**Thriving in adversity: Do life skills programs work for developing world children?**

***A pragmatic RCT***

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**Acknowledgements:** The authors would like to acknowledge the tireless contributions made by Khushboo Kumari, Kanthi Krishnamurthy, Annie Jacob, Sheetal Lydia Prasad and Chandrasekhar for this study.

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**Abstract**

Severe adversity is experienced by millions of children in the developing world. This damages child development, leading to failure to thrive which can result in long term or life-long problems. Failure to thrive is associated with cognitive deficits, emotional management problems, and social impairments, which can collectively be conceptualised as poor *life skills*. In this pragmatic randomised controlled trial, children in India aged 8 -15 years (*N*= 909) from disadvantaged backgrounds took part in a semi-structured program based on sports or creative arts. The Life Skills Assessment Scale was used to assess children before and after taking part in the program. Children showed significant increases in life skills following participation, compared to the control group. This study demonstrates the impact of simple, low budget programs on the cognitive, emotional and social life skills typically delayed by severe adversity. The findings have clear implications for children in other adverse environments, e.g., conflict zones and settlements for displaced children due to war and natural disasters such as covid.

**Key words**

Failure to thrive, stunted growth, damaged development, disadvantaged children, covid, socioeconomic status, developing world, NGO programs, life skills, Life Skills Assessment Scale (LSAS).

**Introduction**

Even with the rapid increase in the middle classes in developing countries, millions of children experience damaging poverty and adversity, leading to severe disruption to normal child development, including failure to thrive and stunted growth (de Onis & Branca, 2016)[[1]](#footnote-2). As statutory services are not available for the majority of these children, many thousands of non-governmental organisations (NGOs) run programs designed to ameliorate these effects. Most of the NGOs rely on volunteers, very low budgets, and anecdotal or ‘common sense’ evaluations rather than standardised measures of effectiveness (Sawhill & Williamson, 2001). The impact of these interventions therefore remains unclear.

*The problem*

Global levels of child poverty are not precisely known or defined. Estimates suggest that 40 to 47 percent of children survive on less than $2 per day, equating to millions of children living in absolute poverty globally (World Bank, 2016, 2018; Olinto, et al., 2013). In India the HUNGaMa (Hunger and Malnutrition) Survey estimated that up to 59% of children under five years had stunted growth (Naandi Foundation, 2012). Similar figures were reported by the Ministry of Statistics and Program Implication, India (MOSPI) (2012). Although a rapid decline in the number of children with stunted growth had been seen in previous decades, the National Family Health Survey-4, India (World Bank, 2018) found that these improvements have stalled. This appears to be a common picture across much of the developing world, compounded by increasing numbers of displaced children (World Bank, 2018; Save the Children, 2017). Chronic malnutrition measured by stunting is estimated to affect 37% of children under five years in Sub-Saharan Africa (Woldehanna, et al., 2017), 47% of children in Kenya (Bloss, et al., 2004), 31.4% of children in Western Africa, and 38.3% of children in Oceania (UNICEF, WHO & WBG, 2017). Similar findings have been reported in the Philippines (Mendez & Adair, 1999) and Zimbabwe (Alderman, et al., 2006).

Severe child adversity comes in many forms including poor nutrition, physical or sexual abuse, living in a war zone, being displaced, institutional care, and poor or dysfunctional parenting. The negative effects of climate change have also been recognised as having a greater impact on the poor (Mendelsohn, et al., 2006). Daniel et al. (2010) describe child adversity as *“the experience of life events and circumstances which may combine to threaten or challenge* *healthy development”* (p. 105). The weight of empirical evidence now irrefutably links severe adversity (usually caused by poverty) to deficits in child development and long-term mental health issues (see Read & Bentall, 2012, and Kennedy et al., 2013 for brief reviews). In addition to the impact on physical growth, the psychological effects of severe childhood adversity can be grouped as shown in Table 1.

