

Language development and Trauma

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رشد زبانی

- ▶ آغاز رشد زبانی کودک از رحم مادر : تشخیص صدای مادر
- ▶ توانایی کلام ندارد ولی در جستجوی راهی است که نیازهای خود را بیان کند
- ▶ اصوات و facial expression مثل گریه
- ▶ والدین از نوع صداسازی و گریه برآورده کردن نیاز
- ▶ تقلید دیگران و صداسازی و تکرار کردن صداها
- ▶ کلمات معنادار ۱۲ ماهگی : SINGLE WORD
- ▶ ۱۸ ماهگی ترکیب کلمات و ۲۵ درصد قابل فهم برای غریبه ها
- ▶ ۲۴ ماهگی ۳۰۰ کلمه و ۵۰ درصد
- ▶ ۳۰ ماهگی ۵۰۰ کلمه
- ▶ ۳۶ ماهگی ۷۵ درصد
- ▶ ۲۰ تا ۳۶ ماهگی پیشرفت گرامر : اشتباه گفتن زمان افعال شایع است
- ▶ ۴ سالگی رشد کامل زبان بیانی و ۱۰۰ درصد قابل فهم حتی اگر تلفظ اشتباهاتی داشته باشد

- ▶ “Language starts as an affective experience - a cry in the dark.” (Caruth, 1987)
- ▶ “The human capacity to understand and use language opens the doors to thinking, learning, and social relationships.” (Cohen, 2001)
- ▶ developmentally **appropriate care** and depending upon **caregivers to sensitively** read their behaviors and respond contingently and accurately to their cries for help (Lewis, 1997).
- ▶ language emerges during the **second year of life**, children are engaging in communicative behaviors long before that.
- ▶ Infants use behaviors such as smiling, crying and fussiness to show pleasure and displeasure.
- ▶ these behaviors **may not be intentional** on the infant’s part, parents begin to respond as if they have communicative intent; which sets the stage for intentional communication and the emergence of language later on (Cohen, 2001).

- ▶ began initiating and seeking direct eye contact and face-to-face interactions within **8 weeks** of birth.
- ▶ Once he had your attention and received verbal communication, he began to smile and coo to continue and maintain the interaction.
- ▶ **At 3 months of age**, he began to display increased excitement when his mother appeared and discriminated between his siblings, father, and strangers by smiling and cooing more quickly when he saw people who were more familiar.

- ▶ While communication establishes reciprocal relationships, it is also **integral to the separation process.**
- ▶ expressive language emerges **during the second year of life** at a time when most children are experimenting with separation from their primary caregiver.
- ▶ major shifts are occurring in how the child experiences self and other through their physical experience as well as in their new language and thinking experience.
- ▶ **Words are symbolic** and introduce a difference between image and reality - a child's world starts to become mediated by language.

- ▶ Judith Brett (1981) applies this to the **individuation-separation** process by explaining that language learning gives labels to others - most crucially the label 'mother' (in its infinitely varied forms).
- ▶ By naming mother, the word has “**pushed itself before the thing**” giving mother and child words, and therefore symbols, for their separate identities (p.40 in Caruth, 1987).

- ▶ Language is both a **creator and facilitator of separation**.
- ▶ It gradually moves the child and their caregiver from **pre-linguistic oneness to a dyad**.
- ▶ The sensations of the first years of life set the stage for learning, understanding, communication and separation (Brett, 1981).
- ▶ Piaget theorized that the sensorimotor experience helps the child understand what is self and what is not self, eventually preparing them for the cognitive task of verbal symbolization (Crocker, 1963).

- ▶ Initially, infants experience speech through its **sensory** rather than semantic qualities.
- ▶ They hear the **prosodic melodies and variations in pitch, tone, and rhythm.**
- ▶ Perhaps they **see** the speaker's **lips** move or even feel bursts of breath.
- ▶ Later words will become symbols but these sensory qualities of speech will also **take on meaning by providing emotional layers** to communication.

- ▶ Caruth (1987) explores the idea that these **prosodic** elements of language can be triggers later in life to early life experiences. Speech can be experienced as **soothing, benign, or even hostile**: “the phonic elements of the voice - the pitch, the intensity, the tone - can be as hostile an experience as intrusions or battering attacks” (p.44).
- ▶ All elements of speech, language and communication begin gathering **meaning during the earliest caregiver and child interactions.**
- ▶ The emotional quality of language and the role of language in a family, in addition to the specific meaning of words, likely have a strong influence on many levels of later social and emotional development.

