

Pretend Play Enhances Creativity and Imagination

Shallu Sansanwal¹

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ABSTRACT

This paper reviews the literature to examine the themes that aims to find the association of pretend play with creativity and how pretend play is predictive of later life creativity. The developmental trends and issues of the play and creativity are also examined to find if any age and gender differences are there in developmental patterns of creativity through pretend play. The review of literature made it clear that pretend play uses cognitive processes that are involved in creative thinking. So pretend play is a predictor of creativity. Results of studies till date also indicated that creativity though develops in continuum has periods of lags and spurts throughout the childhood to adolescence. Gender differences have also been found in girls and boys play behaviors as girls are found to be engaged more in realistic role-playing than boys of their age in preschools. Later girls are found to excel boys in verbal and fluency tasks of creativity in early adolescence.

1. Introduction

Play is an important part of an appropriate childcare and it is closely attached to the development of cognitive, emotional, social and physical behaviors. Play by nature is difficult to define. Saracho (1992) used the criteria like motivation by satisfaction, spontaneous behavior and exploration of familiar and non-familiar objects, non-literal and free from rules activities to define play. Many forms of play thus helps the child to develop in all aspects of learning. Play is viewed as this casual agent in developmental change during childhood, which is the time when many changes in knowledge of self and world are dramatically occurring in the child.

Pretend play is the form of play that uses the child's perception of world and fantasy to symbolize one object as another. It is an arena in which children constructs and reconstructs past experiences that in turn facilitates the development of divergent thinking, which is an important aspect of cognitive development (Russ, 2003). Children playing role in different scenarios using different objects or toys to represent different things, cultivate a picture using the cognitive processes of separating and assembling past experiences and knowledge in unique ways (Singer & Singer, 1990). This process there by increases their divergent thinking and transformational abilities.

Divergent thinking is not a synonym of creativity but it plays a central role in developing creative thinking in children. Literature over the period of time has supported divergent thinking as an important cognitive process, which was associated with pretend play and fantasy affect. The purpose of the present study is to review the literature in order to find the themes that emerge in relation to creativity, imagination and pretend play. This literature review also aims to find the developmental patterns of creative thinking across childhood to adolescence and their relation to pretend play. The gender differences in the play pattern and creative thinking development are also reviewed to find the gap if any in our understanding of how play enhances creativity and imagination.

2. Methods for inclusion criteria and search procedures

Inclusion Criteria: The studies involving preschoolers, young children and adolescents (age 18 or younger) to measure pretend play and creativity and to explore various other aspects related to them were included in the present review. In these studies intelligence was a measure that was controlled. This review also

¹ National Institute of Education, Nanyang Technological University, Singapore

included studies showing that how processes related to play like divergent thinking and transformational ability are also the part of creativity and further when interventions improve play skills it also has effects on cognitive processes and creativity. Studies reflecting developmental patterns of creativity and gender differences in play behavior and creativity development of children from preschools to adolescence were also reviewed. Table 1 gives the brief summary of paper reviewed and instruments used.

Search Procedures

A computerized database was used for this literature review. Multi-database literature search was conducted from 2nd February to 1st March 2012. Academic Search Primer, Child Development, ERIC and Psych INFO databases from EBSCO search engine were used, using the keywords like 'children', 'creativity', 'imagination' and 'gender'. Only peer reviewed journal articles limited to English Language were considered. In addition, online first database of "Creativity Research Journal" was searched to get recent articles relevant to our literature review. Studies measuring different aspects of creativity and imagination were also included to observe the measurement of these activities in different stages of development.

