



Evaluating The Effectiveness of a Resilience Program for Children and Young People in a Private Australian Psychology Clinic

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Evaluating the effectiveness of a resilience program for children and young people in a private Australian psychology clinic¹

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There is increasing research into resilience enhancing intervention programs in young people. A number of international resilience-based group programs exist, however few are within Australia. Two Australian resilience programs are the Linked-Up (13-16 year-olds) and Connect-3 (8-12 year-olds) programs. They are Solution-Focused programs based on the Resilience Doughnut model. The current study assessed the effectiveness of these two programs by comparing pre and post measures of resilience and adversities. Participants were aged between 8-17 years. There were 70 participants in total, 40 males (57%) and 30 females (43%). Results show that the Connect-3 program built personal competency and reduced total difficulties within a non-clinical population. The Linked-Up group showed no significant change in scores for pre-intervention to post-intervention. Future research should aim to explore the effectiveness of the resilience programs within clinical populations or with young people who have increased risk of adversity. Future research should also consider how resilience could be enhanced in older-adolescent populations. .

Resilience is an important area of study because coping with stress, change and adversity is a facet of everyday life. This is particularly true for children and adolescents, who experience multiple biological, social and psychological changes during this developmental phase (Barrett et al., 2014). It is generally accepted that resilience is an individual's ability to bounce back from adversity (Ungar, 2015; Prince-Embury, 2014; Werner & Smith, 2001). This ability

1. A version of this paper was presented to the Pathways to Resilience Conference in Halifax, Canada in June 2015.

is influenced by the complex interaction between protective factors, such as positive social relationships, economic stability, or adaptive coping skills, and risk factors, such as vulnerability to mental health problems, poor attachment or other adversities (Ungar et al., 2015; Werner & Smith, 1992; 2001). Ungar et al., (2015) emphasises that protective factors are not just personal characteristics or qualities of the individual, but also include the availability of community resources (e.g., social supports, and formal service providers) as well as the individual's capacity to access and utilise these resources.

Defining Resilience

There is still no single agreed definition of resilience despite consensus that resilience is developed through both internal resources and external factors. Early definitions of resilience were primarily focused on overcoming adversity, such as Grotberg (1995), who stated, "resilience is the universal capacity which allows a person, group or community to prevent, minimise or overcome the damaging effects of adversity" (p.3). Masten and Powell (2003) stated, "Resilience refers to patterns of positive adaptation in the context of significant risk and adversity" (p. 4).

Over time, definitions have developed to be more comprehensive and complex, to include not just the individual, but also the community within which they live. Ungar, Brown, Liebenberg, Cheung and Levine (2008) define resilience as "the capacity of individuals to navigate their physical and social ecologies to provide resources, as well as their access to families and communities who can culturally navigate for them" (p. 168). In this definition Ungar et al. (2008) identifies that resilience is more than just having, or not having resources, but it is also the capacity to know how to use these resources to be resilient. This definition also identifies that individuals require support from their families and communities to assist in understanding and using these resources.

Ungar (2015) describes the development of resilience as a complex, multidimensional process, where the ability to withstand adversity is not simply dependent on the outweighing of protective factors over risk factors, but rather, "resilience is predicted by both the capacity of individuals and the capacity of their social and physical ecologies to facilitate their coping in culturally meaningful ways." (p. 4)

Overall, it is evident that throughout the research there is a consensus that resilience is developed through both internal resources such as personal characteristics and skills, as well as external factors, such as environmental, social and educational factors. Luthar, Cicchetti and Becker (2000) clarified

this further, by stating that the personal qualities can be referred to as “resiliency”, whereas “resilience” is the developmental process that occurs through the interaction of the internal qualities and the external factors.

Theories of Resilience

There are many theories about what formulates the protective factors of resilience. Grotberg (1995) categorised them into three main areas ‘I HAVE, I AM, I CAN’. I HAVE are the external supports that promote resilience (e.g., I have trusting relationships); I HAVE factors are foundational to the subsequent categories. I AM is the child’s personal strengths and characteristics (e.g., I am loveable). The I CAN is the child’s interpersonal and social skills (e.g., I can communicate and problem solve).

Other researchers have provided more specific categories, such as community, school, family and individual/peers (Fuller, 1998) and social competence, problem solving, autonomy and sense of purpose (Benard, 2004). Ungar (2008) redefined the protective factors and personal qualities as ‘tensions’. He hypothesised that people need to balance these tensions in order to enhance their resilience, and having too much or too little of these resources removes the tensions that are important to developing resilience. Overall, there appears to be a consensus in the research that resilience is developed through both internal resources, such as personal characteristics and skills, and external factors, such as environmental, social and educational factors.

