

# **RE:SOLVE – A Problem Solving Pathway: An Open Trial With Young People at Risk of Self-Harm**

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## **Abstract**

This article presents the results of a mixed methods open trial of “RE:SOLVE – A Problem Solving Pathway” for young people at risk of self-harm. The aims of the study were to: test the acceptability and feasibility of RE:SOLVE for the clients who took part; gather efficacy data using quantitative measures of mood, problem-solving capacity, hopelessness, suicidal thinking, and overall functioning; and understand the experiences of the participants through semi-structured interviews. Two thirds of participants completed the problem-solving therapy sessions and took part in the questionnaires and interviews. For those who completed all assessments, the results showed statistically and clinically significant reductions in levels of depression and suicidal orientation from pre- to post-intervention tests. All other measures showed consistent improvements, although they did not reach statistically significant levels. The intervention shows promise but needs to be tested in a randomised control trial.

## **Key words**

Problem-solving, problem-solving therapy, self-harm, suicide prevention, young people

In my final year of counsellor training, my very dear friend Megan committed suicide. Megan was reaching the age her eldest sister had been when she had committed suicide, and I was reaching the age my mother had been when she had died unexpectedly of cancer. We had planned to mark these significant milestones together. Her death was a devastating experience for those who knew and survived her. They included young people and colleagues whose lives she touched as a teacher. It derailed my life to the extent that I stopped working as a counsellor for a time and questioned this career. My supervisor, Jan Treadaway, was pivotal in helping me imagine “surviving Megan’s death well” and transforming my sorrow, guilt, and grief into something meaningful and purposeful.

Eventually, I applied for a job as a research therapist on a trial of problem-solving therapy for adults who presented to an emergency department following a suicide attempt. I worked on this trial for three years until the study was complete. I then undertook a trainer/supervisor role for a pilot study in which I offered problem-solving therapy training and supervision to mental health practitioners in varied settings around Aotearoa New Zealand. These included primary health organisations (PHOs), community mental health settings, a kaupapa Māori non-governmental organisation (NGO), and a youth service. The feedback from participants who worked with youth was that they liked the intervention but wanted to see it adapted for young people. With this feedback, my PhD topic was conceived.

This article presents the results of the final study of my PhD. It is a mixed methods open trial of “RE:SOLVE : A Problem Solving Pathway” for young people at risk of self-harm. A series of small qualitative studies preceded my PhD, including the development of the training and client manuals, and a training workshop for practitioners. Feedback was gained from participants in those studies to inform revision and development of the resources. The studies involved applications to Māori ethics boards specific to some of the potential research settings (e.g. Ngā Kai Tataki Māori Research Review Committee of the Waitemata District Health Board and the Māori Research Review Committee of the Counties Manukau District Health Board).

In research terms, this study may be seen as “old” since it is more than seven years old, but the prevalence of self-harm in Aotearoa New Zealand remains high (Fleming et al., 2022; Te Whatu Ora, 2022) and the evidence base of effective interventions remains limited (Bailey et al., 2023). Therefore, to ensure the current

relevance of the study, I have incorporated updated literature regarding suicidal behaviours and outcomes, searched for any recent similar studies that have been conducted, and re-examined recent reviews of interventions for young people at risk of self-harm. I find it troubling that self-harm continues to have such high prevalence, which has motivated me to submit this article.

## **Background**

Self-harm and suicide are significant issues among young people in Aotearoa New Zealand. In 2018, 133 people in the 15–25-year-old age group died by suicide (Te Whatu Ora, 2022). Over one third were Māori, a rate 2.1 times higher than for non-Māori. This over-representation is at least in part due to intergenerational trauma from historical and ongoing colonisation contributing to a loss of belonging and cultural identity (Getz, 2018; Graham & Masters-Awatere, 2020; Hatcher, 2016). Further, over six per cent of participants in a recent Youth 2000 survey reported a suicide attempt in the previous 12 months (Fleming et al., 2020). The rates were higher for students attending lower decile schools (13%) and in areas of high deprivation (11%) (Fleming et al., 2020). In related research, Aotearoa New Zealand students attracted to the same sex, or to multiple sexes, showed heightened vulnerability to depression and suicidal behaviour (Fenaughty et al., 2021a; Lucassen et al., 2011;) and one out of five transgender and diverse gender identity students reported a suicide attempt in the previous 12 months (Clark et al., 2013; Fenaughty et al. 2021b). In fact, in a review of Youth 2000 findings since 2012, Fleming et al. (2022) commented that although there had been significant improvements in some health measures, there were also “...concerning increases in symptoms of depression, suicide thoughts and suicide attempts and declines in psychological wellbeing since 2012” (p. 441). It is important to understand that while self-harm is an indicator of distress it also reflects an effort to manage distress. However, young people who have self-harmed are still at a much greater risk of future episodes of self-harm and death by suicide than the general population (Beautrais, 2003; Fergusson et al., 2005; Fortune et al., 2021; Hargus et al., 2009; Hawton et al., 2020). In addition, there is a higher risk of self-harm contagion among young people compared to adults (Te Maro, 2019). All of these factors combined make reducing the incidence of self-harm an important focus.

Some school guidance counsellors in Aotearoa New Zealand experience uncertainty about management and intervention strategies (Te Maro et al., 2019) This makes sense given there is limited evidence about how to effectively intervene with young people at risk of self-harm (De Silva et al., 2013). Therapeutic interventions are showing promise in prevention efforts (Ougrin et al., 2015), and problem-solving therapy in particular shows potential in educational settings (Bailey et al., 2023; Robinson et al., 2018). However, there is still a need for more high-quality intervention studies for youth suicide-related behaviours (Bailey et al., 2023). Despite its small size, this study can contribute to this emerging evidence base.

## **Risk Factors**

Risk and protective factors for self-harm among young people are complex and interact in different ways for different people (Fleming et al., 2022). They encompass demographic, social, historical, clinical, and psychiatric domains (Witt et al., 2018). Risk factors include early adversity caused by social and structural determinants such as poverty, marginalisation, racism, and colonisation (Fleming et al., 2022; Graham & Masters-Awatere, 2020). In addition, family factors, physical or sexual abuse, exposure to self-harm, low mood, alcohol and substance misuse, and bullying, including cyber bullying, are among other contributing factors. A young person's risk of self-harm becomes heightened with a greater number and severity of adverse conditions combined with minimal protective factors. Multiple adverse childhood experiences and depressive symptoms are distinguishing features of repeat self-harm in particular (Cleare et al., 2018). Of all these risk factors, symptoms of depression remain the key modifiable risk factor (Fortune et al., 2021; Witt et al., 2018).

