

that adolescence is a relatively peaceful period for the majority of adolescents. To balance the negative implications associated with storm and stress such as adolescents' mood swings and rebellious behaviors, positive interpretations of these expressions have been provided. For example, adolescents' questioning the authority of adults, demanding autonomous decision making, and exploring various possibilities might very well be the results of their cognitive achievements. Jeffrey Arnett has modified the traditional storm and stress view of adolescence to incorporate both individual differences and cultural variations. Not all adolescents experience storm and stress, but storm and stress is more likely during adolescence than at other ages. Modernization and globalization tend to increase the likelihood of storm and stress. Coleman's focal theory of adolescence disagrees with the assumption in the storm and stress view that all issues come at once for an adolescent's attention and resolution so that high levels of stress are inevitable. It proposes that different themes come into the focuses of individuals at different times as they develop during adolescence.

In summary, the traditional storm and stress view of adolescence is characteristic of only a small group of adolescents, and it attributes the inevitable storm and stress to the biological mechanism only. Current researchers are developing more balanced, interdisciplinary theories that typically view adolescence as a period during which the adolescent tries to understand his or her biological, cognitive, social, and emotional changes as a function of a developing person adapting to a changing world, and to reorganize these experiences into a coherent, healthy identity.

—Ling-Yi Zhou

### Further Readings and References

- Arnett, J. J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist*, 54(5), 317–326.
- Coleman, J. C. (1978). Current contradictions in adolescent theory. *Journal of Youth & Adolescence*, 7(1), 1–11.
- Cote, J. E. (1994). *Adolescent storm and stress: An evaluation of the Mead-Freeman controversy*. Hillsdale, NJ: Erlbaum.
- Freeman, D. (1983). *Margaret Mead and Samoa: The making and unmaking of an anthropological myth*. Cambridge, MA: Harvard University Press.
- Freud, A. (1956). Adolescence. *Psychoanalytic Study of the Child*, 13, 255–278.
- Hall, G. S. (1904). *Adolescence: Its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion and education*. New York: D. Appleton and Company.
- Mead, M. (1928). *Coming of age in Samoa*. New York: Morrow.
- Oldham, D. G. (1978). Adolescent turmoil: A myth revisited. *Adolescent Psychiatry*, 6, 267–279.
- Petersen, A. C. (1993). Presidential address: Creating adolescents: The role of context and process in developmental trajectories. *Journal of Research on Adolescence*, 3(1), 1–18.
- Susman, E. J., Dorn, L. D., & Schiefelbein, V. (2003). Puberty, sexuality, and health. *Handbook of Psychology: Developmental Psychology*, 6, 295–324.

---

## STRANGE SITUATION

---

Professor Mary Ainsworth and her student Barbara Wittig at Johns Hopkins University devised the strange situation procedure in the 1960s to demonstrate concepts central to John Bowlby's ethological theory of attachment. Although originally designed to elicit behaviors presumed to be universal among infants under stress, the strange situation instead was found to elicit systematic differences in the behavioral strategies used by infants. Ainsworth's theoretical conceptualization of these patterns, in conjunction with later contributions by her former student Mary Main at the University of California, Berkeley, expanded Bowlby's theory of attachment dramatically.

Bowlby proposed that all ground-dwelling primates possess a biologically based attachment behavioral system that operates to alert an individual to potential dangers, threats, and stresses. Threat is often signaled by the presence of natural clues to danger such as separation from the attachment figure and unfamiliarity of surroundings. The function of the attachment system is to motivate an individual to seek protection from another specific individual when faced with threat and, consequently, increase the individual's chance of survival. In the absence of threat, the activation of the attachment system diminishes, allowing behavioral systems such as exploration to operate. Individuals form enduring emotional bonds (attachments) to other members of their species who provide these "haven of safety" functions; infants form their first attachments to their significant caregivers. The strange situation procedure activates the attachment system in a laboratory setting via the controlled presence of natural clues to danger.

### STRANGE SITUATION PROTOCOL

Outlined in *Patterns of Attachment*, a 1978 book authored by Mary Ainsworth and her colleagues,

the strange situation is conducted in an unfamiliar toy-filled room by an unfamiliar experimenter (the “stranger”) and involves a series of eight episodes. The first episode lasts 1 minute, whereas the remaining seven episodes last 3 minutes each. In the first episode, the stranger introduces the infant and parent to the room then quietly exits. In the second episode, the infant explores the toys on the floor, while the parent sits in a chair and thumbs through a magazine. In the third episode, the stranger enters the room, casually speaks to the mother, then plays with the infant. In the fourth episode (first separation), the parent exits the room, leaving the infant with the stranger. In the fifth episode (first reunion), the parent returns and the stranger exits quietly. In the sixth episode (second separation), the parent again exits, leaving the infant completely alone. In the seventh episode, the stranger enters the room and interacts with the infant. In the eighth and final episode (second reunion), the parent returns and the stranger again exits quietly. The protocol specifies a variety of standardized instructions to be followed by the parent and stranger during these eight episodes; for example, the parent is instructed to leave her purse next to the chair during the separations and to pick up the infant during the second reunion.

