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Freeman, Ruth

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Storytelling, sugar snacking and toothbrushing rules: a proposed theoretical and developmental perspective on children's health and oral health literacy

Ruth Freeman, BDS, PhD, MSc, MMedSc(psych), DDPH.RCS (Eng), FFPH.RCP (UK)

Professor of Dental Public Health Research, Co-Director Dental Health Services Research Unit, University of Dundee, Dundee

Address for correspondence:

Professor Ruth Freeman, Dental Health Services Research Unit, University of Dundee, Park Place, Dundee DD1 4HN

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## **Abstract**

**Background:** Health literacy has been conceptualised to explain how health information facilitates the maintenance of health. What are the clinical implications of children's health literacy? Children, have language skills, numeracy and reading skills that are in a state of flux - how do they decipher and encode adult health messages to make them their own?

**Aim:** To explore children's health and oral health literacy and discover what processes they use to convert adult health messages into useable information.

**Methods:** Observations and descriptive case study approach.

**Results:** A theoretical and developmental perspective on children's health and oral health literacy, based upon the ability of the adult to provide a health message with a common shared element, is proposed. It is this common element that the child uses to make adult words understandable and to generate health action.

**Conclusions:** Children's health and oral health literacy development is achieved though a torturous path, supported by the way adults provide health messages to children. Taking time to identify this common element, helping children to encode and reflect upon the health message will help children convert adult oral health messages into their own oral health practices, and support their emerging health and oral health literacy.

## **Introduction**

The role of health education is said to increase understanding, assist people to modify, and change their health behaviours. A cursory glance or a quick appraisal of this educatory process might indicate that this is a simple matter – provide information to modify and motivate people to change their behaviour – however, such an appraisal is to ignore the complexities of the societal and internal worlds of those receiving the health message. If we place in the mix, the interpersonal dimensions of the working relationship between provider and client, intrapersonal factors, such as attachment style, the individual's ability to form and maintain long-term and secure relationships with others [1,2], then we start to unravel the tangle of difficulties, which are at the centre of merely providing health information to change behaviour [3].

What is proposed here is that to assist in improving people's health, to flatten the steepness of the social gradient and reduce inequality, we must consider the place of personal resources as knowledge, power, prestige, money and the society in which we live. Doing so will start a process in which health knowledge can be used flexibly by the individual, to improve their health status. However, while these factors are essential for health improvement they are also fundamental in the causation and maintenance of health inequality. Theorists, such as Phelan, Link and others [4,5] contend that despite improvements in health technology and preventive treatments, health inequalities persist because those with less education, less money, poorer social networks and less social capital will remain disadvantaged as they are unable to 'use [these] resources to benefit [their] health' [5]. The crux of Phelan et al's position [4,5] is that people from poorer compared with richer neighbourhoods, have less education, less finances and an absence of

beneficial [health] social networks – consequently due to the poverty of their educational, social and economic resources they are unable to take advantage of new health technologies to prolong life – the social gradient therefore persists. Socio-economic status may thus be considered as a manifest perspective of health inequality while the latent, or underlying perspective, are the factors conceptualised within the theory of fundamental causes. Baker and Gibson [6] have used the example of fluoridated toothpaste as a health technology to illustrate the importance of the theory of fundamental causes for oral health. Following from Baker and Gibson's [6] example, it may be suggested that with increased educational, knowledge, social and economic resources, higher socio-economic group families, took advantage of the 'new fluoride toothpaste technology', encouraged their families to brush with fluoride toothpaste, with the result of greater rather than less oral health inequality. It is, thus, proposed that it is the flexibility of knowledge resources in the form of health literacy, that are critical to reduce health inequality [2]. Without an acknowledgment of the fundamental causes, the persistence of health inequality as shown by the social gradient will remain. Addressing the need for improved health knowledge, conceptualised as health literacy within the theory of fundamental causes, is, thus, of central importance [4,5,7].

