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Measurement and Assessment of School Readiness of Preschoolers

KEYWORDS

Non cognitive skills, soft skills, analysis, inference, self-regulation, evaluation

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ABSTRACT The aim of this study is to measure and assess school readiness of preschoolers in five areas of school readiness that are reading, writing, mathematics, social and emotional readiness. This study also measures school readiness with respect to gender. A sample of 193 children in the age group of 4-6 years going to a preschool were purposively selected from rural areas of Maharashtra and Rajasthan. The School Readiness Tool consists of 5 items each for reading, writing and mathematics readiness. Social and emotional readiness questionnaire was administered to parents of the children to measure social and emotional readiness. This questionnaire had 10 items in each area. The data collected was then quantified and analyzed in order to compare between the scores of children residing in both the states using measures such as mean scores, t-test and ANOVA. The results indicated that preschoolers in Maharashtra and Rajasthan are on a similar pace of development; although the preschoolers in Maharashtra performed slightly better than the preschoolers in Rajasthan, in majority of the aspects of each area of school readiness that are reading wherein 'Matching' was found to be the highest prevailing difference with mean scores of 9.42 for Maharashtra and 7.06 for Rajasthan; writing wherein 'Letters and words' and 'Sentences' were found to have lowest mean scores which reveals that these two aspects are still on the verge of development; and mathematics wherein 'Comparison' was found to be the highest prevailing difference with mean scores of 9.15 for Maharashtra and 7.06 for Rajasthan. There was no significant difference found between the mean scores of boys and girls residing in both Maharashtra and Rajasthan with respect to reading, writing and mathematics readiness. In social readiness, preschoolers play and work co-operatively with each other, they are able to help and sympathize a peer in distress. In emotional readiness, preschoolers experience happiness, experience disgust when they touch dirty objects, but do not experience feeling of shame over not doing things by themselves. Result revealed that there was a statistical difference in the scores of social and emotional readiness with respect to gender.

Introduction

The early childhood period of life is critical towards child's lifelong development. It is ideal for learning new skills. Stimulation to the brain during this time is imperative as it absorbs information like a sponge; this period is referred to as the period of plasticity as the impressions that are made on child's mind last throughout his life and influences his career. (Blair, 2002) The main aim of readiness is to ensure a smooth transition from preschool to school through enabling children to successfully meet the demands of the school.

School readiness is gaining attention as an important approach to merge the learning gap and improve the quality in achieving lifelong learning and full developmental potential among preschoolers. Children's readiness for school has been conceptualized as the characteristics and skills children should possess in order to be able to learn effectively in school. (Janus & Offord, 2000)

Reading readiness is the process of developing a rich vocabulary and acquiring adequate knowledge about language and literacy. Reading readiness involves print awareness, alphabet knowledge and phonological awareness, environmental print, listening comprehension, visual memory and visual perceptual skills. (Strickland & Barnett, 2003)

Writing readiness is an important part of literacy. Preschool children acquire writing skill through real life experiences. (Morrow, 2007). During this age, children's behaviours of making scribbles and signs are not random, non-relevant literacy drawings but an indispensable part of the literacy development (Lopez, 2011)

Mathematics readiness is the level of understanding concepts related to quantity, space, volume, time, direction etc. and logical thinking in children, which is derived from the pre- mathematical concepts like, sorting, classification, comparing, ordering, seriation, patterning, sequencing that help lay the foundation for further mathematical concepts, (Swaminathan & Daniel, 2004)

Social readiness refers to children's ability to interact socially. A positive adaptation to school requires such social skills as the ability to take turns and to cooperate. Emotional readiness is the ability to understand the emotions of other people and the ability to interpret and express one's own feelings. Aspects of the social and emotional domain include sustained attention, emotional regulation, following directions, social relationships and social cognition (Raver 2004)

Sonawat and Sanghavi (2015) conducted a research on assessing school readiness in rural and urban pre-schoolers. The sample was 100 pre-schoolers aged 4 to 5 years consisting of 50 from urban and 50 from rural preschools. The results indicated that the mean scores of math readiness, language readiness, and cognitive readiness was higher in urban pre-schoolers than rural pre-schoolers. The results revealed there was no significant difference between mean score of boys and girls of urban area with respect to math, language and cognitive readiness. However, the mean score for language readiness was greater than mean score for boys in the urban area. Results also indicated there was no significant difference between mean score of boys and girls of rural area with respect to math, language and cognitive readiness. However, the mean scores of boys were slightly higher than girls for math readiness.

