



# Designing for Children

- With focus on 'Play + Learn'

## Tackling anger in children with hearing impairment

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**Abstract:** Children with hearing loss suffer from mercurial outbursts of anger which manifests into physical aggression, leading to harm to the self and to their surroundings. More than 30 million children around the world suffer from hearing loss and little research has been conducted to understand what factors lead to mercurial aggression in children with hearing impairment, particularly in the Indian context. This paper aims to determine the critical factors that are responsible for this behaviour in Indian children. We conducted a literature review and semi-structured interviews with hearing-impaired children, their family members, school instructors, medical professionals and counsellors to understand the factors leading to unhealthy behavioural growth in children. We proposed multiple design directions and mapped them on an impact vs time investment graph. These directions can provide a designer comprehensive starting points to initiate design of solutions to tackle anger in children with hearing impairment.

**Key words:** *Hearing disability, Anger management, Children, Aggression*

### 1. Introduction

#### 1.1 Hearing impairment

Every year, more than 30 million children around the world are born deaf or develop acute hearing impairment at an early age. A person is said to have hearing loss when they are unable to hear with a hearing threshold of 25dB or better. Hearing loss can occur across a spectrum, from mild to profound, affecting one or both ears. People with mild to severe

hearing loss are referred to as 'hard of hearing'. These people benefit from hearing aids, cochlear implants and other assistive devices. (G. Vaughan, 2019)

## 1.2 Anger as an emotion

Anger is a normal human emotion. However, the response to anger manifests in different ways amongst different people (Krahé, B., 2013). Behaviour involving the outlet of this anger can be termed as aggressive behaviour. Above a permissive level, aggressive behaviour can have negative consequences in terms of damage to social relationships. Many problems, including aggressive behaviour, are "reduced with the development of social skills, problem solving and communication skills." (Babaroglu A., 2014)

Questionnaires such as *Projective Assessment Test* ((M. Jain, 2017), (A. Singh, 2017), (S.K. Kar, 2017), (I.B. Weiner, 2017), (K. Kuehnle, 2017)) and *Rosenzweig Frustration Test* (Rosenzweig, S., 1945) are used to measure aggression which can manifest in multiple forms. They can be categorised based on the following factors: (Krahé, B., 2013)

- Response modality: Verbal, Physical, Postural or Relational
- Immediacy: Direct, Indirect
- Goal direction: Hostile, Instrumental
- Instigation: Proactive, Reactive
- Type of harm: Physical, Psychological
- Visibility: Overt and covert

If a child learns to deal with a problem with aggression, she will use aggression to deal with the problem going into adulthood as well ((Eron, L. D., 1984), (Huesmann, L. R., 1984)).

## 1.3 Controlling anger

There are two distinct approaches to anger management. These differ in terms of scope, form of intervention and the subsequent long-term impact it will have on the child. (Das, H., 2019)

One of the approach, termed as "impulsive" aggression, is when the child expresses heightened aggressive responses to stimuli around him/her. Controlling impulsive aggression provides temporary respite from the situation and behaves as a form of escapism for the child. However, this acts as a short term solution. (Das, H., 2019)

The other contrasting approach is, long-term anger management, where the child develops a controlled behavioural attitude through positive experiences and reinforcement. This affords a more stable emotional state in testing situations and allows

the child to take rational decisions. Long term anger management has a more effective and long lasting effect on the emotional state of the child and provides a better solution to the problem of heightened aggression, in comparison to impulsive aggression control (Shah, R., 2019).

#### **1.4 Child's behavioural growth**

There are four stakeholders for a child in their early years of growth and behavioural development. These stakeholders have a direct or indirect impact on how the child's behavioural attitude develops.

- The child in her surroundings

The manner in which a child perceives her surroundings and how she responds to unfavourable stimuli causing her to express emotions are directly linked to her behavioural growth ((Eron, L. D., 1984), (Huesmann, L. R., 1984)).

- The parents

The parents of a child interact with her the most, especially in the developing stages of her childhood, and play an active role in shaping how her emotional control matures. (Brubaker, R. G., 2000), (Szakowski, A., 2000))

- The school instructors

The teachers interact and impart lessons to the child in her developing years. An important aspect of schooling in a child's life is overall development of the child's character and personality, where behavioural development is also included (Sylva, K., 1994).

- The peers

The child interacts and plays with her friends in school and her neighbourhood. The manner in which the peers respond to the child's actions can directly impact how she learns to control her behaviour.

