

Chapter 2

The Development of Humor

Abstract Sensing the humorous is a complex psychological process at which infants are surprisingly adept. Early studies focused on *what* infants and young children found amusing—i.e., on their perception of humor, while more recent research has begun to focus on their creation of humor and on *how* such young infants are able to be humorous so early in development. Controversies abound regarding whether infants truly have the cognitive skills to detect humor, or whether in fact they need them.

Keywords Smiling • Laughter • Humor • Infancy • Development • Social • Attachment • Cognitive • Learning • Perception • Controversy

When Does Humor Arise?

Following Darwin's initial attention to infant smiling and laughter, several researchers conducted systematic descriptive studies of this phenomenon, with the onset and precipitants of laughter as the point of interest. Researchers were interested in the *when* and *what* of laughter, and not so much in the *why*. These first two questions are not as straightforward as they initially appear, in part because studies of infant laughter are particularly sensitive to research design, with laboratory studies reporting later laughter onset (Sroufe and Wunsch 1972; Washburn 1929) than naturalistic studies (Darwin 1872; Mireault et al. 2012), and with unfamiliar experimenters being generally less successful at eliciting laughter than familiar caregivers (Sroufe and Wunsch 1972; Washburn 1929). These considerations therefore must be taken into account in piecing together the story of laughter and humor in infancy.

Washburn (1929) conducted a short-term longitudinal study of infants ranging from two to twelve months, and found wide variation in the onset of laughter (12–52 weeks), and little consistency in stimuli that elicited it with the exception of tickling, which was somewhat effective for infants from 6- to 12-months. Wilson (1931, as cited by Rothbart 1973) followed up with a study in which mothers of

infants and toddlers ranging from 1 month to 2½ years kept daily journals of the precipitants of their laughter. Infants laughed in response to gross motor play, tickling, surprising sights, sounds, and movements, and following motor successes like rolling over. Decades later, Wolff's (1963) systematic investigation of smiling and laughing in the first year of life resulted in a developmental timetable beginning with the reflexive smile at birth, which soon comes under voluntary control as the social smile at 5–9 weeks. This is followed by laughter in response to physical stimulation like tickling at 3 months, social games like peek-a-boo at 5 months, and visual events like popping bubbles at 7–9 months.

Sroufe and Wunsch (1972) followed with an observational study of 150 infants, describing changes in the frequency of laughter and the type of stimuli that arouse it in 4- to 12-month-olds. Taking Wolff (1963) lead, Sroufe and Wunsch (1972) investigated specific stimuli to look for developmental effects on the causes of laughter. Generally, they found that younger infants (4- to 6-month-olds) laughed more in response to auditory and tactile stimulation. Auditory amusements included lip popping, squeaky voices, and alliterations like “boom boom boom!” for example, while tactile events involved kissing the infant's stomach, blowing on her hair, or bouncing or jiggling the infant. For 7–9-month-olds, laughter was more readily aroused in response to visual events performed by an adult caregiver like sucking the baby's bottle, walking penguin-style, and crawling on the floor, as well as to social stimuli like chasing the baby, putting a cloth in the (parent's) mouth, and playing tug.

One problem of course is that such events can hardly be described as exclusively “auditory”, “visual”, “tactile” or “social”. For example, events classified as auditory like lip popping include visual elements. In addition, since all events were performed by caregivers for infants, all were social by default. Thus, although these studies were pioneering efforts into infant laughter, ultimately the events themselves were too confounded to conclude that infants at specific ages are more amused by specific types of stimuli. In addition, the research was driven by the expectation that infant humor perception is universal, and that all infants within a certain age-range would respond similarly to the same stimuli, as though there is a universal joke. Finally, these studies also implied that humor is unidirectional, created *by* parents *for* infants, and suggesting that infants are the recipients—rather than also creators—of humor. Despite these limitations, these studies inadvertently supplied two important observations: (1) humor appears in a social context, and (2) humorous events are typically absurd incongruities. Both of these initial and unintended findings are consistent with what Reddy (1991) later observed and labeled “clowning”.

Importantly, although these early studies were investigating *laughter*, they were ultimately exploring the sources of this response, so in that respect were the first studies of infant humor perception. The word humor was not used, possibly because it requires attributing some sophistication to young infants as observers of and participants in the environment, a position that was not supported by the zeitgeist of the time.

