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## Age Differences in Interactions of Children in Multiage Play Settings

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### **Abstract:**

*The study tried to capture the social interactions of children in mixed age group play settings using the Observer Behaviour Software XT 7.0. 88 video clippings taken in 10 minutes duration each of mixed age group play settings in both urban as well as rural play settings in the combined state of Andhra Pradesh, India were analyzed. The results indicated that among all interactions, Verbal Positive, Verbal Negative, Physical Positive, Physical Negative, Gestural Positive and Gestural Negative and Ambivalent behaviours, the toddlers followed by preschool children displayed very high frequencies of behaviours in interaction with other children. For most of the observations, the two – way ANOVA were statistically significant. The primary school group involved more in care related interactions rather than social interactions with younger children.*

### **1. Introduction and Review of Literature**

The possibilities of what infants and toddlers experience through interaction with their older counterparts are still not adequately researched in the Indian context. Theories such as Attachment theory, Social learning theory and Cultural Historical theory indicate some possibility for placing older children as a source of affectionate attachment figure for the infant or toddler as well as for imitation and identification and to further the infant's cognitive and social development

Since industrialization, children have increasingly become educated in age-bands to facilitate manageability. The contemporary 21<sup>st</sup> century Western world further limits mixed-age interaction for young children, though it is beneficial for children's learning. The nature of children's interactions in mixed-age group indicates that age makes a difference to the type of interactions that children engage in. Age has impact on the social interaction techniques and strategies that children applied and was also a factor when choosing a peer to engage with. Older children will be considered as the ideal child to observe, and to engage with, and this assigned an unspoken leadership role to older children. The arguable point is children's social interactions within a mixed age group create a sense of togetherness within a community; this was the central feature of children's social experiences in mixed-age setting (Tara Jan Fagan, 2009).

Exploring what happens when infants are given the opportunity to interact with older children, such as toddlers and 2-year-olds the study supported the idea that children, with support, can be quite capable in interacting with each other (McGaha, Cummings, Lippard and Dallas, 2011).

Children as young as 2 years make appropriate use of communicative devices (Judy Dunn and Carol Kendrick, 1982). Older girls interact more with their infant siblings, particularly in a nurturant manner (Blakemore 1990).

Children of 3 – 6 years frequently used acceptance strategies for longer duration with older children, whereas children of 6 – 8 years used them with same age and younger children. All children used rejection, resistance and unsocial actions most frequently with younger children. Older girls of 5 – 7 years used sex appropriate behaviours only with younger children (Pavitra Bhatt, 2009)

Instruction and leadership behaviours are most frequently displayed by older children interacting with younger peers. The interactions of children who differ in developmental status, thus differ from those between age-mates, and may have different implications for child socialization (French, 1987).

Evangelou & Demetra (1989) and McClellan & Kinsey (1999) suggest that the multi-age grouping affords children more opportunities to engage in pro-social behaviours and that in effect children tend to display pro-social behaviours when mixed with children of varying ages.

Preschool age children within the multi- age grouping engaged in no negative interaction. This lends support to research that suggests that multi-age groupings encourage co-operation and acceptance of others (Aurelia De Santo, 2000).

## 2. Method

This study tried to capture mixed age group children's interactions, splitting these interactions as four main components like verbal, physical, gestures and ambivalent behaviors to understand children's interactions in the right perspective. This study presents age differences in the children's interactions.

A high precision technique of video capturing the children's interactions and coding behaviours using Observer Behaviour Software XT 7.0 was used for this research. The behaviours that were exhibited by children while interacting with other children were analyzed using frequencies and duration of interactions. The frequencies and durations of every age group with respect to the class of behaviours that were elicited were tabulated

### 2.1. Sample

The study was conducted in various districts within the state of Andhra Pradesh, India, using purposive sampling method. The rural data was procured from Anganwadis (Rural Pre schools run by Government), village government primary schools and NGO maintained schools within Hyderabad and also other districts of Andhra Pradesh and the urban data was procured from different schools of Hyderabad city where children from diverse backgrounds, cultures and various socio-economic groups can be observed and studied so that it constitutes a large sample widening the scope of interactions and all related strategies children use in different settings. Age group of children was from early infancy to eight years.

### 2.2. Selection of sample video clippings

The total sample used for this study is 88 (39 Urban and 49 Rural) video clippings. The duration of each video clipping is 10 minutes. All the video clippings consisted of the data of verbal, physical, gestural and ambivalent interactions among children. The age groups of children among whom the interactions happened were infants, toddlers, preschool children and primary school children covering ages from 6 months to 8 years.

