

# Promoting Alternative Thinking Strategies (PATHS) in preschool children with behavior problems

*Ayesha Inam*

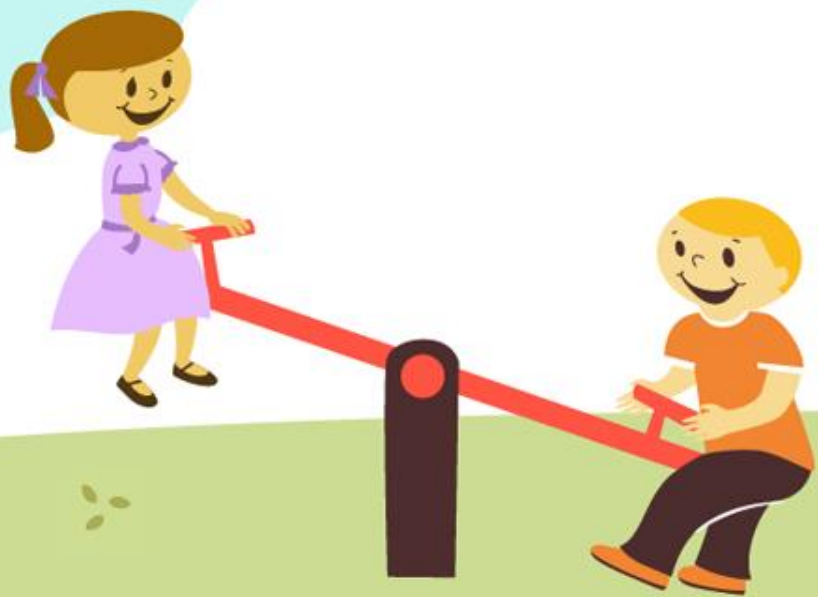


## Rationale

- In Pakistan, neuropsychiatric disorders are estimated to contribute to 11.9% of the global burden of disease (WHO, 2008).
- Increasing prevalence rate of emotional and behavioral problems in children in Pakistan (Javed, Kundi & Khan (1992; Syed, Hussain & Mahmud, 2007; Hussein, 2008).
- The need of the time suggests that issue of mental health problems should be addressed by focusing on primary prevention in developing countries including Pakistan where multiple risk factors such as economic instability, insecurity, lack of opportunities for education, social change and general hopelessness increases the vulnerability to develop psychological disorders especially at early developmental stages (Patel & Kleinman, 2003).



# METHOD



# **PATHS Effectiveness Trial**



## Objectives:

- To assess the impact of PATHS curriculum on social emotional competence of preschool children in intervention and control group.
- To evaluate the impact of PATHS curriculum on behavior problems of preschool children in intervention and control group
- To assess gender differences on impact of intervention.



## Hypotheses:

- Children of the intervention group will exhibit better social and emotional skills at posttest as compared to control group
- Teachers will report less behavioral problems in intervention group at posttest as compared to control group



# Research Design

- A quasi-experimental non-equivalent waitlist control group design was used.
- The intervention and control groups were compared on age and frequency of behavior problems in the class.
- The intervention group was taught PATHS curriculum in the classrooms while the control group did not receive any intervention. However, the control group received the teachers training, counseling services and lessons on self control with children as requested by the school administration at the end of the project.



# Participants

- Sample consisted of 101 preschool children at pretest and 90 at posttest from two school systems having two branches each in Rawalpindi and Islamabad cities in Pakistan. The sample was selected using purposive sampling technique.





# Sample Characteristics

Variables	Control Group Percentage/Mean(SD)	Intervention Group (Percentage/Mean(SD))
Child's age	4.18(.104)	4.16(.099)
Child's gender		
Male	23(48.9%)	26(48.1%)
Female	24(51.1%)	28(51.9%)
Fathers' Education in Years	14.34(1.64)	14.93(1.41)
Mothers' Education in Years	13.61(2.10)	13.19(2.88)
Family monthly income	51333.33(19833.26)	43936.17(15249.24)



# Intervention:

- **Preschool PATHS for Pakistani Children**

- The adapted version of preschool PATHS curriculum originally developed by Domitrovich, Greenberg, Cortes, & Kusche, 2005 was used in this study.
- The adapted curriculum consisted of 35 lessons on understanding feelings, self control, positive classroom atmosphere, and problem solving with peers.
- In addition to the lessons, teachers also used different generalization techniques (circle games, stories, art activities) that were incorporated into the regular curriculum taught to preschool children.



