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Environmental Print Awareness in English and Tamil in Indian Children

Bhuvaneswari. B., M.Phil., Ph.D. Candidate
Prakash Padakannaya, Ph.D.

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Abstract

Environmental print awareness refers to the stage of literacy development when children recognize familiar symbols and words, and display understanding and knowledge that print carries meaning. It has been well documented in literature that environmental print awareness influences the development of early literacy skills. This study was conducted to understand the development of environmental print awareness in kindergarten children. Thirty-eight typically developing Tamil speaking children enrolled in a English medium school and belonging to middle socioeconomic status, were followed from LKG to first grade. They were presented with 15 logos in English and 15 logos in Tamil as they appear in the environment. The 15 logos in each language belonged to three categories: child related, home related and community related. The children were presented with these stimuli every six months and their responses were recorded. Correct responses were given a score of 1 and wrong responses/ no responses were given a score of 0. The scores were analysed to look for a developmental trend in the awareness of environmental print. Results revealed that, across all the readings, children recognized child related logos best, followed by home related and then community related logos. In LKG, fewer logos were recognized and there were no differences in the recognition of English as compared to Tamil. In UKG and grade 1, more numbers of logos were recognized and English logos were recognized better than Tamil. The findings of this study have implications in creating literacy rich environments for children at home and school.

Children's Experiences with Print

Children's experiences with print start as early as they start actively engaging themselves with the print in their world. Children have ample exposure to environmental print such as sign

boards, road signs, logos of products, etc., even if they are not exposed to books or other literacy materials. Young children come to experience print through shared interactions with environmental print (Enz, Prior, Gerard, & Han, 2008; Neumann, Hood, Ford, & Neumann, 2012; Vera, 2011). Children are generally able to recognize environmental print before they are able to read print in books and thus enter school with an understanding that print conveys some meaning (Kuby & Aldridge, 2004). The appearance of symbolic function corresponds to the understanding of environmental print in children (Ginsburg & Opper, 1988).

Environmental print refers to the surrounding non-continuous print that fulfils real-life functions. Environmental print is typically large, bold and uses varying colors and fonts not typically seen in books (Neumann, Hood, & Ford, 2013). Environmental print appears in a variety of fonts, shapes, sizes and generally in capital letters (Horner, 2005; Vukelich, Christie, & Enz, 2008). It includes the forms of print available in the child's environment, like the writing present on toys, commercialized print on grocery products, popular restaurant signs, or large billboards along a highway and street signs (Pelatti, et al., 2014; Stewart & Lovelace, 2006; Adams, 1990). Thus, there are various categories of environmental print including child related, household related and community related (Horner, 2005). Researchers have shown that children tend to enjoy reading environmental print before they engage in reading print in books (Goodman, 1980; Hiebert, 1983, 1986; Hall, 1985; Wepner, 1985; Kontos, 1986; McGee, 1986; Aldrige & Rust, 1987; Clay, 1991). Environmental print awareness refers to the stage of literacy development when children recognize familiar symbols and words, and display understanding and knowledge that print carries meaning (American Speech-Language Hearing Association, 2001). According to Whitehurst and Lonigan (1998), environmental print is a sample measure of pretending to read, and pretending to read is a component of emergent reading.

Developmental models of reading assume that beginning readers process information differently from mature readers. Models proposed by Chall (1983), Ehri (1985) and Frith (1985) explain the progression of stages in the development of reading. According to Frith (1985), there are logographic, alphabetic and orthographic stages in the development of reading in alphabetic languages. Environmental print awareness corresponds to the logographic stage in

children.

Typically, children begin to recognize environmental print in context around 3 years of age. By the ages of 4 or 5 years, typically developing children can recognize some forms of environmental print with contextual cues, but accuracy decreases when contextual cues are removed (Goodman, 1986). According to Pelatii, et al. (2014), environmental print awareness develops as a continuum with children first exhibiting an interest for print and its meaning and eventually learning that print units are related to each other.

