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Evaluation of a core-team centred professional development program for building a whole-school cooperative problem solving approach to conflict

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Abstract

This study evaluated a professional learning approach using a core team (CT) model to assist primary (elementary) schools to develop whole-school collaborative conflict resolution processes. Thirteen schools were matched and randomly assigned to the enhancing relationships in school communities programme (n = 10) or a non-programme control group (n = 3). Programme schools provided a core (professional learning) team, who attended professional learning days, and disseminated programme content throughout their schools. Programme schools also received one full school staff workshop. After one year, CT participants were more likely to apply a collaborative conflict resolution model to problem scenarios and report greater knowledge and skills compared to non-programme- school control participants. Compared to the non-programme control group, non-core team programme school staff described using more cooperative approaches to handling conflict, especially when they had received more professional development from their CT. Programme school teachers taught more hours conflict resolution curriculum, and increases in hours taught by programme (but not control) teachers were associated with teacher reported increases in student understanding and use of cooperative methods. Patterns also supported a role of self-efficacy in implementation. The potential usefulness of a CT professional learning model for assisting schools to develop cooperative conflict resolution approaches was supported.

Keywords: conflict resolution; education; core team; program evaluation; social and emotional learning

This paper reports on a professional development program designed to assist schools in developing better teacher and student understanding and skills for addressing interpersonal conflict and to support practice of cooperative problem solving skills throughout the school community. The approach taken and evaluated involved professional learning (core) teams attending four full-day workshops over a one-year period, with other staff in the school attending one full-day workshop.

Schools play a key role in promoting children's social and emotional development (Pasi, 2001) and the inclusion of social emotional learning programs, such as conflict resolution, in school curricula have been shown to foster child psychological health and academic learning (Calkins, Graziano, & Keane, 2007; Johnson & Johnson, 1989, 1996; Zins, Bloodworth, Weissberg, & Walberg, 2004). Conflict resolution programs aim to enhance skills needed for problem-solving, empathy and acceptance of diversity (Pasi, 2001) and include interpersonal skills, such as listening to and getting along with others, that have been associated with academic outcomes (DiPerna & Elliott, 1999). School communities that learn to cooperatively manage conflict can help students achieve socially and academically (Jones, 2004).

Conflict Resolution Theory

The program studied here derived from psychological theories of conflict and its resolution, including two interlinked models: Deutsch's (1973) Theory of Cooperation and Competition and Pruitt and Rubin's (1986) Dual Concern Model. According to Deutsch's theory, two main orientations to conflict strongly influence conflict dynamics: cooperation and competition. The theory posits that the form of social behaviour engaged in will influence others in a social interaction (Deutsch, 1973; Deutsch, Coleman, & Marcus, 2006). Therefore, if one party approaches a negotiation competitively, the other will tend to compete in return. Similarly, cooperative behaviors tend to produce cooperative responses.

Individuals generally compete versus cooperate based on how they conceptualize conflict. Deutsch (2006) has argued that conflict, by definition, involves an interdependence of goals, such that attainment of one party's goal will influence attainment of another's goal. With *negative goal interdependence*, the more one party gains (or is likely to gain), the less the other party gains, for example, where two people argue over dividing the last piece of pie. With *positive goal interdependence*, the achievement of one party's goals helps the other to achieve their goals; for example, instead of arguing over the pie, the parties bake more, addressing everyone's goals. By reframing the conflict as a mutual problem with the possibility of *win-win* solutions, parties are more likely to cooperate.

Pruitt and Rubin's (1986) Dual Concern Model further suggests that conflict styles are influenced by the level of concern negotiators have for their own outcomes and those of other parties. Five conflict styles are mapped according to levels of both self-concern and other-concern: contending, yielding, avoiding, compromise and *integrative problem solving*. Integrative, or cooperative, problem solving seeks to understand and address the concerns and needs of all parties (self *and* other concern), by finding creative ways to address cooperatively those needs and achieve a win-win solution (Fisher & Ury, 1986).

Empirical findings suggest that cooperative problem-solving approaches aimed at addressing all parties' concerns without simply yielding do result in higher-value joint outcomes for both parties (Davidson & Wood, 2004; De Dreu, Weingart, & Kwon, 2000). Furthermore, use of cooperative conflict resolution is associated with greater psychological health (Johnson & Johnson, 1989).

Conflict Resolution in School Communities

Despite evidence that cooperative problem solving is usually preferable, research suggests it is not the most common strategy used when managing conflict, including in school communities (Johnson, Johnson, & Dudley, 1992; Smith, Inder, & Ratcliff, 1995;

Trinder et al., 2010). Schools often need to manage student-student, student-teacher, teacher-teacher and parent-teacher conflict. The role of teachers, therefore, means that they can be involved in conflict either as a primary party or, often, as the *third party* when students or others in the school community disagree and teachers attempt to assist. The ways in which teachers commonly respond to conflict reflect approaches in the broader community. These can include quickly proposing a solution, acting as an arbitrator who makes a decision for students about what they 'should do' (Johnson et al., 1992); playing the role of disciplinarian when students have broken school rules; or avoiding the conflict, sometimes telling students to 'sort it out' themselves (Stevahn, Munger, & Kealey, 2005). While understandable in the busy life of schools, these responses are unlikely to have long-lasting positive outcomes, since students do not learn for themselves skills needed to resolve conflict effectively and cooperatively, and it is likely teachers will be faced repeatedly with similar disputes.

An alternative approach to handling interpersonal disagreements within schools is to develop a whole school approach in which teachers and students learn cooperative methods for handling conflict, the school develops policies and procedures to support these skills, and the approach is applied in a whole school manner (Jones, 2004; Stevahn et al., 2005; Trinder et al., 2010; Wertheim, Freeman, Trinder, & Sanson, 2006). To achieve this, teachers and students can learn cooperative methods for solving conflict, and teachers can model cooperative problem solving, acting as mediators between parties or 'coaches' who assist students to apply the ideas in practice (Johnson & Johnson, 2004; Trinder, 2006).

Professional Development in Schools

The aim of the current study was to examine outcomes of a professional development (PD) program in primary (elementary) schools designed to support the development of cooperative whole-school processes for managing conflict. The program

provided teachers with professional development in cooperative problem solving approaches and encouraged them to teach students those skills and to apply them in practice. The professional development approach taken was informed by existing research into factors affecting program implementation.