3. Literature Review

Play, Cognitive Style and Creativity

Theoretically play fosters development of creative thinking by developing the cognitive and affective processes involved in the play. Investigations conducted by Saracho (1992) were aimed at finding the relationship between three to five years old children's cognitive style and their social play. Sample consisted of 300 3-, 4-and 5-years old children. They were administered PRS (Play Rating Scale, Saracho 1984) and Preschool Embedded Figure Test (PEFT). On administering PEFT to 3year old children scoring higher than 5 or above were considered Field Independent (FI; socially detached, greater analytic skills and capable of cognitive functioning). Four-and 5-year old children scoring higher than 10 were considered FI and low scoring children were considered Field Dependent (FD; more sensitive to feelings of others and greater social skills). Results indicated a significant difference in FI and FD children's cognitive style. The FI children engaged more in play activity thus giving them the cognitive skills to rely on their own values and standards and solve difficult problems using strong analytical skills. Such children even engaged in social play behavior exhibiting cognitive flexibility. The cognitive flexibility was also related to creativity in FI children. The limitation to the study was that different raters rated the measures for the children that may have brought some discrepancies in results.

Pretend Play and Creativity

i) Play Impact Metacognitive Processes

Pretend play or symbolic play supports metacognitive or self-regulatory skills that are in turn critical in development of problem solving and creativity (Whitebread *et al.*, 2009). Conducting a longitudinal study for two years to find relationship between metacognitive or self-regulatory processes behaviors proved it. All activities involving different play behaviors were video recorded and coded on the basis of analytical model of self-regulation developed by Pino Pasternak (2006). Results indicated that play impacted metacognitive processes, which in turn affected various aspects of development involving problem solving and creativity.

ii) Predictive Power of Pretend Play in Creativity

Russ, Andrew and Christiano (1999) did A longitudinal study was done to investigate the predictive power of pretend play in creativity by posing a research question "Are the abilities of the first and second grade to express emotions and engagement in fantasy play predictive of creativity and fantasy over a period of 4 years"? The original sample included 121 first and second grade children, who were individually administered Affect Play Scale (APS) and then Peabody Picture Vocabulary Test-Revised (PPVT-R Dunn & Dunn, 1981) by separate administrators. The PPVT-R is administered as a control for intelligence. Follow up was done 4 years later in which only 31 of the original participants participated who were in grade five and six then. They were administered APS and Alternate Use Test (Wallach &Kogan's, 1965) as a measure of divergent thinking. Two additional measures Creative Activities Checklist (suitable for grade 5 and 6) and The School Coping Scale were administered for exploratory purpose. Results predicted that pretend play in young children was significantly predictive of divergent thinking and affect in fantasy over a period of time. The APS measure showed that children who express more affect and better quality of fantasy as first and

second graders continue to do so later also. Positive affect themes are also stable over a period of four years. Several scores on APS also predicted that good early play skills also generated the ability of higher quality problem solving in daily life. The limitations of this study included the inability to reproduce the data of all 121 children at the beginning of the study because many children were not available to be studied after four years due to various reasons. Although the APS scores were significant for divergent thinking yet the researchers could not obtain larger samples for any substantial statistical analysis and thus it was difficult to generalize. Second limitation of this study was the measure of coping, which did not actually measure the coping behavior, but was just a self-report on coping. Adequacy of storytelling task measure is also questioned because of discrepancies between the judgments of two raters. Such limitations were also evident in the study of White bread *et al.*, (2009) where adult practitioner selected to be a part of project due to their excellent practices struggled to do so effectively in child's play without taking over regulatory role. Even after these limitations, these studies established significant relation among pretend play, creativity and cognitive processes involved. The study of Russ *et al.*, (1999) established a significant correlation between divergent thinking and children's play behavior when extended to 10 years of follow up (Russ, 2003).

The literature over a period of time supported divergent thinking as an important cognitive process, which is associated with pretend play and fantasy affect and in turn leads to problem solving and creative thinking potential in children.

iii) Developmental Issues of Creativity in relation to Pretend Play

Creativity during the process of development shows many developmental issues and gender differences. Differences in developmental pattern in creativity are studied in relation to pretend play.