Intervention Programs for Non-Clinical Populations

Understanding that resilience is a process influenced by risk and protective factors, more recent research has been interested in how resilience can be developed or enhanced. Seligman (2002) suggests that resiliency can be enhanced with Positive Psychology through utilising a strength-based approach to build people’s capacity, rather than correcting their difficulties. There is considerable research into treatment programs that aim to enhance resilience, and evidence suggests that prevention programs are important in assisting people to overcome difficult circumstances and prevent mental health problems (Barrett et al., 2014). There are a number of international resilience-based programs, such as the Penn Resiliency Program (Gillham et al., 2007); however, there are only two resilience programs that have been evaluated in Australia. The FRIENDS program (Barrett, 2012) and the Resilience Doughnut model (Worsley, 2006) aim to enhance resilience in non-clinical child and adolescent populations.

FRIENDS program

The FRIENDS program (Barrett, 2012) is the most widely researched resilience-enhancing program in Australia and was first developed and evaluated by Barrett and Turner (2001). The aim of the FRIENDS program (Barrett, 2012) is to develop social and emotional skills in children and adolescents in order to promote resilience and prevent anxiety and depression (Barrett et al., 2014). The program is based on the theoretical framework of Cognitive-Behavioural Theory (CBT) and Positive Psychology (Barrett et al., 2014). It uses the acronym of FRIENDS to form the basis of the program, for example, the F stands for 'feelings' and focuses on developing social and emotional skills.

The FRIENDS program (Barrett, 2012) has been evaluated several times as a universal program, using pre-intervention, post-intervention and follow-up data (Lock & Barrett, 2003; Barrett, Lock & Farrell, 2005). The results demonstrated that the program was successful in reducing anxiety and increasing coping skills, with the strongest effects noticed in the group of children aged between 9 and 10 years old compared to the group of adolescents aged between 14 and 16 years-old. Lock and Barrett (2003) used these findings to suggest that earlier intervention could be more beneficial than later intervention.

A follow-up study of Lock and Barrett's (2003) findings was completed to assess the effects of the program at 24 and 36-month intervals (Barrett, Farrell, Ollendick & Dadds, 2006). This study found that the reductions in anxiety were maintained for the younger age group (9-10 years) of students who were in the treatment condition, and not in the aged-matched control group. They also reported a gender effect, with girls in the intervention group scoring lower on anxiety after the intervention than girls in the control group, although this difference was not maintained at the 36-month follow-up. The authors suggest that this finding supports the previous study's hypothesis that earlier intervention, specifically during ages 9-10 years, is ideal for long-term benefits.

Whilst these research findings are positive, an important consideration of the FRIENDS program is whether it actually focuses on developing resilience or whether it focuses more on the management of anxiety. The studies discussed primarily define themselves as a CBT interventions to reduce anxiety, rather than as a program designed to develop resilience. This is particularly evidenced by the authors not using any known measures of resilience, such as the Resilience Scale for Adolescents (READ; Hjemdal, Friborg, Stiles, Martinussen & Resenvinge, 2006) to measure the effect of the FRIENDS intervention on developing the factors that build resilience.

The Resilience Doughnut

The Resilience Doughnut program was developed by Worsley (2006) and is based in the theoretical framework of Solutions-Focused Theory (SFT) and Positive Psychology. As the name suggests, the program is based around the concept of a doughnut, where inside the doughnut represents the internal strengths of the individual, and the outside of the doughnut represents seven protective factors they may have, such as social and environmental factors (see Figure 1). The internal strengths are based on the work of Grotberg (1995), while the protective factors are rooted in the theoretical research by Werner and Smith (2001), Fuller (1998) and Ungar (2008) and are 'Parent', 'Skill', 'Family and Identity', 'Education', 'Peer', 'Community' and 'Money'. Worsley (2014) suggests that the process of resilience is built when the external factors feed into the internal strengths of a child. She states that the Resilience Doughnut is not about teaching children to be resilient, but rather it is about teaching families and communities to have relationship skills that build resilience in children. This process occurs through helping children and their families gain more self-awareness and social skills, as well as developing creative ways to strengthen their external protective factors (Worsley, 2008).

Worsley (2014) suggests that not all seven factors need to be present to

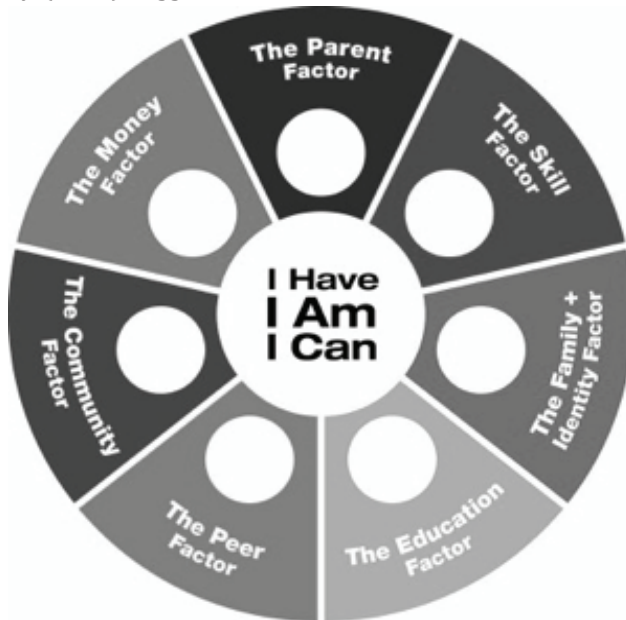


Figure 1. The Resilience Doughnut model (Worsley, 2006)

