

Kama Muta: The Cuteness Emotion

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Abstract

Cute babies, sweet kittens, and fluffy puppies evoke compelling feelings that are rooted in our evolution. Cuteness described through Konrad Lorenz' *Kindchenschema* refers to a youthful and fragile appearance through a set of physical features such as large eyes, a round head, and a small nose. Such features elicit careful behavior in the perceiver, capture attention, and motivate approach. This chapter will describe various responses to cuteness and discuss how these are culturally unifying yet affected by cultural salience and personal differences such as gender and age. As cuteness is considerably associated with childlike features, it has traditionally been linked to a clear evolutionary behavioral function to foster care and protection of offspring. Despite the long line of empirical studies suggesting that cuteness has an evolutionary function, recent advances in the field indicate that responses to cuteness go beyond maternal caregiving to offspring. Cuteness can evoke powerful emotional responses in the perceiver that contemporary research has identified as predominantly positive. Less consensus, however, has been reached on the specific nature of the emotion evoked by cuteness. According to different theories, cuteness may evoke *compassion, tenderness, empathic concern, nurturant love, kawaii, or dimorphous emotional expressions*, which facilitates prosocial behavior, social engagement, and humanization. These emotional states motivate approach and care for the cute elicitor, which this chapter argues may all describe the *kama muta* emotion. *Kama muta*– “moved by love”- is presented as *the* typical cuteness response. The chapter suggests that the evolutionary and cultural aspects of various cuteness theories can be united through the common core of devotion to communal relationships – at the heart of the *kama muta* emotion.

Key words: kama muta; cuteness; communal sharing; baby schema; being moved

Introduction

Adorable features such as big round eyes and a small nose are usually found in infants, and baby animals and attract and sustain our attention, motivate approach, and affect our behavior. And while there is a large consensus among scholars of cuteness that cute objects tend to evoke positive feelings in the beholder, the exact nature of this emotional response remains unclear. Marketing, charity campaigns, product design, and entertainment industries have long acknowledged and exploited the appeal of cuteness and the emotion it evokes (Buckley, 2016; Nittono, 2016; Nittono, Fukushima, Yano, & Moriya, 2012). Hence, this emotion is a widespread phenomenon that is commonly felt yet rarely investigated. At first glance, cuteness may appear too trivial and undeserving of academic attention, but the way we respond to cuteness is one of the most powerful determinants of human behavior (Dale, Goggin, Leyda, McIntyre, & Negra, 2017; Kringelbach, Stark, Alexander, Bornstein, & Stein, 2016; May, 2019). “Cute” typically refers to someone or something small, fragile, and pleasant, and is often associated with the infantile visual features of the baby schema described below. Cuteness is not restricted to visual infant features only, but may also include the sound of babbling babies (Riem et al., 2012; Seifritz et al., 2003; Young et al., 2018), the baby smell of infants’ clothing (Porter, Cernoch, & McLaughlin, 1983) and even soft colors and round shapes of product design (Nenkov & Scott, 2014). This chapter focuses on the visual features of *Kindchenschema* cuteness (Lorenz, 1943, 1971), rather than broader approaches to cuteness like *whimsical* cuteness of product design (Nenkov & Scott, 2014), or cute sounds and smells (Kringelbach et al., 2016). According to Dale et al. (2017), studies of cuteness can be divided into two main focus areas; cuteness as an aesthetic, and cuteness as a psychological response. This chapter will focus on the latter by first reviewing literature linking cuteness to evolutionary fitness and adaptive caretaking behavior. Second, evidence implying that the emotional response to cuteness is cultural-general, yet modified by cultural and individual variance, will be presented. Third, several emotional perspectives on cuteness are reviewed through the common lens of evoking more than parental caretaking, and interpreted as a complex response affected by cognition and emotion. Finally, the authors propose that these various theories of the cuteness emotion may be unified through the common core of communal sharing, which represents the main elicitor of the social-relational *kama muta* emotion, often labeled as being *moved* or *touched*.

Survival of the Cutest

Cuteness is associated with evolutionary fitness. Charles Darwin (1872) noted that infants possess a quality that attracts attention and encourages caregiving from adults, which leads to increased chances of reproductive success. Parents' and caregivers' relation with infants is critical for the latter's survival and development (Kringelbach et al., 2016). Cute infant features have evolved and endured through Darwinian selection, as a cute offspring was more likely to receive attention and caregiving from adults and was thus more likely to survive and reproduce (Dydynski, 2020). Similar "cutifying" effects are seen in the evolution of pets (Dale, 2017; Kaminski, Waller, Diogo, Hartstone-Rose, & Burrows, 2019), toys (Hinde & Barden, 1985), and cartoon characters (Gould, 1982).