Raver et al. (2011) studied the Chicago School Readiness Project's (CSRP) impact on low-income preschoolers' pre-academic skills with self-regulation as a mediating mechanism.The CSRP is a multi-component, cluster-randomized efficacy trial implemented in 35 Head Start–funded classrooms (N = 602 children). The analyses confirmed that the CSRP improved low-income children's self-regulation skills (as indexed by attention/impulse control and executive function) from fall to spring of the Head Start year. Analyses also suggested significant benefits of CSRP for children's pre-academic skills, as measured by vocabulary, letter-naming, and math skills. Partial support was found for improvement in children's self-regulation as a hypothesized mediator for children's gains in academic readiness.

Materials and procedures:

The objectives are 1) To measure and assess school readiness of preschoolers in Maharashtra and Rajasthan in the five areas of readiness that are reading, writing, mathematics, social and emotional readiness; 2) To compare between the mean scores of boys and girls in Maharashtra and Rajasthan with respect to reading, writing and mathematics readiness. 3) To measure and assess social and emotional readiness of preschoolers in Rajasthan. 4) To compare

Volume - 7 | Issue - 2 | February - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

between the mean scores of boys and girls in Rajasthan with respect to social and emotional readiness.

A sample of 193 children was purposively selected, 60 children from a school located in Shegaon, Maharashtra. 22 children from a school located in Navalgarh, Rajasthan and 111 children from a school located in Sikar, Rajasthan. The children were assessed using a School Readiness Tool that focused on reading, writing and mathematics readiness. Each readiness consisted of 5 items:

Reading readiness consisted of: 1)Spot the mistakes; 2)Visual tracking; 3)Matching; 4)Letter identification; 5)Word identification; Writing readiness consisted of: 1) Strokes and shapes; 2)Patterns; 3) Picture completion; 4) Letters and words; 5)Sentences; Math readiness consisted of: 1) Classification; 2)Patterning; 3) Comparison; 4) Counting; 5) Matching

Each item had 4 levels of difficulty ranging from simple to complex. An answer key was carried during the assessment in order to score each child's performance. Parents of these children were given a Social and emotional readiness questionnaire in order to assess children's social and emotional readiness. This instrument had 10 items in each area.

The schools were approached and explained how their contribution could contribute in making a valuable research. Class Senior KG(4-6 years) was assessed for this study. The School Readiness Tool was administered on 1:5 basis. The time taken by children in Maharashtra in the month of July, for each round of study was 42 minutes whereas in Navalgarh in the month of August was 44 minutes and in Sikar in the month of August was 45 minutes. Social and emotional readiness instrument was given to the class teachers of the children and they were asked to give it to the parents of the respective children. These questionnaires were then collected from the schools in the month of November.

Results:

The findings of the school readiness program with respect to reading, writing and mathematics readiness and also, the results obtained from parents with respect to social and emotional readiness are stated and discussed below.

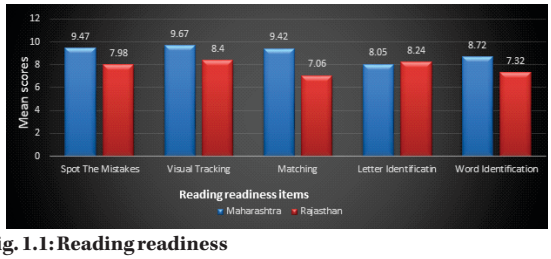

Fig. 1.1: Reading readiness

The mean scores of the states Maharashtra and Rajasthan with respect to reading, writing and mathematics readiness are discussed below. Fig. 1.1 shows, in Reading readiness, 'Visual tracking' was the highest prevailing aspect with mean scores of 9.67 and 8.4 for Maharashtra and Rajasthan respectively. 'Letter identification' and 'Word identification' were the least prevailing aspects in Maharashtra with mean scores of 8.05 and 8.72 respectively. Matching was the least prevailing in Rajasthan with mean scores of 7.06.