### 2.3. NOLDUS Observer Behaviour Software XT.7.0

The Observer is an important tool for the study of behavioural processes to record a level of detail that cannot obtain without an automated system. The Observer can be used to record activities, postures, movements, positions, social interactions or any other aspect of the behaviour of humans and animals.

The video clippings selected for the study are loaded into the processor, and stored as media files. Once the coding scheme is ready, the Observer file is used to observe and code the behaviours of the interactions of children by simultaneously viewing the media file of video clipping. After coding the behaviours, a data profile is created using the software, where the coded behaviours are selectively filtered and fed into processor for getting a result sheet with frequencies, durations, mean durations of the behaviours and modifiers for each of the behaviours. This is later used to perform further statistical analysis and graphical representation to answer specific research questions.

The coding scheme for the current study was developed by the researchers. The coding scheme was developed in four major areas of behaviour which are naturally anticipated when young children interact with infants and toddlers.

### 2.4. Coding Schemes Developed for the Study Are as Follows

- 2.4.1. Verbal Positive behaviours - talking to each other, Trying to please, Entertaining, Initiating, Encouraging, Explaining, Showing, Complimenting and Calling
- 2.4.2. Verbal Negative behaviours – Teasing, interrupting, commanding, threatening, screaming, claiming ownership, complaining, and rejecting
- 2.4.3. Physical Positive behaviours – Playing, Hugging, Kissing, Holding, Cuddling, Lifting, Feeding, Helping, Friendly proximity, Doing together, Offering and Accepting
- 2.4.4. Physical negative behaviours - Temper tantrums, Moving away, Pushing, Pulling, Hitting, Throwing things, Snatching, Disturbing and Pointing fingers
- 2.4.5. Gestures – Positive – Smiling, Eye contact, Excited/ happy and Welcoming
- 2.4.6. Gestures – Negative – Ignoring, Sad, Angry and Crying
- 2.4.7. Ambivalent behaviours - Trying to follow, Trying to copy, Quiet, Staring/ gazing, Warning look, Shocked, Trying to negotiate and Confused/ bewildered

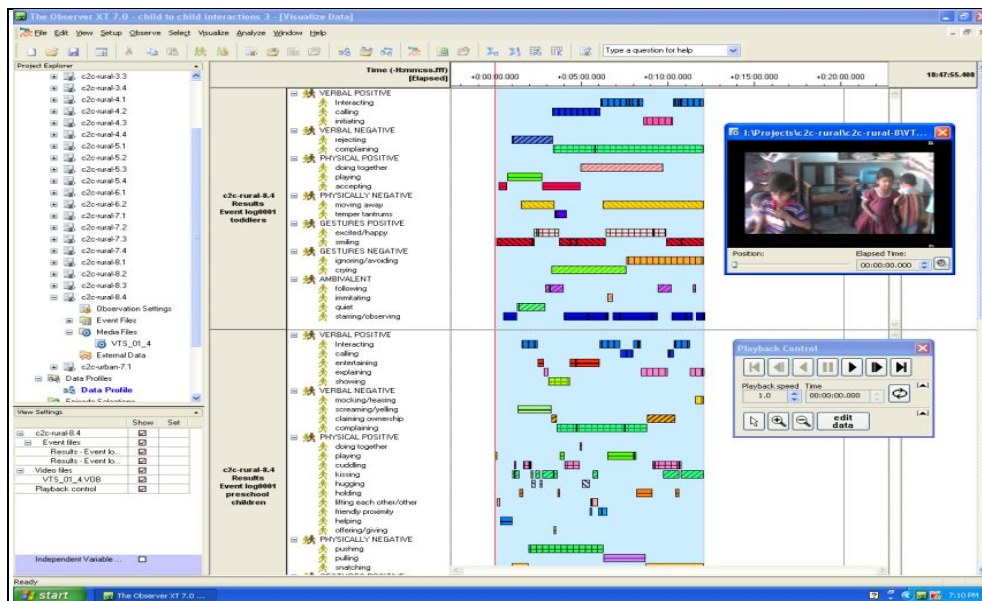


Figure 1: Data Visualization window

**3. Results**

The tabulated data are presented in graphs, tables and age differences expressed through two-way Analysis of Variance.