# Measures:

## ▪ **Demographic Information**

A six item form was developed to gather information about various demographic features of the sample based on literature and expert opinion. This form elicited information like child's age, gender, monthly family income, father's education and mother's education.

## ▪ **Behavioral Issues in Class**

A brief checklist was developed to evaluate the frequency of behavioral issues in the class. Teachers were asked to identify behavioral issues of children in the class from a list of 10 problems. They were also asked to describe the percentage of children exhibiting these problems in the class.



## ▪ **Emotional Competence**

- Revised version of Kusche Emotion Inventory-Recognition subtest by Spletz, DeKlyen, Calderon, Greenberg and Fisher (1999) was used.
- The subtests consisted of 30 stimuli pages each having four cartoon figures depicting different emotions.
- The highest score is 60 for this measure.
- Cronbach's alpha coefficient was reported as .73 (Rhodes, Greenberg, & Domitrovich, 2009).



## ▪ **Social Competence**

- A translated version of Social Competence Scale-Teacher Ratings (Conduct Problems Prevention Research Group, 1990) was used to assess the social competence of children.
- The scale consists of 25 items and three subscales namely prosocial/communication skills, emotion regulation skills, and academic skills.
- The Cronbach's alpha coefficient of the original measure was reported as 0.98 (Corrigan, 2003).



## ▪ Behavioral Problems of Children

- A translated version of CBCL (1.5-5)-CTRF (99 items) was used to assess the emotional and behavioral problems of preschool children as reported by teachers.
- There are six empirically based syndrome scales which are designated as Emotionally Reactive, Anxious/Depressed, Somatic Complaints, Withdrawn, Attention Problems, and Aggressive Behavior.
- Factor Structure was validated in over 50 societies (Ivanova et al, 2010, 2011; Rescorla et al, 2011).
- Alpha coefficient of the original measure was .88 for total problem scale and .89 and .77 for externalizing and internalizing subscales respectively (Achenbach, & Rescorla 2000).



# Procedure

**Step I:** Approaching public and private sector schools for conducting the project

**Step II:** Selection of intervention and control groups

**Step III:** Pretesting of the measures of the study

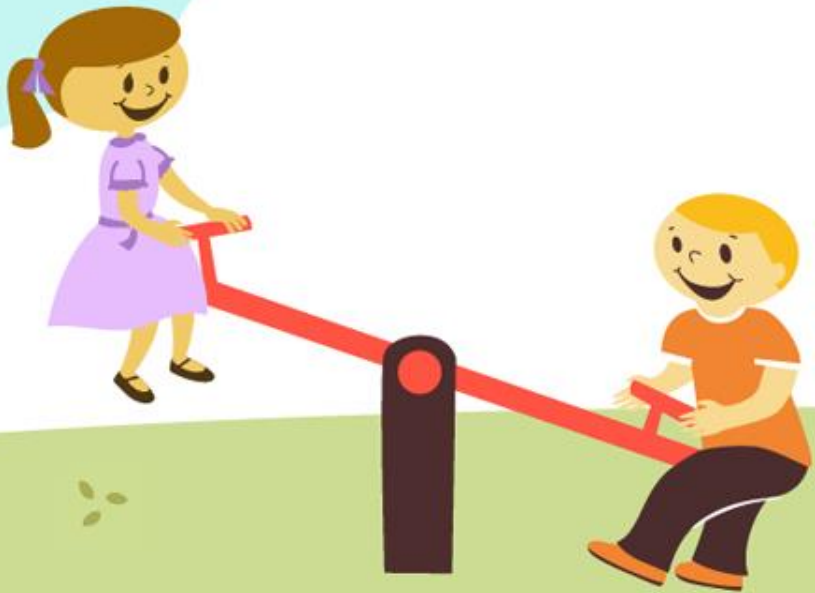
**Step IV:** Teachers training

**Step V:** Implementation of intervention

**Step VI:** Post-testing of the measures



# **Analysis Plan & Results**





# Analysis Plan

- Psychometric properties of the study measures
- Baseline comparisons between intervention and control group on demographic variables and measures of the study
- Effectiveness of PATHS Curriculum (ITT analysis using LOCF Technique)
  - Main Effects
  - Analysis of covariates
- Gender differences on intervention effects