The science behind cuteness, through systematic biological inquiry, was introduced by ethologist Konrad Lorenz in 1943. He proposed the idea of the "baby schema" – a set of facial and bodily characteristics that make someone or something appear cute and that releases innate mechanisms that motivate caregiving in the perceiver (Lorenz, 1971). The baby schema, or *Kindchenschema*, includes features such as a large head relative to body size, large eyes, chubby cheeks, a high and protruding forehead, a small nose and chin, and small ears. These childlike features are neotenous, i.e., only found in children and youth, and gradually abate as the offspring ages. Beyond signaling youth, cute features also tend to communicate helplessness, innocence, physical weakness and smallness, vulnerability, dependence, and naiveté (Batson, Lishner, Cook, & Sawyer, 2005; Berry & McArthur, 1985; Dijkers, 2014; May, 2019; Zebrowitz, 2006). Because cute features are retained in childhood, Lorenz suggested that an affinity for cuteness was a result of natural selection, increasing individuals' chances for survival through caring for offspring (Lorenz, 1943). Hence, a built-in cuteness response would lead adults and even adolescents to want to care for infants, regardless of whether they had children themselves (i.e., alloparenting). Lorenz extended this hypothesis of the caretaking response to cuteness to apply both *within* and *across* species. Specifically, he observed that parents took care of their young, and that humans displayed a similar response to cute infants as to animals resembling these across species. Contemporary research supports this extension of the cuteness response to animals (e.g., Archer & Monton, 2011; Borgi & Cirulli, 2016; Borgi, Cogliati-Dezza, Brelsford, Meints, & Cirulli, 2014; Little, 2012). Borgi et al. (2014), for instance, found that both children (as young as three years) and adults perceived photos of babies, puppies, and kittens with high adherence to the baby schema to be cuter than photos of the same species with low baby schema. Hence, the cuteness response is

not merely evoked by infants from our own species, but also and incidentally from other animals displaying features of the baby schema.

The evolutionary caretaking hypothesis of cuteness proposed by Lorenz has undergone substantial empirical testing. Overall, findings show that cuteness can evoke behavioral tendencies related to protection and care. Research has demonstrated that infants and animals with features of the baby schema capture the attention of adults and children alike, are perceived as cute, are preferentially treated compared to the less cute, and that cute infants are more likely to be adopted and receive attention, toys, baby talk, and caregiving from adults (Borgi et al., 2014; Brosch, Sander, & Scherer, 2007; Glocker, Langleben, Ruparel, Loughead, Gur, et al., 2009; Glocker, Langleben, Ruparel, Loughead, Valdez, et al., 2009; Golle, Lisibach, Mast, & Lobmaier, 2013; Golle, Probst, Mast, & Lobmaier, 2015; Hildebrandt & Fitzgerald, 1979, 1981; Little, 2012; Volk, Lukjanczuk, & Quinsey, 2007; Wolfensohn, 2020). Kruger (2015), for example, tested Lorenz' hypothesis by showing participants photos of semi-precocial baby animals (that require caretaking) and super-precocial baby animals (that do not require caretaking) and asking them to rate the animals. The semi-precocial baby animals were judged as cuter, more attractive, helpless, and youthful, and less mature and independent compared to the super-precocial baby animals. Moreover, the semi-precocial baby animals evoked stronger caregiving-related behaviors in the participants, such as wanting to pet and adopt them. Thus, cuteness is historically presumed to evoke an innate, instinctual, mainly maternal, caregiving response. Several experimental research studies have demonstrated that Lorenz' baby schema accurately defines what and who we perceive to be cute. This is further corroborated by neuroimaging studies of cuteness, demonstrating that baby schema stimuli trigger rapid and unique brain activity in areas associated with attention, focus, emotion, and reward, such as the precuneus, orbitofrontal cortex, and nucleus accumbens (Glocker, Langleben, Ruparel, Loughead, Valdez, et al., 2009; Kringelbach et al., 2008; Kringelbach et al., 2016). That is, cuteness taps into our reward system in the brain, which stimulates our emotions and motivates our intention to nurture human and animal infants displaying features of the baby schema – resulting in increased chances of survival of the cutest.

Despite the long line of empirical studies suggesting that cuteness has an evolutionary component, contemporary research indicates that responses to cuteness go beyond maternal caregiving to offspring. A series of psychological studies identified that the cuteness response also encompasses empathy, humanization, and sharing. The individual response to the baby

schema may not be as instinctual and spontaneous as first believed but is mediated through cognition and emotion and influenced by personality and other individual differences, as well as by cultural factors and their salience.

The Cuteness Response is Culturally Universal, yet Individually Different

This chapter proposes that cuteness – and the emotion it evokes – is not culture-specific or discriminating, but rather culture-general and universal. In fact, the baby schema in infants captures the attention of adults, regardless of the infants' race or ethnicity (Proverbio, De Gabriele, Manfredi, & Adorni, 2011; Zebrowitz, Montepare, & Lee, 1993). Furthermore, Esposito et al. (2014) found that physiological arousal measured through facial temperature increased in response to infant faces, regardless of whether the infant belonged to the perceiver's cultural in-group or out-group. While the absence of significant difference is not proof of equivalence, these results suggest that cuteness responses often disregard both in- and out-group divisions and cultural familiarity.

Despite cuteness and the emotional response to it appearing to be underpinned by a universal core across cultures (Esposito et al., 2014; Nittono, 2016), this global phenomenon is more salient and appreciated in certain cultures. Consider the availability of labels. For many emotions, languages have both terms that describe one's inner state ("I am fearful") and the quality of the evoking stimuli ("This dog is frightening"). There is, for example, no inner state term for the emotion evoked by cuteness in certain cultures (e.g., English, Norwegian, German), while other cultures do have a corresponding label for this emotion (e.g., Hungarian, Estonian, Finnish; Steinnes, Blomster, Seibt, Zickfeld, & Fiske, 2019). East Asian countries are perhaps the most notable examples of cultures where cuteness is highly prevalent and pervasive. The concept of *kawaii*, for example, has long been acknowledged and celebrated in Japan and is considered a central aspect of the country's contemporary culture (Nittono, 2016). East Asian cuteness cultures are accredited as one of the key influences to the global rise of cuteness in mainstream culture (Dale, 2016), and cuteness plays a significant role in modern consumer (Ngai, 2012) and digital cultures (Wittkower, 2012).