**Table 1**

*Psychological effects of severe childhood adversity and failure to thrive*

|  |  |  |
| --- | --- | --- |
|  | Impact | Key sources |
| Cognitive impairments | *Cognitive performance, memory problems, information processing problems, school performance (not reaching capacity)* | India. MOSPI, Government of India (2012)  Mackner, et al. (1997)  Larson-Nath and Biank (2016)  Jaffe (2011)  UNICEF (2009) |
| Attachment disorder type issues | *Adult/child relationship problems, developmental collapse, inappropriate emotions, interpersonal avoidance, confused developmental abilities* | Benoit and Coolbear (2003)  Boddy et al. (2000)  DSM diagnostic system (APA, 2013)  Pearson (2013) |
| Emotional issues | *Inappropriate and extreme emotions, inability to self-sooth, age-inappropriate behaviours* | Dykman, et al. (2001)  Drewett, et al. (2005)  Granthan-McGregor, et al. (2007)  Kennedy, et al. (2013) |
| Mental health | *Wide range including anxiety, depression, self-harm and psychosis* | Kinderman, et al. (2013)  Kessler, et al. (2010)  Read and Bentall (2012) |
| Neuropsychological issues | *Biological stress systems activate and may not develop as appropriate*  *Changes in brain structure* | DeBellis, et al. (2011)  Essex, et al. (2002)  Korzekwa, et al. (2009)  Van der Vegt, et al. (2010)  Benítez‐Bribiesca, et al. (1999)  Cordero, et al. (1993) |

Table 1 adapted from Pearson et al. (2020)

Although many studies focus on very young children and show associations between stunted growth and poor cognitive, social and emotional outcomes, these effects can be long term or even life-long (Alderman, et al., 2006; Brown & Pollitt, 1996; Pollitt, 1996; Gorman & Engle, 1993; Victora, et al., 2008); Hoddinott, et al. (2013) found that stunted growth at 72 months predicted reading and non-verbal cognitive skills deficits at 25 years. These deficits include attention, memory and information-processing problems, resulting in “*diminished learning capacity* *and* *poor* *school performance”* (UNICEF, 2009, p16), and *“a* *lifetime of lost opportunities in education”* (Save the Children, 2017, p8). Interventions are required that target older children and young adults, not just the very young, in order to minimize long-term adverse effects.

*Symptoms vs life skills*

The effects of severe early adversity can be described in terms of *symptoms* or *life skills*. This decision point is generally culturally based. Although a simplification, in the western world, failure to thrive is typically considered symptomatic of a medical or developmental disorder, often diagnosed as organic/non-organic. By contrast, conceptualising *life skill problems* highlights the practical nature of what children need in order to thrive given the demands of the 21st century developing world. The World Health Organisation describes life skills as *“skills that support psychosocial competence or performance (the ability of an individual to deal effectively with demands or challenges of everyday life). It is the ability to maintain a person’s well-being and to show it in adaptable and positive behaviors when interacting with other people, their culture and environment”* (WHO, 1997, p5). These skills are categorized by UNICEF (2003) into three areas; cognitive skills, personal skills and interpersonal skills. Development of each area is essential for self-management, personal development, and to be able to communicate effectively with others. Similar classifications have been described by Ҫeylan and Gok Colac (2019) who include self-awareness (of feelings, values and strengths), self-management (regulating emotions, stress and impulses), and social awareness (including empathy).

*NGO responses*

More than three million NGOs operate in India with a large proportion working with underprivileged children; the actual number is not known due to lack of registration requirements (Mahapatra, 2016). Many programs aim to ameliorate the impact of early adversity on children’s development. However, there is little empirical evidence that these programs are effective. A wide range of interventions are run including nutrition and physical care, enrichment activities, vocational skills programs, mentoring, and life skills training. *Enrichment programs* are typically semi-structured social interventions, commonly based on sports and creative arts. These activities enable children to interact with others, and experience and practice life skills, in a safe and non-judgemental setting, with adult facilitators. The programs typically include some discussion about the life skills used during the activity to help the children understand and learn to apply these effectively. These programs tend to be low budget (or funding free) and do not require specialist facilitation.

*Current study*

The current pragmatic controlled trial used a standardized scale (the Life Skills Assessment Scale, Kennedy, et al., 2014) to assess empirically whether an NGO enrichment program focused on sports and creative arts, improved children’s life skills in Bengaluru, India. We predicted that participants in the intervention group would show greater improvements in life skills, compared with those in the control group.

**Method**

*Procedure*

Children in the intervention group took part in semi-structured enrichment sessions (based on sports or creative arts) at their low cost or free schools. Low cost and free schools provide basic education in areas accessed by families with low economic status, including those living in slums. The schools had previously arranged to become partners with the host NGO, but had not yet started the partnership. None of the schools or the children had previously taken part in enrichment type programs. Sessions took place during school time and ran once per week for two to three hours each session. Each child attended 25 weekly sessions as part of the normal school curriculum. Children chose to participate in sports or creative arts until sessions reached their maximum numbers between 20 and 30 students. Sessions were explicitly socially inclusive, with no separation by gender, religion or socio-economic group. Sessions were structured as follows:

i) Check in and introductions

ii) Short warm up game or exercises

iii) Sports (football) or creative arts activity (visual, drama, dancing)

iv) Structured discussion and reflection on what was observed and learnt during the activity

v) Wrap-up game incorporating ‘thank you’ and ‘goodbye’

