, however, have been found to produce smaller effect sizes for those children at greatest risk (Durlak et al. 2011). The addition of a parent or family component is, therefore, often necessary to provide optimal change.

One well validated early intervention targeting children at risk for conduct disorder that combines child, teacher and parent components is *Fast Track*. *Fast Track* includes a child intervention (socio-emotional child group plus peer pairing and academic tutoring), a universal school intervention (PATHS) and a parent intervention (a behavioral parent program plus home visiting) which are delivered to children identified with behavior problems at school entry (Conduct Problems Prevention Research Group 2002). The parenting program used in *Fast Track* draws on social learning theory and teaches parents' skills in positive reinforcement and setting consistent limits. *Fast Track* is an evidence-based multi-systemic intervention that integrates emerging knowledge about the relations between child emotion competence and behavior problems into the child and teacher interventions but not into the parenting component. *Exploring Together*, an Australian based early intervention for children with clinical level emotional and behavioral problems, also includes a focus on emotion literacy and emotion regulation using a multi-systemic approach (Littlefield et al. 2005). The parenting component, however, is also behavioral and does not include an emotions-focus.

An emotion-focused parenting program would require addressing parents' beliefs and behaviors surrounding emotions. Improving parent empathy and self-regulation, in addition to exploring possible intergenerational patterns of responding to children's emotions that are neglectful, dismissive or critical may be important for generating change in parents with children with behavior problems (Dumas 2005; Leerkes and Crockenberg 2006). These changes would be expected to improve emotional communication between parents and children and foster closer connection and healthy development of children's social and emotional competence (Eisenberg et al. 1998; Gottman and DeClaire 1997). Multi-systemic

interventions with this focus in the parenting component have not as yet been evaluated. Interventions, however, solely targeting emotion socialization practices with parents have recently begun to emerge for children with behavior problems (Havighurst et al. 2013; Salmon et al. 2009). The *Tuning in to Kids* (TIK) program teaches parents to emotion coach their children whilst regulating their own emotions. TIK aims to improve parents' empathy and addresses family of origin experiences. The program has been found effective with preschoolers with and without behavior problems (Havighurst et al. 2010, 2013), however has not been evaluated with school-age children. A clinical trial of the program with preschoolers with behavior problems showed the parenting program alone contributed to significant changes on many aspects of parenting and children's functioning (Havighurst et al. 2013). The addition of a child intervention alongside the parenting program (i.e., a more multi-systemic approach) may have strengthened outcomes.

The current study examined whether a multi-systemic early intervention for school-aged children at risk for conduct disorder that targeted children's emotion competence would lead to improvements in children's emotion knowledge, social competence and behavior compared to those in a wait-list control condition. The combination of a parenting program (*Tuning in to Kids* that targeted parent emotion socialization - rather than behavioral parent training), a child emotion-focused program and a school intervention were selected based on the theoretical model that the way parents, teachers and clinicians respond to and teach children about emotions shapes their knowledge of and capacity to regulate their emotions thereby reducing behavior problems and improving social functioning.

Method

Participants

Participants were 191 mothers and 13 fathers ($M_{age}=36.8$, $SD=5.9$), who were the primary caregiver of 204 children ($M_{age}=7.05$, $SD=1.06$; 74 % boys), recruited from a range of schools in lower socio-economic, metropolitan, regional and rural areas of Victoria, Australia. Children were in preparatory class ($n=58$, 28.4 %; $M_{age}=5.86$, $SD=0.54$), grade 1 ($n=56$, 27.5 %; $M_{age}=6.82$, $SD=0.44$), grade 2 ($n=73$, 35.8 %; $M_{age}=7.75$, $SD=0.54$), and grade 3 ($n=17$, 8.3 %; $M_{age}=8.83$, $SD=0.51$). Demographic data showed that 132 (63.5 %) children were living with two biological parents, 17 children (8.2 %) lived with a step parent, and 52 (25.0 %) children were living with a sole parent. Seven families (3.4 %) did not report their marital status. Half of the parents had completed high school (51.4 %), 38.9 % had completed a non-university qualification and 17.8 % had completed a bachelor degree or

higher. Most parents (83.7 %) spoke English as their first language. Participating parents worked an average of 14.3 h per week (range 0–50 h; $SD=15.3$) and reported gross annual combined family incomes of less than \$40,000 (38.9 %), \$40,000–\$59,999 (15.4 %), \$60,000–\$99,999 (27.4 %) and \$100,000 or more (13.9 %). Fifteen parents declined to report their income (7.2 %). The sample were predominantly from a lower to middle socioeconomic demographic with 60 % of the sample below the mean household income (\$63,232) for the state of Victoria (Australian Bureau of Statistics 2011).