Research has also demonstrated that print from the environment gives young children confidence to experiment and use print resources to improve their writing (Tunks & Giles, 2007). Children sometimes use environmental print simply as a source to copy without regard to its meaning. Also, environmental print helps in the learning of correct spellings of particular words or phrases, which children see often in their immediate environment. It is also interesting to note that, regardless of socioeconomic status (Heath, 1983; Purcell-Gates, 1996) or home language (Teale, 1986; Xu, 1999) environmental print positively affects later reading skills in all children. Therefore, it was noticed that, many early childhood educators have used environmental print as part of their early literacy programmes (Cloer, Aldridge, & Dean, 1981, 1982; Aldridge & Rust, 1987; Kirkland, Aldridge & Kuby, 1991).

In order to recognize logos, children make use of graphic cues like font, as well as visual, non-graphic cues, such as the yellow arches of McDonald's logo. Young children seem to use the visual instead of the graphic cues, while recognizing logos (Masonheimer, Drum, & Ehri, 1984). Typically environmental print awareness of young children is assessed by using everyday advertisement logos, brands, street signs, shop names and billboards (Masonheimer, Drum, & Ehri, 1984; Sulzby & Teale, 1991). A study by Jagadish (1991) on Indian children showed that children demonstrate some amount of logographic reading (one of the initial stages of reading development) right from two years of age, with a significant increase around four and a half years of age. This is the stage when children are able to recognise environmental print, because they are able to combine logographic strategies with alphabetic strategies.

Environmental print awareness can be enhanced in children by parents and teachers. Parents can actively point out to words and letters in the environment during playtime (Gerard, 2004; Lass, 1982). The interactions of parents and children with environmental print can be understood in terms of Vygotsky's (1978) socio-cultural perspective. From this perspective, it can be understood that parents can scaffold literacy interactions with their children (Clarke-Stewart & Beck, 1999; Dodici, Draper, & Peterson, 2003; Trawick-Smith & Dziurgot, 2011; Vandermaas-Peeler, Nelson, Bumpass, & Sassine, 2009). Justice and Pullen (2003) used the term "print referencing" which involves the parents' use of both verbal (comments and questions e.g., that's the letter A; where is the word dog?) and non-verbal references (pointing to and tracking print with a finger). Print referencing during storybook reading also enhances print and word awareness in children (Justice & Ezell, 2000; Justice & Pullen, 2003). In many instances, when parents point out print in the environment, children respond positively (Sinclair & Golan, 2002; Neumann, Hood, & Neumann, 2009; Neumann & Neumann, 2010). When children begin to read environmental print logographically, by using visual cues rather than letter-sound analysis skills (Frith, 1985), they gain meaning from the print which is an important component of emergent literacy (Whitehurst & Lonigan, 1998). Apart from informal interactions during play, explicit guidance from a parent during shared literacy activities supports the development of emergent literacy skills (Bus, van IJzendoorn, & Pelligrini, 1995; Sénéchal & Le Fevre, 2002, Neumann et al., 2009).

By intentionally including environmental print activities in their classrooms, teachers can provide opportunities for children to connect their prior knowledge to literacy experiences in school. Experiences with familiar print assist children with word recognition and provide a sense of ownership when they recognise logos and product labels that they see every day (Prior, 2009). However, a study by Kassow (2006) concluded that the knowledge of environmental print was a poor predictor of later literacy, regardless of the socio-economic status, ethnicity and geographical region. Zhao, et al. (2013) concluded that environmental print was not effective in teaching literacy in the early years, but could be effective as the child matures, if it was accompanied by adult scaffolding, interaction and support.

Need for the Study

It has been well documented in literature that environmental print awareness, scaffolded by adults contributes positively to aspects of emergent literacy development in children. There are no studies on environmental print awareness in Tamil speaking children. This study is the first to explore the categories of environmental print and awareness of the same in English as well as in Tamil in Indian children.