*3.1. Age Differences in Children’s Interactions Table/Graph 4.3.1 Age Differences among Children in Exhibiting Verbal Positive Behaviours (N=88 Video Clippings)*

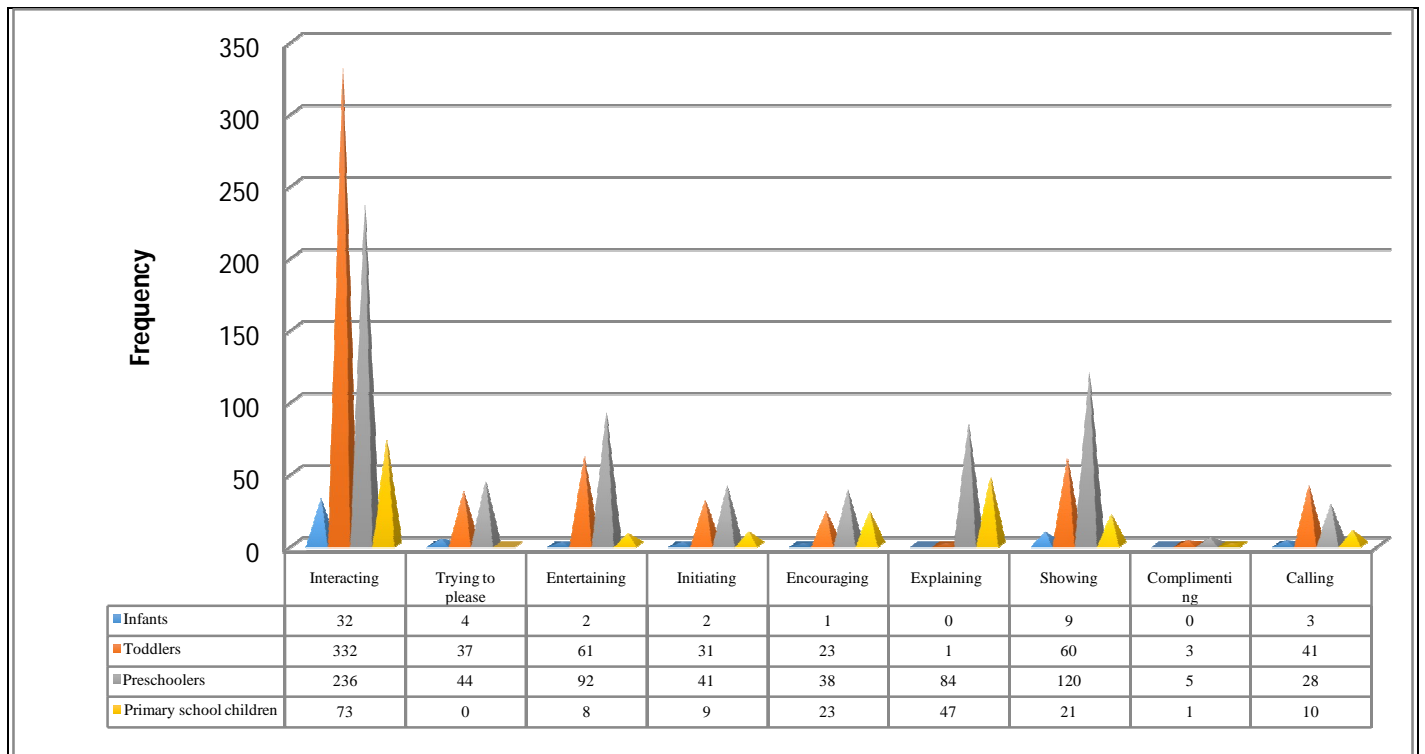


Figure 2: Age differences among children in exhibiting verbal positive behaviours  
 Verbal Positive Behaviours  $f = 2.229 p < 0.9$ ; Ages Groups  $f = 6.674 p < 0.009$

The verbal positive behaviours exhibited by children of four different age groups show some differences which are evident from the graph. In all the types of verbal positive behaviours toddlers and pre-schoolers seem to show a good frequency of interactions. The interacting behaviour is the foremost demonstrated by all the four age groups. The behaviours like entertaining, explaining and showing are observed fairly for more than 100 times. The remaining verbal positive behaviours seem to have less frequency. The two

way ANOVA analysis on the verbal positive behaviours of the children yielded scores which shows that there are significant age differences among children in exhibiting verbal positive behaviours.

All children love interacting with each other despite the age differences. Toddlers and pre-schoolers seem to share a good bonding in eliciting any kind of interactions. Children are good at explaining and showing things to others without being self-seeking, but this is not evident from infants as they are too young to master the language. The other point to be noticed is all the children tried to please when they want to ask for something except the primary school children which may be due the fact that they are the eldest among the whole group. All children are good at initiating, entertaining, complimenting and encouraging; this is a good sign of developing sense of appreciation of rights of others and zeal for socializing oneself.