Developmental Issues

As children grow older their creative thoughts are expected to be richer cognitively in content. One of the key cognitive processes underlying creative continuum across lifespan is transformational abilities (Guilford, 1968; Runco, 1996). Children as young as two and three year-old show transformational abilities which have been suggested to be utilized in childhood's pretend play and linked to later life's creative abilities (Kavanaugh & Harris, 1994). These transformational abilities indicate the difference in degree but no difference in kind. Pretend play provides a sphere through which creative expressions are encouraged (Saracho, 2002). Important developmental venues are provided by pretend play, which allows children to practice their transformational skills for interpreting their developing world (Runco, 1996). This relationship of pretend play to creativity is less clear in later life. Two different views, one stating that pretend play in early childhood is predictive of later life creativity and another that there is no relation between pretend play and creativity in later life has been expressed. As the children become more sociable and get educational training, they are able to assemble their thought well and thus enrich their creative experiences (Mullineaux & Dilalla, 2009). On the other hand, studies have shown no increase in the creativity as the personal factors like lack of risk taking or willingness to face failure act as a block for the development of creativity with growing child (Lau & Li, 1996 & Lau *et al.*, 2004). It is of common observation that the older children are under the peer pressure to let out their original feelings but the younger children are more willing to engage in role-playing and other creative activities. Mullineaux and Dilalla (2009) did a longitudinal study to examine the link between pretend play, realistic role-playing in preschool and creativity and divergent thinking in early adolescence. They hypothesized that the pretend play behavior of preschoolers will be related to the performance task (verbal and non-verbal) on divergent thinking. Gender differences are also examined to understand the individual developmental patterns. Sample of 127 children participated at the age of five. Follow up was done in early adolescence. Results supported the hypothesis. This study showed that pretend play behavior is important to understand the development of creativity during early adolescence. The limitations of this study were firstly the means by which creativity was developed, were left unexplored and secondly it was also not known that the cognitive processes involved in creativity drew upon same cognitive resources like transformational abilities or do they depended upon the personality traits like openness to experience and persistence. Another measure that was not fully explored was the relationship between realistic role-play in performance on Test of Creativity and Thinking Drawing Production (TCT-DP; Urban & Jellin, 1986). Since this study is the first to use these correlations more in depth, it requires further investigations. The results may have some variations, as the role-play behavior of child would be influenced by whom they are paired with and how the aspect of social interaction played between them. Even for the adolescents follow up, the questionnaires were mailed so responses could have been assisted by friends and no time limit in the completion of creativity measure could have resulted in varied results.

The examination of possible links between pretend play behaviours and creativity in adolescence is important for several reasons. First, creative problem solvers have better coping skills as they are better able to utilize these skills in addressing everyday problems (Moore & Russ, 2006). It has been stated that young children, who engage in creative problem solving, are better able to cope with major and minor stresses of life (Carson and Runco, 1999). Secondly, as pretend play impacts later divergent thinking performance (Russ, 2003), it is possible that pretend play interventions during early childhood can lead to improved creative abilities in adolescence. Thirdly, development of full potential of creative thinking is beneficial for both the individual and society in this complex modern world (Runco, 2004).

Age Related Issues

Many studies over the period of time have provided us evidence that although unfolding of creative abilities is a continuous process but there are periods of peaks and slumps over the course of development (Charles & Runco, 2001; Claxton, Pannells, & Rhoads, 2005). First developmental slump was indicated at around the age of 5 (Torrance, 1962). It was reasoned that at this age children enter school and thus demands of school environment like teachers and peers results in initial decline in creativity. In a series of longitudinal studies measuring creative abilities from early childhood to adolescence, an evidence of peak was found in creative performance at the age of 10 and 11, which later declined at 12 years of age (Smith & Carlsson, 1983, 1985, 1990). Later a steady increase was observed from 13 years of age and then there was an additional increase at the age of 16. These findings show that though creativity increases in continuum, there are periods of lags and spurts. Lau and Cheung (2010) tested a sample of 2,476 Grade 4 to 9 Chinese school children on new electronic Wallach-Kogan Creativity Tests. The focus of the study was to study the developmental trends of creativity and to find the differences in girls and boys trajectory of creative thinking development. Results indicated that there emerged two distinct patterns in creativity development of primary and secondary grades. Verbal and figural (fluency & flexibility), uniqueness and unusualness rose from Grade 4 to Grade 5. These measures of creativity then dropped from Grade 5 to Grade 6. There was a drop in the creativity from Grade 6 to grade 7 when there was a transition from primary to secondary school. Grade 7 to Grade 9 saw an increase in creativity measures. In this study significant grade differences were found in verbal and figural (fluency and flexibility) indexes. Index scores in primary were lowest for the fourth graders. Among the secondary students the verbal and figural indexes were lowest for eighth graders. Thus the results were supportive of the previous studies on developmental trends of creativity from preschools to adolescence age (Claxton et al., 2005).