The strange situation is currently conducted with only one modification from the original protocol, based on a theoretically grounded concern. The separations are designed to generate just enough stress to activate an infant’s attachment behavioral system, yet not generate so much stress that the child cannot employ a coping strategy. As a result, the separations (episodes 4 and 6) are typically curtailed after the infant has demonstrated distress for under 30 seconds. Curtailing the separations in this way helps ensure that an infant’s behavior on reunion is a reflection of the quality of the infant-parent relationship rather than simply a reflection of extreme levels of distress that become increasingly difficult to quell.

Other modifications to the strange situation threaten its validity. It is critical that the procedure not be conducted in the child’s home or day care classroom and that the “stranger” role not be filled by an adult whom the infant has met previously. Familiarity with the room or stranger tampers with the appropriate presentation of the natural clues to danger that ground the procedure. In addition, it is critical that the strange situation not be shortened to include only one separation. The procedure relies on the gradual

build-up of stress, with the first separation leaving the child with the stranger and the second separation leaving the child alone. Many infants appear calm during the first separation but become quite distressed upon the second separation; this change in behavior influences classification. Furthermore, it is critical that the strange situation is used only with infants between the ages of 12 and 18 months. Younger children may not yet have become selectively attached to a specific caregiver or may not be capable of crawling to seek proximity to the caregiver, whereas older children are simply not stressed enough by the procedure to adequately trigger the attachment behavioral system.

### INDIVIDUAL DIFFERENCES IN INFANT STRANGE SITUATION BEHAVIOR

The strange situation is videotaped and coded based on the infant’s overt behaviors. Based on her original sample, Ainsworth identified three general classifications of behavioral patterns, which since have been documented in hundreds of samples worldwide. In the mid-1980s, Mary Main and her student Judith Solomon added a fourth classification that accounted for a diverse group of previously unclassifiable infants. All four of the strange situation classifications reflect the quality of an infant’s relationship with a specific caregiver, and thus may be different with respect to each parent. In addition, these classifications refer to the quality, not strength, of attachment. Being attached to someone—even someone who does not provide optimal care—is critical to the survival of all infants. Except under anomalous circumstances, all infants become attached, even when caregivers are maltreating. Furthermore, quality of attachment is not reflected in the amount a child cries when the attachment system is activated. Although an infant’s temperament relates to the amount of distress experienced during separation in the strange situation, it is not associated with the infant’s classification. An infant’s behavior during the separation is useful for placing the reunion behavior in context, but it is primarily the behavior toward the parent on reunion that provides insight into the quality of the attachment relationship.

Infants are classified as secure in the strange situation when they demonstrate the behavioral pattern considered optimally adaptive by Bowlby’s theory: balancing their behaviors and attention between attachment (in the presence of threat) and exploration (in the absence of threat). Many of these

infants show a prototypical pattern of being distressed on separation, then promptly calming and returning to play upon reunion with the parent. However, some securely classified infants are highly distressed during separation and are slow to calm upon reunion, whereas others are not overtly distressed and do not seek direct comfort from the parent. However, all infants classified as secure show signs of missing the parent when separated and being pleased at the parent's return. In middle-class samples, approximately 60% of infants typically are classified as secure.

Infants are classified as resistant-ambivalent when they demonstrate behaviors and attention that is inflexibly oriented toward the parent, thus inhibiting exploration even after the threat has passed. These infants are highly distressed upon separation, yet inconsolable upon reunion. For example, many infants classified as ambivalent-resistant cling to the parent upon reunion while simultaneously squirming and pushing away. Infants are classified as avoidant when they show the opposite pattern: behaviors and attention inflexibly oriented away from the parent. These infants do not show overt signs of missing the parent on separation, then actively avoid the parent on reunion. For example, many infants classified as avoidant casually turn their backs toward the parent upon reunion while focusing intently on a toy. Even though avoidant infants appear calm, data on heart rate, stress hormones, and quality of play all reveal that these infants are as stressed as other infants.

Rather than showing a specific and coherent pattern, infants classified as disorganized/disoriented show any of an array of brief yet odd behaviors. For example, these infants may display anomalous postures, stilling, freezing, hand-to-mouth gestures, stereotypes such as constant rocking, and contradictory behavior patterns such as approaching the parent with head averted or starting to approach the parent then suddenly turning away before achieving proximity. These behaviors typically appear within the context of an otherwise organized attentional strategy (secure, resistant-ambivalent, avoidant), which collapses briefly. As a result, the disorganized classification is always assigned in conjunction with the best alternative organized strategy—the strategy thought to collapse.