Besides cultural variations in salience, responses to cuteness are influenced by individual factors such as age, gender, and stage in life. Both children and adults respond to cuteness. Children, aged 3-6 years, show a preference for the baby schema in both human and

animal faces, measured by gaze allocation and cuteness ratings (Borgi et al., 2014). Several studies show a similar preference in adults (e.g., Archer & Monton, 2011; Brosch et al., 2007; Glocker, Langleben, Ruparel, Loughhead, Gur, et al., 2009). Moreover, empirical evidence of individual differences suggest that women respond stronger to baby schema than men. Women are better at accurately picking out the cutest infant faces, as indexed by the faces' correspondence to Lorenz' baby schema (Lobmaier, Sprengelmeyer, Wiffen, & Perrett, 2010). Moreover, prosocially-oriented women (but not prosocially-oriented men) respond to cuteness through increased physical carefulness, as a proxy for the embodiment of caregiving (Sherman, Haidt, Iyer, & Coan, 2013). Hormonal effects may also influence cuteness perception. High levels of reproductive hormones in women can increase their sensitivity to cuteness compared to low levels of reproductive hormones (Sprengelmeyer et al., 2009), and women are most sensitive to cuteness cues during the ovulation phase of their menstrual cycle (Lobmaier, Probst, Perrett, & Heinrichs, 2015). There are, however, no gender differences when it comes to motivation to view cute babies. Both men and women will exert themselves in order to look longer at infant faces (Hahn, Xiao, Sprengelmeyer, & Perrett, 2013; Parsons, Young, Kumari, Stein, & Kringelbach, 2011). Although no differences *between* genders emerge in motivation to view infant faces, there appear to be differences *within* genders. Specifically, women who report being more interested in interacting with babies expend more effort to look longer at infant faces (Hahn, DeBruine, & Jones, 2015). When participants are asked to rate the cuteness of babies through self-reports, women tend to rate babies as cuter compared to men. Conversely, neuroimaging studies indicate that the cuteness response triggers the same brain area activation in both genders (Kringelbach et al., 2008). This apparent discrepancy between self-reports and brain scans of the cuteness response might be associated with societal gender expectations and norms surrounding child rearing and emotional expressions. Taken together, these findings indicate that responding to cuteness is influenced by age, culture, and biological sex, as well as changes in life circumstances such as pregnancy and parenting (Schaller, 2018).

Beyond Caretaking: Cuteness Fosters Socialization, Humanization, and Emotion Regulation

Contemporary research on cuteness understands responses to cuteness to a larger extent as socialization and emotion, and to a lesser extent as parental caretaking. The broadened psychological conceptualization of cuteness finds that exposure to cute objects

typically induces a positive emotional response involving feelings of tenderness, affection, caregiving, socialization, compassion, empathy, and love (e.g., Nittono et al., 2012; Schaller, 2018; Sherman & Haidt, 2011; Shiota et al., 2014).

Social engagement and morality. Challenging the classical theory of cuteness as an innate release mechanism of parental caregiving, Sherman and Haidt (2011) argued that cute objects motivate social engagement, playfulness, and affiliation. The difference is the assumption that emotional and cognitive factors mediate between stimulus and response. Specifically, they proposed a “cuteness response” as an evolved moral emotion that facilitates social relations and humanizes the targets. They placed *disgust* as an opposing moral emotion to the cuteness response, both of which are posited as highly cognitive emotions. While cute objects are humanized, pleasant, and highly approachable, disgusting objects are dehumanized, unpleasant, and highly aversive. Cuteness is proposed to have evolved as a trigger of social motivations related to parental care, such as cuddling and embracing, suggesting a relationship between social engagement and caretaking (Sherman & Haidt, 2011).

Evaluating a baby’s potential sociability is suggested as an explanation for why cuteness evokes caretaking in non-parents (Sherman & Haidt, 2011). In support of this view, infants are not rated as most cute when they are the most vulnerable and most in need of care, but rather when they are between the age of 10 months and three years (Hildebrandt & Fitzgerald, 1979; Sanefuji, Ohgami, & Hashiya, 2007; Sherman & Haidt, 2011). At this age, they begin expressing greater awareness of other infants and adults, as well as paying more attention to social interactions. Moreover, infants are perceived as cuter when they are happy and smiling than when they are crying and in distress (Hildebrandt, 1983). In a similar experiment, Parsons et al. (2014) found that happy infants were rated as cuter than infants displaying a less positive temperament, and adults were more motivated to view the happy infants. Furthermore, Langlois, Ritter, Casey, and Sawin (1995), found that mothers of cute infants were more affectionate and playful around their babies than mothers of less-cute infants. Hence, Sherman and Haidt (2011) argued that smiling babies invite socialization, and that when infants are at their most cute they are beginning to socialize and engage with others. For this reason, cuteness is proposed to be a contributor to the socialization of children (including those of others), and thus a contributing factor in humans’ development of community and cooperation (Sherman & Haidt, 2011).