Recently, infants have been credited with observational, social, and cognitive skills sophisticated enough to not only perceive, but to create humor. Reddy (1991) observed that in the second part of the first year, infants are capable of humor creation and do so by “clowning”, a reference to the absurd behaviors of circus clowns, but with parallels in infancy: beginning at about 8 months of age infant clowning can include violating others’ constructions or exposing hidden body parts, for example. Beyond the specific behaviors, Reddy (1991) noted that infants revealed their ability to intentionally create and maintain humorous interactions in engagement with others’ minds, and were doing so before their first birthdays.

Reddy’s studies were followed-up by Mireault et al. (2012), who employed a longitudinal naturalistic observation in the first six months of life to investigate precursors to what Reddy (1991) had discovered in the second six months. They found that infants’ accidental use of simple clowning (e.g., shrill calls, odd faces) as early as 3 months of age, inadvertently created or maintained a humorous discourse with their caregivers. Early clowning is not necessarily intentional in such young infants, but arises quite by accident as a result of, e.g., their poor bodily and vocal control. For example, infants may spit or trill as they attempt to vocalize, may flop their head to one side, or may cross their eyes, and caregivers often respond with amusement to these unintentional actions (Mireault et al. 2012). But by six-months, an infant might grab her father’s nose and discover she can make him laugh as a consequence, an act she may then repeat to maintain the effect.

Thus infants are ready to perceive—and inadvertently create—humor beginning with the onset of laughter at approximately three-months of age. As they gain voluntary control over their bodies and become more experienced observers of others’ behavior, they increase their clowning capabilities simultaneously becoming more amused by the clowning of others, such that by their first birthdays infants are sophisticated little clowns who know their audience and can create the events most likely to achieve amusement.

Why Does Humor Arise So Early?

Among the reasonable possibilities as to why nature prioritized laughter and humor so early in development for mammals, there are two that stand out. One is that we ‘laugh for love’ and the other is that we ‘laugh to learn’. Within the first hypothesis is the idea that laughter and humor promote social relationships and emotional development, and within the second is that laughter and humor promote cognitive development. These are not rival explanations, rather there is evidence that laughter and humor accomplish both objectives.

Laughing for love. Within the first four to six weeks after birth, infants gain voluntary control over their smiles, which they reserve largely for social interaction. This “social smile” is followed four to six weeks later by laughter, a response so powerful and pleasant to both social partners that it is difficult to ignore. Given its early debut, it is possible that laughter helps facilitate the development of

attachment, the exclusive and intense emotional bond that results in a sense of psychological security (Bowlby 1969). Attachment, after all, is the major social-emotional milestone of infancy (Bretherton 1992), and is related to key long-term developmental outcomes including emotion regulation (Berlin and Cassidy 2003), mental health (Fagot and Kavanagh 1990), prosocial behavior (Muris et al. 2000) and achievement (Cutrona et al. 1994; Markiewicz et al. 2001).

Humor has been related to attachment-relevant variables among adults including the capacity for emotional intimacy, empathy, relationship satisfaction, trust, and perceived closeness (Cann et al. 2008; Fraley and Aron 2004; Hampes 1992, 1999, 2001). Since humor is related to so many of the qualities that underscore intimacy, it makes sense that it could support attachment. In fact, similar to secure attachments, humorous interactions are mutually responsive, synchronized, playful, and affectively positive (Mireault et al. 2012), and according to Reddy are “an important part of the experience of interacting with babies in any extended and secure relationship” (1991, p. 143). Infants raised in deprivation without adequate positive interactions smile and laugh infrequently, and exhibit poor emotion regulation and higher mortality (Cohn and Tronick 1983; Nelson et al. 2014; Spitz 1946). Mireault et al. (2012) found that parents of six-month-olds responded to their infants’ clowning with their own absurd behaviors and gestures nearly 100 % of the time, resulting in the dyad being “poised for a rich humorous exchange, meaning that they can experience a focused social interaction that is affectively pleasing, reciprocal, and implicitly shared both cognitively and interpersonally” (p. 345). Those types of interactions form the essence of secure attachment bonds.

In one of the few studies to directly explore the relationship between humor and attachment security in the first year, Mireault et al. (2012) investigated infants’ temperamental tendency to smile and laugh, a construct they described as “trait humor”. They predicted that infants with a lower threshold for smiling and laughing in early infancy would have more secure attachments by one year of age. However, the study revealed the reverse. That is, although trait humor at six-months predicted attachment security at 12 months, it did so in the opposite direction. Specifically, infants who scored higher in trait humor (i.e., were more ‘good-humored’ and quicker to smile and laugh regardless of situation) had poorer attachment security. These surprising findings may mean that good-humored infants are easier for parents to ignore, which works against attachment quality; conversely, infants who smile and laugh less frequently may provoke parents to work harder to elicit that response, ultimately fostering attachment bonds. Alternatively, it could be that good-humored infants are working to draw the attention of parents who are less engaged or that sober infants are attempting to regulate over-enthusiastic caregivers (Mireault et al. 2012). Whatever the explanation, humor and laughter appear to be part of the early attachment scenario. Attachment patterns influence infants’ expectations about intimate relationships, and these expectations are resistant to change (Bretherton 1992).