## **The association between problem solving and self-harm**

Social problem-solving skills are significantly associated with the generation and maintenance of psychological distress (Mynors-Wallis, 2005) and self-harm (Beautrais, 2000; Becker-Weidman et al., 2010; Speckens & Hawton, 2005; Williams et al., 2005). Indeed, effective problem-solving skills are an important difference between those who attempt suicide and those who don't (Williams et al., 2005). In a study examining the relationship between depression, social problem solving, and suicidality, problem orientation in particular was predictive of depression and suicidality in youth (Becker-Weidman et al., 2010). People

can become overwhelmed by hopelessness and helplessness when faced with a problem and begin to see self-harm or suicide as the only viable option (Bureau et al., 2012; Clum & Febraro, 2004; Nezu & Nezu, 2021; Orbach et al., 2007).

Prevention should therefore focus on reducing problems that lead to self-harm, helping young people to improve their problem-solving skills and help-seeking behaviours, along with helping them to manage distressing feelings and circumstances (Boeninger et al., 2012; McMahan et al., 2013; Rodham et al., 2004). Young people themselves comment that they want to connect and talk, including with mental health professionals, and are looking for help with solving problems (Sutcliffe et al., 2023).

## **Why Problem-Solving Therapy?**

Social problem solving is the process we use to solve problems in the real world (D’Zurilla et al., 2011), and it underpins problem-solving therapy. First articulated in 1971 by D’Zurilla and Goldfried, problem-solving therapy was refined by D’Zurilla and Nezu in 1982. Revisions have continued, with the most recent development being emotion centred problem-solving therapy (EC-PST) (Nezu & Nezu, 2021). EC-PST explicitly acknowledges the function of problem orientation as an emotional regulation component of problem-solving therapy (Nezu & Nezu, 2021).

The word “social” in this context reflects problems with daily living and functioning as opposed to lab-based or artificial problem solving (Frauenknecht & Black 2003; McGuire, 2005). This includes many of the issues arising from the risk factors noted earlier (Fortune et al., 2021; Nezu & Nezu, 2021). In other words, it encompasses any of the problems in living a client might bring to counselling.

The purpose of social problem solving is to move from a problem to a solution by following a series of explicit steps (McGuire, 2005). In a problem-solving therapy context, the practitioner collaborates with the client to learn and apply the steps so that the immediate problem can be addressed, and the client also learns to use the problem-solving process independently for future challenges. Resilience can thus be developed in young people through their response to appropriate doses of adversity in the context of a supportive therapeutic relationship (Perry & Winfrey, 2021), along with the concomitant development of self-efficacy.

## A Description of Problem-Solving Therapy

Problem-solving therapy is a psycho-educational intervention that fits broadly within a Cognitive behavioural approach (D’Zurilla & Nezu, 2007; Nezu et al., 2013). As a psycho-educative approach, it incorporates a “teaching” element along with the relational and therapeutic element. It is typically a brief intervention (4–12 sessions) with three key components: problem orientation, problem-solving skills, and solution implementation.

Problem orientation determines how people respond when they encounter a problem, leading either to avoidance/impulsivity or to facing the problem (Nezu, et al., 2006). Avoidant or impulsive responses are connected to nervous system states of perceived threat and fight or flight reactions (Nezu & Nezu, 2013). Thus, problem orientation is a tool of emotional regulation and is deeply connected to experiences of early relational adversity and attachment. Once people feel safe in therapeutic relationship, stress and distress are usually reduced, and practical steps can become more achievable (Perry & Winfrey, 2021). This is an appropriate time to identify how clients currently manage distress and to introduce supportive coping mechanisms (e.g. mindfulness, breathing, or “stop and think”) if required.

Problem-solving skills are gained in steps: how to recognise and identify problems; how to define them clearly; how to generate solutions; and how to evaluate ideas with potential to arrive at a chosen solution. Finally, solution implementation requires creating a step-by-step action plan, attempting to carry it out, and evaluating the effectiveness of the plan once it has been carried out or exploring what got in the way of implementation. Problem-solving therapy can also be used as a single-session intervention in a crisis setting and as a tool to develop safety plans or alternative options to self-harm.

The structured framework and possible brevity of the intervention should not be mistaken for a lack of depth. Similarly, use of the word “problem” does not reflect a deficit-based approach or the creation of a problem-saturated story. On the contrary, the intervention is concerned with centring the client, normalising the occurrence of problems, and placing problems in their appropriate context. The problem-solving framework can also act as a relational container that allows people to engage in ways they might not otherwise and provides a reason for them to keep coming for sessions once a perceived crisis has passed.

## **Problem-Solving Therapy Literature Review**

Problem-solving therapy has shown effectiveness for adults who experience anxiety and depression (e.g. Mynors-Wallis, 2005; Mynors-Wallis & Lau, 2010; Nezu et al., 2019) and has also been trialled with adults who have attempted suicide. Problem-solving therapy studies consistently show significant reductions in hopelessness, depression, and anxiety for participants along with improvements in problem solving. Frustratingly, they have shown limited impact on repetition rates (Townsend et al., 2001) but this is not limited to problem-solving therapy.