The socialization perspective is further supported by evidence of embodied physical care in response to cuteness. In addition, viewing pictures of cute baby animals (such as kittens and puppies) compared to their adult and less cute counterparts, increase carefulness in the perceiver when performing a fine motor dexterity task as a proxy for caregiving (Sherman, Haidt, & Coan, 2009). The fine motor dexterity task involved the participant playing a doctor in the Operation Game trying to help a patient by carefully removing harmful objects from the patient's body with a pair of tweezers. Sherman et al. (2009) explain their results through embodied cognition. Viewing cute pictures can elicit tenderness both in terms of a positive emotional state and tender physical behavior. Nittono et al. (2012) further elaborate these findings through three experiments demonstrating that looking at pictures of cute animals improves carefulness in performing tasks that require focused attention, enhancing carefulness in both the motor and perceptual domains. Based on these results, Nittono et al. (2012) argue that the power of cuteness goes beyond social engagement and caregiving. They postulate that the emotional response evoked by cuteness leads to attentional focus and careful behavior and may have broad effects on both cognition and behavior.

Empathic concern. Several other scholars support the socialization and moral perspective of cuteness. For example, Dale (2017) also argues that the emotional response to cute objects prompts engagement, companionship, communication, and interactive play. He suggests that cuteness functions as an adaptive cooperative survival strategy that fosters prosociality. Kringelbach et al. (2016) further support this view by proposing that, beyond caretaking, cuteness evokes empathy, sympathy, and compassion, and consequently facilitates complex social relations. They suggest that anthropomorphizing of cute objects through humanizing them, extends human morality and reduces dehumanization and discrimination against out-groups. Dijker (2014) notes that cuteness is tied to vulnerability and suggests that vulnerable objects evoke various moral emotions such as tenderness and sympathy. Sympathy, for example, is recognized across several cultures by the exclamation "aww" (Cordaro, Keltner, Tshering, Wangchuk, & Flynn, 2016). Compatible findings show that baby schema features are perceived as warm and sociable (Zebrowitz, Kikuchi, & Fellous, 2007), and that both signs of cuteness and vulnerability in faces evoke prosocial behavior (Keating, Randall, Kendrick, & Gutshall, 2003). Additionally, Wang, Mukhopadhyay, and Patrick (2017) found that consumers experienced feelings of tenderness in response to conservation appeals showing baby schema cuteness. Zhang and Zhou (2020) second the moral understanding of cuteness and propose that the prosocial benefits of cuteness can be used to

educate children about morality, altruism, and empathy. Indeed, several studies demonstrate that cuteness evokes empathic concern in the perceiver (e.g., Levin, Arluke, & Irvine, 2017; Steinnes et al., 2019). Tenderness and compassion (or sympathy) are suggested to be part of the broader term *empathic concern* (Lishner, Batson, & Huss, 2011; Lishner, Ocejja, Stocks, & Zaspel, 2008; Niezink, Siero, Dijkstra, Buunk, & Barelds, 2012). Tenderness seems to be more prominently related to cute stimuli (Lishner et al., 2011), and is characterized by reduced aspects of sadness in comparison to compassion (Kalawski, 2010). Similarly, the concept of *nurturant love*, an affectionate response to cute stimuli that motivates caregiving (Shaver, Morgan, & Wu, 1996; Shiota et al., 2014), has also been related to compassion or empathic concern (Weidman & Tracy, 2020a). Empathic concern is typically defined as a response to others in need, and may be described as feeling sympathetic, compassionate, tender, softhearted, warm, and moved (Batson et al., 1987; Steinnes et al., 2019). Cuteness does, in fact, evoke empathic concern in the perceiver. Levin et al. (2017), for example, found that cute objects in distress, such as a child or a puppy, evoke more empathic concern than human adults in distress. Similarly, infants and baby animals evoke more empathic concern compared to adult humans and animals (Lishner et al., 2008; Zickfeld, Kunst, & Hohle, 2018).

Kawaii. Like Sherman and Haidt (2011), Nittono (2016) argues that cuteness evokes caregiving in a broader sense, such as being more careful and encouraging socialization in children. He conceptualizes cuteness and the response to it as the Japanese term *kawaii*. Historically, *kawaii* has been used to refer to something or someone small, weak, and in need of protection (Berque, Chiba, Ohkura, Sripian, & Sugaya, 2020). Recently, the term has expanded to refer to an entire culture of *kawaii*, which permeates virtually all aspects of Japanese society and can be anything charming, adorable, childish, and lovable (Lieber-Milo & Nittono, 2019). Dale (2016) notes that *kawaii*, or “East Asian cute”, is one of the most significant factors influencing cuteness worldwide. *Kawaii* can refer to objects both *with* and *without* baby schema (Nittono & Ihara, 2017) and may include humans, robots, animals, anime characters, movies, handwriting, clothing, food, mannerism, and so on. *Kawaii* has a unique meaning in Japanese and is considered to not be fully translatable to other languages (Nittono, 2016). Nevertheless, *kawaii* may be roughly translated to ‘lovely’, ‘pretty’, ‘adorable’, and similar terms (Nittono, 2016), although the closest equivalent English word for *kawaii* is ‘cute’ (Marcus, Kurosu, & Ma, 2018; Nittono & Ihara, 2017). Nittono (2016) puts forward a behavioral “two-layer model” of *kawaii*-cuteness. The two-layer model

understands cuteness as both a biologically based emotion and as a culturally determined social value. The response to kawaii is a highly positive, moderately arousing, and socially motivated emotion that is typically evoked by (but not limited to) cute babies and children. Kawaii encourages both parental care of needy offspring and promotes socialization as the offspring ages and starts to interact with others. Other studies of kawaii have shown that kawaii pictures (both with and without baby schema) can elicit facial muscles associated with smiling, suggesting that stimuli evoking kawaii motivate socialization and approach-motivation and evoke a positive emotional state (Nittono & Ihara, 2017).