Although numerous useful programs are offered to schools, including through professional development processes, there is ample evidence that most are not well implemented (Elias, Bruene-Butler, Blum, & Schuyler, 2000; Miller & Leyden, 1999; Walker, 2004), and implemented programs often are not maintained over time (Deutsch et al., 2006; Johnson et al., 1992). Two important factors proposed to facilitate implementation of new initiatives in schools are school leadership support of the program (Durlak & DuPre, 2008; Ertesvåg, Roland, Vaaland, Størksen, & Veland, 2010; Gager & Elias, 1997; Han & Weiss, 2005) and the use of professional learning teams, or 'core' teams, to implement initiatives (Gager & Elias, 1997; Ishler, Johnson, & Johnson, 1998). Professional learning teams are focused on encouraging an active interchange of ideas, as opposed to passive learning, and on overcoming isolation of individual teachers (Hadar & Brody, 2010). Involvement of leaders within a core team aims to overcome the problems of initiatives failing because no one with authority takes sustained responsibility for implementing the initiative. Core teams may be an efficient way to provide professional development to a limited number of teachers, who then can disseminate throughout the school their new knowledge and skills.

Furthermore, adequate professional development for school staff is needed, particularly in areas like conflict management, where teachers often need to develop their own skills so that they can model cooperative processes, mediate issues, and assist students, when incidents arise, to put the skills into practice (Batton, 2004; Elias, Zins, Craczyk, & Weissberg, 2003; Girard & Koch, 1996). Greater contact hours and program duration have been found to assist effectiveness of professional development (Garet, Porter, Desimone, Birman, & Yoon, 2001; Penuel, Fishman, Yamaguchi, & Gallagher,

2007), while time for planning and on-site support from experts for implementation also appear to be helpful (e.g., Bond, Glover, Godfrey, Butler, & Patton, 2001). The literature on effective program implementation informed the development of the intervention evaluated in this study.

Enhancing Relationships in School Communities (ERIS)

Enhancing Relationships in School Communities (ERIS) is a professional development program designed to assist primary schools to enhance relationships among teachers, students and parents in school communities. The first ERIS program took place in 2005 with an aim to build the capacity of teachers and students to effectively manage conflict (Trinder et al., 2010). A PD program was built around professional learning for core teams (CTs) that comprised 3-5 school representatives including principal or assistant principal. Because of the practical constraints of releasing all school staff to undertake extended PD to develop new skills, the CTs were offered PD, and given the role of disseminating program material in their school, providing PD opportunities to fellow staff, and encouraging broad adoption of the program throughout the school (Trinder et al., 2010).

The program was designed to help schools develop a cooperative problem-solving CR approach using the methods of Wertheim, Love et al. (2006; Littlefield, Love, Peck, & Wertheim, 1993), which combines Deutsch's (1973) and Pruitt and Rubin's (1986) theories (described earlier) with the applied approach of the Harvard Negotiation Model (Fisher & Ury, 1986). The core of the CR model involves initially identifying the parties and the issues involved, and setting the scene for cooperation by making explicit statements about the possibility of achieving a win-win solution meeting all parties' important interests. The interests (needs, wants, fears, concerns) of both parties are identified and then a range of options are generated to meet the interests of both. Finally, parties agree on an optimal package of options achieving a win-win integrative solution,

addressing all parties' needs. This core CR model has since been labelled the *SIB model* (***S***etting the scene for cooperation, ***I***dentifying interests, and ***B***rainstorming options) (Wertheim, Freeman, Trinder, & MacNaughton, 2009).

[Insert Figure 1 here]

The ERIS program participants were also taught associated skills such as how to listen to and empathize with the interests of all parties and they were given opportunities to role play and apply the concepts to negotiating, mediating, and coaching students to use the model themselves (Wertheim, Love, Peck, & Littlefield, 2006). The professional learning about conflict resolution included helping teachers build an awareness of social justice issues when addressing differences between individuals from different cultural backgrounds, as recommended by researchers such as Jones (2004). Staff were encouraged and supported to implement the ideas through a parallel CR curriculum, and through classroom, playground and staff interactions.

ERIS project researchers worked with 12 schools over 18 months. Core team teachers attended workshops at which they received PD on using the CR model, and had planning time to discuss program implementation. Within their schools, CTs generated their own ideas about how to best implement the program and four in-school visits allowed CTs to work collaboratively with ERIS consultants to discuss progress, and to explore and generate solutions to challenges encountered while implementing ERIS. Resources to help disseminate ERIS material to other staff and students were provided throughout the program to the CT.

The ERIS program was evaluated by comparing a full intervention condition, whose CT received seven days of PD over 18 months, to a partial intervention in which CTs received two days of PD. Both groups received four school visits. Findings at post-program suggested that full intervention schools had made more gains, including increasing CR skills and understanding, integrating ideas into policy and practice, and teaching more CR curriculum to students (Trinder et al., 2010). CT members in the full

intervention schools made most gains in areas such as reported confidence in handling conflict across a range of contexts and researcher ratings of the CT members' reports of how they would handle specific conflict scenarios. These results suggest that the longer version of the ERIS program is more effective, however, there is a need for developing better methods for disseminating ideas to non-CT school staff and for an evaluation of the effectiveness of CT dissemination of information and skills through their school.

Aims of this Study

The current study reports on a modified version of the ERIS professional development program conducted with a group of ten schools. Outcomes from these program schools were compared to three non-program schools (randomly assigned within demographic groupings). Based on the outcomes of the original ERIS program, modifications included supplementing the core team PD with a full-staff workshop for all staff early in the program, to encourage full school engagement and provide initial skills development.

The current study reports on outcomes at one year (after five days of professional development) into the 18-month program to examine what changes, if any, took place among teachers and their perception of students' conflict resolution understanding and skills. Interim program assessments are an important element of school-based projects, since they help to inform modifications to programs (Elias et al., 2000) and highlight factors associated with greater progress. One-year outcomes of the ERIS program were considered important in and of themselves because they may more closely approximate the amount of time schools are able to commit to new programs. Questionnaires were administered pre-program (T1) and after one-year (T2) to evaluate program outcomes, comparing three groups. Two groups were from program schools: core team members and non-core team (NCT) teachers (the teachers at program schools who were not core team members) were compared to assess the extent that NCT teachers made gains based

on a single workshop and CT input. A final control group was teachers from non-program schools who were only provided with ERIS materials but no PD, and who completed questionnaires at parallel pre and post time points (to control for retesting and receipt of materials).