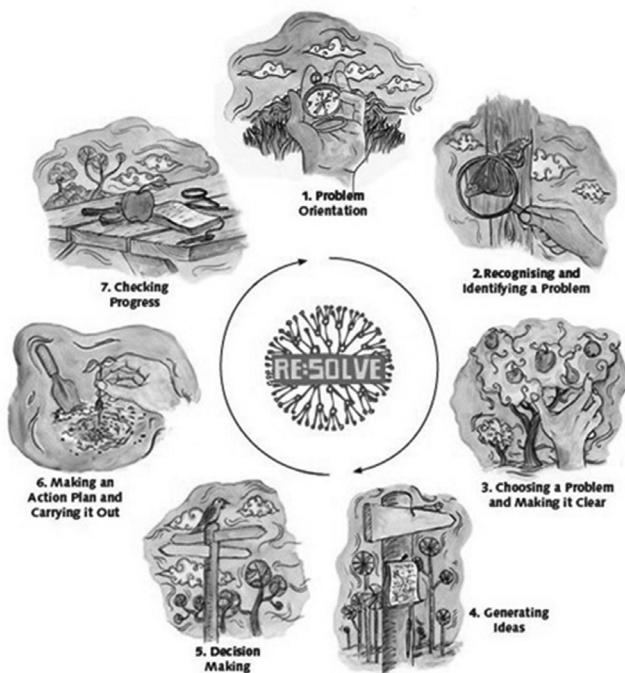
This body of literature includes some Aotearoa New Zealand studies. A large-scale trial investigated the effectiveness of problem-solving therapy for adults who presented to an emergency department following deliberate self-harm. They found significant differences after one year between those receiving problem-solving therapy and those receiving usual care (Hatcher et al., 2011). Another Aotearoa New Zealand study focussed on offering problem-solving therapy within a cultural framework for Māori adults who had self-harmed. Here the problem-solving therapy group showed significant reductions in repetitions of self-harm for up to three months and a significant decrease in attendance for non-mental health problems over the year following the attempt (Hatcher et al., 2016).

Problem-solving therapy is a promising intervention for young people at risk of self-harm as well. In particular, seven previous studies included problem-solving therapy with young people who had either self-harmed or who were at risk of self-harm (Biggam & Power, 2002; Donaldson et al., 2005; Eskin et al., 2008; Hoek et al., 2012; Lerner & Clum, 1990; McLeavey et al., 1994; Salkovskis et al., 1990). These studies showed improvements in mood and problem solving and reductions in hopelessness. There were also short-term reductions in self-harm. More recently, a problem-solving therapy study for young people with suicidal risk was conducted in Brazil (Xavier et al., 2019) and showed reductions in depressive symptoms and suicidal risk both posttreatment and at follow up after six months. Interestingly, the authors noted the change in global and functional problem-solving skills mediated the reduction in suicide orientation.

## RE:SOLVE – A Problem-solving Pathway

The “RE:SOLVE – A Problem-solving Pathway”(RE:SOLVE) programme is based on the model of D’Zurilla and Nezu (2007) with some features from the primary care model developed by Mynors-Wallis (2005). It was divided into seven steps and named “RE:SOLVE - A Problem-Solving Pathway”. The name RE:SOLVE captures three things. Firstly, the programme is *about* solving problems. Secondly, we use it to *resolve* current life problems. Thirdly, it helps the client *develop resolve* and this is an internal quality helpful for persevering with life challenges.

The RE:SOLVE programme is a circular rather than a linear pathway with signposts pointing the way (See Image 1). Although the pathway concept is not unique, I hoped to generate a sense of the whole self being engaged in a process of movement and change. The circularity conveys the idea of problem solving as a normal and continuous part of everyday life.



**IMAGE 1:** RE:SOLVE programme

I changed the problem-solving steps to signposts to match the idea of a pathway and labelled them with clear, descriptive language. I collaborated with an artist/designer to create images that went with each signpost. The client workbook was reviewed by a group of young people who provided helpful feedback (Blackett, 2014).

I created two composite characters, Lydia and Michael (see Image 2). These two imaginary young people featured throughout the workbook. Their presenting stories are shared at the beginning along with examples of each of them working through their own problems using “RE:SOLVE – A Problem-Solving Pathway”.



**IMAGE 2:** Composite characters, Lydia and Michael

We developed a logo to represent connection (see Image 3).



**IMAGE 3:** Logo

Primarily, it represents the generation of ideas and their interconnection. It also reflects the seeding and subsequent proliferation of ideas. The image is aligned with the natural world and the organic process that unfolds through attention to problems in living. Finally, the logo represents a holistic approach – it shows the interrelationship of all aspects of being to one another. This is central to RE:SOLVE, in which participants are encouraged to listen to thoughts, feelings, actions, and bodily sensation that will alert them to something being awry. Equally, they are encouraged to draw on all aspects of being to help solve problems.

#### **Inclusion criteria CAMHS and PHO**

##### **Child and adolescent mental health service (CAMHS) and Primary health organisation (PHO)**

- Between the ages of 13 and 18 years inclusive
- Cognitively able to cope with therapy
- Fluent in English\*

##### **Along with one of the following criteria:**

- Referral to the service occurs following a first episode of self-harm OR
- Referral to the service occurs amid concerns about self-harm with a history of at least one previous episode of self-harm OR
- Currently involved with the service and self-harms during study period

##### **Secondary schools**

- Client presents at mild to moderate risk of self-harm
- Client is not accepted by CAMHS following a referral about self-harm
- Between the ages of 13 and 18 years inclusive
- Cognitively able to cope with therapy
- Fluent in English\*

##### **Exclusion criteria**

- Current psychosis
- Currently involved or participating in another study

\*It was a requirement of the Ethics committee to include fluency in English as an inclusion criterion as we were unable to provide an interpreter.

**FIGURE 1:** Inclusion and exclusion criteria for open trial

## Methodology and Research Design

This study was conceptualised as an open trial, which is an exploratory method, conducted with a view to a future larger-scale clinical trial. It was an opportunity to examine the intervention, the suitability of the data gathering measures, and the experiences of the participants. There was no control group or randomisation, which is typical for this stage and type of clinical trial (e.g. Lancaster et al., 2004). An open trial has very specific parameters due its small size, which preclude over-analysing small amounts of data, including demographics.

In this particular open trial, the aims were to:

- a. test the overall acceptability and feasibility of RE:SOLVE for the clients who took part;
- b. gather efficacy data using quantitative measures of mood, problem solving, hopelessness, suicidal thinking, and overall functioning; and
- c. understand the experiences of the participants through semi-structured interviews.

## Method

### Recruitment

Potential participants were identified by practitioners who had taken part in a training workshop for RE:SOLVE. They explained the study to potential participants and gained permission for the Principal Investigator (PI) to invite them into the study. If the young person was under the age of 16, parental consent was required. Each participant received a \$20 voucher for each completed set of questionnaires, in appreciation of their time and effort.

The participants were young people aged 13–18 who were identified as being at risk of self-harm (see Figure 1 for inclusion criteria). Potential recruitment sites were participating secondary schools, a primary healthcare organisation, and a child and adolescent mental health service. RE:SOLVE was provided to participants by the recruiting practitioners or by the PI.