Cute aggression. Other scholars argue for a more nuanced view of the argument that cuteness evokes a predominantly positive emotional response. In her book, *The Cuteness of the Avant-Garde*, Ngai (2005) suggests that cuteness in consumerism evokes conflicting and simultaneous feelings of tenderness and aggression. That is, parallels are drawn between cuteness and affectionate and nurturing responses, as well as aggressive and violent responses. According to Ngai (2012), cuteness as an aesthetic evokes an emotional response that is characterized by an unbalanced power dynamic, wherein the perceiver feels superior and dominant over the cute object through the latter's vulnerability and powerlessness. Such experienced dominance may, on one hand, lead the perceiver to want to protect and care for the cute object. On another hand, it may promote some form of aggression towards the cute object.

In a related line of experimental research, emotional responses to cuteness are considered to be "dimorphous" expressions of both caregiving and behavior that resemble aggression, such as pinching, squeezing, biting, and teeth clenching (Aragón & Bargh, 2018; Aragón, Clark, Dyer, & Bargh, 2015). The latter is termed "cute aggression" and defines the impulse to squeeze, pinch, and bite cute objects, albeit importantly *without* any intention to hurt (Aragón et al., 2015). Hence, cute aggression may be understood as an example of dimorphous emotional expressions, which may be defined as the expression of an emotion when experiencing another emotion, such as laughing when feeling sad (Stavropoulos & Alba, 2018). Aragón et al. (2015) studied emotional responses to cute stimuli (i.e., photos of baby animals and human infants) through self-reports in an online survey. Their results suggested that cute objects displaying features of the baby schema evoked both caretaking and cute aggression in participants. Specifically, their findings revealed a mediation of self-reports of feeling overwhelmed by positive emotion on the correlation between cuteness ratings and cute aggression (Aragón et al., 2015). From an evolutionary perspective, the authors postulate that

being overwhelmed by emotion and hence somewhat debilitated in response to cute babies in need of protection is not adaptive behavior. Thus, these dimorphous expressions are argued to have evolved to regulate intense and overwhelming positive emotions (Aragón et al., 2015; Stavropoulos & Alba, 2018). (Dale, 2016, 2017) argues that cute aggression is regulated through channeling aggressive behavioral tendencies through social engagement. That is, instead of causing harm to a cute object, the perceiver rather engages in playful linguistic and behavioral outburst in response to its cuteness, such as squealing, exclaiming “aww”, cooing, clenching fists, and gritting teeth. In this way, the perceiver directs the overwhelmingly positive emotion evoked by cuteness away from the cute target by embracing playful and childlike behavior. Dale argues that such channeling of cute aggression both protects the cute object from potential harm as well as encouraging continued social engagement with it.

Kama Muta as the Common Denominator

Relative to other emotions, the published research on the cuteness emotion is remarkably scarce (Buckley, 2016). We speculate that one reason for this is the lack of a common emotional conceptual understanding and corresponding name of the emotion in English. Language and terminology are important drivers of attitudes and behaviors, and precisely defined psychological concepts are crucial when studying the constructs they denote – especially for emotions (Fiske, 2020). We argue that the various cuteness emotion theories can be unified through two concepts: The various relational aspects evoked by cuteness share the core of communal sharing, and the actual emotional reactions can be understood with the emotion concept of kama muta, which is evoked if communal sharing suddenly intensifies. Communal sharing refers to social interactions where people feel they share a common identity, that focus on sharing according to need and ability, and are communicated by means of aspects such as synchrony, touch, or commensalism (Fiske, 2004b). Kama muta (Sanskrit for ‘moved by love’) represents a positive social emotion evoked by a sudden intensification of such communal sharing relations (Fiske, Seibt, & Schubert, 2019). If intense, kama muta is typically accompanied by moist eyes or tears, chills or goosebumps, and a warm feeling in the chest (Zickfeld, Arriaga, Santos, Schubert, & Seibt, 2020; Zickfeld, Schubert, Seibt, Blomster, et al., 2019). A touching father-daughter reunion at an airport, a heartwarming wedding speech from the groom to the bride, and a mother’s first embrace of her newborn child are typical examples of kama muta (Fiske, 2019). Importantly, observing and interacting with cute animals also evokes kama muta (Steinnes et al., 2019). In order to characterize the

relationship between cuteness and kama muta, we will focus on the biological and cultural evolution of kama muta, its relation to other emotions, its motivational functions, and finally consider empirical evidence related to cute animals and infants.

Kama Muta and its Biological and Cultural Evolution

Reviewing the evidence presented so far, it seems clear that Lorenz' initial idea of a direct link between perceiving a *Kindchenschema* stimulus and caretaking behavior should be modified. In its stead, we can assume that baby schema stimuli evoke an emotional response that in turn motivates caretaking behavior (Sherman & Haidt, 2011). Whether and what caretaking behavior ensues depends on the situation, similar to how fear can lead to fight, freeze, or flight depending on the situation.

Can this emotion be identified clearly? Any theoretical proposal would need to accommodate the basic findings identified earlier in the chapter: The emotion motivates approach and caretaking; the emotion is experienced as positive; the emotion is accompanied by a set of nonverbal behavior including smiling, vocalizations such as “aww”; and finally the emotion is universal at its core but still modified by cultural peculiarities. All the emotional states outlined above motivate approach and care for the cute elicitor. Several labels for the emotion evoked by cuteness have been suggested, including *cuteness response*, *kawaii*, *cute-affect*, *aww*, *tenderness*, *nurturant love*, and *cute-emotion* (Buckley, 2016; Dale, 2017; Kalawski, 2010; Nittono, 2016; Sherman & Haidt, 2011; Shiota et al., 2014). Inherent in these proposals is that the emotion is unique for cute stimuli.