build resilience, but hypothesises that three factors are sufficient to enhance wellbeing. Through strengthening three factors, Worsley (2014) hypothesises that the rest of the factors will be strengthened too. This is based on the principles of SFT, which suggests that focusing on strengths, rather than problems, will elicit positive change and promote resiliency (Seligman, 2002). Similar to the FRIENDS program, the Resilience Doughnut framework teaches students about optimistic thinking and also provides parent education sessions on the model.

The Resilience Doughnut (Worsley, 2006) has not been researched as frequently as the FRIENDS program; however, three case studies conducted by Worsley (2014) demonstrate a number of positive outcomes for the model. Three schools were selected to utilise the Doughnut model. The first and second case study used students aged between 13-15 years-old to implement the program, and the third case study used students aged between 12-17 years-old. Specific staff members were trained in the Resilience Doughnut model, which they implemented with their students using an online tool. The online tool assisted the students in identifying their three strongest protective factors. The students then had to develop a project linking their three strengths. For example, a student's strengths might be Parent Factor, Skill Factor (skill being football) and Community Factor. This child's project might involve planning a football match in the local park and inviting his parents to participate.

Pre- and post-measures of anxiety, depression and resilience were taken for each case study, including longitudinal follow up at 12 and 24 months. The measure differed across each of the case studies, but included the Multidimensional Anxiety Scale for Children (MASC-10; March, 1997), the Child Depression Index (CDI-10; Kovacs, 2003), the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), the Child, Youth Resilience Measure (CYRM; Ungar, 2008), the Resilience Scale (RS-14; Wagnild & Young, 1993) and the Resilience Scale for Adolescents (READ; Hjemdal et al., 2006). Post-intervention results showed that children with high and medium anxiety, based on the MASC-10, increased their resilience scores on the resilience measures over time. Worsley (2014) suggests that these results demonstrate that the Doughnut can be used successfully to build resilience in adolescents.

Further research is needed to develop the empirical evidence of the Resilience Doughnut model. Specifically, implementing the program over several sessions, rather than one session to give participants extra time to capitalise on the specific resources around them (Luthar & Cicchetti, 2000). Also, implementing the Doughnut program with both primary school students and high school students and comparing their scores of resilience. This may build on Barrett et al. (2006) suggestion that programs implemented at an earlier age

are more effective at reducing symptoms of anxiety and/or depression and improving resilience.

Aims and Hypotheses

The current study builds on Worsley (2014) research by evaluating two programs based on the Resilience Doughnut (2006) model. The Connect-3 (8-12 year-olds) and Linked-up (13-16 year-olds) programs are interactive 6-week group programs designed to help young people develop their personal competency, improve their social interactions and develop resilient thinking skills (Worsley, 2012a & Worsley, 2012b). This research aims to assess the effectiveness of the two programs by measuring the change from pre-intervention to post-intervention for participants, using the Resilience Scale for Adolescents (READ; Hjemdal et al., 2006) and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997).

It was hypothesised that there would be a significant improvement in the resilience measure scores and decrease in difficulties scores at post-intervention. Specifically, it was hypothesised that participants would increase their scores on all subscales of the READ and decrease their scores on the subscales of the SDQ, with the exception of the Prosocial scale, which would increase. Secondly, it was hypothesised that the Connect-3 group will have a greater decrease in their difficulty scores and increase in the resilience scores compared to the Linked-Up population, based on Barrett et al., (2006) findings. Finally, it was hypothesised that the female participants would have a greater reduction in their difficulties scores and increase in their resilience scores compared to male participants, again based on Barret et al., (2006) results.

Method²

Participants

Participants were children and adolescents aged between 8-17 years who were enrolled in either the Connect-3 or Linked-Up program. There were 70 participants in total; 40 males (57%) and 30 females (43%), with a mean age of 10.43 years ($SD=2.74$). There were 48 participants (69%) in the Connect-3 group (60% males, 40% females) and 22 participants (31%) in the

2. Ethics approval for this study was obtained through the University of Newcastle Human Research Ethics Committee (reference no. H-2015-0152).

Linked-Up group (50% males and females).