Essential to the theory of fundamental causes, is therefore the concept of health literacy. Health literacy has emerged to conceptualise how health information is internalised and is used to facilitate the individual's health capacity. In essence health literacy has become a byword for empowerment - an empowerment associated with increased resilience to reduce risk-taking behaviours and maintain health [7]. Of central importance in this process is the notion of health-learning capacity as described by Wolf and colleagues [8]. For Wolf

et al [8] the core of health-learning capacity is the encodement of information which is dependent on: first, a series of cognitive functioning skills, such as reading ability, numeracy, verbal reasoning and verbal capacity, and secondly, on a series of psychosocial skills which allow the processing of the information commensurate to the individual's needs and requirements as shown in Figure 1. Therefore, health literacy is not just about reading, it is about the acquisition of cognitive and psychosocial skills so that people can '*obtain, process, and understand basic health information and services needed to make appropriate health decisions.*' [9].

Figure 1 about here

Thus health literacy is dependent on health learning capacity, which in turn is dependent on cognitive and psychosocial skill sets. While this has obvious implications for understanding adult difficulties in absorbing the health education message – what are the implications for children? Children, whose language skills are developing and whose numeracy and reading skills are in a state of flux focus attention on a crucial question namely: how do children decipher and encode the health messages received by parents, teachers and health professionals? In addition, how do children navigate through the morass of health information during the evolution of their own health literacy skills to make the health message their own?

For DeWalt and Hink [10] the requirement to have a deeper appreciation of the interplay between parent, caregiver or teacher's provision of health messages to their children and how their children make use of the message, is basic to our understanding of child health literacy. The purpose of this paper, however, is to explore children's health and oral health literacy to discover what processes they use to convert adult health messages into useable

information for their own ends. A cogent exploration of these process will provide a picture of how children develop their health literacy skills. This exploration will use the twin approach of observation and explanation to provide a theory-driven perspective of how children receive and encode health messages and by doing so, develop their health literacy skills.

### **Observations and theoretical perspectives on childhood speech and language**

During the 1939-1945 war a natural experiment was undertaken, by Anna Freud and Dorothy Burlingham, in the Hampstead War Nurseries [11]. Infants and toddlers whose fathers were in the Forces and whose mothers worked in munitions factories were provided with a home in Hampstead, London for the duration of the war. The meticulous notes made on the children, separated from their families provided a number of observations on how the children managed with anxiety and loss. For the purposes of this paper, however, a focus will be placed on speech development. In, *Infants Without Families*, A Freud [11] describes the evolution of a child's speech from '*babble and chatter gibberish*', conceptualised as '*baby stage talking*' to the formation and use of words and phrases at 2 years of age. From the observations of infants and toddlers in the nurseries, language development emerged as two distinct yet overlapping stages. First, the infant's '*babble and chatter gibberish*', full of lively sounds and qualities, expressed the infant's delight, excitement and pleasure at the noises made and second, the acquisition of words and phrases in toddlerhood, were associated with the wish to express emotion and communicate with parents and loved ones. The following vignette of a toddler at nursery school is illustrative:

Four-year-old Jane had been given the honour of welcoming parents who were attended a class display. Jane was told that she must say to each parent, '*Welcome*'

but on seeing her mother and in her excitement, Jane forgot her teacher's instructions and waving frantically, called out, '*Mother, mother here I am!*'

The toddler's acquisition of words and phrases, and the speed of this acquisition are closely related to the child's emotional ties to the family – toddlers will imitate older siblings and in their interaction with mother, whose verbal responses to their gurgles and nonsense words increases the toddler's verbal capacity. In terms of psychological development, as the infant moves from perceiving mother as a mere extension of herself to perceiving mother as a separate individual, then language development also changes and shifts from merely making sounds for personal enjoyment to expressing feelings and thoughts in their communications with loved and significant others.

It would seem reasonable to suggest that Wolf et al's [8] formulation of two distinct skills—cognitive and psychosocial (Figure 1) - starts at these earliest of times and it is in this phase that the foundation of the child's health literacy is, thus, laid down. However, while it is clear that it is through the imitation of the words spoken within the parental-child dyad or when interacting with older siblings, what remains unclear are the social processes, which allow children to develop their verbal capacity and the reasoning they use to make a health message, all their own.