Research Questions

Two sets of research questions were explored. The first set addressed differences between core team members, non-core team program participants, and non-program participant groups at the end of the evaluation period, including:

- RQ1 - How do CT and NCT participants compare to non-program teachers in reports of knowledge and skills in CR, and confidence in their ability to effectively resolve conflict in schools?
- RQ2 - How do CT and NCT participants compare to non-program teachers in use of a cooperative CR model and negotiation style in response to student conflict scenarios?
- RQ3 – To what extent is CR curriculum taught to students by CT and NCT program teachers, compared to non-program teachers, and what are teacher perceptions of student understanding and use of cooperative conflict resolution approaches?

At mid-program, it was expected that CT participants would score highest, and control school teachers lowest in each of these areas. This expectation reflected CT participants receiving the greatest amount of PD directly from the researchers.

The second set of research questions pertained to the usefulness of the core team process. Even though researchers have encouraged the use of this approach (Gager & Elias, 1997; Ishler et al., 1998), the way core teams operate to bring about change is not completely clear. One important element theoretically is that the core team initiates changes in schools. Since evidence of this process taking place would include core teams

meeting regularly between ERIS contact, acting as ERIS representatives on school committees, and integrating ERIS ideas into school practices, these activities were monitored. In addition, the core team was expected to support fellow staff to become skilled when implementing the program. Since many staff do not typically use cooperative conflict resolution approaches (Trinder et al., 2010; Stevahn, et al., 2005), the expectation was that they would need support to learn new skills and to implement them well. If the core team approach works, one would expect that when core team members offered more PD in their school, that non-core team (NCT) staff in that school would have a better understanding of a cooperative conflict resolution approach and be able to apply it to relevant contexts. These assumptions were addressed by the following research questions:

- RQ4 –To what extent is CT dissemination of CR material associated with NCT reports that the ERIS program helped to develop their CR knowledge and skills?
- RQ5 –Is CT dissemination of CR material correlated with NCT participants' reported use of the CR model and their use of a more integrative (win-win) conflict negotiation style when responding to conflict scenarios?
- RQ6 – Is CT dissemination of CR material related to the time spent implementing the CR curriculum by NCT teachers?
- RQ7 – Is CT dissemination of CR material to staff and the number of PD workshops they attend associated with gains for CT staff themselves?

Method

Participants

Principals and teachers from State, Catholic and Independent schools in Melbourne, Australia, were invited through University and education system networks to participate in the 18-month ERIS program consisting of PD workshops and in-school visits.

In their application forms, schools reported the percentage of students receiving an education maintenance allowance (EMA), a means tested education-related government payment for low-income families. Thirteen school applications were clustered into three types (small, medium and large percentage students receiving EMA) and one school was randomly allocated from each group to a non-program control group (total three schools). The remaining 10 schools formed the program school group. Principals were responsible for forming CTs and selecting staff with an interest in the program and sufficient time to attend workshops and coordinate dissemination of program material.

The 13 schools ranged in school size from 137 to 840 students (M = 340.39, SD = 195.26); staff numbers ranged from 12 to 70 (M = 29.08, SD = 15.67). A T1 questionnaire was completed by 307 staff members (response rate = 79%). In total 171 participants completed both T1 and T2 questionnaires and of these 33 were CT participants, 109 were NCT participants and 29 were control school participants.

Measures

Questionnaires (choice of online or hard copy) were administered to participants pre-program (T1) and after ten months (T2). Demographic information was obtained at T1.

Conflict resolution approach. Participants were presented with a scenario involving a student-student conflict on yard duty and asked to describe in detail how they would respond to it. Two scoring methods were used:

1. *Application of the CR model.* Responses were scored for presence of five components of Wertheim et al.'s (2006) CR model: defining the issue, setting the stage for cooperation, understanding both parties' interests, brainstorming options, and agreeing on a win-win solution. Two psychology graduate students independently rated all responses. Inter-rater reliability was

satisfactory, Kappa = .76, $p < .001$, 95% CI (.72, .81). Scores were summed, with higher scores indicating greater use of the steps of the model. Cronbach's alphas were satisfactory for a 5-item scale, .62 (T1) and .79 (T2).

2. *Conflict negotiation style.* Scenario responses were also rated using an adaption of the Conflict Strategies Theory Scale (CSTS; Stevahn, Johnson, Johnson, & Schultz, 2002) which has shown good predictive ability (Stevahn et al., 2002; Trinder, 2006). All non-integrative approaches (forcing, withdrawing, smoothing or compromising) were scored 0; cooperative, integrative negotiation approaches scored 1. Inter-rater reliability was satisfactory, Kappa = .93, $p < .001$, 95% CI (.86, 1.00).

Impact of prior PD or ERIS program on knowledge and skills. At T1, participants rated how much previous PD had helped to develop their knowledge and skills in CR. At T2, control school participants rated how much any PD, and program schools how much the ERIS program in 2008, had helped develop those areas. Items were rated from 1 (*not at all*) to 5 (*very much so*). Nine questions assessed the degree PD (or ERIS) had helped them, for example, to develop "skills in effective conflict resolution." Cronbach's T1 α = .76, T2 α = .98.

Participants' perceptions of their knowledge and skills in CR. At both time points, participants rated from 1 (*not at all*) to 5 (*very much so*) "how *knowledgeable* do you believe you are about effective strategies for resolving conflict in schools?" and a parallel question asking "how *skilled*" they believed they were; T1 intercorrelation = .85, T2 r = .87. The items were summed and averaged.

Teacher implementation of CR curricula. At T1 and T2, teachers indicated the number of hours they had spent teaching CR curricula to students in each term of the preceding year, number of sessions taught and average length of sessions (in minutes). Number of hours taught was calculated.

Student understanding and use of CR concepts. Two 9-question scales assessed participant beliefs that their students understood and used each step of the CR model. Responses were rated from 1 (*they have not yet been taught the concept*) to 5 (*very well*). At T1 Cronbach's α was .93 for *understanding*, .94 for *using* and .96 for the scales combined (T2 combined α=.97).