#### **1.5 Problem Area**

Children with hearing impairment express anger through aggravated media including animated hand movements and physical harm (Das, J., 2019). While heightened aggression is a concern in children with hearing impairment, the level of behavioural problem is not related to the degree of hearing loss ((Stevenson, 2009), (McCann, J., 2009), (Watkin, D., 2009), (Worsfold, P., 2009), (Kennedy, S., 2009), (Colin, 2009)). For some children, these outbursts may happen in response to seemingly trivial stimuli which might not elicit similar responses from children without hearing impairment. In more extreme situations,

the child inflicts self-harm as a way to reprimand himself for being different or physically harms people around, particularly loved ones. (Das, J., 2019)

We aim to figure out why children with hearing impairment are prone to mercurial outbursts of anger and physical aggression, in the Indian context. Further, we will detail out solutions that can help control heightened aggression.

### 1.6 Research Gaps

Some research has gone into understanding what factors lead to heightened aggression in these children in the United States and United Kingdom. A study conducted in the United Kingdom mentions that a crucial factor for elevated rate of behavioural problems is poor communication skills in children with hearing loss. ((Stevenson, 2009), (McCann, J., 2009), (Watkin, D., 2009), (Worsfold, P., 2009), (Kennedy, S., 2009), (Colin, 2009)) Another study conducted in the United States, identified that “ineffective parent-child interactions, including deficits in parental responsiveness and social communication, and vague, poorly articulated parental expectations and demands, have been consistently linked to behaviour problems amongst hearing-impaired children” (Brubaker, R. G., 2000), (Szakowski, A., 2000)).

However, this research has taken place in countries with vastly varying cultures than India. Hofstede’s dimensions like individualism and power distance, which directly affect how the child’s behaviour is influenced growing up (Belyh, A., 2015), vary significantly between the countries in which the studies were conducted and India. Figure 1 shows how important Hofstede dimensions differ between countries in which the studies were conducted and India.

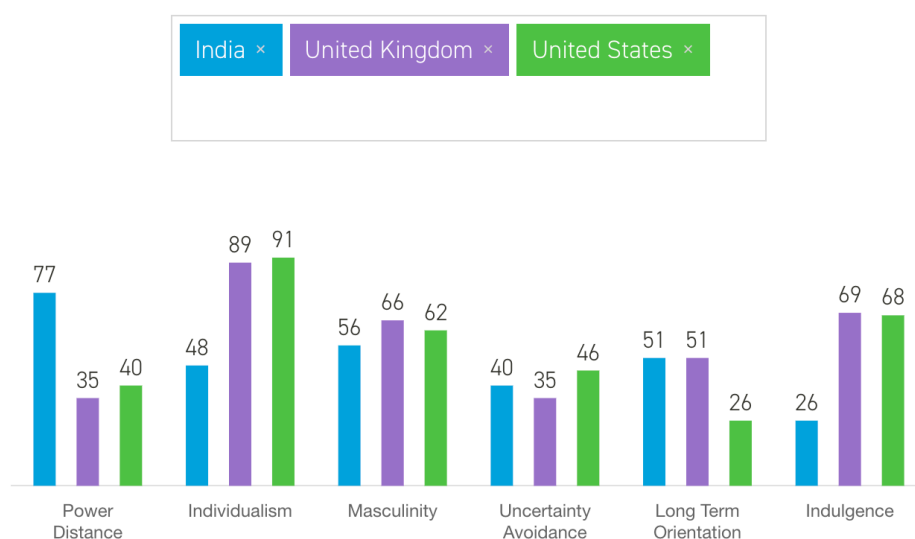


Figure 1. A comparison between the Hofstede dimensions. (Hofstede, G., 2001)

Thus, the research question tackled in this paper are:

1. What factors lead to aggressive behaviour growth in children with hearing impairments in India?
2. What interventions can be designed to manage short-term and long-term anger amongst children with hearing impairments?

## 2. Methodology

We conducted semi-structured interviews with participants (n=10) from multiple stakeholder categories. The interview participants consisted of immediate family members of the hearing-impaired children, school instructors, medical practitioners, children and adolescents with hearing-impairments. The families interviewed belonged to below poverty line as well as higher-middle income. The children interviewed were aged between 8-12 years and were studying at a Deaf and Dumb government school in Guwahati, Assam. One school instructor interviewed was from the same school in Guwahati while another school instructor was a voluntary instructor at a School for Hearing Impaired in Hyderabad, India. The hearing-impaired adolescent was a college student aged 18 years. We interviewed a prominent speech therapist from the Guwahati Medical College Hospital along with a licensed counsellor serving as an in-house consultant at IIT Guwahati.