Method

Thirty-eight typically developing kindergarten children from an English medium school with "Central Board of Secondary Education" curriculum in the state of Tamil Nadu in India participated in the study. These children were followed from kindergarten to first grade at 4 intervals of six months each to observe the development of print skills.

Detailed demographic data including home language and languages exposed to were collected. The 'WHO Ten-Question Screen (cited in Durkin et al., 1994) was used to collect details of the children's development. The Assessment Checklist for Speech and Language Skills (Geetha, 2006) was administered to rule out any speech-language delay/disorders. Hearing related issues like hearing loss, repeated middle ear problems and indications of auditory processing problems was ruled out in these children using checklist developed based on the 'Colorado Early Childhood Hearing Screening Guidelines (Johnson, Thomson & Specht, 2001). Children with visual problems were excluded from the study, while those with corrected vision were included. Children with a history of seizures, delayed motor development, gross and fine motor deficits and those children with physical impairments were also excluded from the study.

Thirty-eight children, 24 male and 14 female were selected for the study. The ages of these children ranged between 3;7 years and 4;6 years. All the children had the home language as Tamil. All the children belonged to middle socio economic status as determined on the basis of the revised NIMH Socioeconomic Status (SES) Scale (Venkatesan, 2009). Informed consent was taken from the parents of the children prior to their inclusion in the study.

Environmental print awareness was assessed by presenting a series of logos representing various brands/products, to the children using a PowerPoint presentation. The children were presented with 15 logos in English and 15 logos in Tamil as they appear in the environment (Refer to APPENDIX). The 15 logos in each language belonged to three categories: child related, home related and community related. The children were instructed to look at the logo and name the brand/product. For every correct response, a score of '1' was given. If the child was unable to identify the brand/product a score of '0' was given. If the child recognized the product type but could not name the exact product or said a similar product, a score of '0.5' was given.

The children were tested at 4 intervals of six months each. A total of 5 readings, first at the beginning of Lower Kindergarten (LKG), second at the end of LKG, third at the beginning of Upper Kindergarten (UKG), fourth at the end of UKG and fifth at the beginning of Grade 1 have been presented in this study.

Results & Discussion

The purpose of this study was to understand the development of environmental print awareness in Tamil-speaking kindergarten children in both English and Tamil. Table 1 shows the mean and standard deviation of the total scores in English and Tamil across the grades.

Table 1
Mean and SD of scores on Environmental Print in English and Tamil across the grades

Language	LKG 1		LKG 2		UKG 1		UKG 2		STD 1	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
English	7.4	2.2	8.3	2.2	9.3	2.0	9.8	2.0	11.3	2.1
Tamil	2.1	1.8	3.5	1.9	4.8	1.7	5.8	1.8	7.4	1.9

As can be seen from Table 12, the mean score on Environmental Print Awareness in English in LKG 1 is 7.4, in LKG 2 is 8.3, in UKG 1 is 9.3, in UKG 2 is 9.8 and in Std 1 is 11.3. The mean score on Environmental Print Awareness in Tamil in LKG 1 is 2.1, in LKG 2 is 3.5, in UKG 1 is 4.8, in UKG 2 is 5.8 and in Std 1 is 7.4.

Figure 1 shows the mean scores on Environmental Print Awareness in English and Tamil across the grades.