The control group were children who took part in ‘Fun Day’ sessions 25 weeks apart, which are offered by the host NGO to schools or groups of children who are not currently partners for programs. The control group schools were matched for economic, social and religious profiles with the program group. The same observer/raters who assessed the intervention group assessed the control group. After the final Fun Day sessions, participating schools were offered the opportunity to become partner organisations with the host NGO with a view to providing regular input. Fun Days include games but no de-brief or reflection to consolidate skills.

Observer/raters assessed the children at the start of the session set and again after 25 sessions, about six months later. Over a period of three weeks, eleven observers attended the first three of each of the sports and creative arts sessions, dividing the groups of children between them. Each observer rated approximately 15 children over three sittings each of two hours. Each child’s initial LSAS ratings were recorded using tablets, and this procedure was repeated at the end of the program from weeks 23 to week 25. Children were not necessarily assessed in the same order at the start and the end of the program. Initial scores for the control group were collected during the Fun Days. Again, each observer assessed around 15 individual children at a time. The length of time available to observe each child was comparable for the intervention and control groups, i.e., six hours at the start and the same time again after 25 weeks.

*Participants*

In total, 909 children aged between 8-15 years participated in the programs, and 335 children aged between 8-15 years took part in the control group.

**Table 2**

*Gender and age of participants by group*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Gender |  | Total | Age |
|  |  | Male | Female |  | Mean (*SD*) |
| Program |  | 500 | 409 | 909 | 11.33 (*1.71*) |
|  | Sports | 243 | 197 | 440 | 11.24 (*1.68*) |
|  | Creative arts | 257 | 212 | 469 | 11.41 (*1.73*) |
| Control |  | 169 | 166 | 335 | 11.99 (*1.61*) |
| Total |  | 669 | 575 | 1244 | 11.51 (*1.79*) |

*Measure*

The Life Skills Assessment Scale (LSAS) (Kennedy, et al., 2014) is a five item, observer-rated, standardised assessment designed to assess the life skills of disadvantaged children in the developing world, and is now in widespread use (e.g., Mandigo et al., 2018) (see Appendix). The five items are not considered discrete but conceptually linked indicators of life skill dimensions (in a similar way that simple child developmental milestones assess linked dimensions of development):

i) Interacting with others

ii) Overcoming difficulties and solving problems

iii) Taking initiative

iv) Managing conflict

v) Understanding and following instructions

The LSAS has established test-retest and inter-rater reliability and is standardised for three age groups: 8-10 years, 11-13 years, and 14-16 years (Kennedy et al., 2014), and more recently for young people aged 17-19 years, and 20-22 years (Pearson et al., 2020). The LSAS has good interrater reliability (*r* = .88, *p* < 0.01). internal consistency (*α* = 0.86) and test-retest reliability (*r = 0*.86) for the target age group (Kennedy et al., 2014). Each item is assessed using a five-point Likert type scale:

Does not yet do (1)

Does with lots of help (2)

Does with some help (3)

Does with a little help (4)

Does independently (5)

The rating for each item is converted into a number as shown in brackets. These numbers do not appear on the scoring sheet to encourage the observer to move away from pass/fail type judgements. An overall (average) score is achieved by adding up the scores and dividing by five, for each individual child. For a full description of the LSAS please see Kennedy et al. (2014) and Pearson et al. (2020).

*Observer/raters*

All 11 observer/raters (six female and five male) worked for local NGOs. Some had come from disadvantaged backgrounds themselves and some had attended enrichment programs as children. The observer/raters did not participate in the programs being assessed. All observer/raters attended a brief orientation session regarding the purpose and administration of the LSAS. They were not aware of the details of the research study.

*Ethical considerations*

An independent steering group considered the study and discussed ethical issues raised. It was decided that all parts of the study including the control groups were comparable to normal organization activities. Fun Day sessions are routinely offered as a day activity, and data for the control group were collected from these. Informed consent was gained from participating partners.

**Results**

*Descriptive statistics*

In total, 1244 children and young people took part in this study, with a minimum age of eight years, a maximum age of 15 years. Table 3 and Figure 1 illustrate the mean LSAS scores at the start and end of the study period for the program and control groups.

