Published in final edited form as:

J Psychiatr Ment Health Nurs. 2010 June ; 17(5): 392–402. doi:10.1111/j.1365-2850.2009.01534.x.

The Strengthening Families Program 10–14: influence on parent and youth problem-solving skill

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Abstract

The aim of this paper is to report the results of a preliminary examination of the efficacy of the Strengthening Families Program (SFP) 10–14 in improving parent and youth problem-solving skill. The Hypotheses in this paper include: (1) youth and parents who participated in SFP would have lower mean scores immediately (T2) and 6 months (T3) post intervention on indicators of hostile and negative problem-solving strategies; (2) higher mean scores on positive problem-solving strategies; and (3) youth who participated in SFP would have higher mean scores at T2 and at T3 on indicators of individual problem solving and problem-solving efficacy than youth in the comparison group. The dyads were recruited from elementary schools that had been stratified for race and assigned randomly to intervention or comparison conditions. Mean age of youth was 11 years (SD = 1.04). Fifty-seven dyads (34-intervention & 23-control) were videotaped discussing a frequently occurring problem. The videotapes were analysed using the Iowa Family Interaction Rating Scale (IFIRS) and data were analysed using Dyadic Assessment Intervention Model. Most mean scores on the IFIRS did not change. One score changed as predicted: youth hostility decreased at T3. Two scores changed contrary to prediction: parent hostility increased T3 and parent positive problem solving decreased at T2. SFP demonstrated questionable efficacy for problem-solving skill in this study.

Keywords

behavioural intervention; dyadic interaction; parent; child conflict; problem-solving skill; programme efficacy

It is universally recognized that as youth develop into adolescents, conflict with their parents increases. Mundane conflicts arise around topics such as curfew and household chores, but issues such as smoking, alcohol use and sexual experimentation have the potential to become more serious (Noller & Callan 1991, Riesch *et al.* 2000, Viikinsalo *et al.* 2005). The ability to reason, negotiate and resolve conflicts is an important dimension of family functioning and parent–child communication (Strauss *et al.* 1996, Van Doorn *et al.* 2007). Frequently, adolescents and their parents do not believe they possess the problem-solving

skills to manage increased conflicts (Riesch *et al.* 2003) to avoid detrimental effects on the relationship (Patterson & Forgatch 1985, Hops *et al.* 1990, Wierson *et al.* 1992, Noller 1995, Herman *et al.* 2007) or on youth health and development (Greenley *et al.* 2007, Lewandowski & Drotar 2007, Liu *et al.* 2008).

An attractive strategy to help families learn conflict management skills to resolve serious issues in the future is to use current minor issues to develop the skills. This paper reports on the efficacy of the Strengthening Families Program 10-14 (SFP) (Kumpfer *et al.* 1996) that purports to build problem-solving skills for parents and adolescents.

Background and significance

The SFP 10-14 (Kumpfer *et al.* 1996) is a Substance Abuse and Mental Health Services (SAMHSA) designated model programme, which indicates the programme has undergone scientific review by the National Registry of Evidence based Programs and Practices (NREPP) (<http://www.nrepp.samhsa.gov/> accessed 29 July 2009). The NREPP evaluation of the programme includes an analysis of the reliability, validity, intervention fidelity, missing data and attrition, potential confounding variables and appropriateness of analysis. NREPP criteria also address programme readiness for dissemination including an evaluation of implementation materials, quality of training and support resources, and quality assurance procedures.

The SFP 10-14 has been used in many communities. Outcomes have included reduced substance use and methamphetamine use among sixth- and seventh-grade students in rural Iowa (Spoth *et al.* 2006) and child's positive adjustment in Washington DC (Gottfredson *et al.* 2006). The programme is thought to enhance family protective factors and reduce family risk processes.

Literature review and conceptual framework

This literature review addresses: (1) indicators of problem-solving skill; (2) correlates of problem-solving skill; and (3) the conceptual framework underpinning the study.

Indicators of problem-solving skill

Through examination of the structure of problem-solving interactions across numerous studies, Granic *et al.* (2003) developed state spaced grids. State spaced grids are a strategy to illustrate hypothetical landscapes of behavioural habits stabilized over development of the relationship. These habits resulted in four categories of problem-solving behaviour: hostile, negative, neutral and positive. For example, attacking and criticizing constitute hostile, disagreeing and denying constitute negative, requests constitute neutral and agreement and endearment constitute positive behaviour.