Percentage CT attendance. At each CT workshop, attendance was recorded. After accounting for any changes in CT group size, a percentage attendance score for each school was calculated by dividing each CT's actual workshop attendance by the CT's total possible attendance.

Field notes. Field notes were recorded during two in-school visits when ERIS consultants met with CT members to discuss and assist with their implementation efforts. Information was collected about frequency of CT meetings, number and length of sessions that CT members held with NCT staff to disseminate ERIS material in CR, and whether CT members represented ERIS on relevant school committees.

Procedure and Program Description

Relevant ethics approvals were received. After schools were allocated to condition and the core team met initially with two ERIS team members, a representative of each school received the school's choice of code-numbered (for anonymity) hard copy questionnaires for teachers to complete and return, or an online survey link.

Program schools then participated in the first year of the ERIS program. Throughout the year, the CTs attended CT professional development on four days and received two further in-school support visits from ERIS coordinators. In addition, CT and NCT staff from each program school attended a whole school professional development day of which half was focused on the ERIS CR concepts and skills. Table 1 summarizes CR topics covered in CT and whole school workshops. Time was allocated at each CT

workshop to allow CTs to reflect on ERIS material and to plan how to embed it into school practice to ensure a whole school approach. Schools were given access, via handouts and a website, to materials to support their teaching NCT staff the skills that the CT had learned.

[Insert Table 1 here]

Control schools were posted ERIS materials but given no workshops or support. These schools were offered a PD workshop after all final data were collected.

Participants completed questionnaires (online and hardcopies were made available) pre-program (T1) and again after 10 months, i.e., one school year (T2) of participation. Participants were eligible for a prize draw if they completed all questionnaires.

Data Analyses

Results are based on the subsample that completed both T1 and T2 questionnaires. Attrition analyses were conducted to determine whether group differences existed on T1 measures between T2 completers and non-completers.

As data were non-normally distributed, not amenable to transformation, and sample sizes differed between groups, nonparametric tests were conducted. Kruskal-Wallis tests evaluated differences among control, NCT and CT groups and Mann-Whitney U tests evaluated post-hoc pairwise comparisons using the Bonferroni approach. Effect sizes (*r*) were considered 0.1 = small, 0.3 = moderate, 0.5 = large effect (Cohen, 1988). Spearman's rho correlation coefficients (nonparametric) were used to describe relationships between ERIS outcome measures, CT attendance at workshops, and time CTs spent disseminating ERIS material to teachers within their school.

Results

Preliminary Analyses

Missing data. Missing values for individual items from scales were imputed using mean substitution (Tabachnick & Fidell, 2001). Three cases were excluded due to incorrect code numbering.

Attrition. Completers were participants who completed questionnaires at both time points and non-completers those who completed only the T1 questionnaire. A Mann-Whitney *U* test revealed non-completers' T1 ratings of their students' understanding of CR concepts were significantly higher than completers, $U = 7035.00$, $z = -2.01$, $p = .04$, $r = .12$, however the effect size was small. In addition, schools differed in the proportion of completers versus noncompleters, $U = 7553.50$, $z = -4.61$, $p = .001$, $r = .27$. All other demographic or dependent variables showed no significant differences between completers and non-completers in T1 questionnaires ($p \geq 0.10$).

Demographic Information. Of 171 participants completing both T1 and T2 questionnaires, 88% were female. Of these, 126 (112 female, 12 male) respondents indicated at T2 that it had been either their partial or main role to teach students during the year. Within the sub-sample who had taught during the year, most were teachers (90% teachers; 2.4% school support officers, teacher aides or librarians; 2.4% principals or assistant principals; 5.6% grade level coordinators). Participants indicated they had spent an average of 7.05 years ($N = 166$, $SD = 5.40$) in their current school.

Differences Between Groups

Kruskal-Wallis tests revealed that at T1, there were no differences among control school, NCT and CT groups that approached significance on any of the measures ($\chi^2 < 2.85$, $p \geq .24$). In contrast, there were group differences on many measures after one year of engagement in the ERIS program (see Table 2).

[Insert Table 2 here]

Application of the CR model. Regarding steps of the CR model used when responding to the conflict scenario, NCT participants used more steps than control school respondents, $p = .01$, $r = .22$; and CT participants used more steps than both

NCT, $p = .001$, $r = .31$ and control school participants, $p = .001$, $r = .57$. Effect sizes were moderate to large.

Conflict negotiation style. Group differences also emerged in the use of integrative conflict strategies when responding to conflict scenarios. The CT group used more integrative conflict strategies than NCT, $p = .001$, $r = .35$ and control school participants, $p = .001$, $r = .49$; a large effect size. Differences between groups were not clearly reflected by median scores but were reflected at the 75th percentile scores (see Table 2). No other significant differences were found between groups.

ERIS or PD helped you with CR. Groups differed in the extent to which participants reported that PD received (control school respondents) or the ERIS program had helped develop their knowledge and skills in CR. The CT participants reported greater CR knowledge and skills development than NCT participants, $p = .001$, $r = .50$; a large effect size. No differences were found between NCT and control school groups, $p = .21$, $r = .12$. All groups rated CR PD received as helpful, with a median of 4 being half way between *somewhat* helpful (3) and a maximum score of *very much so* (5); 100% of CT and 89% of NCT rated ERIS as at least *somewhat* helpful .

Perceived knowledge and skills in CR. Groups differed in perceptions of their CR knowledge and skills; CT participants perceived greater CR knowledge and skills than NCT participants, $p = .01$, $r = .21$, and control schools, $p = .01$, $r = .21$. Effect sizes of post-hoc analyses were small, and differences between groups were reflected only at the 75th percentile scores. The NCT and control groups did not differ significantly (with both reporting moderately high skills and knowledge).

Hours of CR taught to students. Of participants who reported a teaching role, significant group effects were found on reported hours CR curriculum taught (Table 2). Post hoc tests revealed no significant differences in hours taught between CT and NCT teachers, $p = .61$. Non-program teachers taught significantly less CR than NCT teachers, $p = .002$, $r = .34$ (medium effect).