**Table 3**

*Descriptive statistics for the LSAS scores*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Program group | | Control group | |
| LSAS item | Start  Mean *(SD)* | End  Mean *(SD)* | Start  Mean *(SD)* | End  Mean *(SD)* |
| Interacting with others | 2.13 *(0.82)* | 3.84 *(0.86)* | 1.69 *(0.70)* | 1.69 *(0.76)* |
| Overcoming difficulties | 1.84 *(0.80)* | 3.55 *(0.99)* | 1.65 *(0.71)* | 1.68 *(0.72)* |
| Taking initiative | 2.01 *(0.84)* | 3.71 *(0.96)* | 1.69 *(0.73)* | 1.63 *(0.73)* |
| Managing conflict | 1.78 *(0.82)* | 3.48 *(1.02)* | 1.65 *(0.73)* | 1.63 *(0.71)* |
| Understanding/following instructions | 2.05 *(0.85)* | 3.88 *(0.82)* | 1.81 *(0.69)* | 1.65 *(0.74)* |
| Overall average score | 1.96 *(0.73)* | 3.69 *(0.84)* | 1.70 *(0.67)* | 1.66 *(0.68)* |

*Group comparisons*

We used SPSS version 24 to inspect the distribution of data and calculate descriptive statistics. The data were compared for any initial differences between the two groups using chi-square analysis for gender and *t*-tests for age and initial LSAS score. There were no differences in gender (*X* 2(1, 1244) = 2.05, *p* = 0.15, though there were slight differences in both age (*t*(1242) = 6.17, *p* < 0.001) (see Table 2), and life skills (*t*(1242) = 5.76, *p* < 0.001) (see Table 3) at the start of the study.

A mixed model analysis of variance (ANOVA) was used to assess the impact of the program, with one within participants factor (time – pre vs. post program) and one between participants factor (group – intervention vs. control). While the LSAS data were not normally distributed, ANOVAs are sufficiently robust to accommodate some deviation from normality, and so the original analysis plan was retained.

The ANOVA showed that there was a main effect of group, *F*(1, 1242) = 1207.19, *p* < 0.001, ηp2~~p~~ = 0.49, time, *F*(1, 1242) = 563.60, *p* < 0.001, ηp2 = 0.31, and group by time interaction, *F*(1, 1242) = 616.47, *p* < 0.001, ηp2 = 0.33. Life skills increased considerably over time in the intervention group, *t*(908) = 44.21, *p* < 0.001, and did not change in the control group, *t*(334) = -0.78, *p* = 0.44. (see Figure 1).

**Figure 1**

*Mean LSAS scores*



Time

LSAS score

Time 1 = pre group scores, Time 2 = post group scores; error bars indicate 95% CIs

**Discussion**

This study indicates that participation in an enrichment program for disadvantaged children in the developing world, aged between 8 and 15 years, increases their life skills with very large effects. As predicted, there was a significant increase in observer rated life skills for those attending the enrichment program compared to the control group.

These children, due to their socioeconomic status, are vulnerable to the cognitive, emotional and social development delays associated with early adversity, and have minimal access to statutory services. These delays can cause long term if not life-long deficits in the skills needed to function effectively in everyday life. This study indicates that low budget programs using non-professionally trained facilitators can ameliorate such delays. Highly trained professionals and large budgets may not be required to attenuate the devastating effects of severe poverty and adversity that blight the development of millions of children.

The study establishes that enrichment programs can have a significant impact on children’s life skills. Life skill deficits describe poor personal, emotional and social abilities, which are commonly seen as the foundations of child development and mental health problems into adulthood, across developing countries. Further research should now explore whether simple and scalable programs for this age group and young adults (cf. Pearson et al., 2021) affect wider developmental and mental health issues in the longer-term. The structured enrichment program examined in this study had a considerable impact on children’s life skills at the end of the program. Longitudinal research is currently underway to establish whether these changes are maintained. It will also be important to determine if such programs need to impact on each stage of child development as the ‘catching up’ process gets underway. This raises the important question as to whether these programs could ‘kick start’ aspects of delayed development or simply increase life skills at any given point. The current study indicates that delays to cognitive, emotional and social development due to adversity can be at least partly recoverable with simple, low-cost programs. Whether complete recovery is possible remains unknown.

As our methodology was based on child development norms relevant cross-culturally, the results are likely to be generalizable to disadvantaged children across the developing world. Simple enrichment interventions based on sports and creative arts activities are appealing to children cross-culturally, and across gender roles for boys and girls. The global pattern of severe adversity is changing rapidly, with increases in climate change, displaced children, refugees, war zones, etc. In this context, simple structured programs could prove effective and cost-effective in addressing the damage to children’s development typically seen in these situations. These simple programs do not necessarily need professionally trained staff, infrastructures or even buildings.