Problem-solving observation measures compile indicators into observable behaviour that can be coded and quantified. One such behavioural observation measure is the Iowa Family Interaction Rating Scale (IFIRS) (Melby & Conger 1999) that provides categories to examine individual child, individual parent and dyadic problem-solving effectiveness. See the Instrument section for a further description.

Problem solving has been measured using self-reports. Conceptually problem-solving measures have included an individual's perceptions of his or her own behaviours and attitudes, problem-solving confidence, approach-avoidance style and personal control (Kramer & Conoley 1992). Others have included self-esteem, impulsivity and locus of control (Wakeling 2007) in self-report measures of problem-solving skill.

Correlates of problem-solving skill

Most studies of problem-solving skill are conducted with families seeking treatment for child behaviour problems. In this context, correlates of parent-child problem-solving skill included children's difficult temperament (McGee *et al.* 1984), ineffective parenting practices (Hemphill 1996), parent-child interaction with low levels of warmth and affection (Kazdin 1993), parental psychopathology, in particular depression (Beardslee & Wheelock 1994), and family social disadvantage (Blanz *et al.* 1991). Social isolation among mothers, high level of pretreatment behavioural problems and lack of positive family relationships are correlates of poor treatment outcome. Other factors include satisfaction with parenting (Hemphill & Littlefield 2006), marital quality (Vuchinich *et al.* 2002), and family cohesion and adaptability (Floyd *et al.* 2004). However, typically developing children and families in the community have been understudied.

Our review of the field revealed three programmes focused on problem-solving skill efficacy or effectiveness. Exploring Together (ET) was designed for families with a child with an emotional or behavioural disorder. It was most effective in building problem-solving skill among children with the highest levels of emotional problems (Hemphill & Littlefield 2006). Collaborative Problem Solving (CPS) was designed for families with children having Oppositional Defiant Disorder. It was most effective with the skills of limit setting and communication (Greene *et al.* 2004). Problem Solving Skills Training (PSST) was designed for families experiencing distress as the result of a challenging life event. It has been associated with significant decreased negative affectivity and enhanced problem-solving skill among young single mothers with children newly diagnosed with cancer (Sahler *et al.* 2005). Collectively, these studies demonstrate problem-solving skill is a modifiable behaviour and strategies combining cognitive and behavioural approaches are most likely to succeed. The current study was designed to develop skills to manage everyday conflicts in families with typically developing children. We hypothesized mundane issues would be fertile training ground for skill development before adolescence and the expected increase in conflicts. We hoped to influence pre-adolescents at a time when they were more susceptible to parental and trustworthy adult influence than to peer pressure (Anderson *et al.* 1999). Such a strategy could be disseminated to families via everyday nursing practice.

Conceptual framework

The Bio-psychosocial Vulnerability Model (Kumpfer *et al.* 1990) formed the conceptual basis of SFP 10-14. According to this model, a key set of risk factors are those associated with family values interacting with family stressors (e.g. pubertal development, family conflicts, financial stress). At the same time, risk factors are buffered by coping resources (e.g. effective family management, communication skills). These family-related factors are viewed as interacting with community, school and peer-related factors to influence youth outcomes, particularly substance use. The SFP 10-14 programme (Molgaard *et al.* 1997 revised) incorporates empirically supported techniques for improving family management practices and youth skill enhancement to address the risk and resiliency factors in the model. The SFP 10-14 programme teaches families specific skills such as identifying stress symptoms, setting clear expectations, staying calm and respectful, learning individual rules and expectations, and running family meetings. The SFP 10-14 programme was aimed at families with children who are pre to early pubertal development. As parent-youth relationships are reciprocal in nature, SFP 10-14 used a reciprocal bi-directional approach, targeting both parent and child for intervention. The ability to reason, negotiate and resolve conflicts is an important dimension of family functioning and parent-child communication (Strauss *et al.* 1996). Problem-solving skill includes behaviours and interactions developed over time and is part of an ongoing dynamic system (Melby & Conger 1999).

Purpose and aims

The purpose of this paper is to report the results of a preliminary examination of the efficacy of the SFP10-14 programme on parent and young adolescent problem-solving skill. The following hypotheses were tested:

1. Youth and parents who participated in SFP 10-14 would have lower mean scores immediately and 6 months post intervention on observed indicators of hostile problem-solving interaction than youth and parents in the comparison group.
2. Youth and parents who participated in SFP 10-14 would have lower mean scores immediately and 6 months post intervention on observed indicators of negative problem-solving interaction than youth and parents in the comparison group.
3. Youth and parents who participated in SFP 10-14 would have higher mean scores immediately and 6 months post intervention on observed indicators of positive problem-solving interaction than youth and parents in the comparison group.
4. Dyads who participated in SFP 10-14 would have higher mean scores immediately and 6 months post intervention on observed indicators of problem-solving effectiveness interaction than dyads in the comparison group.
5. Youth who participated in SFP 10-14 would have higher mean scores immediately and 6 months post intervention on indicators of self-reported individual problem solving and problem-solving efficacy than youth in the comparison group.