Student understanding and use of CR. Group differences were found in staff members' perceptions of their students' understanding and use of cooperative CR concepts. The CT group exceeded the control group in reports that students understood, p=.004, r= .39, and used, p = .004, r = .39, cooperative CR concepts. The CT group also exceeded NCT group in reports that students understood, p = .02, r = .22 and used, p = .02, r = .21, CR concepts. However, no significant differences were found between NCT and control school respondents.

To examine effects of ERIS CR taught to students, T2-T1 difference scores for hours taught were correlated with T2-T1 difference scores for student CR understanding and use. Increased CR taught related to significant increases in student CR understanding and use combined scores for program teachers, *rho* =.47, n=85, p<.0005 (NCT *rho* = .44, n=70, p <.0005, CT *rho* =.57, n=15, p=.03), but not control teachers, *rho* = .16, n=26, p=.43. Use and understanding scores analysed separately yielded the same patterns.

Core Team Activities and Outcomes

Field notes from in-school visits indicated that in 6 program schools core teams were represented on relevant school decision-making committees such as student wellbeing committees and leadership teams. Six schools reported holding formal core team meetings ranging from one per school term to weekly, and CT members from 6 schools reported holding professional learning meetings with staff to disseminate ERIS material, with total time ranging from 30 to 410 minutes. Three schools reported providing ERIS information to parents. Seven schools reported the CR curriculum had been integrated into school practice; most often this involved staff on yard duty using the CR model when helping students manage conflict, with support materials developed by the CT available on site (such as cards or memory prompts in yard duty folders).

The percentage CT attendance at ERIS workshops ranged from 50 to 87 percent attendance across all program schools. Core teams who attended more PD workshops also taught more CR to staff in their school (*rho*=.50, p <.001). As Table 3 displays, greater

school CT attendance and number of hours the CT spent teaching NCT staff were associated with greater improvements in NCT staff (T2 minus T1 change scores) on use of cooperative conflict steps and an integrative negotiation style in scenario responses, and NCT reports of how much ERIS helped them in the area of conflict resolution. Core team workshop attendance was also associated with increases in NCT perceived CR knowledge and skills. However, CT attendance or dissemination did not relate to increases in hours of CR curriculum taught in classrooms.

[Insert Table 3 here]

Regarding CT outcomes, attendance at PD workshops was associated with more hours teaching CR to students and greater perceptions that ERIS had helped improve skills. Greater CT time spent teaching staff CR was also associated with T1 to T2 increases in the extent to which CT members applied the CR model to a problem scenario and an integrative conflict strategy in conflict scenarios; and CT reports that the ERIS project (compared to previous PD) helped with their conflict resolution development.

Among NCT participants, increases in teacher reports that the ERIS program had helped develop their CR knowledge and skills and increases in the perception of their knowledge and skills in CR were correlated with increases in the number of hours that they reported teaching CR curriculum to students.

Qualitative Descriptions of School Outcomes

Schools were encouraged to implement the ERIS program at a whole school level to meet their specific needs, which resulted in a variety of applications. Descriptions follow of the two schools whose group scores were highest on quantitative outcome measures.

One Catholic school's CT consisted of their student wellbeing team (principal, student wellbeing coordinator, religious education coordinator, and two other classroom teachers). The CT met fortnightly and planned a whole-school approach and school leaders were active in promoting the ERIS program in the school. The CT held three PD

sessions with non-core staff where they practised using the CR model by discussing and role-playing conflict scenarios (using scenarios and resources provided to the core team by the ERIS team during PD sessions). Similar techniques were subsequently used to help students understand and use the model. School staff discussed how to make the ideas accessible to students at all developmental levels and how to ensure that staff and students used a consistent language around conflict resolution. A consistent approach to handling disputes on yard duty (playground) was instituted and staff members were each given a copy of the CR model to refer to when disputes arose.

A public school in which teacher outcomes on quantitative measures were also strong reported high levels of program implementation and dissemination in the classroom and on the playground. The school had an active CT that met weekly, held two formal PD sessions with staff and ensured that topics related to ERIS were regularly raised at staff meetings. The CT members helped NCT staff to practise the CR model through role plays. In classrooms, teachers taught the ERIS curriculum and used role plays to illustrate how students could apply the model to manage conflicts. Adoption of the ERIS CR approach to handling conflict throughout the school was attributed to integrating the CR model into the school curriculum, regular discussions about the CR model at whole school assemblies, prompting students to consider the SIB model when disputes arose (e.g., asking students, “Who would be able to tell me what’s the first step?”), and support from the principal, who provided time to assist staff with any particularly challenging conflicts.

Discussion

In this study, we assessed the effectiveness of a professional development approach for supporting collaborative conflict resolution processes that used a core team model of dissemination, supplemented by a full day workshop for non-core team staff. Our results partially supported the effectiveness of this PD approach. At post-assessment

non-core team teachers and core team teachers, compared to control teachers, reported teaching more conflict resolution curricula in their classrooms and were rated by researchers as having a more collaborative conflict resolution approach to student conflict situations (assessed in scenarios). Qualitative descriptions suggested that the ideas were being used to manage day-to-day student disputes, supporting the idea that the ERIS approach was being implemented. The effectiveness of a core team approach was also supported by findings that when core teams provided more professional development to their staff and attended more ERIS PD themselves, non-core team staff in their schools made greater gains in their reported use of elements of a cooperative conflict resolution approach. However, on several indices, such as post-program perceived conflict resolution knowledge and skills of self and students, only the core team members exceeded control teachers at post program.

Findings Related to Teacher Professional Development

Our results suggested that, after one school year of participation in the ERIS program, core team members in program schools scored higher than other groups on most measures. They scored higher on use of a creative problem solving approach to conflict and were more likely to report they would respond to conflict using methods reflecting a cooperative problem-solving negotiation style. Core team members also perceived they had gained greater knowledge and skills to effectively manage conflict; and indicated that the ERIS program had helped develop their conflict handling ability and their students' abilities to a larger extent than other groups (the non-program school participants rated prior professional development instead of the ERIS program). Finally, CT participants, compared to other groups, indicated that the students with whom they worked (either in a classroom or in other contexts) better understood and used conflict resolution concepts related to achieving win-win cooperative agreements. These findings support the effectiveness of the ERIS program in assisting core team staff to develop skills and knowledge. Given that core team members represented school leaders, such as principals,

assistant principals and student welfare coordinators, who set the tone for a school and often deal with the most difficult conflict situations, building their capacity is of particular benefit.