### **Children, adults and encoding the health message: storytelling and child health literacy**

To understand the processes involved to permit children to take ownership of a health message, it is necessary to return to an observation as a worked example. This time the observation is in the form of a vignette in which Billy, Polly's father told her the biological tale of where babies come from.

Polly was 5 years-old at the time and she had been '*nagging*' her father to tell her



where *'babies come from?'* Billy, a nurse, decided to stick to the biological facts and to provide Polly with the information she sought in a manner commensurate with Polly's level of understanding. Several weeks later, Billy overheard his daughter telling her friend where babies come from. Polly's story was somewhat different to Billy's. With great authority, Polly stated that, *'There is a beautiful room in the Mummy's tummy. It has a big pink bed with pink pillows. That's where the baby sleeps and when the baby wakes up, it crawls along a tunnel. At the end of the tunnel is a big door, like the Barbie's playhouse, and the baby opens that door – that's it!'*

How do we understand the difference between Billy and Polly's tales? There is little doubt that Polly made the story her own, using her own play (social) experiences with her Barbie playhouse to transform the information given to her by her father. Thinking in this way suggests that Polly had taken the 'official view' and translated it into her own or 'unofficial worldview' and in doing so Polly encoded the health message so it became understandable and useful to her [12]. The interplay between the information given by Billy with Polly's social world, according to Vygotsky [13] reflected Polly's involvement in her family community and provided an environment for her '[health] literacy learning'. Polly's cognitive and social functioning therefore coloured how she perceived not only her world but also how she interacted with it. In essence, what is suggested is that a cognitive and psychosocial gap exists between adult and child – in this case Billy and Polly - and it is within this gap that *'common meanings . . . are [searched for], negotiated'* and shared [12]. Therefore to return to Polly and Billy's stories, they had a shared common symbol – that is the symbol of a room - for Billy the uterus: for Polly the Barbie playhouse. Providing this health message Billy lent the information to Polly and Polly made sense of it by *'manipulating [the] language', 'encoding'* the message and reflecting upon it before turning into a form, which echoed her social world and her health learning capacity [12]. Adopting

this strategy allowed the developmental gap between Polly and Billy's use of language, reasoning and understanding to be reduced [12]. In terms of health literacy Polly was able to use her emerging cognitions and psychosocial skill sets to permit ownership of the health message provided by her father.

The role of such storytelling, as Polly's, is recognised as being central to children's developing health literacy. Storytelling allows children to use their own words and social experiences to make sense of the health information given to them. As the qualitative part of an evaluation of Winning Smiles, a school-based toothbrushing programme in Ireland [10], a series of 10 focus groups with 44, 7-8 year-old children took place in the school premises, about two months after the intervention had taken place. On speaking about visits to the dentist and how they looked after their teeth, they became easily distracted, punctuating their oral health narratives with tales of their teacher's wedding, of playing basketball, of eating beef burgers and of visits to the park. Therefore for children, in the throes of their cognitive development, maintaining their concentration to provide the listener with an engaging story can prove difficult. The following thick description of their storytelling demonstrates, that the Irish children's verbal capacity, their use of 'official' words with their own nonsense words (e.g. 'woofer' instead of tooth) assisted them to recount their dental health experiences [14] (Box 1).

Box 1 about here

### **Child oral health literacy: manipulating, encoding and transforming parental rules**

Turning to oral health literacy, do similar patterns of perception and encodement apply? How do children perceive oral health messages within the context of their social world, how do they manipulate, encode and transform their parental dietary [15,16] and toothbrushing rules [14,17] into their own oral health care practices? Two qualitative explorations are presented by way of example [16,17]. The first of these was a qualitative exploration, undertaken as part of a mixed-methods study of a three-year controlled trial to evaluate the effect of school-based snacking policies upon primary school children's consumption of snack foods. The qualitative exploration used a grounded theoretical approach and specifically investigated the children's out-of-school snacking and how parents regulated their children's dietary behaviours. Thus 64 parental-child dyads were approached to canvass their views and opinions on regulating snacking between meals. One-to-one interviews were conducted with parents and children separately at a time, in the school facility that was suitable and possible for the participants. The parents wished to do best by their children and 'policed' their children's snacking behaviours [16]. They policed their children's snacking behaviours through a series of parental dietary or household rules with which the child was required to adhere to. However, it appeared that how the rule information was loaned to the child and whether the rules had a shared meaning between parent and child, were two key processes, if the children were to convert parental dietary rules into their own sugar snack practices [16]. The second example is a secondary analysis of the Winning Smiles [14, 17] qualitative data. Careful examination of the qualitative data permitted a series of parental toothbrushing rules and child toothbrushing practices to emerge. As with the parental dietary rules, how the children converted these to make them