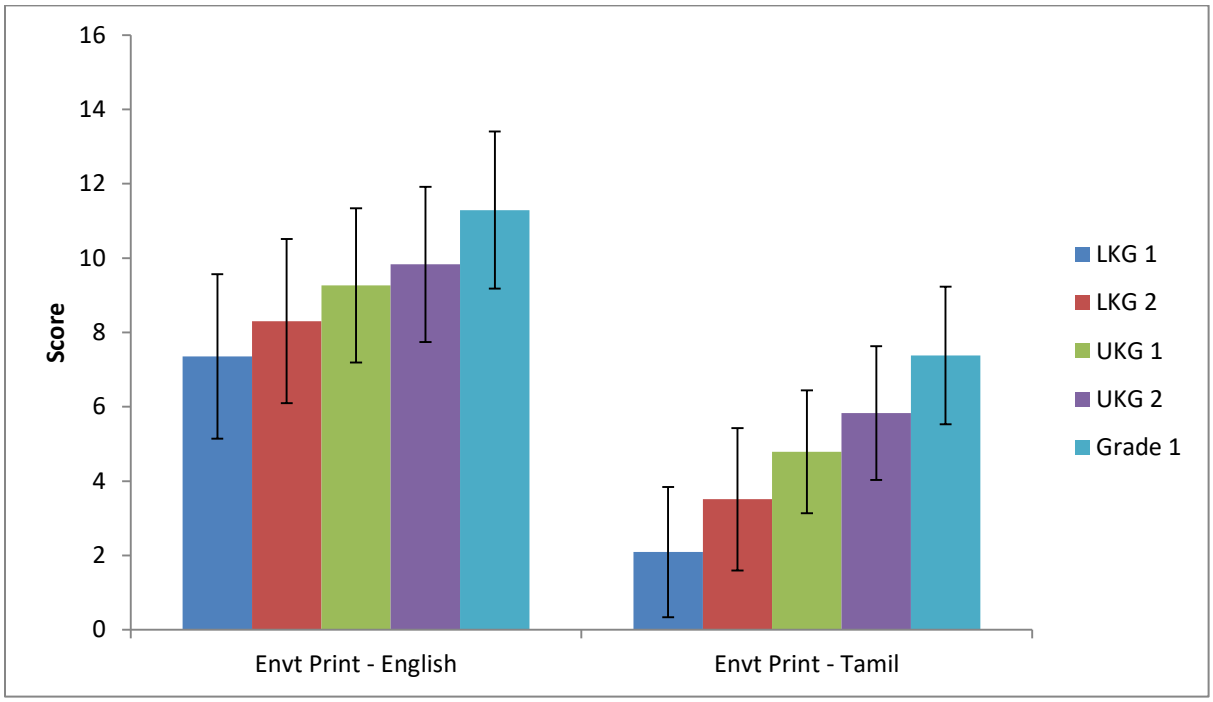

Fig 1: Mean score on Environmental Print Awareness in English and Tamil across the five stages. Error bars denote one standard deviation around the mean.

Table 2 shows the mean and standard deviation of scores on each category of environmental print in English across the grades.

Table 2
Mean and SD of scores in Environmental Print Awareness in the three categories of logos across the five stages.

Category	Language	LKG 1		LKG 2		UKG 1		UKG 2		STD 1	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Child Related	English	3.4	0.6	3.8	0.6	4.0	0.7	4.3	0.7	4.7	0.5
	Tamil	1.2	0.9	1.8	0.9	2.3	0.7	2.8	0.8	3.2	0.8
Household	English	2.6	1.0	2.9	1.0	3.3	0.9	3.5	0.9	4.1	0.9
Related	Tamil	0.8	0.6	1.1	0.7	1.7	0.6	2.0	0.8	2.7	0.8
Community	English	1.3	0.9	1.5	0.9	1.8	0.8	1.9	0.9	2.3	1.1
Related	Tamil	0.1	0.4	0.5	0.5	0.8	0.5	1.0	0.5	1.4	0.5

The mean score for 'child related' environmental print in English in LKG (1) is 3.4, in LKG (2) is 3.8, in UKG (1) is 4.0, in UKG (2) is 4.3 and in Std 1 is 4.7. The mean score for 'household related' environmental print in English in LKG (1) is 2.6, in LKG (2) is 2.9, in UKG (1) is 3.3, in UKG (2) is 3.5 and in Std 1 is 4.1. The mean score for 'community related' environmental print in English in LKG (1) is 1.3, in LKG (2) is 1.5, in UKG (1) is 1.8, in UKG (2) is 1.9 and in Std 1 is 2.3.