## Results

**Table 1: Descriptive Statistics and Alpha Coefficients of the outcome measures (N=101)**

Variable	No. of Items	M	SD	$\alpha$	Range		Skew
					Potential	Actual	
<b>KEI</b>							
Receptive St.	30	32.83	6.46	.64	0-60	21-58	0.97
<b>SCS-T</b>							
Total Scale	25	37.52	6.21	.72	0-100	19-45	-.09
Prosocial/Com	8	12.92	2.54	.57	0-32	4-15	-0.89
Emotion Reg.	10	15.35	3.67	.68	0-40	8-21	0.18
Academic Skills	7	9.26	2.47	.51	0-28	2-16	-0.30
Combined	18	25.57	4.20	.59	0-72	13-33	-0.66
<b>CBCL-CTRF</b>							
Total Scale	99	31.09	15.2	.92	0-198	5-55	-.09
Internalizing	32	9.73	4.23	.68	0-64	1-17	-.31
Externalizing	34	11.91	7.59	.90	0-68	1-29	.50



**Table 2: Baseline comparison between control and intervention group on demographic variables (N=101)**

<b>Variable</b>	<b>Control Group Percentage/Mean(SD)</b>	<b>Intervention Group (Percentage/Mean(SD))</b>	<b>t/ <math>\chi^2</math></b>
<b>Child Characteristics</b>			
<b>Child's age</b>	<b>4.18(.104)</b>	<b>4.16(.099)</b>	<b>-.867</b>
<b>Child's gender</b>			
<b>Male</b>	<b>23(48.9%)</b>	<b>26(48.1%)</b>	<b>.006</b>
<b>Female</b>	<b>24(51.1%)</b>	<b>28(51.9%)</b>	
<b>Family Characteristics</b>			
<b>Fathers' Education</b>	<b>14.34(1.64)</b>	<b>14.93(1.41)</b>	<b>1.92</b>
<b>Mothers' Education</b>	<b>13.61(2.10)</b>	<b>13.19(2.88)</b>	<b>.84</b>
<b>Family monthly income</b>	<b>51333.33(19833.26)</b>	<b>43936.17(15249.24)</b>	<b>2.07*</b>
<b>School characteristics</b>			
<b>Strength in Class</b>			
<b>12 Children</b>	<b>0%</b>	<b>22.2%</b>	<b>32.04**</b>
<b>13-15 Children</b>	<b>61.7%</b>	<b>77.8%</b>	
<b>18 Children</b>	<b>38.3%</b>	<b>0%</b>	

**\* $p < 0.05$ , \*\* $p < .01$**



**Table 3: Baseline comparison between control and intervention group on outcome measures (N=101)**

Variables	Control Group N=47		Intervention Group N=54		t- value
	M	SD	M	SD	
<b>KEI-R</b>					
<b>Total Score</b>	<b>31.89</b>	<b>5.21</b>	<b>33.65</b>	<b>7.39</b>	<b>1.36</b>
<b>Emotion Accuracy (Percent Correct)</b>	<b>28.72</b>	<b>9.86</b>	<b>35.06</b>	<b>17.68</b>	<b>2.17*</b>
<b>Social Competence-Teacher Rating</b>					
<b>Total Score</b>	<b>33.17</b>	<b>6.15</b>	<b>33.61</b>	<b>6.04</b>	<b>0.36</b>
<b>Prosocial</b>	<b>10.81</b>	<b>2.76</b>	<b>11.26</b>	<b>2.86</b>	<b>0.80</b>
<b>Emotion Regulation</b>	<b>13.00</b>	<b>2.71</b>	<b>13.26</b>	<b>2.65</b>	<b>0.48</b>
<b>Academic Skills</b>	<b>9.36</b>	<b>2.71</b>	<b>9.09</b>	<b>2.61</b>	<b>-.50</b>
<b>Combined</b>	<b>23.81</b>	<b>4.60</b>	<b>24.52</b>	<b>4.57</b>	<b>0.77</b>
<b>Child Behavior Checklist (1<sup>1/2</sup>-5)-CTRF</b>					
<b>Total Problem Score</b>	<b>29.64</b>	<b>16.09</b>	<b>32.50</b>	<b>14.56</b>	<b>0.93</b>
<b>Internalizing Problems</b>	<b>9.34</b>	<b>4.36</b>	<b>10.22</b>	<b>4.25</b>	<b>1.02</b>
<b>Externalizing Problems</b>	<b>11.72</b>	<b>8.62</b>	<b>12.07</b>	<b>6.62</b>	<b>0.23</b>