Procedure

Data were collected as part of a randomized control trial conducted by Austin Health and Bendigo Health Child and Adolescent Mental Health Services (CAMHS) to evaluate the effectiveness of an early intervention program (CAMHS and Schools Early Action Program - known as CASEA) targeting preparatory to grade three children identified at risk for conduct disorder. The Austin CASEA catchment was a metropolitan area of Melbourne while Bendigo CASEA was a rural/regional area. Human ethics approval was provided for the study from hospital, school, and university ethics committees. Schools were initially approached by members of the research team to obtain expressions of interest and were then randomized using a computerized random-number generator into one of two conditions: intervention, consisting of an emotion socialization parent program (TIK) plus a child program and a school intervention ($n=14$ schools); and a waitlist control (delayed start of intervention by 1 year; $n=19$) (See Fig. 1 for Participant Flow). Within the two catchment areas 4,752 children between the age of 5 and 9 years, whose parents provided consent, were screened for behavior problems with a seven item parent and teacher Conduct Problems Risk Screen (CPRS; Duncombe et al. 2012b). This measure was based on the Behavioral Disorders Screen Interview of the Schedule for Affective Disorders and Schizophrenia - for School-Age Children (K-SADS; Kaufman et al. 1997) and included items such as, "How often does the child fight with other children and bully them?", "Does the child get upset easily and lose his/her temper?", and "Does he/she get into trouble at home/school for not following the rules?" Children with a Z score greater than or equal to 1 on the CPRS ($n=1,385$; 29.1 %) were identified as at-risk and schools were then approached to discuss selection of children for participation in the early intervention. This Z score cut-off has been used successfully to predict serious problem behavior in this sample (Duncombe et al. 2012a, b). Children with a diagnosis of a pervasive developmental disorder were excluded ($n=47$), a number of parents declined participation ($n=89$); and some were in schools that withdrew after screening ($n=261$). Children from each participating school were ordinaly ranked and for each school eight families whose children showed the highest

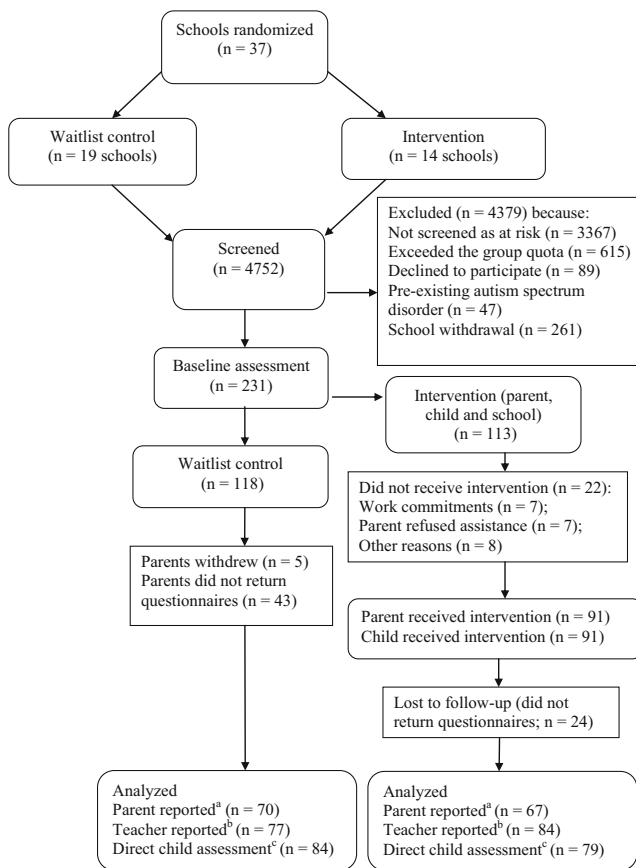


Fig. 1 Participant Flow. ^a = Eyberg Child Behavior Inventory; ^b = Teacher Strengths and Difficulties Questionnaire; ^c = Kusche Affective Inventory – Revised

combined parent and teacher screen scores for behavior problems were invited to participate in the study, representing the top scoring 7.8 % of the screened sample.

Baseline assessments (parent-report, teacher-report and direct child assessments) were conducted on 231 children from 37 schools (TIK=113; waitlist control=118). Assessments of children's emotional knowledge were conducted by research assistants with post-graduate qualifications or CASEA clinicians. Follow-up assessments were conducted 10 months later.

Interventions

CASEA staff who delivered the parent, child, and school interventions were either clinical or educational psychologists, social workers, speech-language therapists, or occupational therapists. Co-facilitators for the parent and child groups were from community services or the school.

Parent Component

The parent intervention was the *Tuning in to Kids* (TIK) program (see Havighurst et al. 2009, for further detail) extended so that it was delivered across eight, 2 h sessions by