3.2. Age Differences among Children in Exhibiting Verbal Negative Behaviours (N=88 Video Clippings)

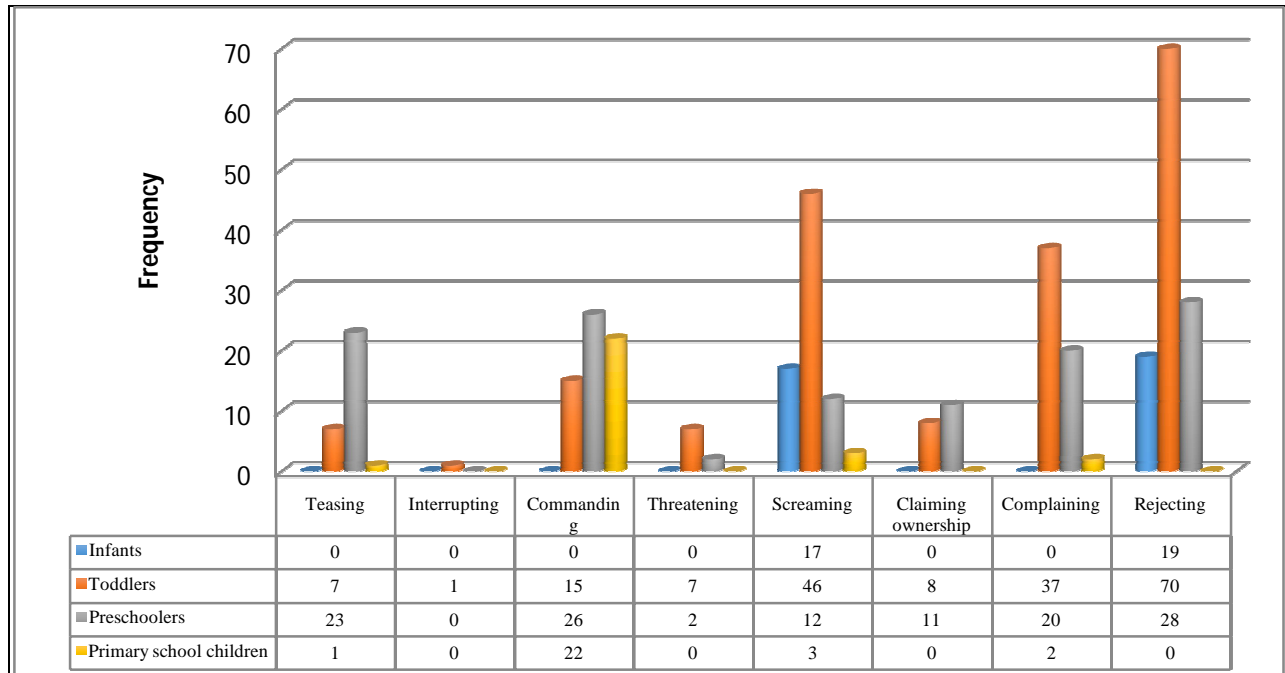


Figure 3: Age differences among children in exhibiting verbal negative behaviours  
 Verbal Negative behaviours  $f= 1.987 p<0.1$ ; Age groups  $f= 4.213 p< 0.04$

The age differences in verbal negative behaviours of children are obvious from the graph. Rejecting behaviour is the most frequent one to be exhibited by children of all age groups except primary school children. In fact toddlers and pre-schoolers are the ones to steal the show even in displaying the verbal negative behaviours. Whilst infants only showed screaming and rejecting behaviours primary school children showed only commanding more frequently, teasing, screaming and complaining behaviours in a small way. The two way ANOVA analysis that yielded the F and P values suggest that there is a significant age differences in the verbal negative behaviours among children while interacting.

So this makes it very evident to believe that as the children grow older they tend to identify with the strong temperaments of adults which seem to them as source of power and being superior. Infants can't be verbally negative due to the initial stage of seeking language. Toddlers and pre-schoolers are the active agents of using a language and making it adept for the situation. Primary school children are good at commanding which might be because they being the eldest can run the show according to their convenience.