The participants parent's completed a consent form with their child, which provided permission for their child's information to be collected, de-identified and used for the research project. Participants who did not give consent to participate in the research were still able to complete the resilience program.

The programs were completed at The Resilience Centre, Sydney, within a high socio-economic suburb as indicated by the Socio Economic Indexes for Areas (SEIFA). The SEIFA is a range of indices created by the Australian Bureau of Statistics (ABS) to analyse the socio-economic status of a population. The Epping-North Epping Statistical Area 2 (SA2) ranks in the highest decile for three of the four SEIFA measures, indicating that it is a highly advantaged and highly educated population (ABS, 2013). More specific demographic details were unavailable for the participants, however, participants generally came from financially resourced families, as they were required to pay \$350 to participate in the program. Furthermore, as part of the program, parents of the participants were invited to attend parent-information sessions to encourage them to engage with what their child was learning. There is no data available for parent attendance at these sessions.

Procedure

Participants were recruited in several ways, most commonly through self-referral to the program. The resilience programs have a strong reputation in the local geographic area, and therefore, many referrals come from recommendations by previous participants. Other referral sources include general practitioners, school counsellors or psychologists who have knowledge of the program, and usually refer because the young person has difficulties with anxiety. Specific details of how many participants were referred from each source were unavailable for this research.

The group programs ran with approximately 6-10 participants in each group. If a participant was unable to attend any of the six sessions, they were offered an individual catch-up session with the provisional psychologist who was co-facilitating the program.

The Linked-Up and Connect-3 programs each ran over a 6-week period for 1.5-hour sessions, per-week. The programs had identical structure, using different examples and worksheets to tailor the concepts of the Resilience Doughnut for the two developmental age groups. The programs were delivered by a psychologist and a provisional psychologist who had completed The Resilience Doughnut accredited training (Worsley, 2008). The facilitators fol-

lowed a structure outlined by the program manuals, which is summarised in Table 1. Additionally, a parent information session was completed following the first session so parents and other family or community members could become engaged in what their child was doing within the program. After each other session, a parent letter was provided, detailing session content and how the strategies discussed could be implemented and developed at home or school. No data is available on overall student attendance at the 6 sessions or parent’s attendance during the first week.

Session	Description of the program
Week 1	Introducing the Resilience Doughnut
Week 2	Identifying young person’s strengths
Week 3	Learning optimistic thinking
Week 4	Learning empathy and social skills
Week 5	Reporting on their kindness project
Week 6	Noticing change

Table 1. Overview of the Connect-3 and Linked-Up programs

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and the Resilience Scale for Adolescents (READ; Hjemdal, et al., 2006) were administered to students 1-week prior to the program commencing and repeated following the conclusion of the sixth session. Most participants completed the questionnaires via a computer, but due to some technical complications, six participants were required to complete the questionnaire using paper and pencil and results entered into the database manually.

Measures

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ is a brief behavioural screening questionnaire for people aged 3-16 years. It contains 25 items, divided into 5 subscales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and pro-social behaviour.

For this study, the SDQ is being used as a measure of participant’s risk factors or adversities. Higher scores on each of the subscales indicate higher level of emotional symptoms, conduct problems, hyperactivity, peer problems and total difficulties, with the exception of the prosocial scale. As the

prosocial scale is a measure of social competency, higher scores indicate a higher level of social resilience. The SDQ subscale scores are divided into four descriptive categories, based on the clinical cut-off points for the subscales. The descriptive categories range from ‘close to average’, indicating difficulties/prosocial score within a normal range through to ‘very high (very low)’, indicating a much higher than average score for difficulties (or much lower prosocial score). The SDQ has previously demonstrated good internal consistency, with a Cronbach α of .93 (Goodman, 2001). For the current study the SDQ had moderate-weak internal consistency, with alpha coefficients ranging between .65 to .43 at pre-intervention to .82 to .43 at post-intervention (See Table 2). The validity of the SDQ is well established (Goodman, Ford, Simons, Gatward & Meltzer, 2000).

		Cronbach alpha	
		Pre	Post
READ Subscale	Personal Competency	.78	.83
	Social Competency	.75	.74
	Structured Style	.58	.43
	Social Resources	.78	.69
	Family Cohesion	.83	.82
SDQ Subscale	Emotional Problems	.61	.82
	Conduct Problems	.50	.51
	Hyperactivity	.58	.50
	Peer problems	.43	.43
	Prosocial behaviour	.65	.65
	Total difficulties	.49	.64

Table 2. Reliability of the READ and SDQ subscales for pre and post (Cronbach alpha)

The Resilience Scale for Adolescents (READ; Hjemdal et al., 2006). The READ (Hjemdal et al., 2006) is a 28-item questionnaire that also consists of five subscales: personal competence, social competence, structured style, awareness of social resources, and family cohesion. The READ is being used as a measure of resilience in this study. It does not have recommended clinical cut-offs points, however, higher scores on each of the subscales indicate higher levels of resilience. The READ has previously demonstrated very strong internal

consistency with Cronbach α of .94 (Hjemdal et al., 2006). For the current study, the READ demonstrated adequate internal consistency, with alpha coefficients ranging between .83 to .58 at pre-intervention and .83 to .43 at post-intervention (See Table 2). The READ is considered to be a valid measure of resilience (von Soest, Mossige, Stefansen & Hjemdal, 2009).