Laughing to learn. Social and emotional development are not the only areas humor can support. Humor has cognitive benefits as well, and may be another reason why it emerges so early. Rothbart (1973) argued that in order for infants to

perceive something as funny, they must be able to make some simple interpretations. Humor perception involves the convergence of several factors including novelty, memory, incongruity, and context to name a few. Infants must quickly recognize and synthesize these factors to extract humor from an event or interaction.

Infants prefer novelty (Baillargeon 1987; Fantz 1964), and humorous events have this quality. The preference for novelty in and of itself supports cognitive development as it means that infants will attend to the unfamiliar, thereby assimilating and accommodating their schemas to their new observations. When infants find novelty funny, they maintain their orientation to the event or stimulus (Sroufe and Wunsch 1972), providing additional opportunity for them to benefit from exposure to it. In addition, if the infant's laughter was elicited by the caregiver, then she or he will likely attempt to recreate the novelty, such that "the child's opportunity to experience the world is greatly enhanced" (Rothbart 1973, p. 254). Rothbart argues that humor in the form of games (i.e., in which the caregiver repeats an event that continues to result in the infant's laughter) promotes the development of the infant's expectations about the world and his or her social partners, as well as the infant's understanding of his effect on them. Such interactions are particularly important because caregivers must tailor their efforts to the infant's cognitive and emotional level, resulting in a developmentally fitted experience for the baby (Rothbart 1973).

Recognizing novelty implies that infants must be able to distinguish what is novel from what is "normal" (Baillargeon 2004). But novelty is not sufficient to elicit humor; infants must also be able to detect incongruity within the novelty (Pien and Rothbart 1980). This suggests infants must have some knowledge of "the norm", such as knowing how an object is normally used or how people typically behave. This knowledge comes from their everyday observations and experiences, which they must recall from memory.

Research has shown that even very young infants are sensitive to violations of the norm (e.g., Baillargeon 2004; Pien and Rothbart 1976), but humor perception requires a sensitivity to not only *what* is odd or absurd, but to when the odd or absurd is *funny*. Thus, infants must further recognize whether the incongruity is embedded within a playful context, another element to which they must attend (Hoicka 2014). Incongruity, which initially elicits surprise, will be perceived as humorous if the context supports that interpretation. However, there is another possible route from incongruity to humor, and that is if the infant is able to resolve the incongruity (Rothbart 1973), although no studies have specifically examined the capacity for resolution among infants. Finally, humor requires sharing something interpersonal, focusing one's attention on both a social partner and the object of the humorous episode. Mireault et al. (2014) found that six-month-olds smiled and laughed at an absurd event compared to an ordinary event, even when their parents remained affectively neutral. However, when their parents also smiled and laughed at the event, infants increased their positive response to it. By ten-months of age, infants, like older children and adults, are more likely to smile in the presence of

others (LaFrance 2011), suggesting their awareness of the presence and absence of social partners with whom to share a smile.

Yet all of this only refers to humor *perception*. Humor *creation* is at least as complex, and requires infants to be able to take an additional cognitive step. To amuse another person requires more active engagement with someone else's mind, their intentions and expectations. To create humor, infants must have an active understanding of mind (Reddy 2008), something that in this context becomes very clear by about 8 months of age (Reddy 2001), and that adds another layer to the cognitive process of humor. This intricate process is what prompted Hill (1996) to conclude that "humor is psychologically complex, but infants are surprisingly good at it".

It is important to note that although humor emerges early, this in itself does not mean it preceded the benefits it seems to provide. Humor may have developed as a by-product of mammals' social nature. All mammals share and communicate affect with kin in order to more effectively function as a group and survive. Humor and laughter may have developed subsequent to or alongside other social behaviors.