Methods

Design

An experimental two-group (intervention and comparison) design was used. There were three data collection points (pretest, post-test and follow-up) that both groups participated in equally. Parents and youth in the intervention group attended the 7-week SFP 10-14. Parents and youth in the comparison group participated only in the data collection procedures and did not receive training. A pictorial of the design is contained in Table 1.

Participants

Eligibility criteria were that the child was in the fifth grade, English speaking, and free of conditions that would prohibit participation in the problem-solving task. At intake, 34 youth–adult dyads were enrolled in the intervention group and 23 were enrolled in the comparison group. No family in either group reported attendance at any other programmes to address parenting skill or family management. See Table 2 for a display of participant characteristics in the intervention and comparison conditions.

Variables and their measurement

Conflict—To stimulate conflict, parent and youth were instructed to complete the 21 item Issues Checklist (IC) (Prinz *et al.* 1979). The IC is used to select an item of regular and exuberant disagreement between parent and youth, such as computer time or curfew. Using the bi-directional theoretical stance, the behaviour of either parent or youth was considered for resolution.

Problem-solving skill—Two methods were used to measure problem-solving skill: an observational method and a self-report survey.

The IFIRS is a global or macro-level observational coding system initially developed in 1989 and has undergone five revisions. Scales assess three aspects of family interaction. The first aspect is individual behavioural characteristics or each person's generalized interaction. It consists of eight items, such as use of humour, complaining. The second aspect is dyadic behavioural characteristics or the nature of behaviour exchanged from one family member to another. It consists of 22 items, such as hostility, warmth, support. The third aspect is the family problem-solving process. It consists of 10 items, such as solution quality, family enjoyment (Melby & Conger 1999).

Using IFIRS, a change post-intervention on all three aspects of family interaction was reported by Kosterman *et al.* (1997). The IFIRS scales distinguished families who could effectively solve problems using a task approach from those who could not (Rueter & Conger 1992).

The Individual Problem Solving and Individual Problem Solving Efficacy scales created by the Design Analysis Group (DAG 2001) were used for the self-report measure. The Individual Problem Solving scale had five items on which the youth rated his or her problem-solving ability on a scale ranging from 1 = strongly agree to 5 = strongly disagree. An item example is, 'I think before I act.' A Cronbach's alpha of 0.74 was reported by DAG (Krainuwat 2006) and it was 0.76 in this sample. The Individual Problem Solving Efficacy scale had six items on which the youth rated his or her problem-solving efficacy on a scale ranging from 1 = strongly agree to 5 = strongly disagree. An item example is, 'It is important to think before acting.' A Cronbach's alpha of 0.84 was reported by DAG (Krainuwat 2006) and it was 0.86 in this sample.

Pubertal development—The Pubertal Development Survey (PDS) (Petersen *et al.* 1988) is a self-report measure of pubertal development. The PDS is a 5-item, gender-specific scale. Boys were asked about pubic hair, voice change and facial hair growth, and girls were asked about pubic hair, menarche and breast development. The responses coincide with the Tanner Stages 1–5 and correlate well with physician ratings ($r = 0.61–0.67$) (Brooks-Gunn *et al.* 1987). The PDS has an internal consistency coefficient of 0.79 in boys and 0.69 in girls (Patton *et al.* 2007) and Cronbach's alpha of 0.67 for girls and 0.66 for boys in this sample. In addition, when PDS was compared with the Sexual Maturation Scale (SMS), agreement was moderate for boys (κ 0.42, 95% CI 0.39, 0.45) and girls (κ 0.57, 95% CI 0.53, 0.61) (Bond *et al.* 2006). There were more missing data for the SMS (13%) than the PDS (4%). Bond *et al.* (2006) recommended using PDS over SMS.