## Data Collection

Following recruitment, each participant completed a consent form and a baseline set of standardised questionnaires. Then the RE:SOLVE intervention began, comprising 4–10 sessions of RE:SOLVE with a brief risk assessment at each session. Once all sessions were finished, the second set of questionnaires was completed, and a month later, the third. At this time, participants took part in a semi-structured face-to-face interview with the PI.

## Quantitative Measures

The study used six quantitative questionnaires, which were filled out at baseline, at the end of therapy, and one month later. Although this resulted in a considerable amount of data, excluding any of these measures would present only a partial picture of the study. I have tried to keep this section brief, while maintaining data integrity.

### Primary Outcome Measure

Depressive symptoms are the most common modifiable risk factor associated with suicidal behaviour in young people, so the primary outcome measure was the Reynolds Adolescent Depression Scale (RADS-2). The RADS-2 is a 30-item self-report questionnaire that measures depressive symptoms in adolescents (Brooks & Kutcher, 2001). The measure has a Cronbach's alpha rating of 0.92, demonstrating excellent internal consistency (Reynolds, 2002).

### Secondary Outcome Measures

There were five secondary outcome measures: the Social Problem-Solving Inventory for Adolescents (SPSI-A), the Inventory of Suicide Orientation (ISO), the Kazdin Hopelessness Scale for Children (Kazdin HPLS), the Pediatric Quality of Life Enjoyment and Satisfaction Questionnaire (PQ-LES-Q), and the Working Alliance Inventory (WAI).

#### *The Social Problem-Solving Inventory for Adolescents.*

The SPSI-A is a 30-item self-report questionnaire used to measure the social problem-solving skills of young people in personal and social contexts (Frauenknecht & Black, 2003). It was adapted and modified from the SPSI-R, a similar measure designed for adults. The SPSI-A short version has a Cronbach's alpha of 0.91–0.94, showing excellent internal consistency (Frauenknecht et al, 2003).

The SPSSI-A has a total score, which is calculated from three scales: the Automatic Process Scale, the Problem Orientation Scale and the Problem-Solving Skills Scale. These scales in turn are made up of nine subscales. The Automatic Process Scale is a single measure scale that reflects the learned response a person applies to a problem situation that they have found adequate in resolving other problems. When this no longer works, a person has to undertake more active problem solving. This active problem solving is measured by the Problem Orientation Scale and Problem-Solving Skills Scale (Frauenknecht & Black, 2003).

***The Kazdin Hopelessness Scale for Children.***

Hopelessness was measured by the Kazdin HPLS. This measure is a 17-item self-report measure, assessing hopelessness. It has a Cronbach's alpha of 0.75, indicating acceptable internal consistency (Kazdin et al., 1983). It is important to measure hopelessness, because it is correlated with suicidal intent (Kazdin et al., 1983).

***The Paediatric Quality of Life Enjoyment and Satisfaction Questionnaire.***

The PQ-LES-Q is a 15-item self-report questionnaire that assesses current feelings of satisfaction and enjoyment in life (Endicott et al, 2006). The PQ-LES-Q has a Cronbach's alpha score of 0.87–0.90, indicating good internal consistency. It is important to take notice of whether quality of life improves alongside treatment (Endicott et al, 2006).

***The Inventory of Suicide Orientation.***

Suicidal orientation and ideation were measured by the ISO. This is a 30-item self-report questionnaire, measuring orientation towards suicidal behaviour and current suicidal ideation (King & Kowalchuk, 1988). The raw score indicates the level of suicide orientation and the critical items measure suicidal ideation specifically. The overall risk classification is based on both of these scores. It has a Cronbach's alpha of 0.90–0.92, indicating excellent internal consistency (King & Kowalchuk, 1988).

***The Working Alliance Inventory.***

The WAI is a 12-item self-report measure for therapists and clients that measure the alliance between them. It primarily measures the general alliance, and to a lesser degree the dimensions of goal, task, and bond. It has a Cronbach's alpha of 0.95–0.98 for the general alliance and 0.83–0.92 for task, bond, and goal, indicating good to excellent internal consistency (Tracey & Kokotovic, 1989).

## **Qualitative Measures**

The study participants took part in a one-to-one semi-structured interview with the PI at the end of their sessions. The interviews explored the client's experience of RE:SOLVE, any life or personal changes that had occurred while taking part in RE:SOLVE, likes and dislikes about RE:SOLVE, feedback about the client workbook (Blackett, 2014) difficulties or challenges that had arose, and any recommended changes.

### **Treatment Fidelity**

Treatment fidelity was measured by recording sessions and photocopying samples of completed worksheets from participants' workbooks. The PI offered the practitioners free supervision specific to learning and implementing the RE:SOLVE intervention for the duration of their study involvement. This was in addition to their normal clinical supervision.

## **Data Analysis**

### **Quantitative Results**

Rating scale results were summarised at each time point using means and standard deviations. The changes from pre- to post-intervention and from post-intervention to the one-month follow-up were statistically tested using paired t-tests, with mean differences summarised with 95% confidence intervals and effect sizes. Positive values for the changes represent improvements in the rating scales except in the cases of the SPSI-A and the PQ-LES-Q, in which case the reverse is true.

### **Qualitative Results**

Thematic analysis was used to analyse the content of the qualitative data (Braun & Clarke, 2006).

### **Ethics Approval**

Ethics approval for this study was gained from the Upper South A Regional Ethics Committee (Ethics ref: URA/10/08/057).

## Results and Discussion

### Participants

Participants were recruited from secondary schools; 20 people were referred to the study and 15 (75%) were eligible and consented to take part. Table 1 outlines the characteristics of the participants and the number of sessions they completed. Their ages ranged from 13 to 16 years old, (with a mean age of 14.3 years). Three participants had a family history of suicide, one of whom also had a personal history of self-harm. The other two with a family history experienced suicidal thoughts, with one having made a previous plan for suicide.

Overall, six participants had a personal history of self-harm. Sessions were considered complete if the participant attended four or more sessions, provided the entire RE:SOLVE process had been shared in that time.