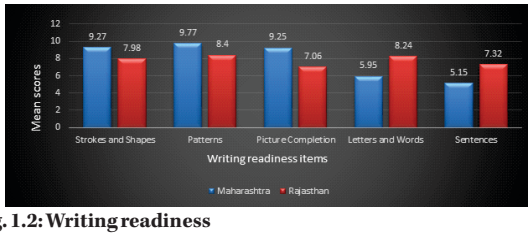

Fig. 1.2: Writing readiness

Fig. 1.2 revealed, in Writing readiness, 'Patterns' was the highest prevailing aspect in both Maharashtra and Rajasthan with mean scores of 9.77 and 8.4 respectively. 'Letters and words' and 'Sentences' were the least prevailing aspects in Maharashtra with mean scores of 5.95 and 5.15 respectively. 'Picture completion' and 'Sentences' was found to be the least prevailing aspect in Rajasthan with mean score of 7.32. Fig. 1.3 revealed, in Mathematics readiness, 'Matching' was the highest prevailing aspect in Maharashtra with mean score of 9.23 and 'Patterning' was the highest prevailing aspect in Rajasthan with mean score of 8.4.

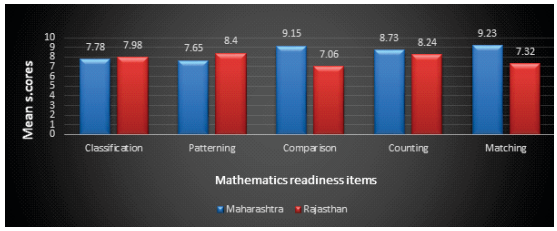

Fig. 1.3: Mathematics readiness

The comparison of mean scores of boys and girls in Maharashtra are stated and discussed below.

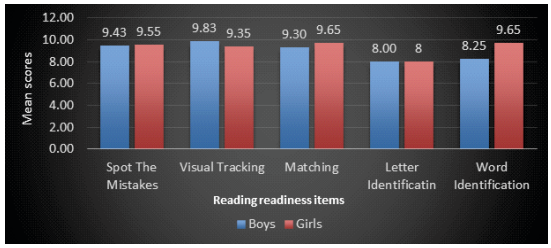

Fig. 2.1: Reading readiness

Fig. 2.1 shows comparison of mean scores of boys and girls in Maharashtra with respect to reading readiness, there was no significant difference between the performances of boys and girls in the aspects like, 'Spot the mistakes', 'Visual tracking', 'Matching' and 'Letter identification'. Whereas there was a difference between the aspect 'Word identification' of boys and girls with the mean scores of 8.25 and 9.65 respectively; wherein the girls performed better.

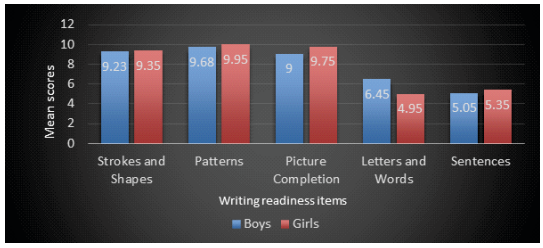

Fig. 2.2: Writing readiness

Fig. 2.2 shows, in Writing readiness there was no significant difference between the performances of boys and girls in the aspects like, 'Strokes and shapes', 'Patterns', 'Picture completion' and 'Sentences. Whereas there was a significant difference between the aspect 'Letters and words' of boys and girls with mean scores of 6.45 and 4.95 respectively.

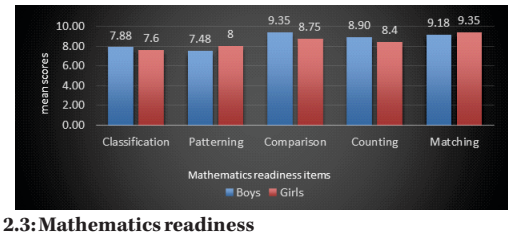

Fig. 2.3: Mathematics readiness

Volume - 7 | Issue - 2 | February - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

Fig. 2.3 shows, in Mathematics readiness there was no significant difference between mean scores of boys and girls in the aspects like 'Classification', 'Patterning', 'Counting', and 'Matching'. Whereas there was difference found between performances of boys and girls in 'Comparison' with mean scores of 9.35 and 8.75 respectively.

The comparison of mean scores of boys and girls in Rajasthan are discussed below.