The authors of this chapter believe that the emotion these labels refer to is *kama muta*, an emotion that is defined and observed more broadly than just in response to cute stimuli. Kama muta theory grew out of observations on experiences that English speakers label as *being moved* or *touched*, and the theoretical framework offered by Relational Models Theory (Fiske, 1992) and its sister theories Complementarity Theory and Conformation Theory (Fiske, 2000, 2004a). The basic assumptions of kama muta theory are these:

Emotions in general and kama muta in particular are understood as a combination of a biologically prepared blueprint and culturally transmitted complements. This view is rooted in *dual inheritance theories* that assume that humans have been shaped in parallel by biological and cultural evolution (Boyd, 2018; Boyd & Richerson, 1985; Fiske, 2000; Henrich, 2016)

and coherent with arguments in developmental and embodied cognition (Lee & Schwarz, 2020; Schubert & Grüning, 2021). Cultures can be understood as providing *implementations* of the basic emotional blueprints and make them unique in various ways: They can emphasize and ritualize situations in which the emotion should be felt strongly. They can teach specific ways to express the emotion. They can emphasize some prepared ways to express the emotion and suppress others. Through labeling, they can differentiate from or assimilate the emotion to other emotions. What cultures do for emotions can be likened to what they do for color perception: Both emotions and color perception are determined by a universal biological basis, but different cultures have developed different color spaces and concepts that are adapted to the local environment and differ substantially in their complexity and structure. This structure in turn influences cognitive processes and to some extent perception, especially at the borders between color concepts (Roberson, Davies, & Davidoff, 2000).

Dual inheritance theories propose an interplay between biological and cultural evolution. Cultural evolution creates concepts, skills, and behaviors that are adapted to the environment, which includes the human body itself. In that sense, the cultural components of emotions are adaptations to the biologically evolved blueprints – for instance some rudimentary facial expressions, the ability to cry, etc. But the outcomes of cultural evolution in turn create an environment for the biological evolution to adapt to. For instance, our surprisingly short guts and small jaws are adaptations to a long history of cooking our food and thereby reducing the need for chewing and detoxifying in the gut. Similarly, it seems well possible, although speculative at this time, that some aspects of our biology of emotions are in fact adaptations to early cultural adaptations.

Kama muta theory further argues that the domain for which kama muta evolved biologically and culturally is the relational building block of communal sharing, as defined by Relational Models Theory (Fiske, 1992). Social relations that build on top of the blueprint for communal sharing are relations where people feel that they share some important essence and are interchangeable in some way. In such relations, people typically share resources and burdens according to need and ability. Such relations are communicated and regulated through behaviors that index the connection of bodies through sharing of real or virtual essences, touch, synchronous behavior, imitation, shared clothing, or body markings, etc. Communal sharing relations often underlie parental caretaking (Fiske, 2004b).

Kama muta is evoked when people experience a sudden intensification of a communal sharing relation. This can be the start of a new relation, the modification of an existing

relation that was previously following a different model, or the intensification of an already existing communal relation. Marriage proposals and marriages, surprise reunions, being given a new pet, becoming a parent, being praised by a parent are all situations where people often feel kama muta. Interestingly, we can also feel kama muta when observing others in such situations (in real life or even in fiction), presumably because we identify with those involved.

When people feel kama muta, they tend to experience bodily warmth, goosebumps, and to tear up. They often express the emotion with vocalizations such as “aww” and moving a hand to their heart. They report that they experience positive affect and often want to share the experience with others. They also report motivation of being socially close to the agent which evoked kama muta (Blomster Lyshol, Pich, & Seibt, 2020; Blomster Lyshol, Seibt, Oliver, & Thomsen, 2020). These effects have been observed in several cultures (Schubert, Zickfeld, Seibt, & Fiske, 2018; Seibt et al., 2018; Zickfeld, Schubert, Seibt, Blomster, et al., 2019) and are consistent with the larger literature on *being moved* (Zickfeld, Schubert, Seibt, & Fiske, 2019).

Kama Muta and its Relation to other Concepts

Kama muta has been theoretically and empirically linked to several other emotion concepts including *awe*, *empathic concern*, *compassion*, *admiration*, *sadness*, or *gratitude* (Fiske et al., 2019; Zickfeld et al., 2020; Zickfeld, Schubert, Seibt, Blomster, et al., 2019; Zickfeld, Schubert, Seibt, & Fiske, 2019). For example, awe, an emotion elicited by perceptions of vastness and a need for accommodation (Keltner & Haidt, 2003), has been successfully differentiated from kama muta with regard to its physiological responses, subjective feelings, or action tendencies (Zickfeld et al., 2020; 2019). On the other hand, the concept of empathic concern, often referred to as *empathy* (Zickfeld et al., 2020), and including aspects of *compassion* (or *sympathy*) and *tenderness* (Kalawski, 2010; Lishner et al., 2011; Niezink et al., 2012) has been argued to represent a specific subtype of kama muta responses (Zickfeld et al., 2017). Studies focusing on the relation between trait empathic concern and state kama muta have provided a consistent association (Zickfeld, Schubert, Seibt, Blomster, et al., 2019; Zickfeld et al., 2017), while both concepts employ the same or similar measurements at the state level. The concept of empathic concern has been associated with cuteness responses (Batson et al., 2005; Lishner et al., 2008; Niezink et al., 2012), specifically the aspect referred to as *tenderness*, which has been considered a prototypical