two facilitators. Traditional behavioral parenting interventions suggest that parents need to change their way of responding to children's behavior. *Tuning in to Kids* instead teaches parents to respond to the emotion underlying behavior, to connect and empathize with the child's emotion experience, to help the child understand their emotions and, if necessary, to problem solve while also setting limits (such as affirming family rules). Parents are encouraged to coach lower intensity emotions, which results in fewer episodes where children's (and parents') emotions escalate or behavior is highly dysregulated (Gottman et al. 1997). Parents were taught this by learning the five steps of *emotion coaching* (Gottman and DeClaire 1997) via a series of exercises, role plays, DVD materials and psycho-education topics. Emphasis was placed on parents noticing emotions in themselves and their children, including physiological cues (step 1) and viewing children's emotion as an opportunity to connect and teach (step 2). In the first four sessions, parents were taught to attend to children's lower intensity emotions, and to reflect, label and empathize with children's emotions (step 3 and 4). The fifth session addressed anxiety and the last three sessions focused on anger, and included emotion regulation strategies such as slow breathing, relaxation, self-control using the turtle technique from PATHS (Greenberg et al. 1995), and safe ways to express anger. At times of higher intensity anger and difficult behaviors, quiet time and time out were discouraged with a preference for using time in where parents stay with their child when the child is very angry or emotional, unless the parent is also very angry, in which case anger regulation strategies are used by parents and only if necessary the parent leaves the situation. Time in is used because many children are overwhelmed by their emotions when angry, and separation from an attachment figure can result in heightened emotional distress and anger. When the child has calmed down, emotion coaching is employed to talk about the situation and if necessary family rules may be restated. Parents were taught skills in regulating their own emotions, particularly anger, and examined the impact of their family of origin experiences on their beliefs about and responses to emotions. Parents were also taught problem solving and setting limits around behavior while accepting the emotion (step 5).

Program fidelity was ensured by all CASEA clinicians attending a 2-day training in TIK (led by the first author), the use of a structured manual to assist in delivery (Havighurst and Harley 2007), and weekly fidelity checklists completed by the clinicians. The first author provided fortnightly supervision to clinicians throughout delivery. Program fidelity was rated as consistently high with 100 % of the foundation skills delivered and 78 % of the optional skills. Optional skills were used when participants needed specific help, such as identification of appropriate emotion coaching opportunities; these were not deemed critical for conveying the main program concepts.

Intervention group sizes ranged from four to eight parents ($M=6.29$, $SD=1.42$). Average parent attendance was six sessions, with 78 % of the 91 parents in the intervention condition attending five or more sessions (71 parents), and 31 parents (34.1 %) attending all eight sessions. Eight parents (8.8 %) attended only one session. In one school (seven parents) the average attendance was two sessions and the group only ran for a total of five out of the eight sessions. If sessions were missed, parents received a phone call from their facilitator and were provided with the session content.

Child Component

The child intervention taught skills in emotional competence and social problem solving. The program drew on materials from *Exploring Together* (Littlefield et al. 2005), a clinical intervention for children with social and behavioral problems, and the Fast Track child group (Greenberg 2007). Clinicians from the two CASEA teams during 2008 were involved in collating the child program. As new staff joined, they participated in a half-day training session along with the school facilitators. The eight-session program was delivered to between six to eight children during school hours by two group facilitators, one a clinician from CASEA and one a professional from the school (such as a school psychologist, School Support Officer, teacher or school chaplain). Sessions one to three focused on identification of emotions. Session four and five explored anger and the associated internal behavioral cues and assisted children to learn skills in de-escalation of anger. The final three sessions addressed social skills, including social problem solving and allowed opportunities for children to practice skills.

Program fidelity was ensured by all CASEA clinicians and co-facilitators attending the half-day training workshop, use of a structured manual to facilitate delivery and completion of weekly fidelity checklists by the clinicians. One hundred percent of the child program content was covered in all groups. Average attendance was 7.3 sessions with 84 children (92.3 %) attending at least six sessions.

School Component

Schools were offered one of two universal interventions, PATHS or a Professional Learning Package; depending on the choice of school or availability (Bendigo CASEA was not able to offer PATHS). The PATHS program (Greenberg et al. 1995), is a universal intervention delivered by teachers to all children in their classes, with a curriculum based on emotional understanding, social-cognitive skills and self-control. Schools who selected PATHS received 6 h training with a certified PATHS trainer. Teachers were asked to use the materials from PATHS in any way they were able (some would deliver program curriculum in class; others would only use the ideas in individual

interactions with students). The Professional Learning Package (PLP) aimed to enhance teachers' knowledge of social and emotional development, and consisted of a series of topics (such as responding in emotionally responsive ways, building teacher-student relationships, managing challenging behaviors). Schools who selected PLP received 6 h training with one of the CASEA staff and teachers were asked to use the information they learned in these sessions to assist in their responses to all students. Both PATHS and PLP aimed to build the capacity of the whole school to work with at-risk children. Seven schools (32 children) received the PATHS program while an additional seven schools received PLP (59 children). Due to limited resources for follow up, the quality of implementation of these two interventions was not possible to determine.

Measures

Parent Report Measures

Parent Emotion Socialization Parent emotion coaching, emotion dismissing and empathy were measured with an adapted version of the *Maternal Emotional Style Questionnaire* (MESQ; Lagacé-Séguin and Coplan 2005). A 21 item version of the MESQ, (see Havighurst et al. 2010), includes parents' responses to anger, sadness and fear (seven items each) measured on a 7-point Likert scale. Exemplar items are: "Childhood is a happy-go-lucky time, not a time for feeling sad or angry" (Emotion Dismissing), and "Anger is an emotion worth exploring" (Emotion Coaching). The Empathy variable was made up of five relevant items from the Emotion Coaching subscale and included items such as: "When my child is scared, it's an opportunity for getting close", and "When my child is angry, I take some time to try to experience this feeling with him/her". Cronbach's alphas at baseline were 0.82, 0.88, and 0.73, and at follow-up were 0.79, 0.78 and 0.74 for Emotion Dismissing, Emotion Coaching and Empathy respectively.