their own was dependent upon how the parental rules were presented and their shared meaning for parent and child [17].

To return to the first dietary example, the encoding process failed because the loaning of the sugar snack message maintained, rather than reduced, the developmental gap between parent and child. This happened because of the absence of a shared or common meaning of what the sugar snack represented. Consequently, the child could not process or encode the dietary message since it was not connected to the child's understandings or appreciations for the need for a healthy diet. The following vignette is illustrative:

If you don't eat your food, like, you just eat a little bit of your dinner and go out and then come back in looking for sweets or biscuits – you won't get any. If I don't eat all my dinner I don't get any chocolate bars. Mummy says, *'If you don't have room for good food you don't have room for rubbish'*. (Sinead aged 9)

A careful examination of this interaction suggested that on the parents' side, the wish to do best [16] by their children was paramount and the 'chocolate bar' or 'sweets' as a reward for a good meal eaten; whereas on the child's side the withholding of the 'chocolate bar' was felt as a punishment and at times, as illustrated below:

I wouldn't dare go to the cupboard now – I did it once and Mum got so cross – I didn't get chocolate or sweets for – oh – not for weeks! (Paul aged 10)

The absence of a shared symbol, between parent and child, meant that children residing in households where dietary rules were strictly policed [16], were unable to convert the parents' health message into their own sugar snack practices - the lack of a common symbol reducing the children's ability to encode the adult dietary message and affected their health

learning capacity. In other households, however, where a more *laissez faire* attitude was adopted a shared meaning emerged within the dietary message loaned by the parent to the child. In this second example, 'sugar' acted as a common symbol for child and parent - sugar standing for the affection felt between parent and child – or as one child put it, 'My Daddy gives me money for sweets because my Daddy loves me'. In the following vignettes 'sweets' emerged as a common symbol expressing the emotional interaction between parent and child and provided a social context for the child to convert the parental dietary message into one of their own. The father of Edith by asking for 'his share' allowed Edith to reflect upon the distribution of the sugar snack and assisted the child's psychosocial skill development.

My Daddy gives money to me - my Daddy's awful soft - the shops only across the road for sweets. (Robin aged 9)

Daddy would give me money, so he would, to go up to the shop to get sweets and then when I come back down Daddy says, 'Where's my share?' (Edith aged 10)

In the second example, the importance of child cognitive skill sets and the sharing of elements or common symbols between parents and children emerged from the *Winning Smiles* qualitative exploration of how children brushed their teeth [17]. Storytelling once more reflected the children's health learning capacity. From their lively storytelling, some 8-year-olds had encoded and merged their parents' toothbrushing message with their social experiences and general household rules. Therefore, Henry's rules reflected those of his parents, '*Don't pretend to brush your teeth when you haven't!*' or '*Don't lie to your Mum and Dad by saying you've brushed your teeth when you've not*', seemed to reflect a shared symbol between Henry aged 8 and his parents – '*don't tell lies*'.

However, while some children vivaciously recounted their toothbrushing stories, wrote down their toothbrushing rules and proudly announced that they brushed their teeth twice a day and spat out - *'but not on the floor'*, others were not as vocal. These children, experienced discomfort about writing down, spelling words or reading - *'But how can you read it?'* (Sally aged 8) - and were anxious about understanding or being understood, *'But what if you can't understand our language?'* (Sean aged 8). Their fears seemed to curtail their storytelling and reduce the ease with which they communicated their toothbrushing experiences. Therefore, alternative strategies to allow these children to communicate were required. The children were, thus, encouraged to draw and to use their illustrations as a medium to express their toothbrushing practices. As in James' picture he expressed the strength of his toothbrushing prowess by incorporating TAZ, a superhero image into his drawing (Figure 3).