response to cute targets (Kalawski, 2010). All of these concepts include a caregiving function, whether in response to others in need, vulnerability, or cuteness (Niezink et al., 2012). In addition, the concepts of compassion and tenderness have been linked to *nurturant love* (Shaver et al., 1996; Weidman & Tracy, 2020a), which is elicited by “physical and behavioral cuteness” (Shiota et al., 2014, p. 108). We argue that all of these concepts – empathic concern, tenderness, compassion, sympathy, and nurturant love – represent an emotional reaction in response to intensifications in communal sharing and in turn motivate attending to communal sharing relationships in the form of altruistic (Batson, 2010) or caregiving behavior (Shiota et al., 2014). While studies found that these concepts show a high theoretical and methodological overlap to the point of being indistinguishable (Weidman, Steckler, & Tracy, 2017; Weidman & Tracy, 2020a, 2020b), we think that communal sharing and thereby kama muta represent the common denominator in merging all these concepts.

Kama Muta and its Motivational Aspects

Relational Models Theory posits that people are fundamentally motivated to socially interact with others (Fiske, 1992). Due to the importance of social relationships, it is further posited that specific emotions are evoked by the state of one’s relationship, which motivates behaviors aimed at fulfilling one’s relational needs (Fiske, 2002). Thus, kama muta, which is evoked by a sudden intensification of a CS relationship, motivates devotion to the CS relation that evoked kama muta (Fiske et al., 2019). As outlined above, CS relationships are characterized by members of the CS relationship focusing on what they have in common, thus making them socially interchangeable. The specific common aspect which is in focus depends on the situation; in some situations, kinship is the main focus, in other situations, the focus is on a common humanity (Fiske 2004b; Haslam, 2006). By focusing on this communality, people respond to the needs of their CS partners (Fiske, 1992). Thus, the motivational effect of kama muta is viewing the agent eliciting kama muta and oneself as the same, and to respond to the needs of the agent. Studies have shown that kama muta is related with increased ratings of communality, operationalized for instance through viewing oppositional partisans belonging to a common American in-group (Blomster Lyshol, Seibt, et al., 2020) viewing out-groups as humans (Blomster Lyshol, Thomsen, et al., 2020), and motivation to adopt Norwegian culture (Blomster Lyshol, 2020; Blomster Lyshol, Pich, et al., 2020; Blomster Lyshol, Thomsen, et al., 2020). Supporting the notion that kama muta motivates people to respond to the needs of their CS partners, studies have shown that kama muta is

related with increased motivation to vote for a political candidate (Seibt, Schubert, Zickfeld, & Fiske, 2019), and motivation to behave communally in general (Zickfeld, Schubert, Seibt, Blomster, et al., 2019; Zickfeld, Schubert, Seibt, & Fiske, 2019). We argue that the motivational effects described in the cuteness response (Sherman & Haidt, 2011), *kawaii* (Nittoni, 2016), baby schema (Lorenz, 1943; 1971), and cute aggression (Aragón et al., 2015) accounts can fit into our *kama muta* account. Our arguments are presented in the following paragraphs.

Sherman and Haidt (2011) argue that viewing cute children results in a cuteness response, which is an emotional response that motivates people to socially engage with cute agents, by playing and talking with the agent. Furthermore, Sherman and Haidt (2011) propose that a mentalizing process (i.e., viewing the agent as having human properties) is then activated in order to strengthen the social bond. Steinnes et al. (2019) found that cute animals cuddling with each other, compared to cute animals not cuddling, evoked more *kama muta*, and were rated as cuter and more human. Furthermore, *kama muta* has been shown to increase humanization of out-group protagonists (Blomster Lyshol, Thomsen, et al., 2020; Sherman & Haidt, 2011; Steinnes et al., 2019). This corroborates the argument that feeling *kama muta* aligns with Sherman and Haidt's (2011) account that cuteness prompts a socializing response. However, we argue that humanization of cute agents is a process of viewing the cute agents as potential CS partners; Having a CS relationship with an agent entails focusing on what one has in common with the agent (Fiske, 1992). Viewing the agent as human entails that one is sharing a common human essence with the agent (Demoulin et al., 2009), thus perceiving the agent as a potential partner of CS. With the focus of commonalities in mind, we predict that this motivates one to respond to the needs of their CS partner, which includes play and talk.

Responding to the needs of a CS partner also involves taking care of her, especially if the CS partner is a child. Thus, our *kama muta* account also aligns with the motivational effects of cuteness described by Lorenz (1943, 1971) and Nittono (2016). They argue that cute agents motivate tender caretaking and protection of one's vulnerable offspring. Indeed, Relational Models Theory postulates that human CS relationships evolved from mammalian mother-child bonds (Fiske, 2004b). The *kama muta* account explains how cute agents are humanized, motivate people to socially engage with, and take care of, the cute agent: The motivational effect of *kama muta* is focusing on commonalities and responding to the needs of the CS partner. When one feels *kama muta* from a cute agent, one perceives the agent and oneself as having a shared essence, thus humanizing them. Furthermore, when focusing on

this shared essence, one is motivated to respond to the needs of the cute agent, where the needs depend on the agent and the situation. Lastly, Aragón et al. (2015) argue that displays of aggressive behavior are common in response to cute stimuli. This aggressive behavior includes squeezing, pinching and biting the cute agents without the intention to hurt them. As the intention of the “aggressive” behavior is not to hurt the cute agent, we argue that this behavior should rather be thought of as a highly intense way of communicating one’s CS devotion to the cute agent, such as impassioned cuddling and play (Fiske, 2004b).