Family Negative Emotion Expressiveness This was measured with the negative expressiveness subscale (12 items) from the *Self-Expressiveness in the Family Questionnaire* short form (Halberstadt et al. 1995). Items (e.g., "How often do you quarrel with a family member?") are rated on a 9-point scale (1=*not at all frequently* to 9=*very frequently*). The scale has been widely used and has shown good internal consistency (Halberstadt et al. 1995). In the current study, reliability for this subscale was satisfactory with Cronbach's alphas 0.83 at baseline and 0.87 at follow-up.

Child Measures

Parent Reported Child Behavior Parents completed the *Eyberg Child Behavior Inventory 6* (ECBI; Eyberg and Pincus

1999), a psychometrically strong and widely used 36-item parent report scale of problem behaviors. Items are rated on a 7-point Likert scale from 1=*never* to 7=*always*. Subscales of *Oppositional Defiant Disorder*, *Conduct Disorder* and *Hyperactivity* were used with Cronbach's alphas of 0.91 at baseline and 0.92 at follow up for *Oppositional Defiant Disorder*, 0.87 at baseline and 0.88 at follow up for *Conduct Disorder*, of 0.89 at baseline and 0.89 at follow up for *Hyperactivity*.

Direct Assessment of Child Emotion Knowledge The *Kusche Affective Inventory – Revised* (KAI-R: Kusche et al. 1988) was used to assess children's emotion knowledge. Three sections of the KAI-R were administered. First, children were asked to identify affect (happy, sad, scared, and angry) from photographs of children's faces and the frequency of correct responses was recorded. For each picture children were asked two questions: "How is this girl/boy feeling?" and "Is there any other way this girl/boy might be feeling?" A total score for picture recognition was computed by summing responses. Second, children were asked to generate a list of feeling words and the number of correct negative and positive feeling words was recorded. An *emotion identification* variable was computed by summing the picture recognition and emotion vocabulary variables (inter-correlation 0.56 at Time 1 and 0.50 at Time 2). Third, children's ability to understand emotions was assessed. Children were asked "How do you know when you (and others) are feeling... (happy, scared, sad, angry, or jealous)?" Responses were scored on a 4-point scale in accordance with the interview's coding system, where higher responses indicated reference to multiple behavioral/situational cues, a self-reflective internal state or empathic identification with others. Children's scores across the five emotions were summed to create an *emotion understanding* variable. High inter-rater reliability has been obtained for the inventory's coding system (Greenberg et al. 1995). Cronbach's alphas for emotion understanding was 0.81 at baseline, and 0.84 at follow-up. To calculate inter-rater reliability two raters separately coded 15 % of the items. Inter-rater reliability was 0.86 for the emotion identification and 0.91 for the emotion understanding.

Teacher Reported Child Behavior Teachers completed the *Strengths and Difficulties Questionnaire* (SDQ; Goodman 1997) to measure child social and behavioral difficulties. The 25 item scale, which has well established reliability and validity, uses a 3-point Likert scale. Cronbach's alphas for the Total Scale were 0.86 at baseline and 0.87 at follow up.

Teacher Reported Child Social Competence The teacher *Social Competence Rating Scale* (SCRC: Gifford-Smith 2000) was used to measure children's prosocial behavior, emotional regulation and academic skills (25 items in total). Responses

are coded on a 5-point Likert scale (0=*not at all* to 4=*very well*). This scale has been used in the Fast Track project and has demonstrated good internal consistency (Conduct Problems Prevention Research Group 1990). In the current study Cronbach's alphas were 0.98 at baseline and 0.97 at follow up for Total Social Competence.

Results

Analytic Strategy

Data were examined for normality and outliers. Missing data were considered missing at random, and comprised only 1.2 % and 3.2 % of the parent and teacher data sets. Therefore, Pearson mean imputation was used to replace missing scale items with mean values, providing at least 80 % of the data were available (Bono et al. 2007). Next, baseline sample characteristics were assessed for comparability between intervention and control participants. Chi-square tests of independence showed a significant between group difference for child grade, (χ^2 (3, n =204)=29.36, p <0.001, ϕ =0.38) due to there being no grade three children in the control condition, compared with 17 grade three children in the intervention condition. No other baseline between group differences emerged on any of the demographic or outcome variables, suggesting randomization was effective. There were equal numbers of participants from each site in the intervention and control conditions. Sample characteristics between sites (urban versus regional/rural), were significantly different (p <0.05) on several variables, with the regional/rural parents reporting lower education levels, and being more likely to speak English as their first language. Parents from the regional/rural site were also significantly younger, (M age=35.84, SD =6.23) and had older children, (M age child=7.31, SD =1.16) when compared to the urban parent-child dyads, (M age parent=37.59, SD =5.32; M age child=6.83, SD =0.90). Site (urban or regional/rural) and child grade were therefore included as covariates in all analyses (Pocock et al. 2002). We also examined whether school intervention (PATHS or PLP) had an impact on outcomes. None of the three-way interactions (Condition*Time*School Intervention) were significant indicating that the school component did not moderate outcomes.