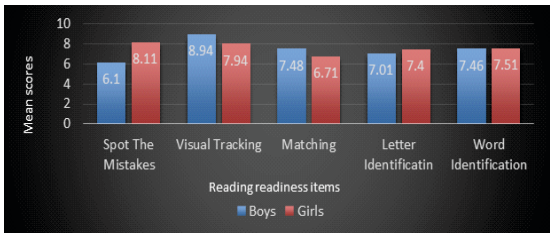

Fig. 3.1: Reading readiness

Fig. 3.1 revealed, in Reading readiness, there was no significant difference between mean scores of aspects like 'Letter identification' and 'Word identification'. Whereas there was difference revealed between the mean scores of boys and girls in aspects like 'Spot the mistakes' which was 6.1 and 8.11 respectively; for 'Visual tracking' it was 8.94 and 7.94 respectively and for 'Matching' it was 7.48 and 6.71 respectively.

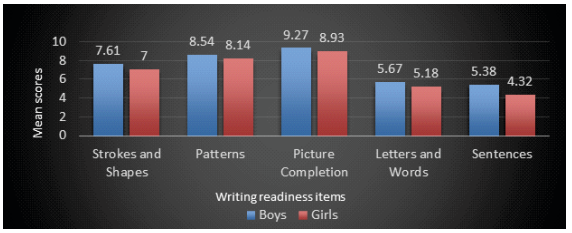

Fig. 3.2: Writing readiness

Fig. 3.2 revealed, in Writing readiness there is no significant difference between aspects like, 'Strokes and shapes', 'Patterns' and 'Letters and words'. Whereas there was difference between the mean scores of boys and girls of 'Picture completion' which was found to be 9.27 and 8.23 respectively and 'Sentences' which was found to be 5.38 and 4.32 respectively.

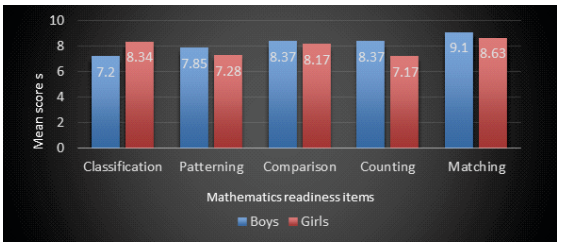

Fig. 3.3: Mathematics readiness

Fig. 3.3 shows, in Mathematics readiness there was no significant difference between the mean scores of 'Patterning', 'Comparison' and 'Matching'. Whereas there was difference between the mean scores of boys and girls in 'Classification' which was found to be 7.2 and 8.34 respectively; 'Counting' which was found to be 8.37 and 7.17 respectively.

t-test with respect to gender for the states of Maharashtra and Rajasthan for reading, writing and mathematics readiness are stated and discussed below.

Table 1.1: Maharashtra

Maharashtra			
Particulars	**Reading readiness**	**Writing readiness**	**Mathematics readiness**
T statistical	-0.892	0.031	0.653
T critical	2.776	2.776	2.776
Significance value (p- value)	0.422	0.976	0.549
Level of significance (alpha value)	0.05	0.05	0.05
Degree of freedom	4	4	4

Table 1.1 revealed; with respect to gender, for reading readiness, with respect to gender, t value was calculated to be -0.892 at 95% confidence level which is less than t-critical= 2.776. For writing readiness, t value was calculated to be 0.031 at 95% confidence level which is less than t-critical=2.776. For mathematics readiness, t value was calculated to be 0.653 at 95% confidence level which is less than t-critical=2.776. Therefore, there was statistically no significant difference found with respect to gender for reading, writing and mathematics readiness in Maharashtra, since the t-value for all the three readiness is less than the t-critical values.

Table 1.2: Rajasthan

Rajasthan			
Particulars	**Reading readiness**	**Writing readiness**	**Mathematics readiness**
T statistical	-0.258	4.528	0.679
T critical	2.776	2.776	2.776
Significance value (p- value)	0.808	0.010	0.534
Level of significance (alpha value)	0.05	0.05	0.05
Degree of freedom	4	4	4

Table 1.2 revealed; with respect to gender, for reading readiness, t value was calculated to be -0.258 at 95% confidence level which is less than t-critical=2.776. For writing readiness, t value was calculated to be 4.528 at 95% confidence level which is more than t-critical=2.776. For mathematics readiness, t value was calculated to be 0.679 at 95% confidence level which is less than t-critical=2.776. Therefore, there was statistically significant difference found for writing readiness, since t value is more than t-critical value, whereas there was statistically no significant difference found for reading and mathematics readiness in Rajasthan.

Analysis of Variance (ANOVA) with respect to gender for the states of Maharashtra and Rajasthan for reading, writing and mathematics readiness are stated and discussed below.

