Developmental periods of cats and the effect of early experiences and stress on development will be examined first. Secondly, feline social behavior and communication will be addressed with an emphasis on body language.

**Developmental Periods**

### Table 1. Feline developmental periods

<table>
<thead>
<tr>
<th>Period</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetal Period</td>
<td>In Utero</td>
</tr>
<tr>
<td>Neonatal Period</td>
<td>Birth to 2 weeks</td>
</tr>
<tr>
<td>Transitional Period</td>
<td>End of neonatal to early socialization</td>
</tr>
<tr>
<td>Socialization Period</td>
<td>2 to 7 weeks (up to 10 weeks?)</td>
</tr>
<tr>
<td>Juvenile Period</td>
<td>2 months to puberty (4–10 months)</td>
</tr>
<tr>
<td>Adolescent Period</td>
<td>Puberty to social maturity (3–4 years)</td>
</tr>
</tbody>
</table>

Feline developmental periods are not clearly delineated in regard to age, with the exception of the fetal period. Cats experience six periods of development:

**Fetal Period**
Maternal nutrition and stress levels can effect physical and psychological development in utero.

**Neonatal Period**
The neonatal period occurs from birth to 2 weeks of age. During the neonatal period, kittens are solely dependent on the queen for survival. They are dependent on the queen for feeding, thermo-regulation, and elimination. They are born insulated from the world and are blind and deaf. However, the righting reflex is intact.

**Transitional Period**
There is no clearly defined age for the transitional period. It occurs between the end of the neonatal period and the beginning of the socialization period. The ears and eyes open during the transitional period. Kittens do not have clear vision until 16 weeks of age. They begin crawling and walking. The teeth erupt late during this period, and kittens start to eat solid food at the end of the transitional period.

**Socialization Period**
The socialization period lasts from 2 weeks to 7 weeks. It may extend until 10 weeks of age. The socialization period is a critical period of development for exposure to novel stimuli. Positive experience and environmental enrichment can have an impact on behavioral development. Kittens become aware of their environment because they can see and hear. This is a time of social play and kinship recognition. Kittens should not be removed from the litter until 8–10 weeks of age. It is imperative that kittens play with kittens during this developmental period. Through social play they learn bite inhibition. If kittens are not allowed to play with kittens during this period, they may have poor bite inhibition.

**Juvenile Period**
The juvenile period occurs from approximately 2 months of age to sexual maturity. Sexual maturity occurs between 4 and 10 months of age.

** Adolescent Period**
The adolescent period ranges from puberty (4–10 months) to social maturity. Social maturity occurs between 36–48 months. During the adolescent period cats are sexually but not socially mature. This stage of development is comparable to the human teenage years. Cats are socially mature at 3–4 years of age.
Effects of Early Experience and Stress on Development
Friendliness is most likely genetic and thought to be influenced strongly by the tom. However, learning and experience can have an effect on development. All behavior is a combination of genetics and learning.

A study was performed that evaluated the effect of environmental complexity and development of sensory abilities of the cat (Blakemore and Cooper 1970). Kittens were reared in darkness, and once a day they were placed into a cylinder with either horizontal or vertical stripes. Later these cats were only able to respond to vertical or horizontal objects, respectively. Visual defects were noted. The significance of this study is that the feline brain is not fully developed at birth, and early experience can have a profound impact on development of the visual cortex.

Numerous experiments in the 1960s and 1970s evaluated how environmental complexity affected learning in the Norway rat. In one study, rats were selected for maze brightness or maze dullness. Genetically bright rats reared in a poor environment performed poorly with maze tests. Genetically dull rats reared in an enriched environment performed well on maze tests. This study illustrated that an enriched environment had a positive effect on development, and a deprived environment had a negative effect on development.