In sum, the motivational effect of kama muta is to enhance the CS relationship that evoked kama muta. This enhancement takes the form of cognitively focusing on what one has in common with the agent, i.e., implementing the relational model of CS. Further, the enhancement of a CS relationship also takes the form of coordinating according to the CS relational model, which is to respond to the needs of the CS relational partner, or connecting one’s body with the CS relational partner (Fiske, 1992; 2004a). This fits with the motivational effects described in the cuteness response (Sherman & Haidt, 2011), kawaii (Nittono, 2016), baby schema (Lorenz, 1943, 1971), and cute aggression (Aragón et al., 2015) accounts; Motivation to socially engage, humanize, take care of, and display impassioned cuddling are all examples of CS devotion.

Kama Muta and its Empirical Evidence as the Cuteness Emotion

Cuteness has been shown to evoke emotional responses that, as argued above, are all part of kama muta, such as *empathic concern*, *compassion*, *tenderness*, and *nurturant love*. Common to all responses, despite cultural background, appear to be that cute objects evoke a distinctive emotion. This chapter propose kama muta as the typical cuteness emotion. Evidence, both direct and indirect, supporting this proposition comes from both quantitative and qualitative data featuring babies and animals as stimuli, through a combination of experiments, semi-structured interviews, and diary studies.

In a set of two experiments, Steinnes et al. (2019) found that videos of cute animals, compared to less cute animals, elicited stronger responses of kama muta and videos of two animals playing together were rated as cuter, humanized, and resulted in more kama muta. Kama muta was measured across four emotional components; vernacular labels, motivation to form or strengthen CS-relations, emotional valence, and sensations and signs. Specifically, the first study found that videos of animals high in cuteness evoked stronger

kama muta than animals low in cuteness, particularly among participants high in trait empathic concern. The second study showed that observing two cute animals in an affectionate interaction (as a proxy for high CS) evoked stronger cuteness ratings, humanization, and kama muta than observing animals with low CS interaction. Study 2 also found that trait empathic concern positively predicted cuteness ratings. These studies provide some initial direct evidence that cute animals trigger the emotion of kama muta and that intensifications of communal sharing trigger perceptions of cuteness. This experimental evidence implies that experiencing kama muta is positive, rewarding, and encourages us to seek out triggers, such as puppies and babies, that can evoke the emotion over and over. Kama muta motivates bonding and solidarity between the elicitor and perceiver, strengthens communal feelings, and social relationships. Thus, sharing cute videos or photos with others represents social connection through wanting to share a positive emotional experience with other people. It is also important to note the differences in the kama muta intensity experienced by the individual participants. For example, individual self-reports of the kama muta components showed variance in experiencing the sensations and signs of kama muta. Some participants reported tearing up and having moist eyes, whereas others reported not feeling any sensations of tears at all in response to the cute animal videos. While it is imperative to point out that responses to cuteness are individually different, the findings in (Steinnes et al., 2019) suggest that *the typical response* to cuteness is kama muta.

Further indirect evidence comes from a qualitative study analyzing diaries of and interviews with parents of newborn babies over the first six weeks. Hoëm and Lunnan-Reitan (2020) found that they experienced being moved in two different ways: as a fleeting moment and as a brief experience of calm. Both experiences seemed to have distinct functions. The fleeting moments were characterized by a realization of the new reality of the presence of the baby in the family, along with a sense of wonder, joy, and gratitude. It motivated participants to prioritize devoting time, energy, and attention to the baby and the family by directing their attention towards the preciousness of the moment. Moved as calm was characterized by being completely absorbed and present in the moment, by being open and focusing on the baby, and by losing track of time. It helped participants be attentive to the needs of the baby, e.g., by feeding it, talking to it, holding it and looking at it. Both forms of being moved were characterized by tears and a feeling of warmth in the chest. They both were experienced as an increase in communal sharing, and thus could be different variants of kama muta. Moved as fleeting moment seems to be more important for the parent to form an attachment to the baby

and to represent the new relationship, while moved as calm seems to be more important for being attentive to, understanding and fulfilling the needs of the newborn. Both fathers and mothers reported such moments. These results are preliminary, and we do not yet know how they relate to the cuteness of the baby specifically. However, in light of the findings on cuteness, it seems plausible that the cuteness of the baby is an important cue for eliciting both types of being moved, and that these moments, in turn, boost the perception of one's own baby as particularly cute.

Conclusion

Ever since Konrad Lorenz introduced cuteness as an academic interest field and proposed the baby schema as an instinctual elicitor of parental caretaking, there has been increasing research on the emotional and motivational mediators between the cute stimulus and the resulting behavior. This accumulating work has provided evidence for a unique cuteness response that appears both complex and informed by cultural salience, yet universally linked through an underlying common denominator. Numerous emotional concepts have been proposed in response, although most remain insular to cuteness. The authors of this chapter propose to tie this work, both theoretically and empirically, to communal relations and kama muta theory. The biological and cultural evolution of kama muta, how it relates to other proposed cuteness emotions, its motivational components, and empirical evidence link cuteness to kama muta. This approach can unify the various emotional perspectives of the cuteness response described in this chapter through the common conceptual core of suddenly intensified *communal sharing* and the *kama muta* emotion it evokes.

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