Figure 3 about here

The children, nonetheless, bravely confessed that, they did what they wanted and, when left to their own devices did not always brush their teeth. These comments and actions seemed on initial inspection to suggest a wish to usurp parental rules yet this interpretation would be incorrect. There is little doubt that the children had some health knowledge but the degree to which this had been incorporated into their repertoire of health behaviours was still in its infancy or in Prochaska and DiClemente [18] terms, the children were still in 'preparation' [19,20]. Adopting this theoretical perspective, it may be proposed that the children were rehearsing their toothbrushing regimes and so their actions to adhere or resist their parents' rules could be postulated as part of their journey as they consolidated

their own toothbrushing practices. Therefore the adoption of toothbrushing actions, as an outcome of child health literacy, must be considered a slow and gradual process, which allows children to *'assume responsibility for the care of their own body and its protection against harm'* [21].

## **Discussion**

The purpose of this paper was to provide a theoretical and developmental perspective of child health literacy, punctuated with observations and vignettes to illustrate how children receive, perceive and manipulate the health messages provided to them by adults to make the health message their own. A theoretical formulation based upon a series of steps has been postulated to explain the development of children's health literacy and is presented as a pictorial schema of adult-child health information exchange in Figure 2. Of central importance in this theoretical formulation is the need for a health learning capacity, which is established upon a cognitive and psychosocial skills foundation [4,7-9]. Thus, understanding how children, at various stages of their cognitive and psychological development, hear and convert adult words into a form that is understandable to them, permits them to take ownership of the health message and allows them to increase their health learning capacity.

It is suggested in this paper, that irrespective of the stage of cognitive and psychological development, children may understand the health information, if adults provide the time and space to work with children to assist them to encode and reflect upon the health message.

Thus there are some clinical implications for our work with children. The need for effective communication skills commensurate with the psychological and cognitive development of the child is evident, but this is not just when providing health information but also when treating the child patient. Paediatric dentists must acknowledge the phantasy world children reside in – a world of superheroes, a world of let's pretend and of imaginative storytelling. Therefore, first we must, allow children to tell their oral health stories, in their own words, in their play [22] or using and describing their thoughts behind their drawings [17]; secondly, we must acknowledge that a developmental gap (both cognitive and psychological) exists between adults and the child recipient; thirdly, from the children's stories we must find a common element or shared sign that links the child's cognitions and social experiences to the subject matter of the health message and finally, working together with the child help the child to encode the message, reflect, make the message their own in order that they may take appropriate action for health maintenance.

The development of children's health and oral health literacy is achieved though a torturous path in which the health message, lent to them by adults, contains a common symbol. It is this common element that permits the child to process and understand the information from the perspective of their social experiences and their own worldview. Consequently, the child with the parent, teacher or health professional is able to encode the message, make sense of it and act upon it. Working with children in this way will assist them to convert parental-adult oral health rules into their own oral health practices [23].



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Box 1 Thick description of children's dental experiences [14]

**Researcher: 'So, tell me this what do you think of the dentist?'**

Mike: 'Grand'

Peter: 'I go, he [*the dentist*] put something stingy in yer mouth. And when they're taking it out. The last time I got my tooth out it cracked into bits.'

**Researcher: 'Really?'**

Jenny: 'He [*the dentist*] put a little drill in my mouth. He put something stingy in my mouth. That I hate and when they're taking your tooth, that's the bit I hate. And when you have the cotton wool in your mouth it tastes horrible.'

**Researcher: 'How did you feel when you were in the dentist?'**

Peter: '...I hate it.'

Jenny: 'So do I - hate it.'

Mike: 'I don't.'

Katie: 'But why?'

Mike: 'I don't know.'