Statistical Analyses

Statistical analyses were conducted using IBM SPSS Statistics for Windows (version 21.0; SPSS, Chicago, IL, USA) and all statistical tests used a type I error of $\alpha = .05$. Cronbach alpha coefficients were calculated for both the READ and SDQ, at both time points to determine the internal consistency of the subscales for these students.

Linear mixed models were created for all subscales of SDQ (total difficulties, emotion symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behaviour) and READ (personal competence, social competence, structured style, awareness of resources and family cohesion) to compare baseline to post-treatment for students in each of the Connect-3 and Linked-Up groups separately.

A mixed models approach to analysing repeated measures data was used as it analyses on an intention to treat basis and there was incomplete data from participants for pre-intervention to post-intervention. The current study only had 29 data points available for post-intervention analysis. Mixed models analysis ensured all participants were included in the analysis and allowed inherent adjustments for baseline scores. Another advantage of using a mixed models approach is that the optimal covariance matrix is selected, resulting “in more appropriate estimates of the effect of treatment and their standard errors” (Brown & Prescott, 2006: p. 3). Model choice was based on comparison of two covariance patterns (Compound Symmetry and Unstructured/General) and selection of the covariance matrix with the best fit was indicated by the lowest Akaike’s Information Criteria (AIC) and Schwartz’s Bayesian Criterion (BIC) values. Compound Symmetry Matrix was most appropriate model for all subscales. Cohen’s d effect size was calculated for each of the variables using the pooled standard deviation from the residual covariance matrix (Dunst & Hamby, 2012).

Further models were used to examine for any difference in gender for each of the two age groups (Connect-3 and Linked-Up). Correlation between the READ and SDQ subscales was examined using Spearman’s ρ due to the relatively small number of students and non-normality of the distributions of the subscales.

Results

Main findings from baseline to post-intervention

Results for the Connect-3 (N=50) group on the SDQ showed a significant reduction in mean scores of 2.11 points from pre-intervention to post-intervention for Total Difficulties $F(1,32) = 4.60, p=.04, d = 0.37$ (see Table 3). Additionally, differences in scores on the Emotional Problems and Hyperactivity subscale were approaching significance $F(1,33) = 3.92, p=.06, d = 0.33$ and $F(1,37) = 3.70, p=.06, d = 0.40$, respectively. No other subscales of the SDQ showed a significant change from pre to post-intervention for the Connect-3 group. On the READ measure, results for the Connect-3 group showed a significant increase in mean scores by 2.65 points on the subscale of Personal Competency from pre-intervention to post-intervention $F(1,36) = 7.31, p=.01, d = 0.49$ (See Table 4). No other subscales on the READ were significant for the Connect-3 group.

SDQ Connect-3						
	Pre M (SE)	Post M (SE)	Difference	Significance	CI (95%)	Cohen's <i>d</i>
Total difficulties	17.71 (0.81)	15.60 (1.05)	-2.11	.04*	0.11, 4.11	0.37
Emotional problems	4.90 (0.36)	4.05 (0.46)	-0.84	.06	-0.02, 1.71	0.33
Conduct problems	3.37 (0.26)	3.20 (0.35)	-0.17	.63	-0.87, 0.53	0.09
Hyperactivity	5.85 (0.29)	5.04 (0.40)	-0.82	.06	-1.68, 0.04	0.40
Peer problems	3.59 (0.32)	3.35 (0.41)	-0.24	.52	-1.00, 0.52	0.11
Prosocial behaviour	7.74 (0.25)	8.02 (0.33)	0.28	.40	-0.39, 0.95	0.16

Table 3. Linear Mixed Model Estimated Marginal Means (M), Significance (p) and Effect Size (d) for the Connect-3 group (n=48) on the SDQ measure.

READ Connect-3						
	Pre M (SE)	Post M (SE)	Difference	Significance	CI (95%)	Cohen's <i>d</i>
Personal competency	19.79 (0.81)	22.44 (1.01)	2.65	.01*	0.66, 4.64	0.49
Social competency	14.47 (0.54)	15.10 (0.65)	0.63	.29	-0.56, 1.82	0.17
Structured style	10.40 (0.43)	10.84 (0.56)	0.44	.45	-0.74, 1.62	0.15
Social resources	16.47 (0.49)	16.49 (0.58)	0.02	.97	-0.96, 1.00	0.01
Family cohesion	19.29 (0.58)	19.44 (0.73)	0.15	.84	-1.34, 1.64	0.04

Table 4. Linear Mixed Model Estimated Marginal Means (M), Significance (p) and Effect Size (d) for the Connect-3 group (n=44) on the READ measure.