3.3. Age Differences among Children in Exhibiting Physical Positive Behaviours (N=88 Video Clippings)

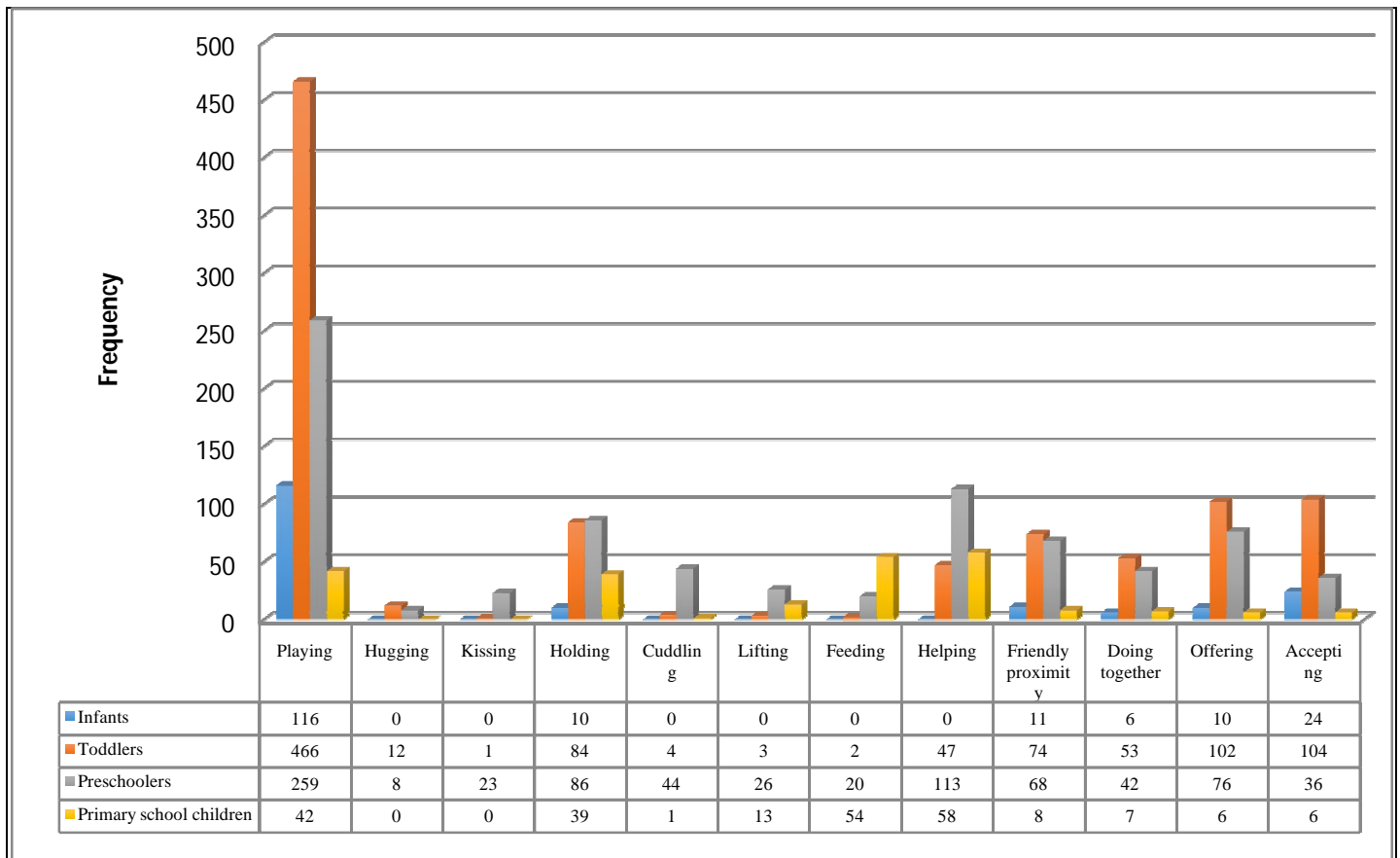


Figure 4: Age differences among children in exhibiting physical positive behaviours  
 Physical Positive Behaviours -  $f = 2.522 p < 0.03$ ; Age groups  $f = 4.430 p < 0.02$

Age differences among children in exhibiting physical positive behaviours are evident from the graph. The graph provides perfect vision on how well children of all the age groups claimed that they are most physically energetic humans. Playing behaviour frequency explains everything about the children’s terrific potential for play. The graph also visualizes that there is something more than playing in childhood, they are affectionate enough just like adults as the hugging, kissing, holding and lifting behaviours in the graph suggest. Primary school children are missing on kissing and hugging while some infants are too young to exhibit most of the physical positive behaviours. The most important thing to be observed is the offering behaviour, toddlers offered more and are followed by pre-schoolers, but infants seem to have offered more than primary school children. Children being referred to as egoistic can’t be as true as the younger children were observed to offer more than older kids. These significant differences visually apparent have been corroborated statistically through F and P values of two ways ANOVA which were significant.