*\*p<0.05*



**Table 4:** Analysis of Covariance for outcome measures at pre and post assessment (N=101)

Variables	Experimental Group (n = 54)		Control Group (n = 47)		ANCOVA F	Cohen's d
	Pretest	Posttest	Pretest	Posttest		
	M(SD)	M(SD)	M(SD)	M(SD)		
<b>KEI-R</b>						
Total Score	33.65(7.33)	36.67(6.83)	31.89(5.21)	33.49(4.35)	5.49*	.55
Accuracy Score	35.06(17.68)	36.42(17.33)	28.72(9.86)	31.56(9.03)	0.328	
<b>SCS-T</b>						
Total Score	33.61(6.04)	36.17(5.12)	33.17(6.15)	33.28(5.11)	8.28**	.56
Prosoc./Com.	11.26(2.86)	11.39(1.94)	10.81(2.76)	10.96 (2.53)	0.479	
Emotion Reg.	13.26(2.65)	15.41(2.77)	13.00(2.71)	13.17(2.80)	15.98***	.80
Academic	9.09(2.61)	9.35(2.51)	9.36(2.71)	9.15(2.44)	0.690	
Combined	24.52(4.57)	26.83(3.94)	23.81(4.60)	24.13(4.70)	10.78**	.67
<b>CBCL-CTRF</b>						
Total Problem	32.50(14.56)	25.63(10.71)	29.64(16.09)	30.11(15.54)	65.49***	-.33
Externalizing	12.07(6.64)	8.26(3.93)	11.72(8.62)	12.30(9.47)	45.85***	-.55
Internalizing	10.22(4.25)	8.72(3.46)	9.34(4.36)	9.43(4.02)	26.15***	-.18

\* $p < 0.05$ , \*\* $p < .01$ , \*\*\* $p < .001$



## Analysis of covariates

- As observed in the preliminary analyses, the two groups also differed significantly on family monthly income and strength in the classroom. Thus all the analyses were rerun with these demographic variables as covariates along with the baseline measures.
- After controlling for class room strength, results were no longer significant for emotion knowledge reported on KEI-R ( $F = .54, p = .47$ ) while significance level increased for the same variable ( $F = 7.74, p = .006$ ) after controlling monthly family income.



**Table 4:** Analysis of Covariance for outcome measures at pre and post assessment without imputations (N=90)

Variables	Experimental Group (n = 47)		Control Group (n = 43)		ANCOVA F	Cohen's d
	Pretest	Posttest	Pretest	Posttest		
	M(SD)	M(SD)	M(SD)	M(SD)		
<b>KEI-R</b>						
Total Score	33.45(7.58)	36.91(7.01)	31.81(5.31)	33.56(4.39)	5.76**	.57
Accuracy Score	34.96(18.29)	36.52(17.90)	28.76(10.70)	31.86(9.20)	0.294	
<b>SCS-T</b>						
Total Score	33.89(5.99)	36.83(4.61)	33.07(6.37)	33.19(5.27)	11.77***	.73
Prosoc./Com.	11.40(2.74)	11.60(1.62)	10.70(2.85)	10.86 (2.61)	1.66	
Emotion Reg.	13.34(2.63)	15.81(2.54)	13.09(2.74)	13.28(2.84)	19.48***	.93
Academic	9.15(2.67)	9.43(2.44)	9.28(2.75)	9.05(2.44)	0.986	
Combined	24.74(4.43)	27.40(3.35)	23.79(4.75)	24.14(4.20)	15.44**	.85
<b>CBCL-CTRF</b>						
Total Problem	33.89(5.99)	25.47(9.73)	33.07(6.07)	30.58(15.84)	84.74***	-.38
Externalizing	12.26(6.72)	7.87(3.35)	12.09(8.90)	12.72(9.77)	54.75***	-.66
Internalizing	10.57(4.18)	8.85(3.36)	9.33(4.43)	9.42(4.06)	27.34***	-.19