The results for the Linked-Up (N=22) group showed no significant change in scores for pre-intervention to post-intervention for either the SDQ or the READ (see Table 5 & 6). However, the subscale of Prosocial Behaviour on the SDQ was approaching significance $F(1,34) = 3.62, p=.07, d = 0.62$. There was an apparent increase in mean scores of 1.09 points from pre-intervention to post-intervention (See Table 5).

SDQ Linked-Up						
	Pre M (SE)	Post M (SE)	Difference	Significance	CI (95%)	Cohen's <i>d</i>
Total difficulties	18.59 (1.21)	15.60 (1.05)	-2.11	.04*	0.11, 4.11	0.37
Emotional problems	5.59 (0.54)	4.05 (0.46)	-0.84	.06	-0.02, 1.71	0.33
Conduct problems	3.32 (0.39)	3.20 (0.35)	-0.17	.63	-0.87, 0.53	0.09
Hyperactivity	5.27 (0.43)	5.04 (0.40)	-0.82	.06	-1.68, 0.04	0.40
Peer problems	4.41 (0.48)	3.35 (0.41)	-0.24	.52	-1.00, 0.52	0.11
Prosocial behaviour	7.23 (0.37)	8.02 (0.33)	0.28	.40	-0.39, 0.95	0.16

Table 5: Linear Mixed Model Estimated Marginal Means (M), Significance (p) and Effect Size (d) for the Linked-Up group (n=22) on the SDQ measure.

READ Linked-Up						
	Pre M (SE)	Post M (SE)	Difference	Significance	CI (95%)	Cohen's <i>d</i>
Personal competency	17.72 (1.15)	17.14 (1.79)	-0.59	.74	-2.91, 4.09	0.11
Social competency	12.50 (0.77)	12.49 (1.13)	-0.15	.99	-2.09, 2.12	0.04
Structured style	8.96 (0.61)	9.19 (1.00)	0.23	.82	-1.83, 2.30	0.08
Social resources	14.91 (0.70)	14.36 (0.98)	-0.55	.52	-2.28, 1.18	0.17
Family cohesion	16.36 (0.82)	15.17 (1.30)	-1.19	.36	-3.81, 1.42	0.31

Table 6. Linear Mixed Model Estimated Marginal Means (M), Significance (p) and Effect Size (d) for the Linked-Up group (n=22) on the READ measure.

Gender Analysis

Further analysis was conducted to determine if the overall results were significant for both males and females. There was little difference in gender from baseline to post-intervention in either the Connect-3 or Linked-Up group. The only significant difference was found for the Connect-3 group on the subscale of Personal Competency. Males significantly ($p=.01$) increased their scores from pre-intervention ($M=19.54$) to post-intervention ($M=23.02$).

		Emotional problems	Conduct problems	Hyperactivity	Peer problems	Prosocial behaviour	Total difficulties	
Spearman's rho	Personal competency	Correlation coefficient	-.476**	-.182	-.005	-.198	.307**	-.354**
		Sig. (2-tailed)	.000	.150	.968	.116	.014	.004
	Social competency	N	64	64	64	64	64	64
		Correlation coefficient	-.197	-.139	.301*	-.326**	.393**	-.146
	Structured style	Sig. (2-tailed)	.118	.275	.016	.009	.001	.251
		N	64	64	64	64	64	64
	Social resources	Correlation coefficient	-.327**	-.316*	-.208	-.124	.238	-.361**
		Sig. (2-tailed)	.008	.011	.099	.330	.059	.003
	Family cohesion	N	64	64	64	64	64	64
		Correlation coefficient	-.144	-.154	.120	-.149	.398**	-.155
		Sig. (2-tailed)	.256	.224	.347	.239	.001	.222
		N	64	64	64	64	64	64
		Correlation coefficient	-.204	-.223	-.014	-.068	-.263*	-.218
		Sig. (2-tailed)	.106	.076	.914	.594	.036	.083
		N	64	64	64	64	64	64

Table 7. Correlation Matrix for the READ and SDQ Subscales

Resilience and Adversities

As hypothesised, most subscales of READ were negatively correlated with subscales of the SDQ, with the exception of the Prosocial scale, which was significantly positive (See Table 7). Specifically, the Prosocial scale was positively correlated with the subscale of Personal Competency (.31, $p=.01$); Social Competency (.39, $p<.01$); Social Resources (.40, $p<.01$); Family Cohesion (.26, $p=.04$) and was approaching significance for Structured Style (.24, $p=.06$). Social Competency was positively correlated with Hyperactivity (.30, $p=.02$).