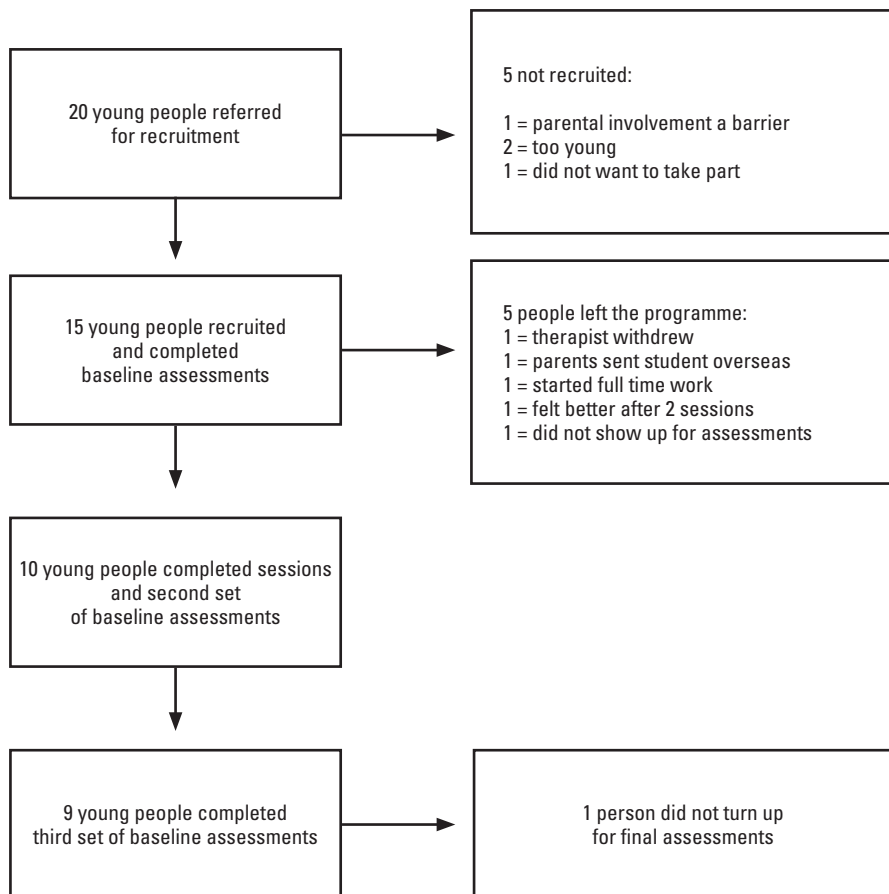
The participants were an ethnically and culturally diverse group of people. This is likely due to the school counsellors who engaged in the study working in schools in South Auckland, where there is a high level of cultural diversity. As noted, there was no randomisation, so these were the young people who consented to take part. Given the small number of participants it is not possible to draw meaningful conclusions on the basis of culture or ethnicity.

Participant	Ethnicity	School decile	Sex	Age	Family Hx of self-harm	Personal Hx of self-harm	Risk of self-harm	Sessions completed	Took part in interview
1	NZ European	10	F	15	N	N	Suicidal thoughts	Completed sessions	Y
2	Pasifika	3	F	14	N	Y	Previous history	BPD. Therapist withdrew	N
3	NZ European	4	F	15	N	N	Depressive symptoms	Completed sessions	Y
4	Pasifika	3	F	13	N	N	Suicidal thought	Completed sessions	Y
5	Indian	10	F	15	N	N	Suicidal thoughts	Completed sessions	Y
6	Indian	10	F	15	N	Y	Previous history	Completed sessions	Y
7	Korean	3	M	14	N	N	Suicidal thoughts	Completed sessions	Y
8	Maori	3	M	13	Cousin died by suicide	N	Suicidal thoughts, previous plan made	Completed 4 sessions but only filled pre and post	N
9	Fijian Indian	3	F	16	N	N	Suicidal thoughts	Completed sessions	Y
10	Filipino	3	F	13	N	Y	Previous history	3 sessions, then sent overseas	N
11	Maori	4	F	15	Suicidal brother	Y	Previous History	Completed 4 sessions but only 1st assessments	N
12	Fijian Indian	4	M	15	N	N	Depressive symptoms	Completed sessions	Y
13	Fijian Indian	4	M	15	N	Y	Previous history	Left school partway through sessions	N
14	Pasifika	3	F	13	N	Y	Previous history	2 sessions then withdrew	N
15	NZ European	10	F	13	Mother died by suicide	N	Suicidal thoughts	Completed sessions	Y

TABLE 1: Client participants in the open trial

## Recruitment, Retention Rates and Completion

All 15 participants completed the baseline assessments. Of these, 10 participants (67%) completed the therapy sessions with nine completing all three assessments and one completing the first two assessments. The reasons for non-completion by the other five participants were: being sent back to their home country; an acute mental health diagnosis leading to no longer being eligible for the study; feeling better after two sessions; leaving school; and completing four sessions but not providing any further questionnaires.



**FIGURE 2:** Flow chart of retention and completion

The participants who withdrew from the therapy, regardless of the reasons, had poorer average baseline scores than those who completed. The main statistical difference was that the problem-solving scores were lower in those who withdrew. However, there were participants with comparable scores who did complete the sessions and show improvements. The most notable difference was in the levels of hopelessness, which were higher among those who did not complete the sessions.

Measures	Completed all assessments	Withdrew	P values
RADS baseline means (sd)	62 (9.3)	65.8 (4.5)	P = 0.399
ISO baseline means (sd)	48.5 (13.7)	49.4 (12.2)	P = 0.920
SPSI-A baseline means (sd)	*1.94 (0.4)	*1.3 (0.6)	P = 0.49
HPLS baseline means (sd)	5.3 (4.5)	9.1 (3.4)	P = 0.124
PQ-LES-Q baseline means (sd)	*44.1 (6.96)	*37.3 (8.4)	P = 0.137

**TABLE 2: Baseline mean scores for clients who completed and did not complete**  
 \*higher score desirable

## Quantitative Results: Psychometric Scales

### Primary Outcome Measures

There were significant reductions in the total depression scores from the pre- to post-intervention tests and these were largely maintained at follow up.