As is a common problem when conducting research in real world settings and with high risk populations (Fernandez and Eyberg 2009) follow-up data was not available from a number of parents (n =65, 31.3 %), teachers (n =46, 22.1 %) and from direct child assessment (n =42, 20.2 %). Parents failing to return questionnaires at follow-up worked longer hours on average, (M ean difference in hours worked=7.97, SE =2.36; t =3.38, p =0.001), were more likely to be from the urban site

($n=43$, 39.8 %) rather than the regional/rural site, ($n=22$, 22.0 %), $\chi^2(1, n=208)=6.86$, $p=0.009$, $\phi=0.19$, but did not significantly differ from the rest of the sample on any of the other measures. There was no significant difference in parent questionnaire return rate between intervention ($n=71$, 62.8 %) and control participants ($n=72$, 75.8 %). For direct child assessment, data at follow-up was collected from fewer control families (84, 74.3 %) compared with intervention families, (82, 86.3 %), $\chi^2(1, n=208)=3.88$, $p=0.049$, $\phi=-0.15$. Similarly, for teacher data, significantly fewer questionnaires were returned at follow-up for control participants (79, 69.9 %) compared to intervention participants, (83, 87.4 %), $\chi^2(1, n=208)=8.15$, $p=0.004$, $\phi=-0.21$). Given that attrition was greater than 15 %, all analyses were repeated using an intention to treat approach, where baseline data were used as follow-up scores in place of missing data, assuming no change for participants who failed to return data. Lastly, clinical and reliable change calculations were conducted.

Multilevel Analyses

Due to the multi-stage sampling strategy (schools recruited first, and then children within schools), multilevel analyses were conducted to assess the impact of condition (intervention, control) from baseline to follow-up on parent and child outcome variables, taking into account variation explained by school (Peugh and Enders 2005). First, a baseline random intercept model (i.e., children nested within schools) was constructed for each outcome measure. Best model fit for the null model (Step 1) was determined by the smallest Akaike information criterion (AIC) index, and achieved using variance components covariance structure, and intercept and school as a random effects and time as a fixed effect (Heck et al. 2010). At step 2, key variables (condition and time; each dummy coded 0 and 1) were added to the model, followed by covariates (child grade and site) at step 3. As indicated by chi square statistics for the change in -2 Log Likelihood, adding covariates significantly improved the model ($p=0.01$) for all outcomes of interest (Field 2009). Effect sizes were calculated using the recommended formula for multi-level analyses evaluating treatment efficacy in randomized control trials (Feingold 2009). This formula uses the difference between the estimated means of the slopes (taken from the unstandardized b -value) of the two conditions (intervention and control over time) divided by the baseline standard deviation of raw scores (equivalent to the square root of the mean squared error obtained from ANOVA with school as the group variable). According to Cohen (1988), an effect size (d) is interpreted as small (0.2), moderate (0.5) or large (0.8).

Outcomes, including significance figures for the interaction between time and condition are reported in Tables 1 (parent outcomes) and 2 (child outcomes). A significant interaction between time and condition reflects a significant difference in

slopes for the two conditions (i.e., the change over time varies according to condition). Main effects of time and condition are only reported in text when the interaction between time and condition was not significant.

Parenting Outcomes

Parent Emotion Socialization For emotion dismissing, a significant interaction between time and condition showed greater reductions in emotion dismissing for parents in the intervention condition compared with control parents. The effect size was medium. For emotion coaching, parents from both conditions reported no change. A significant interaction between time and condition was found on the empathy subscale indicating significantly greater empathy for intervention parents at follow-up, compared with control parents who reported no change. All parents reported a reduction in family negative expressiveness on the SEFQ, ($\beta=-4.94$, $SE=1.83$, $t(162.6)=-2.71$, $p=0.007$, 95 % CI $[-8.56, -1.35]$), with the interaction between time and condition approaching significance (0.069), indicating a trend for greater improvements for intervention families.

Child Outcomes

Parent Reported Child Behavior For parent reported child oppositional defiant and conduct disorders on the ECBI, the interactions between condition and time were significant, indicating greater reductions in child behaviors reported by parents from the intervention condition compared with control parents. A significant main effect for time (but non-significant interaction between time and condition) indicated all children showed improvements over time in parent reported child hyperactivity, ($\beta=-4.98$, $SE=1.24$, $t(156.7)=4.01$, $p<0.001$, 95 % CI $[-2.53, -7.44]$).