Peter: 'I know. Its boring just sittin' there waiting. Yeah, but yeah, actually get a drink before ya take out yer teeth. Yeah, but then you have to spit it back out into the font.'

Katie: 'Ye have to wear glass, like goggle glasses. Do yeah see them plastic white ones . . the big ones?'

**Researcher: 'No? - oh right OK?'**

Peter: 'Us, us . . . . I didn't when I went to the dentist, right I was nervous but I wasn't scared. And I was nervous but when then I got out I was [OK]. And you know what me Ma was after doing . . throwing me tooth out in the bin.'

**Researcher: 'Yer Mum threw your tooth in the bin?'**

Peter: 'That big back tooth.'

Jenny: 'Look at that big woofer.'

Katie: 'Look at my big woofer. I got that out when I was... I got four teeth out when I was a baby when I was about three. That is just about there. (Katie tries to speak with her finger in her mouth) ...cause I can actually feel it at the back.'

**Researcher: 'Have you got new teeth?'**

Katie: 'I've got new teeth at the back.'

Figure 1 Conceptual Model of Health Learning Capacity and Health Learning after Wolf et al (2009)

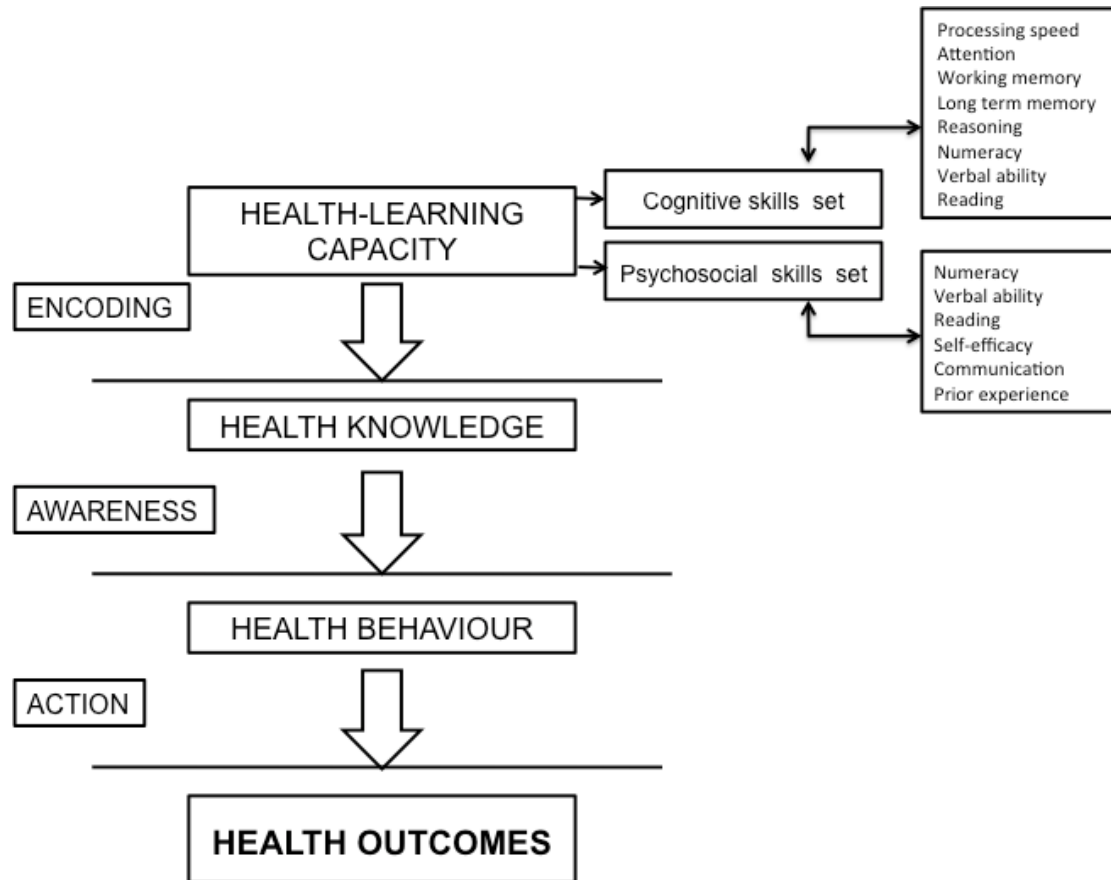


Figure 2 Pictorial schema of adult-to-child health information exchange leading to child oral health action