- ▶ Although infants initially communicate **egocentric needs and desires**, they are born ready to perceive the mental states of others, preferring interactions with **people rather than objects** (Legerstee, 2005).
- ▶ caregivers interact with them **face-to-face** and communicate through **positive facial expressions, touch, and tone of voice**.
- ▶ From these interactions, infants begin to identify and associate emotions with facial expressions and tone of voice.
- ▶ They learn to draw inferences about their own and others' mental states from their caregivers' nonverbal and verbal communication, as well as how to regulate and share their own emotional states (Baldwin & Moses, 1994; Butterworth, 1994; Moses, Baldwin, Rosicky, & Tidball, 2001; Smith, 2005).
- ▶ Social communicative interactions facilitate infants' ability to develop social cognition about their own emotions, desires, and intentions (Perner, 1991; Zeedyk, 1996).
- ▶ These interactions also help infants' development of **joint attention** and secondary inter subjectivity or sharing emotional states involving an object or an event (Legerstee, 2005).

- ▶ Through consistent face-to-face interactions with a caring adult, infants learn to infer from their caregivers' **calm, positive eye gaze and soothing tone of voice that their needs will be met and learn to gradually inhibit negative emotions during these interactions** (Bronson, 2000).
- ▶ Bernier and colleagues (2010) found that
 - maternal sensitivity,
 - parents' talk about mental states when interacting with their children
 - parental support for autonomywere related to their children's inhibition, regulation, attention, and problem-solving abilities.

- ▶ While **language is the primary means** of social exchange and communication, it is far from the only available tool.
- ▶ Rogoff (1990) observes: “young children are so skilled at obtaining information from adults’ **glances, winces, and mood** that one of the greatest challenges of testing preschoolers is to avoid nonverbal actions that may be construed as cues” (p.67).
- ▶ By gazing, watching and eventually imitating, children achieve **joint attention** and engage in early forms of nonverbal communication - often called **social referencing** (Rogoff, 1990).

- ▶ Mothers may accompany their **nonverbal exchanges** with emotional cues (facial expressions) as well as words (despite the child being unlikely to understand these words).
- ▶ To achieve communication and shared understanding, often called intersubjectivity, both partners in the exchange (adult and child) have to make adjustments to the other.
- ▶ The adult must be **sensitive to the perspective of the child and change their effort to communicate accordingly** (e.g., vary the pitch of their voice, exaggerate their facial expression of emotion, shift their body to take the viewpoint of the child).
- ▶ The child adjusts by taking an interest and joining the adult's attention by looking where they look or point, watching their face or body, and eventually imitating a gesture or sound.

- ▶ Social interaction is also important for language development.
- ▶ Although factors such as neurological symptoms, hearing loss or recurrent ear infections, and oral motor anomalies such as cleft palate affect language development, infants must be exposed to language-rich social interactions to begin to develop knowledge, social communicative functions, and receptive and expressive language (Clarke-Stewart, 1973; Coh, Matias, Tronick, Connell, & Lyons-Ruth, 1986; Solantus-Simlva, Punamaki, & Beardslee, 2002, Sroufe, 1997).
- ▶ When neuro-typical and healthy children are exposed to **limited, inconsistent, and/or inappropriate social interactions, or their communication is misinterpreted, they are more likely to exhibit dysfunctional or delayed communication development and social-emotional relationships.**
- ▶ Researchers studying children from abused and/or neglected backgrounds provide evidence that these experiences negatively affect language development.

Language and Trauma

- ▶ It is important to also examine changes in major milestones of child development such as language disorders.
- ▶ With regard to trauma's effect on language development, deficits have been observed in **vocabulary, fluency, listening, mutism, social discourse and symbolism** (Yehuda, 2005).
- ▶ Beeghly (1994) examined the language of toddlers and showed that those who had been abused or maltreated had **less internal state language (words to describe their feelings such as happy, sad, tired)**.
- ▶ Additionally they showed deficits in social language use, making fewer attempts at interaction and fewer descriptions of themselves.