Table. 2.1: Maharashtra

ANOVA (Maharashtra)						
Reading readiness						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	0.193	1	0.193	0.343	0.574	5.317
Within Groups	4.501	8	0.562			
Total	4.694	9				
Writing readiness						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	0.000	1	0.000	6.973	0.993	5.317
Within Groups	41.298	8	5.162			
Total	41.299	9				
Mathematics readiness						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	0.047	1	0.047	0.083	0.780	5.317
Within Groups	4.575	8	0.571			
Total	4.623	9				

Volume - 7 | Issue - 2 | February - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

Table. 2.1 revealed; with respect to gender, For reading readiness, F-value was calculated to be 0.343 at p= 0.574 which is less than the F-critical=5.317. The F-value for writing readiness, was calculated to be 6.973 at p=0.993 which is slightly more than F-critical=5.317. The F-value for mathematics readiness, was calculated to be 0.083 at p=0.780 which is less than F-critical=5.317. Therefore there was statistically no significant difference found for reading and mathematics readiness, whereas there was a slight difference found for writing readiness in Maharashtra.

Table 2.2: Rajasthan

ANOVA (Rajasthan)						
Reading readiness						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	0.047	1	0.0476	0.070	0.797	5.317
Within Groups	5.409	8	0.676			
Total	5.456	9				
Writing readiness						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	9.830	1	9.830	7.746	0.023	5.317
Within Groups	10.153	8	1.269			
Total	19.983	9				
Mathematics readiness						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	0.172	1	0.172	0.373	0.557	5.317
Within Groups	3.700	8	0.462			
Total	3.873	9				

Table. 2.2 revealed; with respect to gender, For reading readiness, F-value was calculated to be 0.070 at p= .810 which is less than the F-critical= 5.317. For writing readiness, F-value was calculated to be 7.746 at p=0.023 which is less than F-critical=5.317. For mathematics readiness, F-value was calculated to be 0.373 at p=0.557 which is less than F-critical=5.317. Therefore there was statistically no significant difference found for reading and mathematics readiness, since the F-values are less than the F-critical values; whereas statistically significant difference was found for writing readiness, since the F-value is more than the F-critical value.

The mean scores of preschoolers in Rajasthan with respect to social readiness and emotional readiness are stated and discussed below.

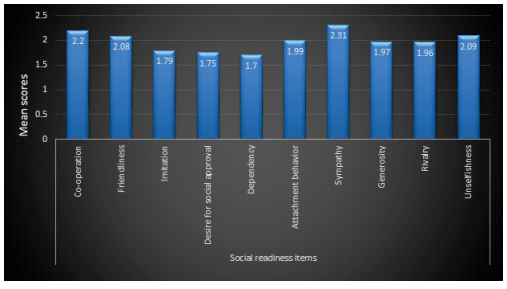

Fig. 4.1: Social readiness

Results in Fig. 4.1 revealed, in Social readiness, highest prevailing component were 'Sympathy', 'Co-operation' and 'Unselfishness' with mean scores of 2.31, 2.2 and 2.09 respectively followed by 'Attachment behavior' and 'Generosity' with mean scores of 1.99 and 1.97 respectively. 'Dependency' was found to be the least prevailing aspect with mean score of 1.7.

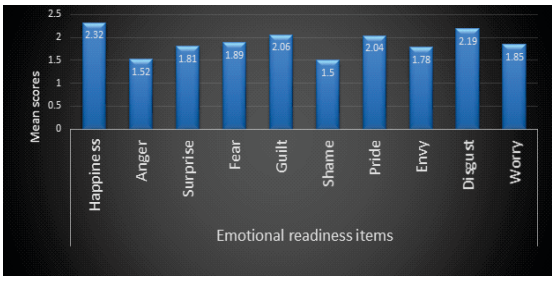

Fig. 4.2: Emotional readiness

Results in Fig. 4.2 revealed, in Emotional readiness the highest prevailing components were 'Happiness', 'Disgust', 'Guilt' and 'Pride' with mean scores of 2.32, 2.19, 2.06 and 2.04 respectively; followed by 'Fear' and 'Worry' with mean scores of 1.89 and 1.85 respectively. The least prevailing component was 'Anger' and 'Shame' with mean scores of 1.52 and 1.5 respectively.

The mean scores of social and emotional readiness of preschoolers in Rajasthan with respect to gender are stated and discussed below.