We conducted the interviews either face-to-face or over telephone. Two researchers were involved in each interview. One acted as the interviewer while the other took shorthand notes of the responses. Interviews were audio-recorded if the participant consented to the same. Objectives for each interview conducted are tabulated below:

Table 1. Number of Interviews conducted and their objectives

Stakeholder	Number of Interviews	Objective
Family Member	1 - below poverty line 1 - higher-middle income	<ul style="list-style-type: none"> <li>• To understand how children behave at home.</li> <li>• To understand how parents/siblings react to the children's behaviour.</li> </ul>
School Instructor	2	<ul style="list-style-type: none"> <li>• To understand how children react to favourable and unfavourable stimuli.</li> <li>• To understand how children behave in school surrounded by peers, with and without similar disabilities.</li> <li>• To understand how teachers respond to the children's behaviour.</li> </ul>

Medical Practitioner	2	<ul style="list-style-type: none"> <li>• To understand how doctors and counsellors treat anger in children.</li> <li>• To understand how children respond to such treatment.</li> </ul>
Hearing-Impaired	3 - children 1 - adolescent	<ul style="list-style-type: none"> <li>• To understand how children respond to peers around them.</li> <li>• To understand what they think when they are under pressure.</li> </ul>



Figure 2. An interview session with a hard of hearing child's mother.

An affinity mapping exercise helped us understand patterns and commonalities in categorising the responses from the participants. These patterns were used to recognise root causes for behavioural issues in children with hearing disabilities, which led to heightened aggression in children.

### 3. Observations and results

The parents of a hard of hearing child suffered a certain level of emotional trauma upon finding out that their kid was hard of hearing. Siblings and family members of the child adapted to the requirements of the child. The child himself was marginalised by other children and this led the child to be isolated. Another parent, however, realised the importance of making sure his child mingles and started to encourage him to interact with

everyone. He insisted on how parents should be involved with their kids and that it is equally important to educate both the parents and the child.

The teachers noted that children in school get angry particularly because their fellow peers or teachers were unable to understand what the children were trying to convey. They also said that another reason for anger was when these children struggled to perform any task.

The counsellor was quick to point out that parents who are hot headed and react aggressively lead to children who mimic this behaviour, further highlighting the importance of parental influence. She noted how in minor cases, mental retardation or intellectual disability can also lead to anger issues with physical outbursts.

The college student who grew up with supportive parents attributes his level headedness to his parents' upbringing. They taught him to channelise anger into something productive and positive. Figure 3 highlights the key sentences from the interviews.









<i>Stakeholder interviews</i>			
<p><b>Parent of a hearing impaired child</b></p>  <p><i>"Good parenting can have a major impact on a child's behavioural growth."</i></p>	<p><b>Psychologist</b></p>  <p><i>"Anger if not dealt with properly in the child growth stage, may result in anti-social behaviour in adults "</i></p>	<p><b>Voluntary Teacher to the hearing impaired</b></p>  <p><i>"The kids feel like no one really understands them and that manifests into anger outbursts "</i></p>	<p><b>Headmaster of a Deaf and dumb school</b></p>  <p><i>"We often see parents who've considered their child a curse and have given up on them"</i></p>
<p><b>Hearing impaired child</b></p>  <p><i>"The other kids wouldn't play with me because I was different and I would cry a lot but my parents helped me channelise that negative energy into something positive like reading a book"</i></p>	<p><b>Parent of a hearing impaired child(BPL)</b></p>  <p><i>"My son gets angry very often at trivial things and has tendencies of self harm, he starts banging his head violently against the wall, destroys things around him and shuts himself at home for long periods of time"</i></p>	<p><b>Speech therapist</b></p>  <p><i>"We receive a lot of post-injury hearing impairment cases of children and to get them to get back to speak like they used to is a tough and cumbersome task with a lot of time and money involved "</i></p>	<p><b>Hearing impaired child(BPL)</b></p>  <p><i>"Kids often bully me at school and in my neighbourhood, hence I don't go out and play anymore. I stay at home and play with my siblings"</i></p>

Figure 3: Insights derived from the interviews with opinions of subjects to exemplify

While different interviewees highlighted different factors, parental influence was common across all interviewees, which is similar to the study concluding that child's behavioural problems have been linked to "lack of parental warmth and involvement in the child's life" (Brubaker, R. G., 2000), (Szakowski, A., 2000)).