In addition, the non-core team teacher group taught more CR curriculum and was rated as using more elements of a cooperative conflict resolution approach in student conflict scenarios than control teachers. Almost 90% of NCT respondents reported ERIS to be at least somewhat helpful in building their conflict resolution capacity across a range of areas, such as in addressing conflict and negotiation situations, and in making changes to curriculum. However, their knowledge was not as developed as in core team staff and as a group they did not report the ERIS program had helped to develop their own CR knowledge and skills or their students' skills substantially more than the control group.

Although the non-core team group as a whole did not report greater student use and understanding of cooperative CR approaches than control group teachers, those NCT teachers who reported increases in teaching CR curriculum reported student gains in student understanding and use of a cooperative approach to conflict resolution. Since this was not the case for control teachers, it suggests that when program teachers did implement the ERIS curriculum, they viewed it as having positive effects on student outcomes.

Overall, at one school year into the 18-month program, there were promising gains for core team members, with more limited gains for non-core team members. However, schools varied in the level of priority ERIS had been given in the school, and on how completely they had engaged with the ERIS program and made efforts to disseminate it in the school over the assessment period.

Predictors of Dissemination and Implementation

Schools that scored as benefiting most from the ERIS program, such as those described in the qualitative outcomes, adopted a whole-school approach to implementing

the program. Common strategies amongst these schools included the development of a whole school policy for staff to use the SIB model in the context of disputes in the playground, the provision to NCT staff of PD such as in staff meetings, teaching the skills to students through CR curriculum, and informing parents about program-related ideas.

The role of core team dissemination. An important aim of this study was to examine how successfully core teams carried out their roles disseminating program material to develop fellow teachers' knowledge, skills and motivation. There was substantial variation between schools in how actively core teams disseminated information. As predicted, when core teams spent more time disseminating CR material in their school and also when core teams more consistently attended ERIS workshops, NCT staff in those schools demonstrated better outcomes. For example, following more active CT involvement, NCT teachers reported viewing the ERIS program as more helpful in developing knowledge and skills; and the NCT participants' understanding and use of a cooperative problem solving approach to conflict were independently rated more highly. These findings support the effectiveness of the core team approach to PD when the program is given priority in a school through core teams actively passing on knowledge and skills to fellow staff.

It should be noted that CT dissemination of material to NCT staff was not associated with greater implementation of CR curricula by NCT teachers in classrooms. Rather, CT teaching of fellow staff was associated with NCT staff demonstrating a better understanding of how to approach conflict using a cooperative integrative approach and greater self-reported benefits from the program. It is likely that these outcomes led to higher quality teaching of the curriculum, although that was not assessed. In fact, although those staff, across all schools, who self-reported teaching CR curriculum material to their students reported gaining more from the ERIS program, they did not necessarily show greater application of cooperative problem solving when assessed via student conflict scenarios (see Table 3). These findings point to the importance of

ensuring that staff who implement curricula are indeed well skilled prior to doing so, whether through researcher- or core team-led PD.

There were also several benefits for CT members who spent more time disseminating CR material. They were more likely to report having gained more from the ERIS program and to have received higher scores on using a cooperative problem solving approach to conflict. Teaching the material may have helped consolidate understanding for those CT members or alternatively their strong skill development motivated them to pass on the new knowledge. Furthermore, greater CT workshop attendance was associated with more CT dissemination of CR material suggesting that dissemination may be encouraged by workshop attendance. These findings on the importance of attending PD sessions and making efforts to disseminate information could be communicated to participants during programs, to encourage engagement in CT professional learning opportunities and sharing the knowledge with other staff in their schools.

In summary, core teams do seem to have the potential to disseminate knowledge and skills in a productive way in schools. Although previous researchers have observed core teams can be useful in promoting better outcomes (Bond et al., 2001), our study further examined empirically whether core team dissemination of skills and concepts in conflict resolution result in better outcomes for fellow staff and themselves. The findings support the idea that core teams can be used to pass on knowledge, gained during PD workshops, to their colleagues, who in turn can achieve positive changes in skills and knowledge. Nonetheless the current findings suggest that further research is needed to improve the effectiveness of this process.

Self efficacy in dissemination and implementation. Thus far in the discussion teacher self-reported increases in knowledge and skills have been assumed to represent increases in those capacities. While teacher reports may indeed represent actual gains, self-reported capacities could also reflect self-efficacy beliefs.

From a self-efficacy perspective, core team participants reported increasing their self-efficacy related to cooperative conflict resolution capacities. Furthermore, core team participants who reported greatest self-efficacy gains also provided more professional development to fellow staff in their school. Regarding non-core team teachers, those with greatest increases in self-efficacy taught the most CR curriculum to their students. Increases in self-efficacy more strongly predicted increases teaching CR curriculum than did researcher ratings of teacher knowledge and skills. These patterns support the role of an increase in self-efficacy in encouraging participants of PD to translate their learning into practice. The role of self-efficacy as a mediator in professional development is worth developing in future research.

Limitations and Strengths

Study limitations include the self-report nature of most data without direct observation of student and teacher behaviour. Our measure of CR model application was based on a hypothetical scenario, so how (and when) the model is applied to actual conflicts requires further research attention.

The types of analyses possible in this sample were limited by skewed distributions, not assisted by transformations. Future research with larger samples could use methods such as hierarchical linear modeling to examine differences between types of school based on size and demographic characteristics. For example, the larger schools in our study reported that dealing with many staff and structures within the school created challenges for implementation. A mixed model could be used to assess how specific factors limit and enable the success of a core team dissemination approach, for example, whether school size and CT composition exert an influence. Evaluation was also focused mostly on curriculum implementation, rather than incidental teaching in class and yard duty, which also took place. Timing of the second questionnaire coincided with end-of-year report writing resulting in more attrition than hoped; however, except for confidence

in their CR knowledge and skills (which suggested that teachers who thought they already knew the material tended not to persist), the final sample was similar to the initial one. It should be noted, however, that sample size (and the quantitative nature of the study) is larger than in many prior studies, and quantitative findings were supplemented with information from field notes.