- ▶ Traumatic childhood events have also been shown to lead to brain abnormalities in the areas of memory and language such as **diminished hippocampal volumes, reduced corpus callosum size and less activity in the cerebellum** (Bremner, Randall, & Vermetten, 1997; Ito, Teicher, Glod & Ackerman, 1998).
- ▶ Giedd (2003) has shown that **increased pauses during speech** may be related to disruptions from early psychological trauma affecting the **corpus callosum**, resulting in **decreased communication** between the left and right hemispheres and less fluid translation of thoughts to speech.
- ▶ The ability to process increasingly difficult cognitive tasks, such as **metallization**, Giedd suggests relies on the transfer of information between brain hemispheres through the corpus callosum.

- ▶ During childhood, the corpus callosum undergoes dramatic growth and change and is therefore highly vulnerable during this period.
- ▶ Children with a history of abuse show **less hemispheric integration** leading researchers to believe that traumatic events may be compartmentalized in the **right hemisphere** where they are less accessible to the verbal right hemisphere (Giedd, 2003).
- ▶ In subjects with a diagnosis of PTSD, exposure to **trauma-salient stimuli** has been shown to have a **negative effect on both language and delayed memory retrieval as shown through decreased activity in Broca's area - the area responsible for verbal production** (Rauch, 1996).

- ▶ Zlotnick (2001) sought to examine the associations between PTSD and the **inability to verbally describe or identify emotions, a pathology referred to as alexithymia.**
- ▶ Carter and Grenyer (2012) examined how adult language becomes impaired during moments of emotional dysregulation when traumatic memories are activated. The Adult Attachment Interview was used to elicit samples of subjects verbally describing emotional material, intended to trigger emotional dysregulation. These samples cued relevant traumatic memories in early childhood such as separation, rejection and physical harm.
- ▶ Deficits were evident in **increased number and length of pauses and reduced complexity of sentence structure.** Subjects with borderline personality disorder had greater overall **expressive language deficits** during emotional vignettes but were relatively similar to controls during neutral conditions.
- ▶ Brain imaging studies have shown **activation of the pre-frontal cortex and increased activation in the amygdala during exposure to trauma-salient stimuli** (Donegan, 2003; Minzenberg, 2008).

Stress

- ▶ Another, related, pathway between environment and language deficits is the hormonal stress response, specifically the **HPA axis**.
- ▶ High levels of stress, measured hormonally rather than by identifying specific traumatic events, have been shown to **permanently change the hormonal response to stress and affect development** (SturgeApple, 2012).
- ▶ Children enduring long-term stress early in life develop **persistent activation of the central nervous system's stress response**.
- ▶ In this state of hyper arousal, it is likely that the child will have difficulty incorporating **complex cognitive information** as is required for developmental tasks such as **learning language**.

- ▶ Perry (1997) describes these children as **hypervigilant** to threat and likely to focus more **on non-verbal cues that they recognize as threatening rather than the words that accompany the actions.**
- ▶ Perry maintains that only when the child is “**significantly calmed**” will they be able to incorporate and benefit from words (p.134).
- ▶ Effects of hypervigilance in the face of chronic stress may also be more permanent: **higher levels of cortisol** have been shown in children exposed to ongoing trauma and anxiety which may have deleterious effects on the **hippocampus and may be responsible for the relationship between abuse and expressive language deficits** (McAuley, 2009; Music, 2011).

- ▶ The body's cortisol levels (its hormonal response to environmental threat and stress) are mediated by the hypothalamic-pituitary-adrenal (HPA) axis.
- ▶ **Cortisol** is known to function adaptively to perceived threats by mobilizing energy and **increasing cognitive processing of emotionally significant events (Sturge-Apple, 2012)**.
- ▶ Sturge-Apple (2012) found that children exposed to **interparental** violence in the home had lower cortisol reactivity to interparental aggression in the laboratory context (a situation where reactivity should be high).
- ▶ They concluded that these children's physiological stress systems had adapted to insecurity and were consistently primed to respond to possible threat. In other words, **their baseline was higher**. Researchers suggested that this lower cortisol reactivity might represent a form of dissociation or attempt to inhibit the psychological impact of fear. In the same study, maternal emotional unavailability was also correlated with higher base line cortisol levels before a stressful task (the strange situation) but lower reactivity to the stressor.