Another longitudinal study of Claxton et al.,(2005) using Creativity Assessment Packet (CAP, Williams, 1993) in school age children examines the developmental trends in both divergent thinking and feeling. Initial sample of 184 children were assessed in Grade 4 and 124 of the original sample was reassessed in grade 6. It was found that divergent thinking and divergent feeling scores increases over time. Slight increase was found in divergent thinking scores between fourth and ninth graders but no significant increase was recorded between fourth and sixth grade, and sixth and ninth grades. One significant score was recorded for a decrease in originality score between fourth and sixth grades and increase in Elaboration score between sixth and ninth grades. Interesting aspect of this study was that significant change was seen over time on divergent feeling for 4 through 6 grade and ninth grade levels. Greatest changes between sixth and ninth grades were found. These findings support that divergent feeling increases through school years especially between sixth and ninth grades as a child enters adolescence. These scores on CAP were related to personality characteristics and motivational dimensions in creativity. This supports the idea that creativity is still developing during adolescence like personality characteristics.

Effects of Gender Differences

Mixed evidence of gender differences have been found in establishing the correlation between pretend play and creativity. Many studies have indicated male advantage in verbal tasks during the elementary school years. Mullineaux and Dilalla (2009) conducted study with 127 children at the age of 5 and then a follow up was done in early adolescence. The results supported male advantage on verbal tasks in elementary years. This study indicated significant gender differences in terms of total number of instances of realistic role-playing during free play. Study showed that boys engaged more in outdoor activities and girls in role-playing behavior. Girls at ages of 10-15 had more elaborate, better-drawn and novel drawing skills than boys. Cheung and Lau (2010) used electronic version of Wallach-Kogan Creativity Tests (e-WKCT) to find the gender differences in creativity. Sample of this study consisted of eight primary and four secondary schools. Grade 4 to Grade 6 was recruited for primary and Grade 7 to Grade 9 for secondary schools. Total of 2476 children consisting of 1222 boys and 1254 girls were studied. Results showed that girls excelled in

verbal flexibility, figural fluency, and figural unusualness. In a previous study of Lau and Cheung (2010), it was found that boys from grade 4 through grade 6 had higher creativity scores but the difference was only marginal. The pattern reversed in grade 4 to grade 6 where girls showed statistically significant scores in creativity as compared to boys. In grade 7 through grade 8, girls excelled boys in verbal (flexibility & fluency) and figural (flexibility and fluency). The pattern of girls outperforming boys has also been observed for eighth and eleventh graders (Rejskind, Rapagna & Gold, 1999; Kim & Michael, 1995). These differences may be due to girls engaging more in role-playing or personal fantasy plays than boys do during preschool years. Personal play fantasy is a common form of pretend play for girls during preschool years (Werebe & Baudonniere, 1991). This fact has also been supported by the results of a study where girls around 4 to 5 years of age have been observed to engage in role-playing and on personal play fantasy twice the time than the boys of similar age group (Jones and Glenn, 1991). The lack of high scores of girls in elementary level may be due to lowering ideation counteracting their language development. This may be possibly due to the cultural differences in boys and girls bringing up.

The study done by Cheung *et al.*, (2004) reported no gender differences by using paper pencil test version of WKCT and gender differences, if any in terms of stress, were due to change in school environment in Hong Kong. A study on fifth and sixth graders could not reveal any gender differences in creativity scores. Similarly no creative differences could be seen in males and females in a college and adult samples (Barrantes- Vidal, Caparros, & Obiols, 1999; Reese, Lee, Cohen & Puckett, 2001). One of the most significant factors explaining gender differences includes cultural demands like politeness and restraint, which interferes with creative development of girls (Reis, 1999).

iv) Pretend Play Interventions

Creativity, emotional understanding, regulation of affect and subjective well-being are related to cognitive and affective processes. Interventions designed to improve play should also have long term effects on related attributes like facilitating positive affect as well as skill development. Long term pretend play interventions should develop play skills that promote long-term improvement in cognitive and effective outcomes.