Procedures

Recruitment—Twenty-eight public elementary schools in a medium sized Midwestern US city served as recruitment sites for the sample. The schools were stratified for high and low minority enrolment to promote representativeness of the sample and assigned randomly to the intervention or comparison groups. High minority enrolment was defined as 60% of the enrolled students were African American. All seven randomly selected schools approached agreed to serve as a recruitment site. At each site, invitational materials were sent home in school backpacks or US mail to families with a child in the fifth grade. The materials included a letter from the school principal indicating his or her knowledge of the study and approval by the school district's Research and Evaluation Committee, but directing questions towards the study team.

Invitations to participate in the study were sent through the US mail or backpacks to 396 families. Interested parents contacted the research office by phone, post card or email. After project staff discussed participation with a parent on the telephone, an appointment was

made to obtain consent and collect data. Sixty-six families were enrolled, for a response rate of 17%. Of these families, 57 participated in the videotaped problem-solving tasks.

SFP 10-14 intervention—The SFP 10-14 is a 7-week SAMHSA Model Program lasting 2 h per week. Youth and adults participated in separate activities in the first hour and group activities in the second hour. The sessions focused on discipline, family management, stress reduction, resistance skills for alcohol tobacco and other drug use, and problem-solving skill and communication (see Table 3). Nurses, trained by staff at the Iowa State University where SFP 10-14 is housed, delivered the intervention per in-depth manual direction. Sessions included videotapes to deliver didactic content and lively, prescribed activities for parent and youth. Intervention sessions were held at community locations throughout Madison, Wisconsin. Enrolment in each set of sessions ranged from a minimum of five dyads to a maximum of 10 dyads. Incentives included a meal to motivate arriving on time along with transportation and childcare.

Data collection—The evaluation data were gathered from both groups through in-home interviews over three time periods (T1-Intake, T2-Post, T3-Follow-up) between the years 2002–2005. The IC was administered and a conflict chosen for discussion. The parent and youth dyad were videotaped for 10 min as they attempted to manage or solve the conflict. Dyads were paid \$10, \$20 and \$40 for their participation at Intake, Post and Follow-up, respectively. The videotapes were sent to Iowa State University for coding using the IFIRS. The data were entered into SPSS Version 14. All study procedures were reviewed and approved by the University's Health Sciences Committee for the Protection of Human Subjects.

Data analysis—The coded behaviours from the IFIRS were sorted into hostile, negative and positive problem-solving effectiveness categories (Melby & Conger 1999, Granic *et al.* 2003). Table 4 provides a description of categories.

A multilevel multivariate longitudinal Dyadic Assessment Intervention Model (Kenny *et al.* 2006) was used to analyse the observational and self-reported variable data. The model used a linear equation to examine the intercept, group effect (intervention vs. comparison), two covariates (intake and PDS scores) and residual error (see Fig. 1).

Results

The attrition rate was 44% for the treatment group and 65% for the comparison group. Reasons for attrition included not being able to reach families, family relocation and discomfort with the videotaped task. Attendance at SFP 10-14 was monitored. Full participation was defined as attendance at five of seven sessions. Fifty-one of 57 dyads (89%) were full attendees. There was no significant difference in income, education, age, race or gender in dyads who completed study procedures and those who did not. In addition, there was no significant difference in dyads who attended at least five of seven sessions vs. those who did not.

Hypothesis one was youth and parents who participated in SFP 10-14 would have lower mean scores immediately (T2) and 6 months (T3) post intervention on indicators of hostile problem-solving interaction than youth and parents in the comparison group. For Time 2, there were no significant differences in mean scores between intervention and comparison group on indicators of hostile problem-solving interaction for youth or parents. At Time 3, there was a significant decrease in mean scores ($Z = -2.405$, $\alpha = 0.05$, where Z significant ≥ 1.96) for youth hostile problem-solving interaction. There was a significant increase in mean scores for parent hostile problem-solving interaction ($Z = 3.784$, $\alpha = 0.05$, where Z is

significant ≥ 1.96). This hypothesis was supported for youth at Time 3; however, the results for parents were contrary to prediction (Table 5).

Hypothesis two was youth and parents who participated in SFP 10-14 would have lower mean scores immediately (T2) and 6 months (T3) post intervention on indicators of negative problem-solving interaction than youth and parents in the comparison group. There was no significant difference in the mean scores at Time 2 or at Time 3 on indicators of negative problem-solving interaction for youth or parents in the intervention and comparison groups. This hypothesis was not supported (Table 6).