The mean score for 'child related' environmental print in Tamil in LKG (1) is 1.1, in LKG (2) is 1.7, in UKG (1) is 2.2, in UKG (2) is 2.7 and in Std 1 is 3.2. The mean score for 'household related' environmental print in Tamil in LKG (1) is 0.7, in LKG (2) is 1.1, in UKG (1) is 1.7, in UKG (2) is 2.0 and in Std 1 is 2.6. The mean score for 'community related' environmental print in Tamil in LKG (1) is 0.1, in LKG (2) is 0.5, in UKG (1) is 0.8, in UKG (2) is 1.0 and in Std 1 is 1.4.

Figure 2 shows the mean scores on the three categories of logos in English and Tamil across the five stages.

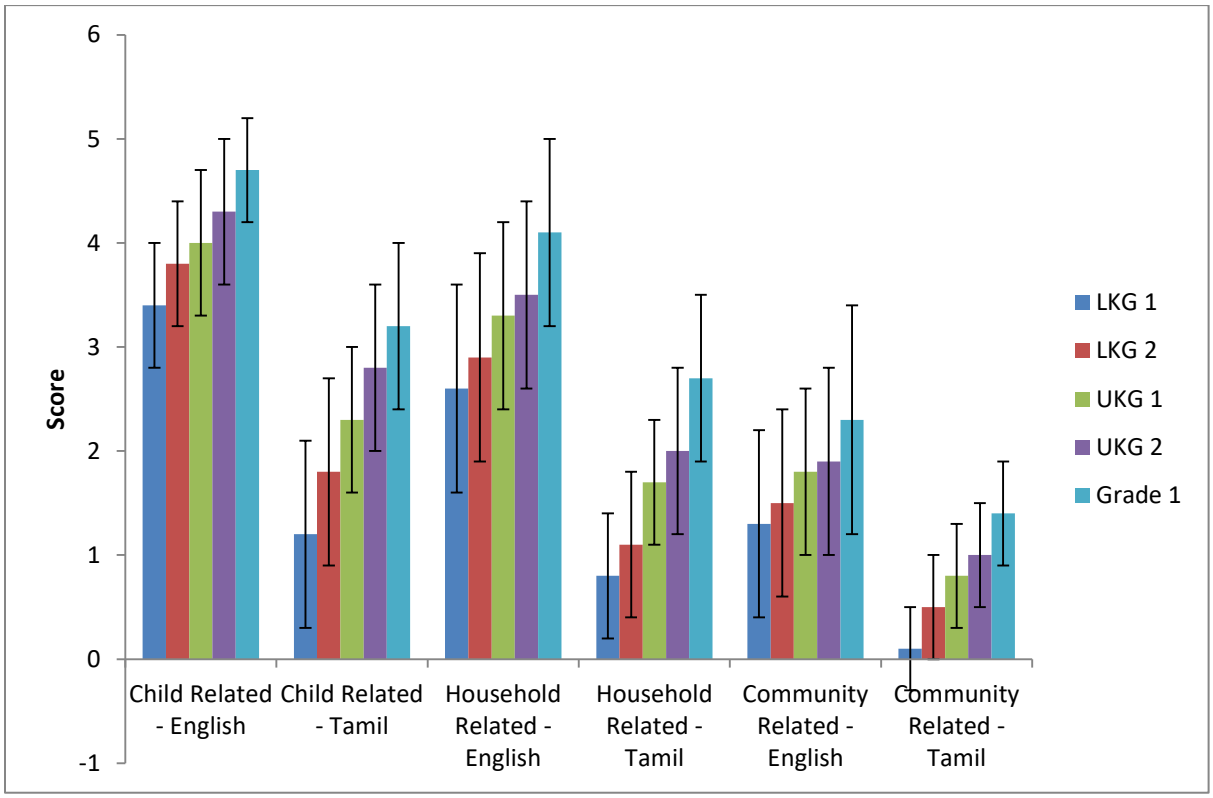

Fig 2: Mean scores on the three categories of logos across the five stages. Error bars denote one standard deviation around the mean.