3.4. Age Differences among Children in Exhibiting Physical Negative Behaviours (N=88 Video Clippings)

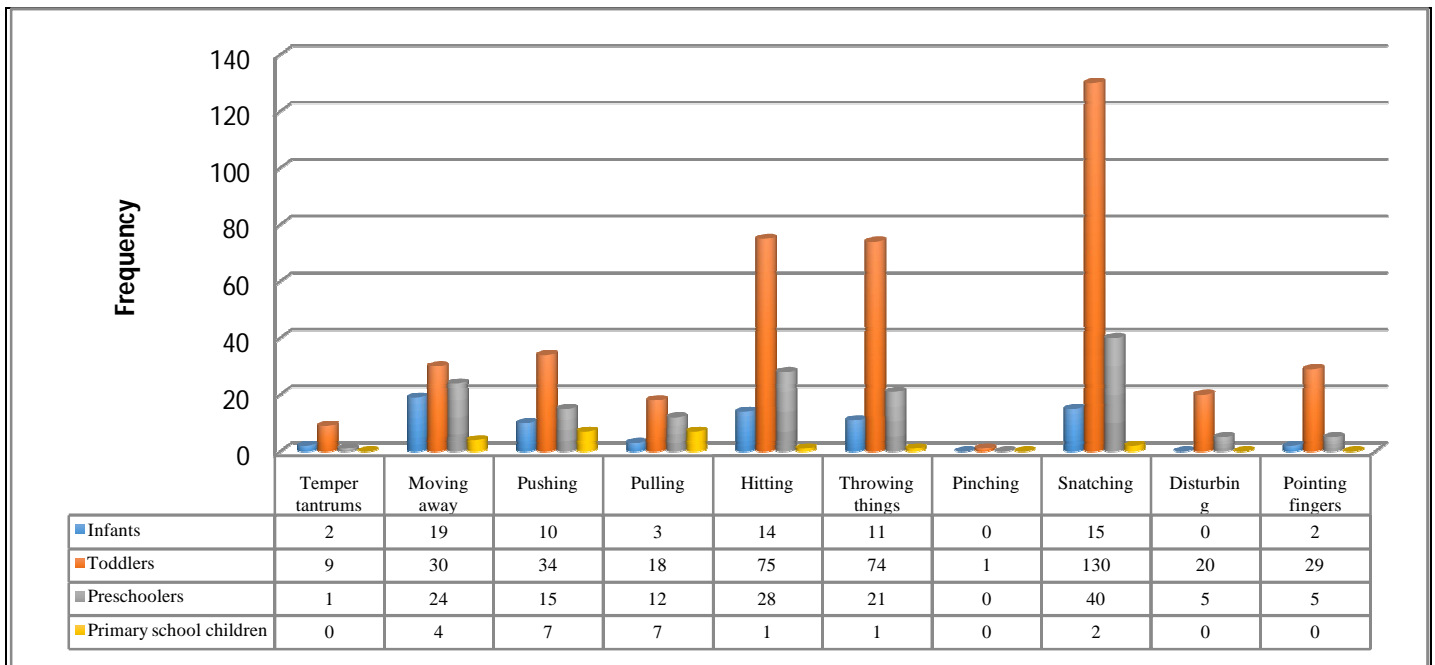


Figure 5: Age differences among children in exhibiting physical negative behaviours  
Physical Negative behaviours –  $f= 2.02$   $p<0.1$ ; Age groups  $f= 9.878$   $p< 0.001$

Bad always seems to overtake good that aptly describes the graph. The physical negative behaviours are elicited more by all the children than the physical positive behaviours. Snatching is the most observed behaviour which was followed by hitting and throwing things. Pinching is the behaviour that was hardly observed. Pushing, pulling, moving away, pointing fingers are the other behaviours which were demonstrated by all the children at varying frequencies. Pointing fingers, disturbing and temper tantrums were not exhibited by primary school children, may be because they think they can deal with the situation without complaining or disturbing. Though these behaviours are shortlived, they might turn into seriously bad temperaments if not straightened in the young age. The two way ANOVA analysis on this suggests that there are significant differences in the physical negative behaviours of children’s interactions, with toddlers topping the list.