Hypothesis three was youth and parents who participated in SFP 10-14 would have higher mean scores immediately (T2) and 6 months (T3) post intervention on indicators of positive problem-solving interaction than youth and parents in the comparison group. For Time 2, parents who participated in the SFP had lower mean scores ($Z = -2.286$, $\alpha = 0.05$, where Z is significant ≥ 1.96) on positive problem-solving interaction than parents who did not participate. For Time 3, no change in the mean scores on positive problem solving was found for parents in either group. For youth at Time 2 and at Time 3, no change in mean scores on positive problem solving was found in either group. This hypothesis was not supported and at Time 2 the results for parents were contrary to prediction (Table 7).

Hypothesis four was dyads who participated in SFP 10-14 would have higher mean scores immediately (T2) and 6 months (T3) post intervention on indicators of problem-solving effectiveness interaction than dyads in the comparison group. Dyads' mean scores on indicators of problem-solving effectiveness in the intervention and comparison groups were not statistically significant at Time 2 and at Time 3. This hypothesis was not supported (Table 8).

Hypothesis five was youth who participated in SFP 10-14 would have higher mean scores immediately (T2) and 6 months (T3) post intervention on self-reported indicators of individual problem solving and problem-solving efficacy than youth in the comparison group. There was no statistically significant difference in the mean scores at Time 2 and at Time 3 on indicators of individual problem solving and problem-solving efficacy for youth in the intervention and control groups. This hypothesis was not supported (Table 9).

There was no significant difference in problem solving among parents and youth who attended at least five of seven sessions than dyads who attended four sessions or less (data not shown).

Discussion

Summary

Parent and young adolescent ability to manage or solve problems is important to the relationship and to the child's growth and development. The developmental tasks of adolescence, such as gaining a sense of self-separate from the parent, commonly provide challenges for the achievement and maintenance of positive parent-child relationships. Further, the natural transitions to more independent behaviour can put adolescents at risk for experimenting with behaviours that could substantially alter their life course.

The purpose of this paper was to conduct a preliminary examination of the efficacy of the SFP 10-14 on parent and young adolescent problem-solving skill. Five hypotheses were proposed and tested. None were fully supported; in fact, outcomes for parents were contrary to prediction. However, the variation from intake scores was reduced considerably in the intervention group at 6 months while remaining high in the control group. Perhaps this

reduced variation indicates that the youth and parents in the intervention group were moving towards improved problem-solving skills.

There may be several reasons why the hypotheses were not supported. First, problem solving is a difficult skill to learn, particularly if interaction habits have been in place for some time. The parents had a lifetime of problem-solving habits to unlearn. This was less of an issue with the youth. At age 11, youth are on the cusp of transition to adolescence and may be trying new behaviours, becoming more introspective and basing decisions on personal or peer opinions rather than those of their parents. New forms of problem-solving strategies may be emerging. It was based on this idea that we targeted the young adolescent stage as an ideal time to acquire problem-solving skills.

Problem solving may include a considerable level of emotion. The problem-solving tasks were constructed such that topics that had been a source of disagreement with high frequency and exuberance were chosen for discussion. These problems may have become emotional because of a lack of progress in management or resolution. Emotional behaviour can be a barrier to effective problem solving (Lynam & Tenn 1989).

A number of study parents stated that it was difficult for them to lessen control of their children. They just wanted to 'keep them little for longer' or not see them 'grow up too soon'. Thus, a process that includes the opinions and values of the child who up until now had been reliant on the parent may be difficult to embrace and use. Parents conveyed that the youth tended to pick up the skill faster than they did. Anecdotally, the youth mastered the process quickly with more than one parent lamenting that the intervention 'made monsters' out of their child. With the youth using the problem-solving skill and the parent not, it is conceivable the parent could resort to hostile interactions out of frustration or in an attempt to reclaim their control and power in the relationship.

Limitations

There were several limitations to this study. Attrition was high, the sample was small, and the coding scheme captured only macro observations. Youth and parents may have been constrained by the videotaping procedure. This seems unlikely given the ubiquity of videotaping, and the observation by Nunally (1978) that dyads are incapable of performing on videotape in a manner that they cannot do under usual circumstances.

On the other hand, state of the art methods were used in this study. A sensitive observational method and a valid and reliable self-report method were used to assess problem-solving skill. IFIRS, as a coding scheme, is widely used, sensitive to change, reliable and valid. The multilevel multivariate longitudinal Dyadic Assessment Intervention Model (Kenny *et al.* 2006) is specifically designed to take into consideration the co-dependency of parent and child interaction. The intervention approach was theoretically grounded, implemented with integrity and delivered in bi-directional method – teaching the same skill to parent and child.