	Mean(sd) Baseline	Mean (sd) Post test	Mean (sd) Follow up
	n = 15	n = 10	n = 9
Primary outcome measure RADS	79.7 (12.5)	60.4 (10.3)	59.7 (15.3)
Secondary outcome measure ISO	48.3 (13.8)	29.9 (20.8)	25.1 (13.9)
Secondary outcome measure SPSI-A	*1.66 (.59)	*2.43 (.55)	*2.67 (.83)
Secondary outcome measure HPLS	6.9 (4.7)	3.0 (2.8)	2.1 (1.8)
Secondary outcome measure PQ-LES-Q	*41.4 (8.6)	*49.0 (8.4)	*51.4 (6.0)

**TABLE 3: Mean outcome scores at pre, post and follow-up**  
 \*Higher score indicates improvement

There were also significant differences in negative self-evaluation and somatic complaints. These changes are important, given that depression is a significant risk factor for self-harm or attempted suicide (Foley et al., 2006; Hawton et. al, 2012).

	Mean difference in change, baseline to post treatment (95% CI)	P value	Effect size	Mean difference in change, post treatment to follow up (95% CI)	P value	Effect size
Primary outcome measure RADS	16.2 (1.8 – 30.6)	0.031	0.81	-9 (-12.5 – 10.7)	0.864	0.06
Secondary outcome measure ISD	21.3 (.9 – 41.6)	0.043	0.97	4.3 (-5.9 – 14.5)	0.346	0.39
Secondary outcome measure SPSI-A	**-.4 (-1.02 – 0.1)	0.117	0.6	-2 (-.8 - .4)	0.452	0.27
Secondary outcome measure HPLS	2.4 (-1.6 – 6.3)	0.207	0.4	0.44 (-1.9 – 2.9)	0.681	0.1
Secondary outcome measure PQ-LES-Q	**-.4.6 (11.6 – 2.4)	0.170	0.47	-1.56 (-9.1 – 6.04)	0.649	-0.16

**TABLE 4:** Mean differences in change for pre, post and follow-up

\*\*negative value indicates improvement

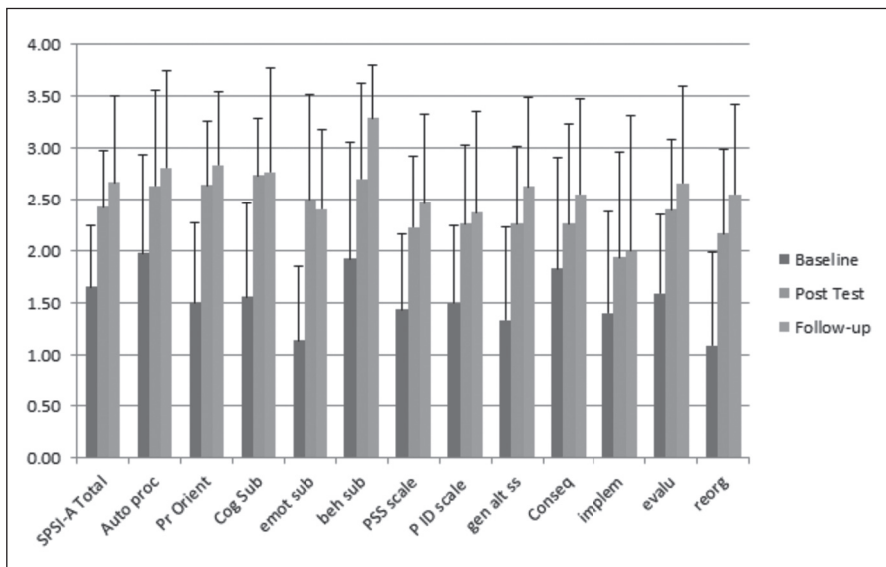
<b>RADS subscales</b>	<b>Pre-test (n=15)</b>	<b>Post-test (n=10)</b>	<b>Follow-up (n=9)</b>
<b>Somatic complaints</b>			
Means	20.0	16.4	17.6
Standard deviation	3.2	2.5	4.8
Mean change	-	3.3	-1.4
Standard deviation	-	4.4	3.8
Confidence interval	-	.12 – 6.5	-4.3 – 1.5
P-value	-	0.044	0.285
Effect size	-	0.7	0.37
<b>Negative self-evaluation</b>			
Means	22.1	14.1	16.3
Standard deviation	4.9	4.9	7.1
Mean change	-	6.2	-2.1
Standard deviation	-	7.1	8.2
Confidence interval	-	1.1 – 11.3	2.7 – -8.4
P-value	-	0.022	0.462
Effect size	-	0.887	0.26
<b>Dysphoric mood</b>			
Means	22.9	18.8	16.4
Standard deviation	3.7	4.4	4.0
Mean change	-	3.2	1.8
Standard deviation	-	6.6	4.7
Confidence interval	-	-1.5 – 7.9	-1.8 – 5.4
P-value	-	0.159	0.290
Effect size	-	0.5	0.4
<b>Anhedonia</b>			
Means	14.5	10.2	10.6
Standard deviation	3.5	2.4	3.6
Mean change	-	3.2	-0.56
Standard deviation	-	4.8	2.8
Confidence interval	-	- 0.22 – 6.6	-2.7 – 1.6
P-value	-	0.63	0.573
Effect size	-	0.67	-0.2

**TABLE 5:** RADS subscales scores

### *Secondary Outcome Measures*

All of the scores for the SPSI-A showed adolescents improved from the pre-intervention test to the post-intervention test, and all scores continued to show improvement from the post-intervention test to follow up.

The improvements reached significance for two subscales, the emotional subscale, and the reorganisation subscale. This shows that participants experienced less distress when faced with a problem. They also evaluated the effectiveness of the solution they implemented, prior to working out their next step. This is consistent with studies that have demonstrated associations between problem orientation and depression (Becker-Weidman et al., 2010); problem solving confidence and depression and hopelessness (Yang & Clum, 1994); and problem orientation and wellbeing (Ciarrochi et al., 2009).