### **3.1 The importance of parenting**

We saw a clear demarcation between the parenting styles of different children. There were two styles we noticed; namely "concerted cultivation" and "accomplishment of natural growth" (Lareau, A., 2011).

Some parents expressed resentment towards their child for being hearing impaired and their parenting was influenced by that resentment. This led the parents to follow the 'accomplishment of natural growth' style of parenting, where the child is left to grow and develop naturally. This is typical of parents who lack the financial requirement to afford proper treatment for the child.

On the other hand, we also saw parents who wholeheartedly embraced their child's impairment and provided all the help and support they can. They followed the "concerted cultivation" style of parenting and felt the need to help aid their child's growth and talents. This is usually found among families who can afford the required medical help and aid for the child.

We noticed that "concerted cultivation" among children led to a more balanced and stable emotional state in children. This can be attributed to how the children are treated, reprimanded and supported throughout the growing years of the child and how this positively or negatively affected the child's mindset. While we noticed this in the responses we received from the family members we interviewed, it was further corroborated by the doctor and counsellor in the responses received from the interviews.

## **5. Discussion**

### **5.1 Suggested design directions**

From the research findings and literature study, we narrowed down on five design directions with a focus on long-term anger management and impulsive aggression control. We plotted these solutions on an impact vs time investment map [figure 4] to evaluate their effectiveness. The purpose of plotting this map was to understand and predict the effectiveness and overall impact of a particular idea.