Recommendations

The SFP 10-14 programme enjoys wide dissemination. The parents and youth in this study reported taking pleasure in the activities and assignments. However, improvements in problem-solving skill as measured by observation and youth self-report were not supported. Potentially, improvements may have occurred if problem-solving strategies were emphasized more strongly than they were in the curriculum, a longer time period than 6 months was afforded to account for a lag effect in acquisition of the skill, booster or refresher sessions had been implemented, and the focus of the programme had been solely on problem-solving skill.

It is widely accepted that developmental conflict increases as children enter adolescents. The 'storm and stress' perspective was considered the status quo during adolescence. It was thought children needed to act out and rebel so that they could separate from the family (Hall 1904). More recently, the 'storm and stress' view has been replaced by the view that the parent-child relationship is ever evolving (Arnett 1999). Relationships are vulnerable whenever conflict or problems simmer. Problem solving is a life-skill that everyone needs and the family is the ideal training ground. Thus, parent and child training in the skills to develop positive relationships in which the give and take of problem solving is mastered should be commonplace.

Sample attrition was frustrating. In future studies, it may be informative to let participants know in a non-coercive manner how important it is to complete the study procedures. Another potential idea is to include in the study protocol an assessment of the reasons given for programme non-completion in light of the provision of transportation, child care, and meals for the intervention group and incentives for data collection for both groups.

Conclusion

We do not dismiss the SFP 10-14 as a potential intervention to assist families to develop problem-solving skills. The families enjoyed the sessions and variability of the scores was reduced from pretest to post-test. A longitudinal approach and increased focus on problem-solving strategies and processes may be necessary. Programme facilitators should prepare parents that youth tend to pick up the skills faster than adults and that the changing dynamic may be frustrating. As dyads become more relaxed or habituated to the videotaping tasks, they may become more natural and comfortable at expressing themselves.

Acknowledgments

This study was supported by funding from Substance Abuse & Mental Health Services Administration (SP09460) and the Helen Denne Schulte Trust at the University of Wisconsin Madison School of Nursing, USA.

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$$y_{it} = \sum_{t=1}^4 \beta_{0,t} Z_{it} + \sum_{t=1}^4 \beta_{1,t} Z_{it} \text{Group}_{1,ti} + \sum_{t=1}^4 \sum_{h=2}^H \beta_{h,t} Z_{it} \text{Covariates}_{h,ti} + \sum_{t=1}^4 \mu_{it}$$

Where,

$$\begin{array}{ll} Z_{1i} = 1 & \text{if } t = \text{Youth first post - intervention} \\ Z_{2i} = 1 & \text{if } t = \text{Parent first post - intervention} \\ Z_{3i} = 1 & \text{if } t = \text{Youth second post - intervention} \\ Z_{4i} = 1 & \text{if } t = \text{Parent second post - intervention} \end{array} \quad \boxed{\text{Else}=0}$$

$$\Omega_{\mu} = \begin{pmatrix} \sigma_{\mu 1}^2 & & & \\ \sigma_{\mu 12} & \sigma_{\mu 2}^2 & & \\ \sigma_{\mu 13} & \sigma_{\mu 23} & \sigma_{\mu 3}^2 & \\ \sigma_{\mu 14} & \sigma_{\mu 24} & \sigma_{\mu 34} & \sigma_{\mu 4}^2 \end{pmatrix}$$

Youth T2
Parent T2
Youth T3
Parent T3

Figure 1. Dyadic Assessment Intervention Model

Table 1

Study design

Group	Intake	2 weeks post intake	Time 1 (T1)	10 weeks post intake	Time 2 (T2)	6 months post intake	Time 3 (T3)
Intervention group	R	0 ₁	SFP 10-14	0 ₃	0 ₅		
		n = 34		n = 31	n = 18		
Comparison group	R	0 ₂		0 ₄	0 ₆		
		n = 23		n = 19	n = 10		

R, random.

Table 2

Sample description

Sample characteristics						
	Age	Gender	Race	Education	Income	Employment status
Youth	M = 11	M: 55%	White 75%	Grade 5		
	SD = 1.04	F: 45%	Black 15%			
			Hispanic 3%			
			Native Am. 3%			
			Asian 2%			
Adult	M = 40	M: 10%	Other 2%			
	SD = 6.53	F: 90%	White 73%	Some H.S.: 9%	\$0-5K: 2%	Full time 49.2%
			Black 15%	H.S.: 7%	\$5-20K: 27%	Part time 25.4%
			Hispanic 7%	Tech: 7%	\$20-50K: 20%	Unemployed 25.4%
			Asian 3%	Some College: 10%	≥\$50K: 51%	
		Other 2%	College: 37%			
			College+: 30%			