Play Interventions Improves Cognitive Processes

Moore and Russ (2008) investigated the effects on play processes and creativity by the intervention designed to improve the children's pretend play skills. It was a longitudinal study involving 2-8 months of post intervention. This study hypothesized that on follow up a) play group shows improvement in play skills, b) increased amount and variety of affect would be expressed by affect group and also higher scores on the subjective well-being and also regulation of emotions, c) better story organization and imagination in play would be shown by the imagination group d) play group will show higher scores on creativity measures. The sample consisted of 50 children from six to eight years of age in first- and second- grade classrooms. Forty-five children out of the original sample participated in the post intervention follow up. The original sample was then distributed in different groups like 19 in imagination group, 17 in affect group, and 14 in control group. Measures like APS (Affect Play Scale), Alternate use Test (Gulliford, 1968), Kusche affective interview- revised (KAI-R; Kusche, Greenberg, & Beilke, 1988) and Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) were used. Results showed that play intervention resulted in improved play at follow-up for the imagination group and these improvements were stable over the period of time. This result also showed that play did not lead to improvement in other measure's of children's functioning. The possible reason for such finding can be that the organized play interventions were most effective in improving the cognitive and affective play processes in the long term. Secondly APS had been most sensitive measure for the cognitive processes that was targeted by the imagination intervention. These findings were consistent when group differences in APS were measured for frequency of affect expression, frequency of positive affect, organizational scores and quality of fantasy. It was then established that improving the play skills can lead to increase in cognitive and affective processes.

Another finding from this study also showed no significant difference in the intervention and control group for emotional understanding, emotion regulation ability and subjective well-being. This could be due to the fact that the intervention planned did not target these skills adequately. Another unexpected finding of the study was that AUT fluency and flexibility scores were significantly higher for the control group. This unanticipated direction suggests that certain play processes interfere with one another. In terms of creativity in fluency and flexibility, it can mean that cognitive processes of organization and imagination may interfere with the creative processes. This indicated that short-term improvement in the creativity can be gained by play interventions but it will require follow up interventions for long term effects. Limitation of

the study was that it had low statistical power and larger sample were needed for significant results. Different examiners carried out interventions that might have contributed to differential effect.

Play and Mood

A study carried out by Russ and Kaugras (2000-2001) investigated that whether expression of affect in pretend play is altered by instructions and will creativity be influenced by different affective conditions. Eighty-first and second grade children were administered APS, Alternate Use Test (AUT) and self-rating of mood measures. Results showed that instructions could influence affect in play but negative affect was influenced most. This showed that the type of play he is engaged in affects the mood of the child. The negative affect failed to facilitate creativity. Self-reported mood although associated with the originality of the divergent thinking responses. Children expressing more emotions gave more original responses. This study failed to test the effect of positive emotions of creativity, as the play instructions in happy group could not increase positive affect. This gives us future area to concentrate for the research in relationship between positive affect and creativity.

Creativity Play and Imagination

Imagination is the ability to form rich and varied mental images or concepts of people, places, things and situations not present (Isenberg & Jalongo, 1993). Thus imagination is that thought of mind, which is characterized by the ability of individuals to reproduce images that are originally derived from the basic senses, but are now reflected in one's consciousness as memories, fantasies, and future plans. The imagination capacities begin to appear by third year of life. It evolves same time around which the child begins to start pretend games and start verbalizing their stories. Creativity and imagination are not the same things but are connected as creativity involves the use of imagination. Creativity involves purposefully using imagination to generate something original and valuable. Thus creativity is the ability to turn imagination into reality.