Attrition Rates

For the 70 participants for whom pre-intervention data from the SDQ and READ measures were available; 29 (41%) of participants had post-intervention data available. There are also two participants in the Connect-3 group where post-intervention SDQ and READ data was available, but not their pre-intervention data. Given this low retention rate, independent-sample t-tests were conducted on each of the subscales and available demographics for the READ and SDQ to compare the baseline scores of the students for whom no post-intervention measures were available. The two groups were similar in all respects except for the Family Cohesion ($p=.04$) subscale within the READ and the Peer Problems ($p=.01$) and Total Difficulties ($p=.02$) within the SDQ (see Table 8 overleaf).

Discussion

The aim of the current study was to build on Worsley's (2014) research of the Resilience Doughnut model. Specifically, to assess the effectiveness of two programs based on the Resilience Doughnut model. The Connect-3 and Linked-Up programs are group-interventions that aim to help young people find their strengths, improve their social interactions and develop resilient thinking skills. The effectiveness of these programs was assessed by examining pre-intervention and post-intervention measures of resilience, using the READ (Hjemdal et al., 2006) and adversities, using the SDQ (Goodman, 1997). The study also examined age and gender difference from pre- to post-intervention.

Effectiveness of Resilience Doughnut Programs

Results from the Connect-3 group show that there were significant changes in their scores from pre-intervention to post-intervention. Specifically, par-

	Post data not available	Post data available	
	n=41	n=29	Significance
Age	11.14	10.5	.33
Gender (males)	26 (61%)	16 (55%)	.66
Personal competency	18.70	19.55	.54
Social competency	13.62	13.90	.77
Structured style	9.38	10.59	.10
Social resources	15.27	16.69	.08
Family cohesion	17.35	19.45	.04*
Emotional problems	4.88	5.54	.26
Conduct problems	3.24	3.50	.54
Hyperactivity	5.40	6.07	.16
Peer problems	3.31	4.57	.01*
Prosocial behaviour	7.50	7.71	.62
Total difficulties	16.83	19.68	.02*

Table 8. Baseline measures for n=41 students whose time 2 data was not available compared to the n=29 students who completed both time 1 and time 2 measures.

ticipants in the Connect-3 group significantly reduced their total difficulties score at post-intervention. They also had a significant increase in their scores for the Personal Competency subscale within the READ measure of resilience. Further, there was an apparent decrease in the subscales of Emotional Problems and Hyperactivity that were trending toward significance. Whilst these results provide some good evidence for Connect-3 program in reducing adversities, it is important to consider the clinical relevance of the scores. In all of the SDQ subscales, the mean participant scores fell within the ‘average’ to ‘slightly raised’ descriptive categories, suggesting that the participants did not have a clinically high rate of difficulties even before treatment. This is not surprising, given that the study was completed with a non-clinical population.

Unlike the Connect-3 group (primary school aged students), the Linked-Up group (high school aged students), showed no significant change in scores from baseline to post-intervention. These results support the Lock and Barrett (2003) and Barrett et al. (2006) findings, which suggest that implementing programs with primary school-aged children appears to be more effective at reducing adversities than compared to high-school aged youth. Small participant numbers in the Linked-Up group may have impacted on these

findings, given that there were only 22 participants at pre-intervention and seven at post-intervention. There was a non-significant increase in the Total Difficulties scores for the Linked-Up group, which appears more likely due to random variation rather than a type II error. Although these scores are based on only seven available participants, there appears to be no downward trend of the estimated marginal means from pre to post, which was apparent in the Connect-3 group.

However, in contrast to Barrett et al. (2006) findings, the results of this study found no significant difference in the changes from baseline to post-intervention for most subscales for males and females. The only exception was in the Connect-3 group, where male scores significantly increased on the subscale of Personal Competency from baseline to post-intervention. This unremarkable finding suggests that males and females generally do not respond differently to the Resilience Doughnut programs.

Relationship Between READ and SDQ Scores

As hypothesised, there was a significant increase in the resilience measure scores (READ) and decrease in difficulties scores (SDQ) at post-intervention, as seen in the correlation matrix of the two measures (Table 7), which is consistent with Worsley (2014) findings. However, unlike Worsley's (2014) study, a small number of the SDQ subscales did not have significant correlations against the READ subscales, such as the Hyperactivity scale. This is likely due to the type of participants within the group, who were more commonly referred for anxiety difficulties than problems with hyperactivity behaviour. In contrast to Worsley (2014) study (particularly the third case study), this research contained participants from socio-economically advantaged backgrounds.