Direct Assessment of Child Emotion Knowledge On the KAI-R a significant main effect for time indicated improvements in emotion identification for children in both conditions, ($\beta=-2.36$, $SE=0.48$, $t(180.4)=4.91$, $p<0.001$, 95 % CI $[-3.32, -1.42]$). Children in the intervention condition demonstrated significantly greater improvements in emotion understanding compared to control children as indicated by a significant interaction between condition and time.

Teacher Reported Child Functioning Significant interactions between time and condition indicated greater reductions in teacher reported total social and behavioral difficulties (SDQ) for intervention children compared with control children. A significant main effect of time indicated all children showed improvements in social competence on the SCRC, ($\beta=6.64$, $SE=1.95$, $t(161.9)=3.41$, $p=0.001$, 95 % CI $[10.49, 2.79]$), however, the interaction between time and condition

Table 1 Multi-level mixed effects modeling: parent-reported parent outcomes

| Measure | | Adjusted Mean ^a | | | | | | | | | | | | |
|-------------------------|--------------|----------------------------|-----------|----------|-----------|----------|----------|---------------------|-----------|-----------|----------|----------|--------------|----------|
| | | Baseline | | | Follow-up | | | Test of Interaction | | | | | | |
| | | <i>M</i> | <i>SE</i> | <i>n</i> | <i>SE</i> | <i>M</i> | <i>n</i> | β | <i>SE</i> | <i>df</i> | <i>t</i> | <i>p</i> | 95 % CI | <i>d</i> |
| Emotion dismissing | Intervention | 37.95 | 0.61 | 91 | 30.04 | 0.69 | 64 | -3.66 | 0.90 | 159.05 | -4.06 | < 0.001 | -5.44, -1.88 | 0.63 |
| | Control | 38.63 | 0.57 | 113 | 34.37 | 0.65 | 70 | | | | | | | |
| Emotion coaching | Intervention | 43.55 | 0.58 | 91 | 44.09 | 0.66 | 64 | 1.09 | 0.93 | 164.08 | 1.17 | 0.244 | -0.75, 2.94 | 0.19 |
| | Control | 44.26 | 0.54 | 113 | 43.70 | 0.63 | 70 | | | | | | | |
| Empathy | Intervention | 18.37 | 0.36 | 91 | 19.69 | 0.41 | 62 | 1.83 | 0.58 | 158.05 | 3.15 | 0.002 | 0.68, 2.98 | 0.33 |
| | Control | 18.71 | 0.33 | 113 | 18.21 | 0.39 | 69 | | | | | | | |
| Negative expressiveness | Intervention | 48.66 | 1.48 | 91 | 43.70 | 1.81 | 62 | -4.45 | 2.43 | 160.16 | -1.83 | 0.069 | -9.25, 0.35 | 0.31 |
| | Control | 45.89 | 1.36 | 113 | 45.39 | 1.59 | 70 | | | | | | | |

^a all analyses adjusted for school, site (urban or regional/rural) and child grade

approached significance ($p=0.054$) indicating a trend for greater improvement in social competence for intervention children.

Intention to Treat Analyses

To take into account intention to treat, all analyses were repeated using baseline data as follow-up scores for cases where follow-up data were missing. For parent reported variables, findings held for emotion dismissing parenting ($p<0.001$; $d=0.99$), parent empathy ($p=0.004$; $d=0.36$) child oppositional defiant disorder ($p=0.007$; $d=0.29$) and child conduct disorder ($p=0.019$; $d=0.51$); they became significant for hyperactivity ($p=0.032$; $d=0.26$), and remained non-

significant for emotion coaching ($p=0.335$; $d=0.12$), and family negative expressiveness ($p=0.192$; $d=0.15$). For direct child assessment variables, findings held for emotion understanding ($p=0.005$; $d=0.20$) and remained non-significant for emotion identification ($p=0.098$; $d=0.23$). Finally, for teacher reported variables, findings held for child total emotional and behavioral difficulties ($p=0.001$; $d=0.38$) and became significant for social competence ($p=0.015$; $d=0.26$).

Clinical Significance

To examine whether behavioral changes were clinically significant we looked at the percentage of children with behavior

Table 2 Multi-level mixed effects modeling: parent reported, teacher reported, and direct child assessment: child outcomes