The key limitation of this study is the fact that we did not have an active control group. This means that we cannot attribute the effects to the nature of the activities offered. Future research requires comparison with an active control in which children are involved in the same frequency and duration of contacts (e.g., as Fun Days) as the program group. Additionally, assessments were completed over the initial and final sessions of the program (rather than immediately before and after the program period), and children were not necessarily assessed in the same order on these two occasions. Each of these issues should be addressed in future work. The study is also limited by the fact that groups differed in age (the children in the intervention group were slightly younger than those in the control group) and initial LSAS score (the children in the intervention group scored slightly higher at the start of the study). Nevertheless, the analyses showed large improvements in observer assessed life skills following the program. Other limitations relate to the study being run in real-world conditions with no dedicated funding. The allocation to group (program or control) was not random, and while we sought to ensure that participants and facilitators were blinded (unaware of the research details and group allocation), this cannot be guaranteed. For these reasons the study was classed as a *pragmatic* randomized controlled trial (Dal-Ré, et al., 2018), which arguably has greater generalizability in the field (Salive, 2017).

**Conclusions**

Severe adversity due to poverty is experienced by millions of children in the developing world due to their socioeconomic status. This damages child development, resulting in long-term life skill deficits, which seriously impair their ability to function day to day. Simple, structured enrichment programs can significantly improve children’s life skills. These programs can be facilitated by non-professionally trained adults, including those who have experienced disadvantaged childhoods themselves. The results have clear implications for children in developing countries, conflict zones, settlements for displaced children due to war and natural disasters such as covid, and other places where children experience severe poverty and adversity, and only minimal funding is available.

**Disclosure Statement:** The authors have no conflict of interest with respect to this publication.

**Financial support:** This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

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**Appendix**

# LIFE SKILLS ASSESSMENT SCALE (LSAS)

Please complete this scale while observing, or as soon as possible after observing, the young person. You may need to spend some time observing before you decide. Do not spend too long thinking about each question, just record your impression. For each question, consider age appropriateness (think of actual age, rather than physical appearance).

Put a √ in **one** most relevant box for each question. The comments box can be used to note down things that you saw that helped you ﬁll in the boxes or for any other comments. You do not always have to ﬁll in the comments boxes.

|  |  |  |
| --- | --- | --- |
| Name of young person | Gender | Name of assessor |
| Actual age | How old does the young person look? | Is the young person having difﬁculty working in a language other than his/her native language? |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Date of assessment | Does not yet do | Does with lots of help | Does with some help | | Does with a little help | | Does independently |
| IO. Interacting with others  For example, does X interact appropriately with peers, staff, opposite sex? Does X communicate effectively? Does X show sensitivity to others’ needs and feelings? |  |  |  | |  | |  |
| Any other comments you would like to make: | | | | | | | |
| DP. Overcoming difﬁculties and solving problems  For example, does X ﬁnd a way around obstacles that arise? Does X ask for help appropriately? Does X solve problems successfully? |  |  |  | |  | |  |
| Any other comments you would like to make: | | | | | | | |
| TI. Taking Initiative  For example, does X carry out tasks without being told? Does X show age-appropriate leadership? |  |  |  | |  | |  |
| Any other comments you would like to make: | | | | | | | |
| MC. Managing Conﬂict  For example, does X show appropriate assertiveness? Does X resolve disagreements appropriately? Does X accept appropriate correction? Does X do this without violence or foul language or running away? |  |  |  | |  | |  |
| Any other comments you would like to make: | | | | | | | |
| UI. Understanding and following instructions  For example, Does X understand appropriate instructions when given? Does X comply with instructions? Does X ask for clariﬁcation when needed? |  |  |  | |  | |  |
| Any other comments you would like to make: | | | | | | | |
| OS. Overall Score  You get the Overall Score by changing each √ into numbers  Does not yet do = 1 | Does with lots of help = 2 | Does with some help = 3 | Does with a little help = 4 | Does independently = 5  Add all the numbers and put the total in the box on the right, then divide by 5. This is the Overall Score. Put this in the Overall Score box | | | | Total | | = | Overall Score |
| 5 | |  |
| Any other comments you would like to make: | | | | | | | |

1. Normally, children grow in a pre-determined way as measured on an appropriate growth chart, regardless of culture or geography; stunted growth can be defined as a child being two standard deviations below the expected median (de Onis & Branca, 2016). [↑](#footnote-ref-2)