Future Research Directions

Consistent with the findings of previous research studies (Ertesvåg et al., 2010; Firth et al., 2008; Ingvarson, Meiers, & Beavis, 2005; Jones, 2004), the current outcomes suggest that successful implementation of whole school initiatives requires a commitment and investment of time from a school, strategically focused on building the individual and collective knowledge and skills. A well-positioned core team, with authority and credibility to coordinate action and integration of the program in the school, shows potential in school-wide implementation efforts, although further research is needed into how to ensure CT effectiveness. Future research should build on this study's findings to examine specific barriers and facilitators of program implementation.

Feedback from participants and our observations suggested that particular school characteristics appeared to have an impact on rate of change, such as greater history of change attempts and leadership changes, leadership styles, school size, high staff turnover, and competing time pressures, such as timing of other major school evaluations or change processes. The development of a strategic focus in each school appears important if schools are to avoid what Fullan (2010) has described as 'blind urgency' where staff can become overwhelmed and discouraged by pressure to make changes. These factors need to be systematically explored and addressed in future studies, and point to a need for ongoing support of schools and realistic expectations of time frames for whole school adoption of new approaches.

A core team professional learning approach coupled with some direct PD for the full school staff was used in this study. We had hoped that adding a full-day PD

workshop for all staff very early in the program would motivate staff and lead to quicker uptake of the program and knowledge and skills development. Although we generally received positive evaluations at the end of the full-school PD day, the strategy of offering a workshop early in the project may not have been as impactful as hoped. It became clear that core teams took some time to understand and embrace the CR concepts they were learning, so the full-school workshop may have preceded core teams' capacities to support their school soon after that day. Also, some teachers who implemented conflict resolution curricula after the PD workshop may have been only partly skilled to do so. Waiting for core teams to provide further PD prior to teaching students may have enhanced quality curriculum implementation, although that needs to be balanced with ensuring motivation is high enough to promote initiating the new curricula. Future research should address timing of different components of the intervention program and relative effectiveness of different formats (e.g., full PD days for staff at different points in the program versus more closely working with subgroups within schools) over time. The aim is to develop time- and cost-effective approaches that have the potential to disseminate skills and knowledge efficiently and effectively to large numbers of schools.

Future research needs to address observed outcomes for students. Preliminary student data suggests that ERIS curriculum resulted in gains in understanding of cooperative conflict resolution (DiPerna & Elliott, 1999), and our qualitative feedback suggested this knowledge supported teacher attempts to apply the CR approach in the playground, where skills become embedded. Further research into this process and these outcomes are needed.

Our findings provide some support for dose-response effects in CR professional development. Dose-response models examine how the number of sessions relates to outcomes and how many sessions are needed for optimal, or sufficient, outcomes (Howard, Kopta, Krause, & Orlinsky, 1986; Maracy & Dunn, 2011). Dose-response effects were supported in outcomes of the original ERIS program, when the full ERIS

program resulted in more positive outcomes than a partial program (Trinder et al., 2010). Dose-responses effects can also be assessed through associations between attendance and outcomes (Maracy & Dunn, 2011). Our study showed that greater core team attendance at workshops predicted better school outcomes. Similarly, when core teams delivered more professional development sessions, non-core team staff outcomes were more positive. These findings support a dose-response effect, which should be more systematically explored in future.

Conclusions

The end-of-year-one outcomes of the modified ERIS program lend some support to the use of core teams to disseminate program content, and suggest that school communities engaged with the cooperative conflict resolution curriculum offered. Considered as a whole, it appears that professional development workshops were quite effective in developing conflict resolution knowledge and skills of core team groups from participating schools. Furthermore, the program appears to have facilitated schools teaching students relevant curriculum and, particularly when core team members provided PD to fellow staff, the program assisted non-core team teachers to develop a deeper understanding of a cooperative conflict resolution process. Findings provide some support for a core team approach to professional development in schools, and were theoretically consistent with a role of self-efficacy beliefs in assisting to translate professional development into practice. Fostering respectful relationships in complex and diverse communities is, however, not a simple undertaking and further research is needed to develop the most effective methods for providing professional development in this field.

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Table 1

Summary of ERIS Program Content Delivered During Workshops

Workshop	Content and activities
CT Workshop 1	*Fundamentals of constructive conflict resolution.* Identifying and responding to conflict; roles. A broad CR model: defining conflict, approaches to conflict (competitive, cooperative; and avoiding, contending, conceding, compromise, creative problem solving), interests versus positions, and components of a creative problem solving approach. Interactive activities. Planning time.
Whole school day	*Whole school approach to resolving conflicts.* Overview of a whole school approach. Constructively addressing differences, awareness of cultural diversity, and overview of relevant research. Introduction to the (briefer) SIB CR model. Activities included identifying typical conflicts in schools and typical teacher responses; enacting and evaluating scripts for applying the model as a party, facilitator, or coach assisting a single student. Introduction to the CR curriculum. Planning time.
CT Workshop 2	*Deepening use of the CR model*. Using the model as a tool for general problem solving, practice applying the ideas to a relevant problem/issue, considering cultural differences and social justice when applying the CR model. *Understanding and fostering change processes in schools.* Recognizing potential impact of ERIS changes, identifying factors promoting implementation (reducing resistance), planning implementation
CT Workshop 3	*Whole school implementation:* Principal and CT member from ERIS Phase 1 full-program school describing their school's ERIS process and outcomes. *Applying the SIB CR model*: Identifying opportunities to use the SIB CR model and practice applying it; role plays of student-related conflict scenarios in different roles (negotiator, mediator), observer feedback. Planning time.
CT Workshop 4	*A whole school approach:* Principal from another Phase 1 school describing that school's implementation process and outcomes. *Dealing effectively with multiple viewpoints.* Good listening, listening for interests, asking questions (open vs. closed questions). Exercise practicing listening to contrary views, observer feedback. Applying the CR model to a relevant contentious staff issue; using the SIB CR model. Brainstorming options and acting as a facilitator using the model. Planning time.