Table 3
Programme description of SFP 10–14

Session #	Goals for parent	Goals for youth	Goals for the family	Bio-psychosocial vulnerability model
1	<p>1 Identify stresses & problems in youth</p> <p>2 Think about qualities they want in their youth</p> <p>3 Learn the value of parental love and limits</p> <p>4 Learn to support youth's goals and dreams</p>	<p>1 Get acquainted</p> <p>2 Make ground rules</p> <p>3 Think about and visualize dreams</p>	<p>1 Help family build positive relationships</p> <p>2 Support youth's goals and dreams</p>	<p>Youth–adult factors</p> <p>Coping resources</p> <p>Cognitions</p>
2	<p>1 Help parents understand changes in youth</p> <p>2 Understand the need for rules</p> <p>3 Learn to remind youth about rules with out criticizing</p>	<p>1 Acknowledge their own and their parents' frustrations and difficulties</p> <p>2 Understand that parent stress may cause them to do or say certain things</p> <p>3 Appreciate the things their parents do</p>	<p>1 Help families identify strengths</p> <p>2 Express appreciation</p>	<p>Physiological factors</p> <p>Pubertal development</p> <p>Family environment factors</p> <p>Stressors</p> <p>Coping resources</p>
3	<p>1 Notice good behaviour and give compliments</p> <p>2 Use rewards to teach new behaviour</p> <p>3 Use a point system to teach good behaviour</p> <p>4 Build a positive relationship</p>	<p>1 Identify situations that may cause stress</p> <p>2 Identify stress symptoms</p> <p>3 Learn healthy ways of coping</p>	<p>1 Understand the value of family meetings</p> <p>2 Learn how to conduct a family meeting</p> <p>3 Work on privileges and reward point charts</p> <p>4 Plan fun activities</p>	<p>Family environment factors</p> <p>Values</p> <p>Stressors</p> <p>Coping resources</p>
4	<p>1 Understand why it is important to stay calm and respectful</p> <p>2 Learn to use small penalties for small problems</p> <p>3 Learn to save large consequences</p>	<p>1 Learn everyone has rules and responsibilities (youth and adults)</p> <p>2 Learn that things go better</p>	<p>1 Help family see connections between family values and their activities and decisions</p>	<p>Family environment factors</p> <p>Values</p> <p>Stressors</p> <p>Coping resources</p>

Session #	Goals for parent	Goals for youth	Goals for the family	Bio-psychosocial vulnerability model
	for major problems	when they follow the rules	2 Identify their own family values	
5	1 Understand the value of good listening 2 Learn to listen for feelings 3 Understand the basis for misbehaviour	1 Learn that drugs and alcohol will hurt them 2 Learn to practice skills for resisting peer pressure	1 Learn to build listening skills 2 Solve problems together	Youth–adult factors Coping resources Cognitions
6	1 Protect youth against drugs and alcohol 2 Learn ways to interact with the youth's school3. Monitor their youth	1 Learn additional skills for resisting peer pressure 2 Learn what good friends are like	1 Help family talk together about avoiding drugs and alcohol abuse 2 Talk together about other behaviour problems 3 Set clear expectations for youth	Youth–adult factors Substance use Community/school/environment factors Values Stressors Coping resources Social/peer environment factors Values Stressors Coping resources
7	1 Understand special needs families may have 2 How to help others access support	1 Learn to be of service to others 2 Interact with positive older teen role models	1. Review content2. Express appreciation3. Graduation ceremony	Social/peer environment factors Values Stressors Coping resources

Table 4
Coded behaviours description

Hostile interaction	Extent to which hostile, angry, critical, disapproving, rejecting or contemptuous behaviour is directed towards another interactor's behaviour, appearance, or personal characteristics; verbal attack; physical attack; a specific form of hostility characterized by disgust, disdain, or scorn of another interactor; angry coercion; building onto one's own hostile behaviours towards another interactor; and extent to which one reciprocates the hostility of another interactor
Negative interaction	Dominance; lecture/moralize; interrogation; denial; anti-social; and avoidant
Positive interaction	Warmth/support; endearment; physical affection; escalate warmth/support; reciprocate warmth/support; assertiveness; listener responsiveness; communication; demonstrations of helpfulness, cooperation, sympathy, and respectfulness towards others in an age-appropriate manner; the number of specific proposals/ideas suggested that present an action or change in behaviour as a means for reaching a goal or solving a problem; the degree to which proposed solutions are reasonable, realistic, potentially beneficial, specific, feasible, contingent, non-exploitive, seriously offered, or achievable; effective process; and negotiate/compromise
Problem-solving effectiveness	Dyadic problem-solving family enjoyment; dyadic problem-solving agreement on problem description; dyadic problem-solving agreement on solution; and dyadic problem-solving implementation commitment