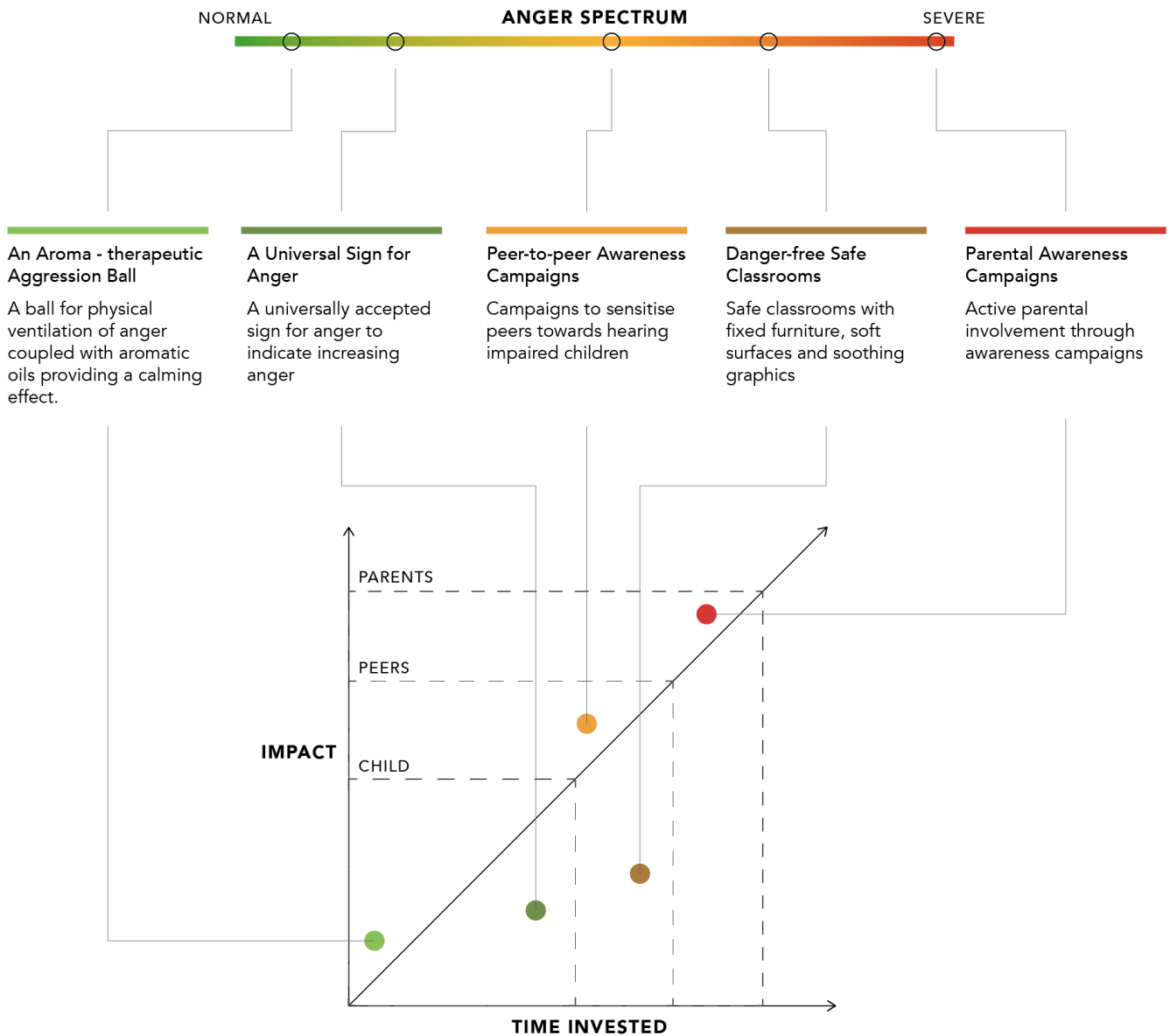


Figure 4. Design directions mapped on an impact vs time investment map.

An important factor that affected the plotting of ideas on the map was the extent of anger seen in the child, put down on the Anger Spectrum. Normal levels of anger include anger outbursts that would be expected of a child in a given scenario. However, severe levels of anger is when the child uses extreme physical actions such as throwing punches at herself or people to vent her frustration. Table 2 discusses the advantages and disadvantages of each of the above-mentioned solutions.

Table 2. The suggested design directions, their advantages and their disadvantages.

Directions	Advantages	Disadvantages
An Aroma - therapeutic Aggression Ball	<ul style="list-style-type: none"> <li>• Instant relief to the child</li> <li>• Inexpensive to produce</li> <li>• Direct intervention at the point of contact</li> </ul>	<ul style="list-style-type: none"> <li>• Means of escapism</li> <li>• Requires habituation</li> <li>• Can become ineffective through overuse</li> <li>• Effective in some users and ineffective in others</li> </ul>
A Universal Sign for Anger	<ul style="list-style-type: none"> <li>• A universal sign for all children</li> <li>• Leads to controlled immediate surroundings</li> <li>• Stems escalating frustration</li> </ul>	<ul style="list-style-type: none"> <li>• Requires positive acceptance culturally</li> <li>• Can fall out of practice or take on a negative connotation</li> </ul>
Danger-free Safe Classrooms	<ul style="list-style-type: none"> <li>• Minimal physical harm</li> <li>• Safe outlet to anger</li> <li>• Teachers can monitor situations easily</li> <li>• Classroom is modular and customisable.</li> </ul>	<ul style="list-style-type: none"> <li>• The classroom and its elements cannot be controlled entirely</li> <li>• Expensive and has high investment requirements</li> </ul>
Peer-to-peer Awareness Campaigns	<ul style="list-style-type: none"> <li>• Enables dealing with difficult situations without adult supervision.</li> <li>• Reduces marginalised bullying.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires long term investment</li> <li>• May require frequent and regular activities.</li> <li>• Instructors will need to be trained to deliver these lessons appropriately</li> </ul>
Parental Awareness Campaigns	<ul style="list-style-type: none"> <li>• Attempts to solve the root cause of aggression</li> <li>• Better equips the child to deal with challenges</li> <li>• Improved life-long parent-child relationships</li> </ul>	<ul style="list-style-type: none"> <li>• Requires long term investment.</li> <li>• May require frequent and regular involvement.</li> </ul>

## 5.2 Most impactful solution

The most impactful solution is the parental awareness campaigns which leverages comparative statistics of kids with and without active parental involvement and impart those learnings through gamified parent-child sessions.

The higher parents disparage a child for her behaviour or accomplishments and the more the child is ashamed and humiliated in public, the more likely she is to show aggression. This further ties back to the results shown by the study conducted by Brubaker et al. (2000) which concluded that ineffective parent-child interactions have been consistently linked to behaviour problems among hearing-impaired children (Brubaker, R. G., 2000), (Szakowski, A., 2000)). Supportive parents who are actively involved and consistently respond to the child's needs help nurture the child's ability to adapt to testing stimuli and react rationally.

## 6. Future Scope

The following design directions can act as a starting point for a designer to design a desirable, feasible and viable solution to tackle anger in children with hearing-impairments. A thorough research in future involving larger number of participants across various socio-economic backgrounds and age is required to map the India-specific scenario and effect of various mitigation strategies.

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