**FIGURE 3:** SPSSI-A scores at three time points

<b>SPSI-A scales and subscales</b>	<b>Pre-test (n=15)</b>	<b>Post-test (n=10)</b>	<b>Follow-up (n=9)</b>
<b>Automatic Processing Scale</b>			
Means	1.98	2.63	2.81
Standard deviation	.96	.92	.93
Mean change	-	-.37	-.11
Standard deviation	-	.75	.67
Confidence interval	-	-.95 - .21	-.62 - .4
P-value	-	0.178	0.633
Effect size	-	-.49	-.16
<b>Problem Orientation Scale</b>			
Means	1.5	2.64	2.84
Standard deviation	.77	.61	.71
Mean change	-	-.82	-.17
Standard deviation	-	1.1	1.03
Confidence interval	-	-1.7 - .05	-.97 - .62
P-value	-	.062	.625
Effect size	-	-.75	-.17
<b>Cognition Subscale</b>			
Means	1.56	2.73	2.77
Standard deviation	.91	.56	1.00
Mean change	-	-.70	.004
Standard deviation	-	1.1	1.03
Confidence interval	-	-1.6 - .16	-.9 - .91
P-value	-	.097	.991
Effect size	-	-.64	.003
<b>Emotional Subscale</b>			
Means	1.14	2.5	2.4
Standard deviation	.71	1.02	.78
Mean change	-	-1.3	.11
Standard deviation	-	1.5	1.4
Confidence interval	-	-2.4 - -.13	-.96 - 1.2
P-value	-	.033	.813
Effect size	-	-.87	.1
<b>Behaviour Subscale</b>			
Means	1.93	2.7	3.29
Standard deviation	1.13	.92	.51
Mean change	-	-1.3	.11
Standard deviation	-	1.5	1.4
Confidence interval	-	-1.3 - .62	-1.4 - .21
P-value	-	.441	.128
Effect size	-	-.87	.08

<b>SPSI-A scales and subscales</b>	<b>Pre-test (n=15)</b>	<b>Post-test (n=10)</b>	<b>Follow-up (n=9)</b>
<b>Problem Solving Skills Scale</b>			
Means	1.44	2.23	2.47
Standard deviation	.73	.69	.87
Mean change	-	-.44	-.2
Standard deviation	-	.96	.78
Confidence interval	-	-1.18 - .3	-.8 - .66
P-value	-	.207	.476
Effect size	-	-.46	-.26
<b>Problem Identification Subscale</b>			
Means	1.5	2.27	2.37
Standard deviation	.75	.77	.99
Mean change	-	-.37	-.07
Standard deviation	-	.98	.96
Confidence interval	-	-1.1 - .38	-.8 - .66
P-value	-	.290	.826
Effect size	-	-.38	-.07
<b>Generating Alternatives Subscale</b>			
Means	1.33	2.27	2.63
Standard deviation	.90	.75	.86
Mean change	-	-.5	-.33
Standard deviation	-	1.25	.94
Confidence interval	-	-1.44 - .48	-1.06 - .39
P-value	-	.283	.321
Effect size	-	-.4	-.35
<b>Consequences Subscale</b>			
Means	1.83	2.26	2.55
Standard deviation	1.08	.97	.93
Mean change	-	.04	-.19
Standard deviation	-	1.09	.93
Confidence interval	-	-.80 - .88	-.90 - .53
P-value	-	.913	.562
Effect size	-	.04	-.2
<b>Implementation Subscale</b>			
Means	1.41	1.94	2.00
Standard deviation	.98	1.03	1.31
Mean change	-	-.03	-.48
Standard deviation	-	1.01	1.3
Confidence interval	-	-1.1 - .44	-1.02 - .96
P-value	-	.391	.940
Effect size	-	-.03	-.37

<b>SPSI-A scales and subscales</b>	<b>Pre-test (n=15)</b>	<b>Post-test (n=10)</b>	<b>Follow-up (n=9)</b>
<b>Evaluation Subscale</b>			
Means	1.6	2.4	2.66
Standard deviation	.75	.68	.93
Mean change	-	-.48	-.22
Standard deviation	-	1.16	.81
Confidence interval	-	-1.37 - .40	-.85 - .40
P-value	-	.247	.442
Effect size	-	-.41	-.27
<b>Reorganisation Subscale</b>			
Means	1.10	2.17	2.55
Standard deviation	.89	.82	.87
Mean change	-	-.78	-.37
Standard deviation	-	.94	.91
Confidence interval	-	-1.50 -.05	-1.06 - .33
P-value	-	.039	.258
Effect size	-	-.83	-.41

**TABLE 6:** SPSI-A scales and subscales

There were significant reductions in all of the results on the ISO from pre- to post-intervention tests. At baseline, 81% of participants scored as being at high risk of self-harm. At follow up this was reduced to 10%. These are very encouraging results, although the study is very small.

	<b>Pre-test (n=11)</b>	<b>Post-test (n=8)</b>	<b>One month f/u (n=9)</b>
Critical item mean score	3.7	1.1	1.1
Standard deviation	1.8	1.7	1.9

**TABLE 7:** Critical item scores

The Kazdin HPLS and the PQ-LES-Q both showed improvements, but these did not reach significance. However, both sets of results are still important indicators of improved wellbeing.

The WAI measures the degree of match between the client and the therapist in their assessment of the therapeutic alliance. Results were included for the seven complete sets of paired results. The mean rating of the alliance by clients was 76.9/84 (91%) and the mean rating of the alliance by therapists is 69.7/84 (83%). These results indicate a good to excellent working alliance between counsellors and clients. Given the centrality of the therapeutic relationship across all therapeutic encounters, this is highly relevant (e.g. Paul & Charura, 2014).

## Qualitative Results: Participant interviews

The PI carried out one-to-one interviews with nine client participants. Overall, the responses supported RE:SOLVE as acceptable and feasible for young people to take part in. It was pleasing that all of the client participants reported that taking part in RE:SOLVE was constructive and positive for them. For example: “It’s been a really positive one [experience]. It’s really helped to tackle my problems and things. It’s not hard either. It’s really easy to follow.” And “There’s nothing I didn’t like. I actually liked it!”

When asked about the workbooks, the characters and stories of Lydia and Michael were a strong theme for five participants. For example, two respondents identified Lydia and Michael as role models, while another mentioned she had taken ideas from Lydia’s brainstorm and used them in her own, reinforcing the notion of role modelling. For example, “I thought it was good because they [Lydia and Michael] had problems and stuff and then they’d go step by step and finally reach the point where they could fix it.” And “Probably liked having those people Michael and Lydia they were quite neat because they’ve gone through similar things and they are doing the same things I am.”

Three participants commented on liking their stories, with three also suggesting that more stories and vignettes should be included in the workbook as they found this aspect particularly helpful. This would definitely be enhanced in any future study.

These results are consistent both with the findings from the young people who initially reviewed the resources and with the feedback from the cultural consultation. All the reviewers highlighted the stories as a strength because they read as if the characters were speaking to the reader. They noted the stories were easy to relate to and this kept them engaged and interested in the workbook.