As observed in table 1, and further in table 2, children performed better in identifying environmental print in English as compared to Tamil. Environmental print awareness was better in English for all the 3 categories (namely-child related, household related and community related logos) as compared to English. Further from the tables, the scores also reveal a developmental trend, with the least number of logos recognized in LKG (1) and progressively more logos being recognized by the time the children reached Std 1. This developmental trend was seen in both the languages, English and Tamil.

Non-parametric Friedman's Test results revealed that there was a significant difference across grades for English, $\chi2(4) = 150.312$, $p = 0.000$, as well as for Tamil, $\chi2(4) = 144.211$, $p = 0.000$. Non-parametric Wilcoxon Signed Ranks Test revealed a significant difference for the children in LKG, UKG in English at points 1 and 2, $p<0.01$. A significant difference was also observed between LKG, UKG and Grade 1. Based on the statistical analysis, a significant developmental trend was also observed in the recognition of logos through LKG to Grade 1. Typically, children begin to recognize environmental print in context around 3 years of age. By the ages of 4 or 5 years, typically developing children can recognize some forms of environmental print with contextual cues, but accuracy decreases when contextual cues are removed (Goodman, 1986). Again as Jagadish (1991) states that children's logographic reading skills increase as age increases, the findings of this study indicates that the developmental trend continues beyond 4 years of age and is evident till 6 years. The study indicates the development of symbolism in children. This is considered as one of the most important cognitive achievements of early childhood where a child learns the ability to understand and use symbols (Bialystok & Martin, 2003; De Loache, 2000) as a prelude to learning literacy. This kind of symbolic development is also true when a symbol is presented in context, for example written word along with the logo. Children seem to identify better in the context than out of context (Hiebert, 1978) and this seems to be a transition to identifying written symbols.

Figure 3 shows the linear growth in scores on Environmental Print Awareness in English and Tamil.

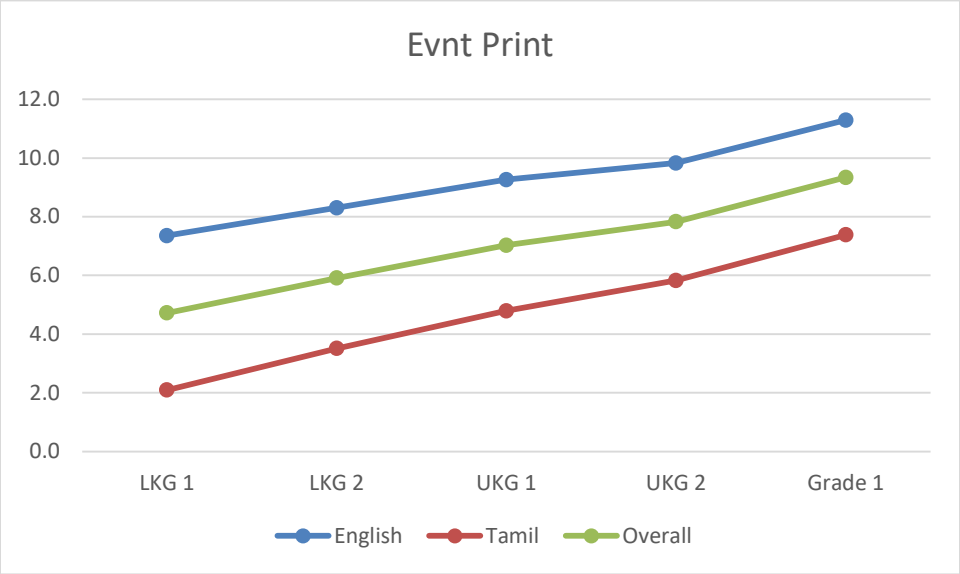

Fig 3: Linear growth of scores on Environmental Print Awareness in English and Tamil across the grades.