- ▶ Maltreatment such as abuse and/or neglect is widespread.
- ▶ Maltreatment types include **physical abuse, child neglect, sexual abuse, and emotional abuse**. Of these, neglect was the most commonly reported form of abuse.
- ▶ Have poorer developmental outcomes.
- ▶ By age 2, children who experienced neglect demonstrated more **frustration and anger during problem-solving and less enthusiasm during play** (for a review, see Hildyard & Wolfe, 2002).
- ▶ By age 4 and 5, children were less flexible in solving problems and scored lower than all other groups of maltreated children on measures of **intelligence and school achievement**.
- ▶ These children tended to have more **insecure attachments** to their caregivers as well as negative internal models of themselves and others, which may result in **poor self-regulation, fewer initiations and social interactions with others, or less cooperative interactions** (Hildyard & Wolfe, 2002; Van der Kolk & Fislter, 1994).

- ▶ Maltreatment also affects language development.
- ▶ Coster, Gersten, Beeghly, and Cicchetti (1989) recruited 40 toddlers from low socioeconomic status (SES) backgrounds (20 maltreated and 20 nonmaltreated) who remained with their families.
- ▶ The maltreated group, which included 15 children exposed to physical neglect, demonstrated **poorer syntactic development, less expressive vocabulary, and fewer communicative functions than the nonmaltreated group.**
- ▶ Children who have experienced abuse and/or neglect tend to have **difficulty regulating their**
 - *emotions;*
 - *developing close, secure, relationships;*
 - *developing typical communication skills;*
 - *thinking dynamically and flexibly, which are important skills for learning.*

- ▶ An often-cited source of trauma or stress in the research on child language development and maternal mental health is **domestic violence**.
- ▶ Young children may directly or indirectly witness explosive arguments and physical abuse between parents.
- ▶ domestic violence situations present intense stimulation, arousal, threat and terror for child witnesses, exacerbated by the fact that the situation is uncontrollable for them, creating a pervasive feeling of helplessness (Yates, 2003).
- ▶ Re-experiencing symptoms specifically may be distracting, intrusive and **“divert attentional resources” from other areas of learning and development** (Saltzman, 2006, p.270).
- ▶ The impact is particularly great for children before preschool age because these early experiences form the foundation for development and later coping strategies.

- ▶ De Bellis (2009) researched children with a history of neglect and a history of witnessing domestic violence.
- ▶ These children showed significantly **lower scores on verbal fluency and overall receptive language capabilities than controls. Lower IQ and impaired visual-spatial, learning/memory, and attention/executive function capacities were also found.**
- ▶ Deficits in **expressive language** are highlighted by Gersten (1986) in a study of maltreated and insecurely attached toddlers.
- ▶ This group used **less syntactically complex language, had shorter mean length of utterance, fewer total number of unique words, and used more content-less filler utterances than cognitively matched,** securely attached controls.
- ▶ Coster (1989) found that in an assessment of maltreated and non-maltreated children, the two groups differed on **all measures of language expression but not on vocabulary.**
- ▶ More specifically, the maltreated group had **less descriptive speech** including content referring to their own activities and feelings, a finding replicated by McFayden (1996).

- ▶ Communication delays can be seen in areas such as **grammar, vocabulary, comprehension and production, conversational skills and receptive or expressive syntactic skills** (Beeghly, 1994; Law, 1992).
- ▶ Schore (2002) has shown that a mother's lack of emotional availability interferes with the child's capacity to regulate affective experience and learn **emotional descriptive language**. More specifically, exposure to DV may inhibit a 22 mother's ability to regulate her own affects and behaviors which then compromises to model regulation for her child (Fonagy, 2002). Schore (2002) has contended that due to the central importance of the mother-child relationship in early development, a parent's ability to expand positive affect and moderate negative affect is necessary teach emotional organization to the child.

- ▶ Culp and colleagues (1991) compared 20 children who were physically abused, 41 children exposed to neglect, and 13 children exposed to both abuse and neglect. All children were approximately 3;6 years of age, were placed in protective care at approximately the same age during the study, and were from low SES backgrounds according to parental education and income levels.
- ▶ On measures of receptive and expressive language, the neglected group had lower scores than the other groups.
- *neglected group demonstrated 6 to 9 months of delay*
- *4 to 8 months of delay for children who were abused and neglected*
- *0 to 2 months of delay for the children exposed to abuse alone.*
- ▶ Thus, early exposure to neglect places children at risk of language delay more than exposure to abuse alone.