Unexpectedly, Social Competency was positively correlated with Hyperactivity. This is again likely the result of the shy and anxious population. The Hyperactivity scale may be indicative of participants who were more extroverted and not hyperactive, as evidenced by the Hyperactivity scores being within the clinically normal range.

Strengths

The current study is the first to examine the effectiveness of the Connect-3 and Linked-Up group programs based on the Resilience Doughnut model. The data collected from this study provides further insight into the factors that build resilience in young people for a well-resourced population. These findings provide the platform to conduct further study of these programs

within more diverse, and less affluent populations.

Another strength of this study is that the Connect-3 and Linked-Up programs are innovative, strengths-based programs, which aim to build resilience in a variety of domains, such as community and peer factors. Unlike other programs that may solely focus on developing an individual's characteristics (e.g. coping skills), the Resilience Doughnut programs are designed to engage young people in connecting with their family, community and other external resources around them. The READ subscales provide some measure of these resources, however future research could focus more specifically on how this broader view of resilience impacts on the effectiveness of the programs.

Finally, the difficulty in obtaining post-intervention scores for the READ and SDQ measures highlights the importance of having good quality assurance within the private clinic. This study has been the catalysis for improving the data collection system, including identifying technical issues with the computer-based program. Stricter procedures for the collection and recording of data will assist the clinic to conduct further rigorous research on the programs run at the centre. It will also allow the clinic to continue to contribute to the growing field of resilience-based research.

Limitations

There were a number of limitations to this research. Firstly, there were only a small number of participants within the Linked-Up group. These smaller numbers may have impacted on the ability to find significant change in scores on the READ and SDQ over time. Further research within the adolescent population is needed to assess this more thoroughly.

Another limitation of the program was the small amount of post-intervention data available. There were only 29 data points available for post-intervention analysis; however, this is not a direct indication of dropout rates, as most participants completed the program in full. Rather, this low number could be due to technical issues, with the failure of the computer system to save the data properly. It could also have been due to some participants not attending the follow-up session, which is where most of the post-intervention data was collected. Attempts were made to get participants to complete the post-intervention questionnaires at a later date, however this was not always possible. The results from the independent-sample t-tests showed that only Family Cohesion, Peer Problems and Total Difficulties subscales were significant for participants who did not have data for post-intervention. It is unclear what may have contributed to this; however, it could be that participants who

had more limited familial support were unable to attend the follow-up session for post-intervention data collection, as they had significantly lower Family Cohesion baseline scores. Alternatively, it could be that these participants did not attend the follow-up session because they did not need the intervention, as they had significantly lower scores for Peer Problems and Total Difficulties.

Another limitation was the small amount of demographic and descriptive data available to analyse the participant population. Specifically, no data was available to examine how many participants had completed previous interventions, or how many participants were getting other psychological intervention in conjunction with participating in the programs, particularly given that many referrals to the program came from psychologists. Similarly, there is a limitation for participants who self-referred to the program, as often self-referrals only capture a population that is likely to be interested and more engaged in the program and therefore may bias the results toward a positive response to the program.

Finally, the design of the current research presents a significant limitation. The current design was a pre-post test, with no control group. This limits the conclusions that can be drawn from the findings for the general effectiveness of the program.

Recommendations for Future Research

The current study examined the effect of the Connect-3 and Linked-Up programs on improving resilience scores with a small, homogenous population that is socio-economically advantaged, and therefore well resourced enough to already be resilient, as suggested by Ungar (2008). Future research may be interested in examining the effectiveness of Connect-3 and Linked-Up groups within a population that has increased adversity, as it may yield more clinically significant results. It could also be interesting to examine how these programs compare with other international resilience programs, such as the Penn Resiliency Program (Gillham, et al., 2007).

Another area for future research could be to examine how these programs help to engage young people with the resources around them, such as their family and community, and how in turn, these resources build a young person's resilience. For example, the programs were designed to engage the young person's family through providing parent information sessions. The family and community were also involved in homework tasks, such as the kindness project, where participants had to develop a project that connected themselves with their available social resources (e.g., school, sporting club, family, faith-based community). Future research could aim to examine the

impact of these connections on building resilience. This is particularly important as increasingly resilience is being defined as a process of overcoming adversity through using both individual and environmental resources (Ungar et al., 2008; Windle et al 2011).

Finally, future studies should consider changing the design of the study. Rather than using pre-post test design, future research could consider using randomised assignment training and control groups. This would ensure more statistically robust results, which may provide wider scope for the clinical implications of the programs.

Conclusion

The current research offers a perspective on building resilience in non-clinical child and adolescent populations through the Connect-3 and Linked-Up programs. These two 6-week programs, which are based on the Resilience Doughnut model, have demonstrated the ability to build personal competency and reduce total difficulties within a for young people aged between 8-12 years-old. However, more research is required to examine the impact of the programs within non-clinical and clinical population samples.

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