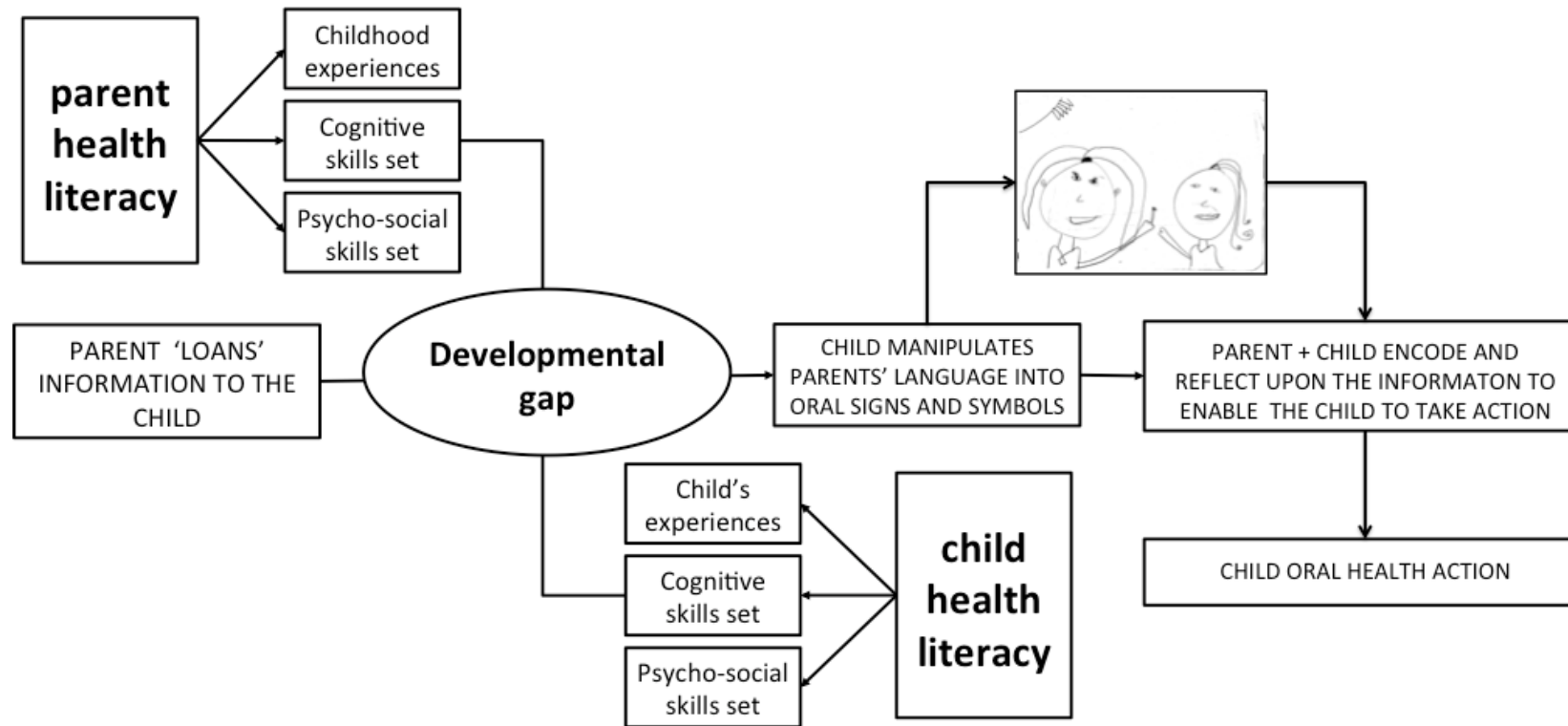


Figure 3 James' toothbrushing rules and superhero 'TAZ'