There were four problem-solving signposts mentioned as part of this theme of likes and dislikes about the workbook. These were:

- generating ideas (“I quite liked the big brain storm of how to solve ideas, I think. To write different solutions was good”);
- exploring the potential pros and cons of a potential solution (“I liked the advantages and the disadvantages because you could see different points of view for that one problem and then think about it.”);

- the action plan (“I liked the action plan. I got worried at first, if it wouldn’t work out or something, but then you never know until you tried.”);
- the problem list (“I think it was quite good to outline all the different problems and concentrate on separate ones so you could work through them.”).

Participants all indicated they had experienced changes in their problem solving, which is borne out by the improvements seen in the SPSSI-A scores. Their comments also suggested an improved confidence and belief in their abilities: “Definitely [my problem solving has changed], because my problems aren’t so big, and I know how to tackle them, it’s made me a lot happier and things are a lot easier.”

Knowledge of what had got in the way of previous problem-solving efforts and the steps they could take in future were also highlighted:

I kind of let them bunch up and they would all become too much for me but I know now to have a problem, make it clear and decide what I am going to do about it and then move on to the next one without them all getting to me.

Finally, there was recognition that following the steps could lead to feeling better in oneself:

Umm, I guess making a plan, trying to do that a bit more and so I can concentrate on what I want to do and then tick that off and then I’ll feel more satisfied that I’ve done something.

Finally, participants reported feeling better in themselves than they had before taking part in RE:SOLVE: “Feeling good. Feeling happy”; “I guess I do feel a lot better than I was. I just made small improvements each day I guess. But compared back to then, a lot. Quite a big difference”; and:

Long gone [thoughts about self-harm]. I’m pretty happy. It’s just the decision I made that put me back into that place. Like I caused a problem and my parents got angry and then I get angry with them and it makes a problem. So it’s up to my decisions. I have goals this year.

These one-to-one interviews reflected the high degree to which the RE:SOLVE problem-solving therapy was considered acceptable by participants. Their feedback highlights the inextricably linked nature of problem orientation and practical problem solving, with problem orientation helping us to reduce our sense of threat and restore connection to self.

From my own clinical experience, I can attest to the relief people feel when we talk about problem orientation and they realise that having problems does not mean something is wrong with them. Their bodies relax, their faces soften, their breaths slow. When we resolve a difficulty, even partially, this builds self-efficacy and self-confidence and makes it more likely we will find a way to face into problems and seek help in the future.

However, the feedback also needs to be viewed with caution. Firstly, those who did not complete all three assessments were not interviewed and their views may have been different from those that were expressed. Secondly, the participants knew the PI had developed the resource and also conducted the therapy with some of them. Thirdly, the PI did the thematic analysis. These factors could have introduced bias into these results.

## **Strengths of the Current Study**

Primary and secondary outcome measures were clearly stated. The study showed significant improvements in the primary outcome of depression, along with significant reductions in suicide orientation and moderate improvements across all other measures. There were improvements across all measures that have possible clinical relevance. Participants who completed the intervention also took part in an interview. This feedback from the participants' lived experience of RE:SOLVE adds depth to the quantitative data, incorporating a more human dimension. It also provides direction for future development of the RE:SOLVE programme and resources.

## **Limitations of the current study**

The limitations of this study are that it was a pilot study, the sample size was small, there was no randomisation, no control group, and only a short follow-up period, which hinders our ability to see whether differences were maintained for any length of time. The problem solving and suicidal risk measures used in this study were different from other studies of this kind, and this limits comparisons that can be made between them. However, this is acceptable considering the purpose of this study which was to establish the suitability of these measures for a larger scale study.

The participants who did not complete the programme were more likely to have had a history of self-harm. This limits our knowledge of the acceptability and feasibility of RE:SOLVE for them. However, given that three of the five who dropped out did not make this choice themselves, and that students with comparable baseline scores did complete the sessions, this is not a definitive issue.

Because this study was a PhD project, most of the study functions were carried out by the PI. This included conducting recruitment, most of the assessments, and the therapy with some clients. Since there was no comparison group, there was no blinding, but this was a pilot acceptability and feasibility study so this design is within acceptable parameters.

## **Future Research**

Recommendations for future research relate firstly to study design. A definitive randomised control trial for the quantitative aspect of a study would provide more robust data to explore intervention effectiveness. This study would require a larger sample size, a longer follow-up period, and randomisation. The data collection and analysis procedures would be reviewed to reduce the risk of bias. Incorporating a mixed-methods approach to access participant experiences would remain important.

There were few Māori participants identified and recruited. This will be an important focus for future research given that young Māori people are overrepresented in self-harm and suicide statistics in Aotearoa New Zealand. The resources would be co-designed and adapted with project consultants to better connect with rangatahi and embody tikanga such as the hui process (Pitama et al., 2017), as recommended by the consultants.

## **Conclusion**

At a time when symptoms of depression, suicidal thinking, and suicidal behaviour among young people have increased (Fleming et al., 2022), the importance of school counsellors as a source of support is crucial. When young people self-harm, they are expressing something important, and school counsellors are well-placed to listen, collaborate, and respond. RE:SOLVE is a pragmatic and accessible way of framing conversations that lends itself to contexts requiring brief interventions as well as those requiring open-ended work.

With this small study of 15 young people, administered by school counsellors and the PI, RE:SOLVE contributes to an emerging evidence base. Results show significant reductions in depressive symptoms and suicide orientation, along with reductions in hopelessness. Improvements in problem solving and life enjoyment were demonstrated for participants who completed all aspects of the study. The therapeutic alliance ratings by the clients and practitioners were high. These results indicate that those who took part in RE:SOLVE were satisfied with the programme. In addition there was a consensus that taking part in RE:SOLVE problem-solving therapy was a productive and helpful experience that led to participants feeling better about themselves and having improved problem-solving, and problem-solving confidence.

This study provides some support for problem-solving therapy as an intervention for young people at risk of self-harm. There is evidence that the chosen measures are acceptable, feasible to use, and sensitive to change. The combined results reflect that while there were a number of study issues, and difficulties in implementation, RE:SOLVE problem-solving therapy has promise as an acceptable and feasible intervention for both clients and practitioners.

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