| Measure | | Adjusted Mean ^a | | | | | | | | | | | | |
|-----------------------------------|--------------|----------------------------|-----------|----------|-----------|-----------|----------|---------------------|-----------|-----------|----------|----------|---------------|----------|
| | | Baseline | | | Follow-up | | | Test of Interaction | | | | | | |
| | | <i>M</i> | <i>SE</i> | <i>n</i> | <i>M</i> | <i>SE</i> | <i>n</i> | β | <i>SE</i> | <i>df</i> | <i>t</i> | <i>p</i> | 95 % CI | <i>d</i> |
| Oppositional defiant disorder (P) | Intervention | 74.18 | 2.13 | 91 | 66.00 | 2.33 | 68 | -7.62 | 2.95 | 150.96 | -2.58 | 0.011 | -13.45, -1.80 | 0.37 |
| | Control | 71.30 | 1.97 | 113 | 70.75 | 2.25 | 71 | | | | | | | |
| Conduct disorder (P) | Intervention | 34.30 | 1.36 | 91 | 29.49 | 1.49 | 67 | -4.84 | 1.91 | 156.20 | -2.53 | 0.012 | -8.61, -1.07 | 0.37 |
| | Control | 32.41 | 1.26 | 113 | 32.43 | 1.44 | 71 | | | | | | | |
| Hyperactivity disorder (P) | Intervention | 34.41 | 1.17 | 91 | 29.43 | 1.30 | 68 | -3.20 | 1.73 | 158.79 | -1.85 | 0.066 | -6.60, 0.21 | 0.29 |
| | Control | 34.68 | 1.08 | 113 | 32.90 | 1.25 | 71 | | | | | | | |
| Emotion identification (D) | Intervention | 13.04 | 0.39 | 91 | 15.41 | 0.41 | 79 | 0.81 | 0.66 | 185.4 | 1.22 | 0.223 | -0.50, 2.12 | 0.20 |
| | Control | 12.57 | 0.35 | 113 | 14.13 | 0.40 | 84 | | | | | | | |
| Emotion understanding (D) | Intervention | 9.21 | 0.45 | 91 | 11.57 | 0.48 | 79 | 2.23 | 0.83 | 181.42 | 2.69 | 0.008 | 0.59, 3.86 | 0.50 |
| | Control | 10.12 | 0.40 | 113 | 10.25 | 0.46 | 84 | | | | | | | |
| Total SDQ ^b (T) | Intervention | 17.28 | 0.76 | 91 | 14.32 | 0.78 | 84 | -3.01 | 1.01 | 176.64 | -2.98 | 0.003 | -5.01, -1.02 | 0.41 |
| | Control | 15.83 | 0.69 | 113 | 15.88 | 0.78 | 79 | | | | | | | |
| Social competence (T) | Intervention | 39.48 | 2.13 | 91 | 46.12 | 2.20 | 80 | 5.36 | 2.76 | 167.58 | 1.94 | 0.054 | -0.09, 10.82 | 0.25 |
| | Control | 42.80 | 1.95 | 113 | 44.08 | 2.16 | 76 | | | | | | | |

P parent reported, *D* Direct child Assessment, *T* Teacher reported

^a all analyses adjusted for school, site (urban or regional/rural), and child grade

^b SDQ = Total social and behavioral difficulties on the Strengths and Difficulties Questionnaire

problems (total ECBI Intensity score) in the clinical range at baseline and follow-up. For the 90 intervention families where data was available at baseline, 56 parents (62 %) reported child behavior problems in the clinical range. At follow up 15 of those (26.8 %) were no longer in the clinical range. For the 105 control families, 62 parents (59 %) reported behavior problems in the clinical range at baseline and 11 (17.7 %) were no longer in the clinical range at follow up.

In addition, we calculated an Index of Reliable Change for the subscales of the ECBI which indicate whether the changes are reliable, taking into account measurement unreliability (Jacobson and Truax 1991). A criterion score is determined using the baseline standard deviation of the outcome measure and its reliability (<http://www.psych.org/stats/rcsc1.htm>). Changes above the criterion score are deemed reliable. Analyses of clinical significance using the Reliable Change Index indicated that 17 intervention parents (25.4 %) reported clinically reliable change (i.e., reduction > 16.87) on child oppositional defiant disorder compared with 7 control parents (10 %) who indicated change. For conduct disorder, 14 intervention parents (20.9 %) and 5 control (7.1 %) reported clinically reliable change (i.e., reduction > 6.55). For hyperactivity, 20 intervention parents (29.9 %) reported clinically reliable change (i.e., reduction > 10.04) compared with 12 control parents (17.1 %).

Discussion

This study examined outcomes of a multi-systemic emotion-focused intervention delivered to early school aged children with emerging conduct problems. Components of the intervention included an emotion socialization parenting group program, a child social and emotional group program, and a teacher delivered component that focused on emotional functioning of children for use in the classroom. This real-world effectiveness trial delivered by clinical teams in an urban and a regional/rural area of Victoria, Australia used random assignment at the school level enabling comparison of children receiving an intervention with those who did not. Universal screening enabled identification and intervention with those children most at risk. The central research question was whether this emotion-focused approach to early intervention would be effective in improving parenting and children's emotional, social and behavioral functioning.

We first examined the impact of the parenting program on parent's emotion socialization, including their reported levels of emotion dismissiveness, empathy, coaching, and family emotion expressiveness. Consistent with expectations and our previous findings (Havighurst et al. 2010, 2013), parents in the intervention condition reported significantly decreased emotion dismissing and increased empathy, with moderate

effect sizes for both. There was also a trend ($p < 0.069$) for significantly less negative emotion expressiveness in the families of those in the intervention condition. Emotionally dismissive, harsh and critical parenting has repeatedly been linked to child conduct disorders in the research literature (e.g., Eisenberg et al. 1999; Morris et al. 2010).