\*\* $p < .01$ , \*\*\* $p < .001$ 

**Table 4:** *Between Subject Gender Effects on Pre-Post assessment for Intervention Status(N=54)*

Variables	Pre-assessment		Post-assessment		F	Cohen's d
	Boys	Girls	Boys	Girls		
	(n=26)	(n=28)	(n=26)	(n=28)		
	M(SD)	M(SD)	M(SD)	M(SD)		
<b>KEI-R</b>						
Total Score	34.69(7.77)	32.68(6.89)	38.27(8.22)	35.18(4.92)	0.488	
Accuracy Score	36.92(18.94)	33.33(16.58)	40.12(19.56)	32.96(14.49)	0.890	
<b>SCS-T</b>						
Total Score	32.85(5.95)	34.32(6.14)	35.62(4.74)	36.68(5.49)	0.177	
Prosoc./Com.	11.08(2.68)	11.43(3.07)	11.42(1.74)	11.43 (2.26)	0.433	
Emotion Reg.	12.73(2.08)	13.75(3.05)	14.73(2.10)	16.04(3.19)	.171	
Academic	9.04(2.93)	9.14(2.33)	9.46(2.70)	9.21(2.18)	0.593	
Combined	23.81(4.12)	25.18(4.94)	26.15(3.05)	27.46(4.58)	.005	
<b>CBCL-CTRF</b>						
Total Problem	39.31(13.32)	26.18(12.88)	29.73(10.31)	21.82(9.77)	9.92**	.78
Externalizing	15.15(6.88)	9.21(5.02)	9.73(4.35)	6.89(2.97)	7.35**	.76
Internalizing	11.35(3.54)	9.18(4.65)	9.58(2.85)	7.93(3.82)	1.72	

**\*\*p<.01**



# Conclusion

- Results of the study indicates effectiveness of Preschool PATHS curriculum for children in Pakistan for enhancing social-emotional skills and reducing behavioral problems. The results are consistent with the evidence of effectiveness both from US and international implementation sites (Greenberg, Kusche, Cook, & Quamma, 1995; Greenberg, & Kusche, 1998; Kam, Greenberg, & Kusche, 2004; Domitrovich, Cortes, & Greenberg, 2007; Bierman, Domitrovich, Nix, Gest, Welsh, Greenberg, Blair, Nelson, & Gill, 2008; Kam, Wong, & Fung, 2011; Arda, & Ocak, 2012 ; Goossens, Gooren, De Castro, Overveld, Buijs, Monshouwer, Onrust, & Paulussen, 2012).
- Research evidence shows non significant findings on accuracy of emotion recognition after one year implementation in different cultures (Arda, & Ocak, 2012; Kelly, Edgerton, Robertson & Neil, 2012).



- Gender differences are generally seen in responding to intervention on behavioral problems where boys show significant improvement in behavioral problems especially externalizing behaviors as compared to girls (Webster-Stratton, 1996).
- PATHS effectiveness also reflects universality of its prevention strategies



# Limitations & Suggestions:

- Non-randomized control trials
- Small sample size
- Inclusion of only private schools
- Lack of geographical spread
- No follow-up studies



# Implications & Future Prospects

- For academia, this project would open new avenues of research and understanding of evidence based practices and action researches in Pakistan
- The use of evidence based practices is of utmost importance to schools as behavioral problems is a great concern for school administration and teachers.
- Social-emotional learning strategies also equip teachers with practical skills of dealing with children's problems in classrooms
- The program can be used in clinical settings with children of different disorders as a targeted intervention.



*Thanks*