- ▶ Caregivers' language input may be related to their children's language delays.
- ▶ Eigsti and Cicchetti (2004) recruited 33 mother-child dyads; 19 of the children had experienced maltreatment from their mothers prior to the age of 2 and remained in the care of their mothers. Fourteen of the children had not received maltreatment and served as the control group.
- ▶ Approximately 95% of the maltreated group was neglected and 53% also experienced physical abuse.
- ▶ All of the families were from low SES backgrounds.
- ▶ The mean age of the maltreated group was 58 months, and the control group had a mean age of 59 months.
- ▶ Researcher measured children's receptive vocabulary and expressive syntax as well as the mothers' verbal intelligence quotients (IQ) and utterances during a 30-minute mother-child interaction in a playroom. Similar to previous findings, the maltreated group of children demonstrated lower indexes of **productive syntax and receptive vocabulary, with girls performing lower than boys.**

- ▶ Mothers of children who had experienced and had not experienced maltreatment also displayed different communication patterns (Eigsti & Cicchetti, 2004).
- ▶ The mothers of the no maltreated group produced **more utterances and their verbal IQ scores correlated positively with their children's receptive and expressive language scores.**
- ▶ Mothers of the no maltreated group used **more multclause utterances and wh-questions, which correlated with their children using more auxiliary verbs.** They also used **fewer commands**, which were related to their children's higher receptive vocabulary scores. These mothers also tended to **express more expansions and repetitions with younger, rather than older, children.**
- ▶ In contrast, mothers of the maltreated group of children expressed more commands and fewer complex utterances and did not adjust their language according to age.

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- ▶ **The implications of face masks for babies and families during the COVID-19 pandemic: A discussion paper**
Janet Green a , Lynette Staff a , Patricia Bromley a ,
Linda Jones a , Julia Petty b,*

- ▶ Preventative strategies such as **mask wearing and social distancing have become a part of everyday life in an attempt to reduce the risk of infection during the COVID-19 pandemic.**
- ▶ As **schools** have begun to open this fall, there are increasing concerns over how the COVID-19 pandemic will affect the younger generation.
- ▶ For example, in-person classes have been canceled in favor of virtual meetings and classrooms due to contagion concerns.
- ▶ Increased use of masks, social distancing, and the quarantine of individuals exposed to or infected with COVID-19 have been encouraged to prevent the spread of the virus.
- ▶ Although necessary, these practices may have unintended consequences on children's language and communication skills during their critical development years.

- ▶ **Mask wearing** by caregivers can potentially influence the baby's neurodevelopment due to the effect on the **normal attachment and bonding that takes place in the early days of life between a baby and their parents** ([Sullivan et al., 2011](#); [Green et al., 2020](#)). This paper discusses the potential impact of wearing face masks in the newborn period in line with underpinning theory, creating key recommendations for practice.
- ▶ **The ability to read faces** is also a much-needed skill within our society because it helps people gauge emotions of others and regulate their behaviour and interactions accordingly.
- ▶ Under normal circumstances, humans have a coordinated **package of communication cues, which include facial expressions, hand gestures, body language, words, pitch, tone, and face colour such as blushing.**
- ▶ The communication cues act together to convey message and intent ([Ong, 2020](#)).

- ▶ From the **minute of birth**, faces are visible to infants, with research indicating that newborns shown photos of their mothers and other people, are adept at differentiating their mother's face from the faces of strangers ([LoBue, 2016](#)).
- ▶ LoBue's research also indicated that newborns chose to **look longer at images of their own mothers compared to images of different women** ([LoBue, 2016](#)).
- ▶ Moreover, research has demonstrated that it only takes newborns a **few days to learn how to discriminate between differing emotional facial expressions, such as happy, sad and surprised** ([Farroni et al., 2007](#); [Palama et al., 2018](#)).

- ▶ By the time an infant has reached **five months of age**, they are able to **match the image of an emotional expression such as a sad face, with the corresponding sad vocal expression** (Rigato et al., 2011).
- ▶ At **five years of age** the child has developed the ability to recognize and label facial expressions with the competence of **most adults** (LoBue, 2016).

- ▶ The terms **bonding and attachment** are often used interchangeably. [Klaus and Kennell \(1982\)](#) differentiated the terms by describing bonding as the tie of a mother to her baby and attachment as the tie of a baby to his or her mother.
- ▶ Studies related to bonding were the catalyst for **bringing mothers and babies together as soon as possible after birth, leading to couplet care where the mother and baby ‘room-in’ together** ([Cassidy et al., 2013](#)).
- ▶ Early contact in the immediate hours after birth is when a baby is alert and face-to-face interaction is the most successful.
- ▶ At this moment, the mother and baby get to know each other, and the potential for a strong bond starts developing. This bond can initiate positive parenting behaviors and is important for normal neurobehavioral development of the baby.
- ▶ **Failure to establish this bond** can result in **lack of maternal** feelings and subsequent rejection of the infant which could potentially progress to neglect, parental inconsistency, lack of love, and in turn, long-term mental health problems ([Winston and Chicot, 2016](#)).