3.5. Age Differences among Children in Exhibiting Gesture Positive Behaviour (N=88 Video Clippings)

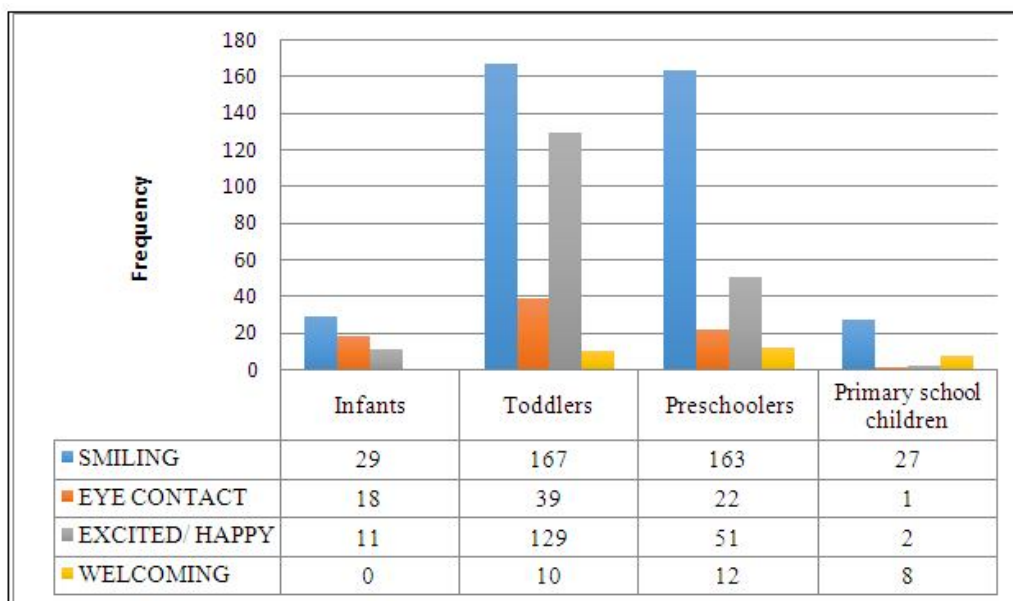


Figure 6: Age differences among children in exhibiting gestures positive behaviours  
Gestures Positive -  $f= 2.00$   $p < 0.2$ ; Age groups –  $f= 2.186$   $p<0.22$

Positive gestures of children always get rewarded; this can be understood from the graph. Smiling is the most common behaviour that can be expected from children. The excitement/happy behaviours are seen fairly from all the children but primary school children didn't exhibit it so much. All children maintained good eye contact while primary school children could afford to maintain eye contact just for once. Children welcomed others while infants didn't exhibit any as such. Somehow primary school children seem to exhibit behaviours with less frequency which supports that they not so comfortable with younger age group. Adding to this result the two way ANOVA analysis on the same has shown a little significance in the gesture positive behaviours of interactions among children.

### 3.6. Age Differences among Children in Exhibiting Gesture Negative Behaviours (N=88 Video Clippings)

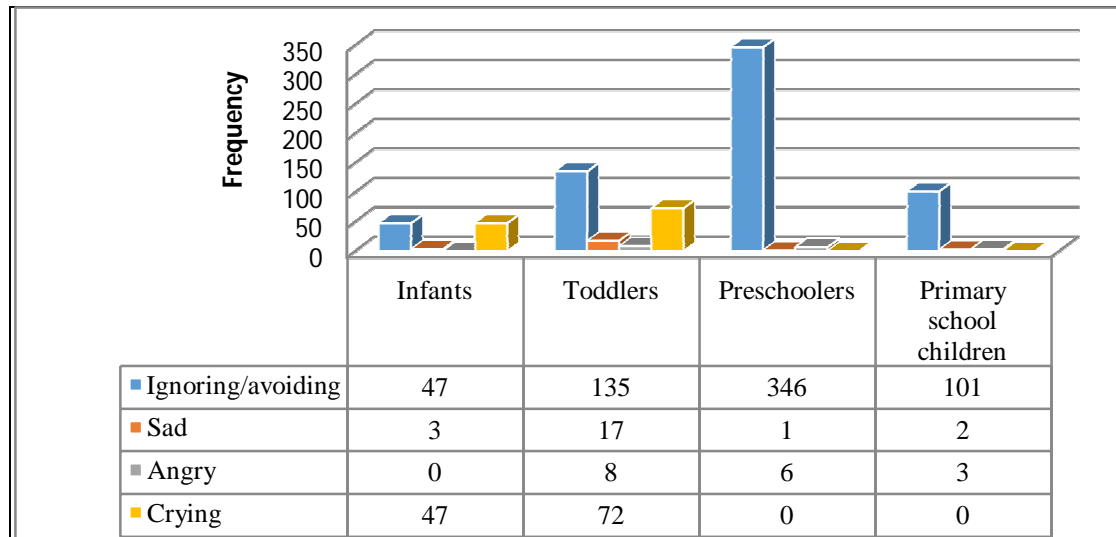


Figure 7: Age differences among children in exhibiting gestures negative behaviours  
 Gestures Negative -  $f=0.712$   $p<0.5$ ; Age groups -  $f=2.058$   $p<0.2$

The age differences in gesture negative behaviours of children are apparent from the graph. Ignoring/avoiding behaviours were the most frequently seen to be exhibited by the children of all four age groups. The sad and angry gesture was seen for very few times, the latter was not at all observed from infants. Crying was observed from toddlers highly and then followed the infants, but it wasn't at all observed from pre-schoolers and primary school children. This may be because by the age of preschool years children do develop some control over their tears and can avoid this behaviour unless very seriously provoked. Adding to these little differences the two way analysis has shown little significant age differences in the gestures negative behaviours of interactions among children.