Table 2

One-year Group Differences

Variables	Comparison schools			Non-core team			Core team				
	Md	75th %ile	*n*	Md	75th %ile	*n*	Md	75th %ile	*n*	χ^2	Post-hoc Mann Whitney Test
CRM steps	1.00	2.00	29	2.00	5.00	103	6.00	8.00	31	23.33**	CT>NCT>Comparison
Conflict strategy	.00	.00	29	.00	.00	103	.00	1.00	31	24.14**	CT>NCT=Comparison
ERIS or PD helped you with CR	2.06	3.17	16	2.39	3.36	102	4.00	4.22	29	36.65**	CT>NCT= Comparison
Perceived K&S in CR	4.00	4.00	28	4.00	4.00	102	4.00	4.50	30	7.82*	CT>NCT=Comparison
Hours teachers taught CR	.00	7.50	24	8.00	18.50	62	11.00	22.00	15	11.29*	CT=NCT>Comparison
Students understand CR	2.00	3.00	28	2.67	3.14	98	3.11	3.89	28	9.34**	CT>NCT=Comparison
Students use CR	1.89	2.28	28	2.28	2.67	98	2.67	3.22	29	8.64*	CT>NCT=Comparison

Note. K&S = knowledge and skills.

* $p < .05$. ** $p < .01$, d.f. = 2

Table 3

Intercorrelations Between Core Team ERIS Activities and T2 – T1 Difference Scores on Outcome Measures for Non Core Team (NCT) group (displayed in upper diagonal) and Core Team (CT) group (lower diagonal)

Measures	1	2	3	4	5	6	7
1. Time CT taught staff CR	-	.50*	.04	.43**	-.08	.28**	.43**
2. CT % attendance at workshops	.50*	-	.23	.36**	.32**	.22*	.23*
3. Hours teachers taught students CR[a,b]	.34	.45*	-	.26*	.34**	.05	.02
4. ERIS/PD helped you CR [b]	.51**	.39*	.05	-	.10	.24*	.29**
5. Perceived K&S in CR [b]	.11	-.10	.00	.05	-	.07	.15
6. CRM steps [b]	.55**	.19	.20	.30	.18	-	.47**
7. Conflict strategy [b]	.52**	.15	.20	.13	.36	.73**	-

Note. K&S = knowledge and skills; the sample size for each correlation varies and for NCTs ranges from 69 to 100 and for CTs ranges from 19 to 30.

[a] All correlations involving these variables are only among teachers who taught during the program period and blank hours taught in T2 submitted questionnaires were coded as 0 hours taught.

[b] Time 2 minus Time 1 difference score

* $p < .05$. ** $p < .01$

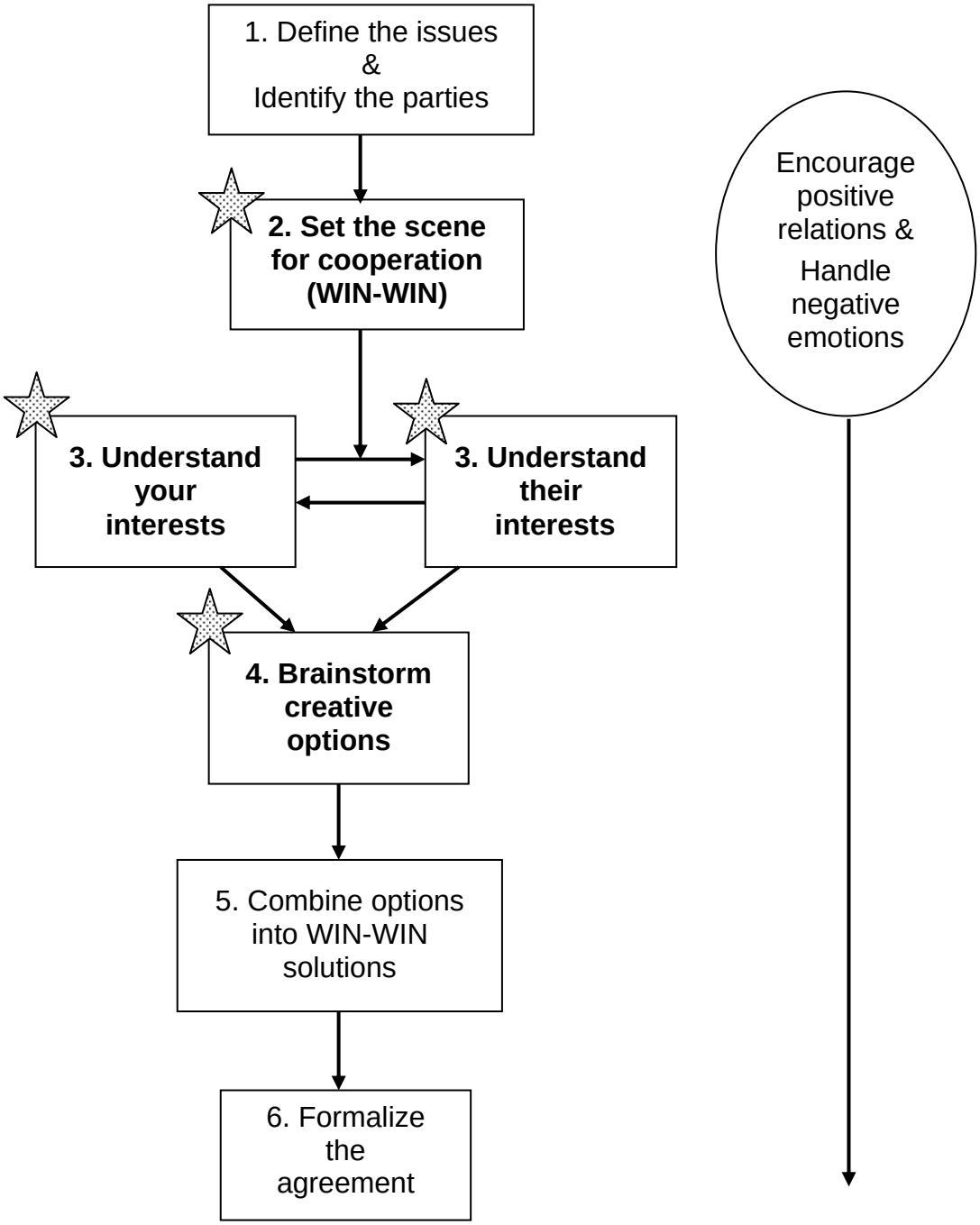

Figure 1. Core conflict resolution model (SIB model). Wertheim et al. (2009).