Factors enhancing imaginative play

Though children begin showing signs of make believe play by three years of age, there are individual differences in their frequencies and complexity. Development of imaginary friends may be a creative step for many children as it is associated with imaginative play forms (Singer & Singer, 1990). Parents, who discourage children in talking about imaginary friends, are putting obstacles in the path of cognitive and emotional development of their children. Enhancing imaginative skills through storytelling, reading or floor play helps in development and encouraging child's imagination, which in turn improves his creative thinking. Imagination and play in children are closely related. In a study, children's play materials have been shown to motivate them to create fantasy themes that were based on their daily life incidences (Saracho, 1992). Real-life situations in games like 'house-house' or play as movie stars, cops cartoon characters etc. are usually represented by the children in pretend play. These plays give them creative opportunities and this explains association between play, imagination and creativity. Affect in play and creativity has 2 dimensions (Kaugars & Russ, 2009). One is affect state like emotions, expressions and expressing feelings and another is affect-laden thought including themes and contents. In children's fantasy play, these affect themes and affect-laden thoughts associate and facilitate divergent thinking. These associations in turn broaden the association of creativity with pretend play and imagination.

4. Discussion

Pretend play in young children is predictive of divergent thinking and affect in fantasy over the time. Affective and cognitive processes in play are stable over time and these processes are important for divergent thinking. The children expressing more affect and better quality of fantasy as first and second graders expressed more affect and better quality of fantasy in puppet play and stories as sixth and seventh graders. Cognitive processes are involved in pretend play and later fantasy activity (Russ *et al.*, 1999; Moore and Russ, 2008; Russ and Kaugras, 2000-2001; Saracho, 1992; and Whitebread *et al.*, 2009). Their studies further suggested that play influences self-regulation and metacognitive processes. It has been shown that good early play skills were predictive of the ability to generate alternative solutions and higher quality problem solving ability. The Affect in Fantasy measure was significantly related to divergent thinking and several dimensions of storytelling but failed to relate to creativity scores in storytelling or to creative activities measure. The analysis of their data involving two experimental studies regarding experience of students about the play conditions showed that playful experiences were effective in preparing children for

effortful, problem solving or creative tasks that required higher level of metacognitive and self regulatory performance. The results of significant differences in play behaviors of FD and FI groups of children indicated significant relationship between children's cognitive style and their play behaviors. The play behaviors observed in FI children suggest cognitive flexibility. Social interaction observed in play is a form of social behavior and is again related to cognitive flexibility of thought. The ability of children's ability to engage in pretense or fantasy play is related to the wide range of cognitive and cognitive skills (Rubin, 1980). Since the children apply their power to make symbols and fantasy play, it is an essential component to maintain human uniqueness and vitality. It can be concluded from several studies that play assists children to develop their creative thinking. Fantasy play in children is based on the incidents of day today problems and play materials can motivate fantasy themes.

Play can be improved with systematic interventions. Play intervention resulted in improved play at follow up for imagination group. Imagination focused intervention improved scores on a measure of play processes, thus supporting the theory that play can be improved (Russ, 1993). An imagination or organization focused intervention is the most effective way to improve both cognitive and affective play processes in long term. Targeting cognitive skills can improve certain affective processes in play such as increased positive affect expression (Moore & Russ, 2008).

Cheung *et al.*, (2004) could see no gender differences in previous norming study using WKCT, which was revised in the Chinese language for administering in Hong Kong. The cultural practices in Hong Kong of treating boys and girls differently in performance reflected no gender differences. The practice of boys and girls being lined up in two separate lines according to their scores in examinations for equal number of central allocation in Hong Kong was replaced by a law suit won by Equal Opportunity Commission against Education Department using unfair secondary school placement for girls who excelled boys in 2001. Therefore, from 2002 onwards, the girls lined in one line with boys and performing well could not be excluded and thus girls outperformed boys in verbal ideation. Overall gender differences were due to secondary sub example, which means that girls in junior high grades were significantly affected by introduction of sex discrimination ordinance to school setting. It might also be possibly due to direct personal experience of girls with new sex-fair practice of secondary school placement in junior high grades. Therefore, it is believed that under the environment designed suitable for equal opportunity for both sexes, girls can outscore boys in creative performance. The studies on development trend in creativity between boys and girls by using electronic WCKT have shown that in grade 4 to 6, boys had marginally higher creativity scores whereas in grade 7 and 8, girls overtook boys in verbal and figural creativity scores (Lau & Cheung, 2010). For better understanding of development in children and adolescents, social and personal factors should be taken into consideration. Two distinct development patterns were seen for primary graders and the secondary graders (Lau & Cheung, 2010). The creativity (as measured by verbal and figural fluency, flexibility, uniqueness and unusualness) of primary school students increased from grade 4 to grade 5 and later decreased from grade 5 to 6. For secondary school students, creativity increased from grade 7 to grade 9 with a drop from grade 6 to grade 7. Increasing patterns of creativity development have also been found in other cultures and places (Claxton *et al.*, 2005; Lopez *et al.*, 1993).