Controversies Within the Field

When exactly does a sense of humour develop? We can be sure that babies are cute and funny and amusing, and of course they laugh, but it may not be easy to convince ourselves that they are amused, or that they have the capacity to see things as funny. And if we listen to 4 and 5 year old children's tortuous attempts to make up what they think are hilarious jokes (often totally unfunny substitutions of any old content for standard formats such as knock-knock jokes, for instance), it is easy to conclude that although they certainly aspire to humour they can't quite manage to create it. Several developmental theories of humour have concluded precisely this—that not until somewhere in middle childhood do children develop the ability to grasp what it is that makes jokes funny. One theory argues that the key to getting funniness is the ability to not only say absurd things or sentences that don't fit in context, but to put the sentences in a context where the mis-fitting punch line suddenly fits in a different way or where the incongruity gets 'resolved'; and this ability, some argue, doesn't develop until 6 or 7 years of age (Shultz 1976).

Other cognitive developmental theories suggest that there are two components to humorous incongruities: the ability to *perceive* a contrast between the expected and the 'abnormal' (or the incongruous), and the ability to *interpret* this contrast as funny (rather than simply wrong). Most people would agree that the ability to perceive a contrast between the normal and the mis-expected is already present by about 4 months of age as we described earlier. The question then is, what do you need in order to see it as funny? One theorist (McGhee 1979) argues that what is needed is a *make believe attitude*—something we see very clearly in pretending—in

other words, the ability to tolerate the mis-expected without thinking it wrong. Pretend play begins in late infancy—around 18 months of age. McGhee argues that until this ability comes into play, infants cannot suspend reality and use a make-believe attitude to see something odd as also funny. In other words, he argues that before 18 months of age, infants *cannot* experience humour. However, do we really need a make-believe attitude to see things as funny? Rothbart (1973) suggests that we don't: all we need is the ability to suspend seriousness. The distinction between suspending reality and suspending seriousness is perhaps a subtle difference, but with important implications for understanding humour. She suggests that to see odd things as amusing what infants need is an attitude of playfulness. Things are funny, she argues, even within the framework of reality; why, for example, do we laugh at a person in a too-large hat or at someone tripping on a banana peel where there is no pretense involved? We don't need to interpret these events as make-believe in anyway. They are humorous because we see them in a playful way, i.e., as neither threatening, nor worrying, nor serious. Since the capacity to play begins at around 4 months of age, Rothbart (1973) suggests that infants also have the capacity for humour from around then.

How do we get past these theoretical arguments and judge the evidence from infancy? Certainly infant laughter, which also begins around that age, suggests that Rothbart (1973) might be right. Since most research on humor focuses on verbal humor, it is easy to avoid looking more closely at incidents of infant laughter. The adult literature on humour has tended to focus on analyses of 'the joke' and 'the comic'. This offers a 'third-person' conceptual route to explaining how we understand what others find funny, in other words giving a detached, more objective, take on understanding humor. This focus on the text of a joke is much easier to parse and manipulate if we are dealing literally with verbal text. It is also possible of course, to substitute cartoon images for verbal clauses. Indeed Pien and Rothbart (1976) have observed that if simply presented, even 4 year olds who are shown cartoon absurdities and cartoon punch lines can engage in incongruity resolution (at least sometimes). But when we are talking about non-verbal events (as is the case in infancy), the analysis of the 'text' of actions becomes more difficult. It is still possible, however, to do so. For instance, we could analyze the kinematics of actions, their intensity or degree of variation from previous actions and so on, as the essence of that which makes them funny, but it seems as though such efforts would provide less insight than we seek.

This focus on the text of a joke as the essence of funniness and humor could seriously undermine our understanding of it; it could absorb so much of our energy that we fail to see the relevance of the larger context or gestalt in which the joke exists. Some of us have had the experience of giggling fits with friends in contexts where laughter may be forbidden; we know from experiencing—or even just witnessing—such events that the thing one is ostensibly laughing at is not remotely as funny as it appears; it is the companionship in the laughter and its contextual inappropriateness that gives it its humorous power. The text of the joke may thus only achieve its funniness from its context, so ignoring context might mislead us

not only in understanding what it is that provides the fuel for humor, but in understanding when and how it develops.

How, then do we look for the origins of humor? Some answers are clear: we should not look only at verbal humor, but also at non-verbal actions; we should not look only at humor perception, but also its creation; and we should not focus only on the ‘text’ of a joke, whether verbal or non-verbal, but very much also on its context as an intrinsic part of it.

And there is yet another issue to confront: To what extent can one think of humour as an intellectual act rather than an emotional one? Can you *think* funniness without *feeling* it? There is something called an ‘arousal jag’ in humor perception—a rise and fall in tension—that can be felt as a physiological and emotional phenomenon. And, as Bergson (1928) argued, the perception of the comic involves at least a brief stepping aside from ordinary emotional involvement—‘a momentary anaesthesia of the heart’—where one can make jokes about otherwise painful or threatening things. Certainly some would argue that making a joke can be a very useful way of getting out of painful discussions or of acknowledging problems. Indifference may not be the natural ground of humor as Bergson (1928) suggested, but it can involve an interplay between engagement and disengagement with different emotional intensities.