- ▶ A child has an innate (i.e. inborn) need to attach to one **main attachment figure** and this emotional connection or attachment is formed by wordless communication occurring between the infant and the mother or caregiver (Bowlby, 1992).
- ▶ Poor early mother-infant attachment can be associated with emotional and behavioral problems in the infant and poor long-term social and emotional outcomes (Benoit, 2004).
- ▶ When a mother and baby are separated, relational interactions are hindered, negatively impacting the attachment process. **The quality of the mother-baby relationship is typically assessed at 12 months of age** (Bowlby, 1992).
- ▶ Although safety prevails, when mothers and/or fathers are required to wear a mask, the **inability of a baby to see facial expressions and hindered wordless communication can negatively impact on both the bonding and attachment process.**

The evidence base for the importance of faces

- ▶ A human face is comprised of the **front part of the head that extends from the forehead to the chin and includes the mouth, nose, cheeks, and eyes. It is of interest that this definition does not include the eyebrows, which are powerfully expressive components of a face.**
- ▶ Reflecting further on a face, it is three-dimensional and mobile in the sense that its features can move yet remain fixed in place.
- ▶ A face is also **animated and has the capacity to animate others.**
- ▶ Furthermore, a face responds by means of expression to many things, including an infant's cues and activities.
- ▶ A human face is usually symmetrical along its **vertical axis, and its components are organized and mostly consistent across all faces.**
- ▶ In addition, all faces include different yet similar shapes, contours and tones.

- ▶ Simion and Giorgio (2015) note that a human **face has more elements in the upper part of the face, and these elements are placed congruent to the outline of the shape of the face, significant in relation to the current discussion around face mask wearing.**
- ▶ Johnson et al. (1991) found evidence that for infants to preferentially track a human face in the first hour of life, not only is the configuration of facial features important, aspects of the features themselves are too.
- ▶ We must therefore understand the **potential impact of being cared for and exposed to people who are almost all masked.**

- ▶ Simion and Giorgio (2015, p.1) term ‘**inborn predispositions**’ which are thought to be already present at birth and essential for face processing to occur.
- ▶ Infants interact **reciprocally** with their caregivers from the moment of birth.
- ▶ **Reciprocity** is a process of communication between a baby and a parent.
- ▶ The baby sends out signals using facial and vocal expressions about his/her needs, and then waits for a response.
- ▶ The parent or caregiver reads and responds to the baby's signals, and this in turn serves as a return signal for the baby to read. The actions of the baby and parent affects the other in a manner that has been described as resembling an **intricate dance** (Brazelton et al., 1974, 1975; Yogman et al., 2018).

- ▶ Field and her colleagues found that infants of a **mean age of 36 h were able to discriminate and imitate facial expressions** ([Field et al., 1982](#)).
- ▶ During the process the infant **visually fixates on the eyes and the mouth in varying degrees**, dependent on the facial expression being observed, implying the importance of an infant being able to observe the mouth as part of facial processing.
- ▶ Infants have been shown to be able to **discriminate between male and female gender** ([Righi et al., 2014](#)) and one earlier study suggested a preferential selectivity based on ethnicity learned within the first 3 months of life ([Kelly et al., 2005](#)).

The implications of wearing a face mask

- ▶ When a face mask is worn, the **eyes become a primary method of communication**.
- ▶ On the human face, the **eyes and mouth are the most informative regions for communicating because they are the most expressive**.
- ▶ The mouth region can express happiness with smiles; however, concealing the mouth can be problematic in health care when staff want to appear friendly and approachable ([Karz and Hadani, 2020](#); [Ong, 2020](#)).
- ▶ Having a mask can make users feel there is a **physical barrier between themselves and the person they are communicating with**. Masks not only hide smiles; they make it harder for the staff to determine emotions in their patients such as pain, discomfort, dismay and disdain ([Fortin, 2020](#)).