From the scores, it is clear that the children were able to recognize English logos better than Tamil as indicated in Table 1. Non-parametric Wilcoxon Signed Ranks Test revealed a significant difference for children between English and Tamil across all the grades, $p<0.01$. This could be attributed to the fact that most of the brands and products display English logos and the same are shown on advertisements in TV and magazines. The exposure to these logos seems to be more frequent, better represented and hence, recognized better due to familiarity when compared to other logos in Tamil. The scores show a pattern in the recognition of the categories of environmental print. Child related logos were recognized the most, followed by household related logos and then by community related logos. This could be attributed to the familiarity of child related logos compared to the other categories of logos. This observation is in consonance with the study by Horner (2005) who found that child related logos were recognized better by children.

Summary and Conclusions

The present study was conducted on thirty-eight typically developing Tamil speaking children from middle socioeconomic setting. The children were presented with everyday logos as they

appear in the environment, both in English and Tamil, under three categories, child related, household related and environment related. The results show that the children were able to recognize English logos better than Tamil as familiar brands and products are displayed in English on TV and other media. It was observed that the children recognized child related logos better than household related logos, whereas community related logos were recognized the least. This is the first study to compare the environmental print awareness in Tamil and English. Since children revealed a better ability to recognize environmental print based on the exposure, it provides directions for future learning. It has implications for teachers and parents to include environmental print in their daily interactions with the children, thereby enriching the literacy environments at home and school.

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APPENDIX

ENGLISH

Child related

1)		Dairy Milk – Chocolate
2)		Chhota Bheem – Cartoon
3)		Oreo – Biscuit
4)		Maggi – Instant noodles
5)		Apsara – Pencil

Household related

1)		Dettol – Soap
2)		Aavin – Milk packet
3)		Good Knight – Repellant
4)		Vim – Dishwash liquid
5)		Samsung – TV brand

Community Related

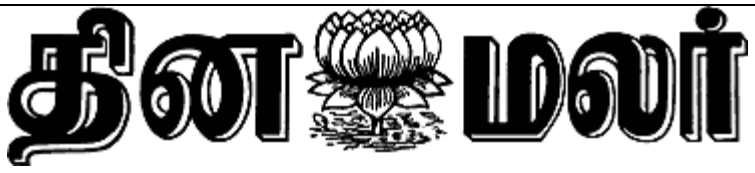
1)		Dominos Pizza – Restaurant
2)		Stop – Traffic sign
3)		Ambulance
4)		Use Me – Dustbin
5)		McDonald's – Restaurant

TAMIL

Child related

1)		Chutti – TV channel
2)		Dora – Cartoon
3)		Gokulam – Magazine
4)		Champak – Magazine
5)		Chutti Vikatan – Magazine

Household Related

1)		**Sakthi Masala – Spice powder**
2)		**Kalaignar – TV channel**
3)		**Idhayam – Oil**
4)		**Aavin – Milk packet**
5)		**Dina Malar – Newspaper**

Community Related

1)		Pothys – Clothes shop
2)		The Chennai Silks – Clothes shop
3)		Stop – Traffic sign
4)		Singam 2 – Movie
5)		Agarwal Bhavan –Sweets shop

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Bhuvaneswari. B., Ph.D. Candidate
Department of Studies in Psychology
University of Mysore
Mysore 570006
Karnataka
India
bhuvana.nrb@gmail.com

Dr. Prakash Padakannaya, Ph.D.
Professor
Department of Studies in Psychology
University of Mysore
Mysore 570006
Karnataka
India
prakashp99@gmail.com