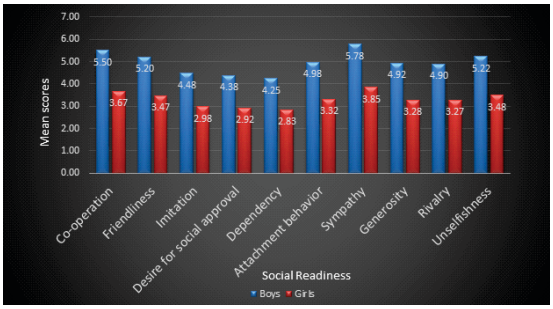

Fig. 5.1: Social readiness

Results from Fig 5.1 revealed, in Social readiness there was a significant difference found between the mean scores of all the components of social readiness with respect to gender; wherein the mean scores of boys were higher than the mean scores of girls. 'Sympathy' was found to be the highest prevailing difference between the mean scores of boys and girls; and 'Imitation' being the least prevailing difference.

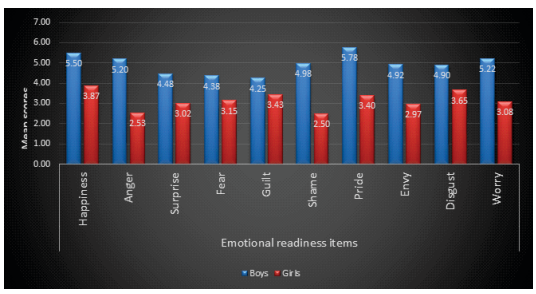

Fig. 5.2: Emotional readiness

Results from Fig. 5.2, in Emotional readiness there was a significant difference found between the mean scores of all the components of social readiness with respect to gender; wherein the mean scores of boys were higher than the mean scores of girls. 'Anger' being the component with the highest prevailing difference in the mean scores of boys and girls, followed by 'Shame' and 'Pride'; and 'Disgust' being the least prevailing difference.

t-test for social and emotional readiness for preschoolers in Rajasthan with respect to gender are stated and discussed below.

Table 3.1: Rajasthan

Volume - 7 | Issue - 2 | February - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

Rajasthan		
Particulars	**Social readiness**	**Emotional readiness**
T statistical	31.940	9.228
T critical	2.262	2.262
Significance value (p- value)	1.419	6.95
Level of significance (alpha value)	0.05	0.05
Degree of freedom (df)	9	9

Table 3.1 revealed, for Social readiness, with respect to gender, The t-value at 95% confidence level was calculated to be 31.940 which is more than t-critical=2.262 (p=1.419, Alpha=0.05). For Emotional readiness, with respect to gender, the t-value at 95% confidence level was calculated to be 9.228 which is more than t-critical=2.262 (p=6.9, Alpha=0.05) Therefore, there was statistically significant difference found with respect to gender for social and emotional readiness in Rajasthan.

Analysis of Variance (ANOVA) for social and emotional readiness for preschoolers in Rajasthan with respect to gender are stated and discussed below.

Table 3.2: Rajasthan

ANOVA (Rajasthan)						
Social						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	12.0540	1	12.054	72.152	2.526	4.493
Within Groups	2.673	16	0.167			
Total	14.727	17				
Emotional						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F critical**
Between Groups	16.254	1	16.254	74.264	8.364	4.413
Within Groups	3.939	18	0.218			
Total	20.193	19				

Table 3.2 revealed; for Social readiness, with respect to gender, the F value was calculated to be 72.152 at p=2.526 which is more than F-critical=4.493. For Emotional readiness, with respect to gender, the F value was calculated to be 74.264 at p=8.364 which is more than F-critical=4.413. Therefore, there was significant difference found for social and emotional readiness with respect to gender.

Conclusion:

This study Measures and Assesses School Readiness of Preschoolers in the rural areas of Maharashtra and Rajasthan. In conclusion, all preschoolers from both the states show good amount of understanding of school readiness concepts.

The preschoolers in Maharashtra and Rajasthan are found to be on a similar pace of readiness; although the preschoolers in Maharashtra performed slightly better than the preschoolers in Rajasthan, in majority of the aspects of each area of school readiness that are reading, writing and mathematics readiness.

With respect to reading, writing and mathematics readiness., there was no significant difference found between the performances of boys and girls in both Maharashtra and Rajasthan.

With respect to social and emotional readiness, it was revealed that there is a difference between boys and girls in Rajasthan. Therefore, this concludes that boys in Rajasthan are socially and emotionally more ready than girls.

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