5. Conclusion

Affective and cognitive processes in play in young children are predictive of similar processes in fantasy and of divergent thinking and these are stable overtime. Affect in play scores is valid in predicting divergent thinking and similar processes on Affect in Fantasy play. Play interventions can result in improved play skills that continue post interventions. The improvements in cognitive play skills such as organization and imagination may assist in indirect improvement of play skills. The use of booster sessions may also be supportive in maintaining gains in play skills.

There is considerable evidence that play particularly pretend or symbolic play involving objects or other children has a role in particular kinds of learning. The studies on play, cognition and self-regulation is of significance for play within educational settings as it influences the effortful and intentional learning involved in the development of problem solving and creativity skills. The importance of self-regulation in children's learning significantly helps teachers of young children to interact more productivity in playful conditions.

Early pretend play behaviors are related to performance on verbally oriented divergent thinking tasks. Gender differences have been observed for realistic role-play at age five and for picture production tasks in early adolescence and girls performed better than boys in both measures. The trends in creativity development showed increasing trend across primary and secondary school years and these trends were similar in other cultures and places. Large-scale studies with broad age and grade ranges have shown an increase of creativity with age/grade whereas small scale with narrow ranges in age/grade has shown a decrease in creativity. The ability of early creative play behaviors has been demonstrated to predict the creativity in early adolescence.

6. Future research

Cognitive process like divergent thinking was predictable of creativity. Affect fantasy and emotions are also a part of these creative processes but research still needs to establish a significant relationship of play facilitating positive affect and the positive affect increasing creativity. Creativity is measured more in terms of cognitive processes. Though many studies support the evidence of gender differences in development of creativity, role of emotions and gender differences are yet to be established. When the divergent thinking tasks are divided into verbal and non-verbal performance tasks there are differences in the elementary school level but these differences are not visible in secondary grades and late adolescence period. Affect Play Scale was used for measuring creativity but failed to reveal any differences on the gender in pretend play and divergent thinking tasks. This scale has also been found to show no significant relationship with imagination score and also no correlation with creativity elements in tasks like story telling. This leaves a gap in our understanding that how imagination and certain aspects of pretend play is related to prediction of later life creative thinking and problem solving.

Creativity is said to be developing in a continuum with brief periods of peaks and slumps in development through childhood to early adolescence. Researchers have studied these slumps but more studies are required to record slump in stages other than 5 years of age. Longitudinal studies are required to establish how play facilitates creativity over time and what aspects of play; cognitive processes, emotions and imagination are involved in this process. Sample size studied should be large enough to carry out a substantial statistical analysis. The role of emotions needs to be explored in the pretend play as increasing their emotional understanding and ability to regulate emotions enhances children's subjective well-being.

The studies on pretend play interventions were carried out with a small sample size. Secondly, the use of different examiners to deliver interventions might have contributed to a differential effect. Therefore, it is possible that examiners might have delivered the intervention inconsistently. The testing conditions were poor and may have interfered with quality of assessment. The variability in time from intervention was also a limiting factor in this study as follow up study was done 2-8 months.