Early mild stress during the neonatal period (first days after birth) primes the hypothalamic-hypophyseal-adrenal axis and can have beneficial effects on altricial animals. Early handling is beneficial. Removing a kitten from the litter and placing it on a cool surface for 1–2 minutes each day constitutes a mild stress. Animals that experience early stress react more strongly endocrinologically to acute stressors and less strongly endocrinologically to chronic stressors. Animals that experience mild stress during the neonatal period are better able to handle chronic stress. Other reported effects of mild neonatal stress are that kittens open their eyes sooner and leave the nest earlier, Siamese kittens will develop color points earlier, cats may have an increased resistance to some diseases, and decreased emotionality.

Feline Social Behavior
Felines vary in their desire for social interaction. The domestic felines’ wild ancestor, Felis silvestris lybica, was solitary. Domestic felines form social groups or colonies, with preferred associations within the group. Colonies are dependent on resources. If food is plentiful, this will establish and maintain a colony. Colonies are based on matrilineal kinship. Related females form the group. Queens will cooperatively rear young. Hunting behavior is not innate; rather, predatory behavior is dependant on the queen. Observational learning likely has an effect. The tom’s home ranges often overlap several different females. Toms may have an affiliation with a particular group.

Cats (male and female) are polygamous. If choosing an unfamiliar tom, the female cat will choose the larger unfamiliar male. However, if she has the choice between a familiar smaller male versus a larger unfamiliar male, she may choose the familiar smaller male (Clutton-Brock 1989).

The domestic cat is crepuscular (active at dusk and dawn) rather than nocturnal. Domestic cats are solitary hunters and eat small meals frequently. Territorial ranges vary between the sexes. Male cats have on average 3 times more territory than female cats. In the indoor setting, the male cat’s average range was 4–5 rooms, whereas the female cat’s range was 3–3.6 rooms. In one study on feline territory, a 2,000-square-foot home could successfully house 4–5 cats if multiple provisions were made. A 2,000-square-foot home with limited provision can successfully house 2 cats.

Feline Communication
The feline native language is probably a mixture of body language and scents. A communal smell establishes and maintains the colony. Scent glands are located in the chin, corners of the lip, temples, base of the tail, and the pads of the feet. Often, a submissive cat will affiliatively rub the dominant member of the colony. Core areas of the territory are often scented with cheek marking. The outskirts of the territory are more likely to be urine marked. Urine marking is performed when there is a perceived threat to the territory. Cats rarely mark territory with feces (middening).

The importance of vocalization has been underplayed in regards to body language and communication amongst cats. Because humans are more verbally oriented, cats that co-exist with humans may be more vocal because of learning. Cats can produce a variety of different sounds. The various sounds have different meanings. Some are used to
increase distance (hiss, growl). Other sounds are used to decrease distance (meow, purr). Siamese and oriental breeds tend to be more vocal.

Body language is used as the main form of communication amongst cats. Cats can be very subtle regarding their body language. They use body language to avoid or end confrontation. There are 3 major areas of the body to observe for body language. They are facial expression, body posture, and tail position. The message sent is a combination of all the areas. In order to read the entire message, it is necessary to look at the entire cat. Just in the ears alone, cats have 20–30 muscles. Cats can move the ears independently and rotate them 180 degrees.

Cats will also display conflict behaviors. Conflict behaviors indicate uneasiness and are used to diffuse or resolve conflict. Conflict behaviors are also known as calming signals or appeasement gestures (Table 2).

**Table 2. Feline conflict behaviors**

<table>
<thead>
<tr>
<th>Yawning</th>
<th>Lip Licking</th>
<th>Grooming</th>
<th>Averting Gaze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilated pupils</td>
<td>Blinking</td>
<td>Ears back and/or flattening</td>
<td>One ear up, one down</td>
</tr>
<tr>
<td>Tail twitching</td>
<td>Piloerection</td>
<td>Turning away</td>
<td>Freezing</td>
</tr>
<tr>
<td>Rolling to side</td>
<td>Sneezing</td>
<td>Sniffing ground</td>
<td>Scratching</td>
</tr>
</tbody>
</table>

**Conclusion**

With a thorough knowledge of normal feline behavior, social behavior, and development, it is easier to recognize abnormal behavior. Similarly, through careful observation of feline body language, we can often interpret subtle body cues and understand feline communication.

**References**