- ▶ For people with hearing difficulties, having the mouth covered is a major barrier as they are unable to lip read.
- ▶ Masks are known to **degrade the speech signal**, serving as a low-pass filter by **attenuating high frequencies spoken by the wearer**; the decibel level of attenuation ranges **from 3 to 4 dB for simple medical masks and close to 12 dB for N95 masks**.
- ▶ Masks can **muffle speech and make hearing difficult**.
- ▶ It has been estimated that approximately five percent of the world's population have disabling hearing loss ([Ong, 2020](#)), and they rely on visual cues, lip-reading and facial expressions to effectively communicate, even in those who use sign language ([Fortin, 2020](#)).

- ▶ Placing a medical mask on a face results in an individual **missing feature information such as the nose, cheeks, chin and mouth as well as second order configurable information**, such as the spaces between inner facial features.
- ▶ Specific facial features are obliterated causing the global structure of a whole face to be incomplete ([Maurer et al., 2002](#); [Piepers and Robbins, 2012](#)) and preventing people from being able to detect a full face and facial expression.

- ▶ For an infant, this has the potential for long reaching effects in the early stages of neurobehavioral development.
- ▶ A mask covering the face may affect the **infant's ability to develop facial processing and orientating to or focusing on another person's face.**
- ▶ A potential implication is that this may **interfere with the parent-infant bond and longer-term attachment.**
- ▶ An insecure attachment between the parent and infant fails to meet security needs of an infant and prevents normal development of the infant's brain.
- ▶ **Delays or impairments of an infant's cognitive, social-emotional, and/or neurobehavioral development** can also occur, leading to difficulties in learning and forming effective relationships later in life.

Recommendations

- ▶ Firstly, to assist patients, frontline health care workers who wear masks, full face covering shields and protective gowns have started **adhering smiling pictures of themselves to their gowns to decrease patient anxiety.**
- ▶ **Clear plastic masks could be useful for those with hearing loss and those who care for them, so they can continue to lip read.**
- ▶ Schlögl and Jones (2020) suggest mindful attention, calm behavior and clear communication are vitally important during communication with older patients.

- ▶ A Danish audiology company WIDEX :
- ▶ always **facing** the person one is speaking to;
- ▶ maintaining a **close but safe** proximity during communication;
- ▶ ensuring that **full lighting** is available during conversations when masks are covering faces;
- ▶ using approved **clear face shields** when possible;
- ▶ facing one another during important conversations, especially when decisions are required;
- ▶ using **clear speech** that does not include **over-articulation or shouting**;
- ▶ **re-phrasing** rather than using repetition;
- ▶ ensuring **environmental noise is at a minimum** during conversations and providing written information where possible ([WIDEX, 2020](#)).

Recommendations for face mask communicative practice with babies, infants and children.

- ▶ Talk to the baby **through** the mask.
- ▶ Try to keep mask wearing to a **minimum**.
- ▶ When not wearing a mask, **maximize the facial interaction** between mother / father / caregiver and baby.
- ▶ •Find and implement **alternative ways** to communicate and connect during mask wearing- for example; mothers should be provided with clear **face masks or clear face shields** to ensure that **bonding and attachment are not disrupted**, and the baby's attempts to learn to read faces are not thwarted.

- ▶ For **long-term babies in the neonatal unit** (such as those who require complex surgical procedures), and for those babies whose **family does not visit regularly**, clear face masks would be recommended for a team of nurses caring for these babies. It is understood that these masks are more expensive than the regular masks worn by staff, therefore there will be an attempt to limit their use.

Infants and children

- ▶ Let children **see** the mask and then put it on the face.
- ▶ **Explain** to children that the mask will be worn while outside which helps them anticipate.
- ▶ **Play peek-a-boo** with the mask on and then away, **revealing a smile so that they know the parent is still smiling under the mask.**
- ▶ Help the child learn from **looking at the eyes and eyebrows to understand the expression and feeling.**

Other recommendations

- ▶ In virtual classrooms, educators should ensure **optimization** of the visual and auditory environment using adequate equipment, video chat capabilities (eg, chat, mute, and “raise hand” functions), as well as supplemental captioning, recording, and transcribing services.
- ▶ **Zoom fatigue** can be avoided by allowing the opportunity for students to “unplug” and obtain appropriate rest in between meetings.
- ▶ Clinicians should be **aware** of the potential language and communication ramifications of the COVID-19 pandemic, particularly in the pediatric population. Health care personnel such as otolaryngologists, audiologists, and speech language pathologists are the gatekeepers of communication.
- ▶ primary and secondary prevention of communication impairment.