A favorite motif of science fiction writers creating characters who are humanoid robots is the question of their humor: they can create complex verbal and logical thoughts, but they cannot *feel* the funniness of thoughts. Marvin the paranoid android in *The Hitchhiker’s Guide to the Galaxy* (Adams 1980) is comic, but doesn’t understand it. Crichton in the television series *Red Dwarf* grasps the formula for joking, but can’t make people find his attempts funny. Mike the android in Heinlein’s (1966) *The Moon is a Harsh Mistress* also works out the algorithm for humor, but, unable to understand why it doesn’t work, keeps plaintively asking ‘So that’s *not* very funny?’ This purely cerebral or logical approach seems in direct contrast to the way children find things funny and manage to make things funny for others, even though they have not quite figured out the code. While robots know the code but can’t participate in the emotional action, children seem to do the reverse. Thinking about humor as a thought, therefore, is to miss something completely fundamental about its nature.

Humor as Fundamentally Social

Despite the limitations pointed out above of focusing on humor as exclusively cognitive, nearly all humor research has done just that, framing funniness as primarily an intellectual experience. By implication then, humor would require cognitive skills beyond infants’ capacities (Reddy and Mireault 2015), which is one reason that infants have been largely ignored in the literature. Although cognitive theories are informative, they don’t provide a complete picture of humor development and function. More recently researchers have focused on humor

development as a social process, arguing that humor is not primarily intellectual but is instead fundamentally interpersonal (Kraut and Johnston 1979; Provine 2004; Reddy 1991). Provine (2004) has proposed that humor and laughter have considerably less to do with amusement and much more to do with social engagement, at least among adults. He argues that laughter itself is a “social behavior”, meaning that it occurs with much greater frequency in the presence of others regardless of whether there is a humorous stimulus (Kraut and Johnston 1979; Provine and Fischer 1989). In support of this theory is the finding that 85 % of adults’ smiles and laughs are precipitated by non-humorous events (Provine and Fischer 1989). For example, benign comments like “I’ve got to go!” or “How are you?” are much more likely to precede adult laughter, which is 30 times more likely to occur in group vs. solitary situations. Similarly, individuals are much less likely to laugh and smile when they are alone, even if they are amused (Provine 1997). For this reason, Provine (2004) concluded that “the main ingredient for laughter is not a joke, but another person” (p. 215). Further, the lawful occurrence of laughter at particular points in speech, for example at the ends but not in the middle of phrases, has caused him to postulate that laughter in fact may be a part of communicative processes.

These findings are consistent with the observation that laughter is contagious, spreading across individuals so that they effectively simultaneously share positive affect (Provine 1992), an experience so salient that adults are likely to find a complete stranger more likeable if they have shared a moment of laughter (Fraleigh and Aron 2004). Perhaps not surprisingly, a sense of humor is one of the top characteristics sought by adults in a romantic partner (Sprecher and Regan 2002). The social component of laughter, referred to as “the audience effect”, is observable by at least ten months of age whereby smiling and laughter are much more likely in the presence of others (LaFrance 2011).

Part of the social environment includes the affective signals of the infant’s social partners regarding the humorous event. In a longitudinal study of infant humor perception from three- to six-months, Mireault et al. (2012) found that the majority of the time when acting absurdly to amuse their babies, parents also provided humor cues, both communicating and sharing positive affect. Follow-up studies with five- and six-month-olds found that although they are able to independently appraise an event as funny, they smile and laugh more at the event if their parents do as well (Mireault et al. 2014, 2015). Interestingly, by 7-months, infants refrained from laughing at an event they had found amusing at 5- and 6-months of age if their mothers—who were performing the event—did not laugh. Therefore, when faced with absurdity, a social partner’s presence is not sufficient in and of itself. Rather, the affect of a familiar social partner becomes a more salient feature of the event beginning at seven months of age. At this age, infants are on the cusp of social referencing (Walden and Ogan 1988) whereby they will use the emotional cues of others to appraise and respond to an event. This process appears to be underway, at least with regard to negative affect, beginning at seven months (Mireault et al. 2015).

Therefore humor, for both adults and infants, is a rich social *and* emotional *and* cognitive experience. The three components cannot be separately parsed, and instead converge in the individual's awareness of *what* is happening, *who* is present, and *how* they should respond.

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