In contrast to Havighurst et al. (2010), and consistent with Wilson et al. (2012), in the current study there was no increase in emotion coaching beliefs. Instead the main changes were that parents reported being less emotionally dismissive and more empathic. We have, however, found in other research that parent reports on emotion socialization questionnaires, especially those targeting parent beliefs, are affected by expectancy bias and observational measures may be a more reliable indicator of whether parents increase emotion coaching (Havighurst et al. 2010; Lauw et al. 2014). Future research with TIK or other emotion coaching interventions would benefit from using observational measures.

There were significant changes over time for children in both conditions on direct assessment of children's emotion identification, but only children in the intervention condition showed significantly greater change in their emotion understanding. It is likely that emotion identification improved across the whole sample because children acquire increased knowledge of emotions with age (Denham 1998). The intervention, however, appears to have contributed to greater improvement in children's knowledge of more complex emotion information relative to control participants. Changes in emotion knowledge can be taught and are expected to improve children's capacity to manage emotions (Pons et al. 2004). The combination of a parenting program with a focus on teaching children skills in understanding and regulating emotions and a child program targeting emotion awareness and regulation appears to have resulted in improved child emotion knowledge. The school interventions may also have contributed to these improvements, however, the relative contribution of each intervention component was not possible to determine.

While the parenting intervention used few behavioral strategies, parents and teachers reported significant reductions in behavior problems for those in the intervention condition with moderate effect sizes. This outcome supports the theoretical model that enhancing children's emotional competence through intervention with parents, teachers and children can indirectly impact behavior. Changes in parenting may also have a direct impact on children's behavior by reducing emotionally dismissive parenting and increasing empathy which have been found to be directly implicated in promoting children's prosocial behavior (Schaffer et al. 2009). Usually interventions targeting children's behavior problems utilize behavioral parenting strategies. The current study has demonstrated that a behavioral intervention is not the only method of improving child behavior. A comparison of an emotion-

focused parenting approach (*Tuning in to Kids*) with a behavioral parenting approach (*Triple P*) was also conducted as part of this multi-systemic intervention (Duncombe et al. 2014). This comparison showed that there were no significant differences between the two parenting approaches, with both interventions associated with significant reductions in children's behavior problems (by parent/teacher report and child direct assessment).

Children in the intervention condition demonstrated between 12.8 and 15.4 % greater reliably and clinically significant improvements in behavior than control children. These reductions are comparable to the differences between intervention and control children in the Fast Track study at 3-year follow-up (see Conduct Problems Prevention Research Group 2002). Participants in the current study need to be followed up for a similar period to see if these changes were sustained.

These parent and child outcomes were found in a real-world context with delivery by clinicians. Program attendance by parents was high, with 78 % of parents attending 5 or more of the sessions, an important outcome when program attendance in high-risk samples is often poor (Fernandez and Eyberg 2009). Child attendance was also excellent, with delivery in the school setting maximizing program completion. Implementation integrity of PATHS and PLP was not possible to assess in the current study due to limited resources to support ongoing program delivery. School intervention did not moderate child outcomes, suggesting that both PATHS and PLP were equivalent in their impact. These dosage and intervention delivery outcomes provide further evidence in support of this emotion-focused approach.

Limitations

The absence of a dismantling procedure makes conclusions about the relative effectiveness of each component of this multi-systemic intervention difficult to draw. The degree to which changes in children's functioning were due to the parenting program versus the child or school intervention is not possible to determine. Second, attrition was high primarily for the parent follow-up questionnaires, a common problem with delivering and evaluating interventions with high-risk samples (Humphrey et al. 2010). While the difference between intervention and control attrition was not significant for parent reported data, there were significantly fewer child assessments and teacher questionnaires for control children at follow-up. While intention to treat analyses showed that all findings held, the higher rate of attrition for control participants on child assessment and teacher reports means these findings need to be interpreted with some caution. Third, due to the limitations in resources and no independent observers or research assistants blind to participants' intervention condition status, fidelity of the intervention components was difficult to accurately determine and child assessments may have been

subject to bias. This is a common problem in a real-world effectiveness trial where it is difficult to maintain the stringent conditions often found in efficacy trials. Fourth, the sample was relatively ethnically homogenous, limiting the generalizability of the findings. Fifth, independent observations of children's behavior were not available: parent and teacher reports of children's behavior may have been limited by expectancy bias where reporters were aware of whether children were receiving an intervention. Finally, an extended period of follow-up into adolescence would determine whether changes were sustained and antisocial behavior was reduced in the longer term.

Conclusion

This effectiveness trial provides evidence that this emotion-focused intervention improved children's emotion knowledge, social functioning and behavior in a sample at risk for conduct disorder. This study is one of the first to evaluate a multi-systemic intervention designed to enhance emotional competence in a real world setting. Parents in the intervention reported increased empathy for their children and reduced emotion dismissiveness. Children in the intervention showed improved emotion understanding and their parents and teachers reported they had reduced behavior problems at follow-up. The current study, with a focus on emotions, widens the choice of intervention options for those working to prevent and intervene with children at greatest risk of later antisocial outcomes.

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Conflict of Interest The first author discloses a conflict of interest because she disseminates the *Tuning in to Kids* program.

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