Table 5
Youth and parent scores for hostile problem solving at time 2 and 3, controlling for time 1 and pubertal development status

Hostile problem solving				
	Youth (T2)	Youth (T3)	Parent (T2)	Parent (T3)
Intercept	1.156 (0.237)	1.175 (0.291)	0.928 (0.225)	0.163 (0.184)
Group	0.118 (0.176)	-0.724 (0.301) ¹	0.268 (0.174)	0.420 (0.111) ²
Pre-hostile	0.099 (0.103)	0.099 (0.103)	0.263 (0.104)	0.263 (0.104)
PDS	0.018 (0.024)	0.084 (0.015)	0.018 (0.024)	0.084 (0.015)
σ^2	0.335 (0.070)	0.578 (0.169)	0.330 (0.069)	0.077 (0.023)

¹ $Z = -2.405$, $\alpha = 0.05$, where Z is significant ≥ 1.96 for Y(T3) group.

² $Z = 3.784$, $\alpha = 0.05$, where Z is significant ≥ 1.96 for P(T3) group.

PDS, Pubertal Development Survey.

Table 6
Youth and parent scores for negative problem-solving behaviour at times 2 and 3,
controlling for time 1 and pubertal development status

Negative problem solving				
	Youth (T2)	Youth (T3)	Parent (T2)	Parent (T3)
Intercept	2.452 (0.500)	1.080 (0.652)	2.378 (0.454)	0.465 (0.528)
Group	−0.114 (0.318)	0.228 (0.471)	−0.012 (0.211)	0.478 (0.275)
Pre-negative	0.386 (0.113)	0.386 (0.113)	0.478 (0.100)	0.478 (0.100)
PDS	−0.041 (0.041)	0.175 (0.056)	−0.041 (0.041)	0.175 (0.056)
σ^2	1.107 (0.233)	1.325 (0.396)	0.486 (0.102)	0.355 (0.110)

PDS, Pubertal Development Survey.

Table 7
Youth and parent scores for positive problem-solving behaviour at times 2 and 3,
controlling for time 1 and pubertal development status

Positive problem solving				
	Youth (T2)	Youth (T3)	Parent (T2)	Parent (T3)
Intercept	1.390 (0.318)	1.024 (0.500)	1.969 (0.380)	1.813 (0.534)
Group	-0.198 (0.169)	0.445 (0.301)	-0.416 (0.182) ¹	-0.111 (0.265)
Pre-positive	0.429 (0.078)	0.429 (0.078)	0.460 (0.080)	0.460 (0.080)
PDS	0.005 (0.031)	-0.013 (0.051)	0.005 (0.031)	-0.013 (0.051)
σ^2	0.309 (0.066)	0.435 (0.134)	0.364 (0.076)	0.339 (0.104)

¹ $Z = -2.286$, $\alpha = 0.05$, where Z is significant ≥ 1.96 for P(T2) Group.

PDS, Pubertal Development Survey.

Table 8
Youth and parent dyad scores for perception of problem-solving effectiveness at times 2 and 3, controlling for time 1 and pubertal development status

Problem-solving effectiveness		
	Dyad (T2)	Dyad (T3)
Intercept	3.383 (0.973)	2.183 (1.331)
Group	−0.655 (0.388)	0.311 (0.470)
Pre-problem solving effectiveness	0.247 (0.147)	0.465 (0.182)
PDS	0.056 (0.082)	−0.037 (0.094)
σ^2	1.596 (0.340)	0.990 (0.305)

PDS, Pubertal Development Survey.

Table 9
Youth scores for perceived individual problem-solving efficacy at times 2 and 3,
controlling for time 1 and pubertal development status

Individual problem-solving efficacy		
	Youth (T2)	Youth (T3)
Intercept	3.083 (0.631)	2.071 (1.187)
Group	0.036 (0.144)	0.172 (0.266)
Pre-Ind. problem-solving efficacy	0.332 (0.135)	0.452 (0.261)
PDS	−0.060 (0.030)	0.031 (0.052)
σ^2	0.207 (0.044)	0.500 (0.125)

PDS, Pubertal Development Survey.