## 3.7. Age Differences among Children in Exhibiting Ambivalent Behaviours (N=88 Video Clippings)

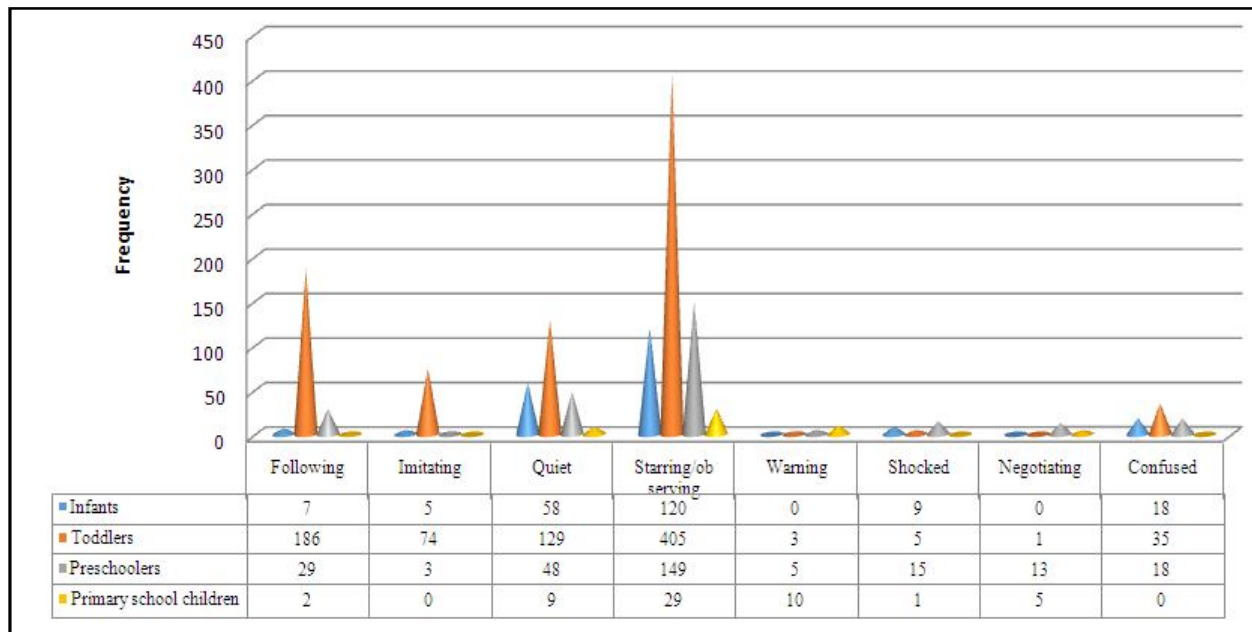


Figure 8: Age differences among children in exhibiting ambivalent behaviours  
 Ambivalent behaviours –  $f = 2.861$ ,  $P < 0.05$ ; Age groups –  $f = 2.695$ ,  $p < 0.1$

Ambivalent behaviours such as staring or observing are something children did more frequently as and when they found something interesting, different and unknown. Following, imitating and quiet behaviours were also exhibited by all the children but primary school children didn't show any imitating behaviour at all and this explains that the older children saw themselves as models of imitation for younger children, but did not imitate the younger ones. The two way ANOVA analysis reveals that there exist significant age differences in the ambivalent behaviours of interactions among children. Toddlers and Preschoolers exhibited ambivalent behaviours more frequently than infants or primary school children.

#### 4. Conclusion

This study indicates that children in mixed age groups do benefit very much in developing social interaction skills. While it is obvious that toddlers and preschool children were the most active, infants were not far behind. Infants tend to benefit very much from mixed group settings since they will receive significant stimulation for socialization. One trend must be noted that the primary school children were less involved with the younger children and when they did it was more frequencies of staring or observing, commanding than affectionate ones. However, useful interactions were seen from primary school age children with younger children, such as engaging them in play, feeding them, helping and simply holding them.

Families and schools must find more opportunities for mixed age group interactions and help older children to interact with younger ones in a more positive manner in order to get the best possible benefit of socialization from children's interactions with each other

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