7. Limitations

In the study of developmental trends of creativity, index scores in grade 4 were generally as low as grade 7. It was uncertain whether or not there was a fourth grade slump as grade 3 students were not included in study. During the studies of early pretend play behaviors and creativity in adolescence, behavior of target child may be influenced by the other child of age 5 with whom he or she has been paired during free play session. The difference in social interaction between two children during play session may have affected the observed pretend play behaviors. The creativity tasks at follow up in early adolescence were obtained by mail and it might have been possible that parents or other children might have assisted in completing the creativity measures. Measure of intelligence was not included in the analysis. It is possible that controlling for differences in intelligence may have resulted in a different pattern of results.

The studies on pretend play, creativity and affect in fantasy have several limitations including small sample size limiting statistical power of analyses. It is always difficult to get the consent of parents for longitudinal studies. The results of studies needs to be replicated with a larger samples before definitive and statistical significant conclusion be drawn. The measure of coping in the study was a self-report only and did not involve actual coping behavior.

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Table 1

Study Characteristics

Sr. no	Study	Sample Size			Follow-up Sample Size			Age Range	Measures Used	Outcomes
		Total	Boys	Girls	Total	Boys	Girls			
1	Moore & Russ (2008)	50	20	30	45	-	-	6- to 8-yrs	Affect Scale (APS) Alternate Test (AUT) Kusche Affective Interview-Revised (KAI-R) Emotional Regulation Checklist (ERC) Multidimensional Student Life Satisfaction Scale (MSLSS) Positive & Negative Affect Schedule for Children	Play Interventions improve play processes and cognitive processes in long term. Play interventions did not show any variation in subjective well-being and emotion regulation ability. Life satisfaction in children is related to mood & positive affect & it can be measured.
2	Russ et al.,(1999)	121	-	-	31	17	14	6- to 11-yrs	APS AUT Affect in Fantasy Task	Significant correlation of affect in play and divergent thinking. Affect in fantasy was also related to divergent thinking. Pretend play in early years is predictive of later life creative thinking.
3	Russ &Kaugars (2000 - 2001)	80	-	-	-	-	-	6-to 7-yrs	APS Self -rating of mood	Negative affect in play is increased by instruction Play can alters mood Negative affect does not facilitate creativity
4	White bread et al., (2009)	582	-	-	-	-	-	3-to 5yrs	Analytical model of self regulation	Pretend play or symbolic play develops metacognitive and self-

5	Claxton et al., (2005)	184	85	99	124	57	67	9 to 12yrs	Creativity Assessment Packet	regulatory development skills that in turn help in development of creativity and problem solving skills. Divergent thinking and divergent feeling increases over a period of time. Creativity like personality is developed over the period of time through adolescence.
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Sr. no	Study	Sample Size			Follow-up Sample Size			Age Range	Measures Used	Outcomes
		Total	Boys	Girls	Total	Boys	Girls			
6	Mullineaux & Dilalla, 2009	127			120	54	66	5- to 15- yrs	Realistic Role Play Rating at the age of 5 Alternative Use Test at age of 10 Test of Creative Thinking- Drawing Production	Realistic role-playing is the predictor of later life creativity. Girls engage in more pretend play and fantasy behavior than boys Girls at the age of 8 to 10 are more organized and elaborate in drawings.
7	Cheung & Lau, 2010	2476	1222	1254				10- to 15- yrs	Electronic Wallach-Kogan creativity Test	Gender differences prevalent Boys are more in verbal skills in elementary schools Girls are more scoring on verbal and fluency scores.
8	Sing & Cheung, 2010	2476						10- to 15- yrs	Electronic Wallach-Kogan creativity Test	There are periods of lags and spurts in creativity development.

9	Saracho (1992)	300	150	150	3- to 5-yrs	Plat Rating Scale (PRS) Preschool Embedded Figure Test (PEFT)	Gender differences are also their. Girls in grade 7 to8yrs excelled boys in verbal and fluency scores and also in uniqueness and unusualness. FI (Field Independent) & FD(Field Dependent) children differ significantly in cognitive styles FI children engage more in play activities FI children have higher analytical and cognitive skills FI children engage more in social play behavior exhibiting cognitive flexibility.
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