## CORRELATES OF STRANGE SITUATION CLASSIFICATIONS

Strange situation classifications are thought to reflect an infant's expectations of a particular parent's

availability in times of stress, based on the history of their interactions. Indeed, the procedure has been validated largely by its moderate to strong associations to parental behavior in the home. An infant's security in the strange situation is predicted by the parent's sensitivity of care during the first year. Specifically, parents of secure babies identify and correctly interpret their infants' social signals such as crying, then respond to those signals promptly and appropriately. In contrast, avoidant and ambivalent-resistant patterns are associated with a variety of forms of insensitive caregiving. Parents of avoidant infants are especially likely to reject infant bids for attachment and to show discomfort with physical contact, whereas parents of ambivalent-resistant infants are especially likely to be inconsistent and unpredictable.

Whereas these organized patterns are associated with parental sensitivity or insensitivity, disorganized infant behavior is associated with parental behavior that is either maltreating or subtly frightening (e.g., quasi-dissociative). As Bowlby originally proposed, when frightened, a baby is motivated to flee from the source of alarm and toward the attachment figure. However, as Mary Main and Erik Hesse later pointed out, when the attachment figure actually is the source of alarm, the baby is placed in a behavioral paradox. The behavioral collapse observed in these human infants mirrors collapses shown by other primates experiencing the activation of conflicting behavior systems.

The strange situation has been validated across gender, temperament, and culture. In addition, the procedure has served as a source of validation for a range of additional attachment assessments in childhood and adulthood, including the widely used Adult Attachment Interview, devised by Main and colleagues. Furthermore, security in the strange situation predicts a variety of behaviors, mental representations, and mental health variables throughout childhood and, when environmental and relationship conditions remain stable, into adulthood as well. Overall, the strange situation is one of the most theoretically grounded and widely used instruments in the study of human development.

—Kirsten Blount-Matthews and  
Matthew J. Hertenstein

See also Ainsworth, Mary Salter; Stranger Anxiety

## Further Readings and References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Hillsdale, NJ: Erlbaum.

- Attachment Theory and Research at Stony Brook, <http://www.johnbowlby.com>
- Lyons-Ruth, K., & Jacobvitz, D. (1999). Attachment disorganization: Unresolved loss, relationship violence, and lapses in behavioral and attentional strategies. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment*. New York: Guilford.
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth strange situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 121–160). Chicago: University of Chicago Press.
- Solomon, J., & George, C. (1999). The measurement of attachment security in infancy and childhood. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 287–318). New York: Guilford.
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, *117*, 387–403.
- van IJzendoorn, M. H., & Kroonenberg, P. M. (1988). Cross-cultural patterns of attachment: A meta-analysis of the strange situation. *Child Development*, *58*, 147–156.
- Waters, E., Hamilton, C. E., & Weinfield, N. S. (2000). The stability of attachment security from infancy to adulthood: General introduction. *Child Development*, *71*, 684–689.
- Weinfield, N. S., Sroufe, L. A., Egeland, B., & Carlson, E. A. (1999). The nature of individual differences in infant-caregiver attachment. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 68–98). New York: Guilford.

---

## STRANGER ANXIETY

---

Stranger anxiety—the emotional distress displayed by infants and young children due to the approach of an unfamiliar person—is a significant and adaptive developmental achievement in the child’s life. The presence of stranger anxiety is rare in the first 6 months of life, common by about 8 months, and peaks around the child’s first birthday. On average, girls display it slightly earlier than boys. Research indicates that stranger anxiety is universal cross-culturally among most infants and is signaled by a host of infant behaviors, including crying, gaze aversion, crawling or walking away from the stranger, hiding their faces, and self-soothing (e.g., sucking their thumb). The presence of such behaviors in response to strangers indicates that infants are capable of distinguishing between familiar and unfamiliar adults, a critical cognitive task.

Considerable individual variation exists among infants, with some infants exhibiting more stranger anxiety than others. Two factors have been linked to individual differences in stranger anxiety: temperament and attachment. Researchers have found that

infants who are temperamentally “fussy” are more likely to respond more negatively to the approach of a stranger than temperamentally “easy-going” infants. In addition, researchers have found that infants who have been indexed as securely attached to their caregiver are more sociable and less wary of strangers than infants identified as insecurely attached. Infants who are securely attached tend to have caregivers who are sensitive and responsive to their infants’ emotional signals, while infants who are insecurely attached tend to have caregivers who are either inconsistently sensitive and responsive to their infants’ emotional signals or ignore their infants’ signals altogether.

The incidence and severity of stranger anxiety are influenced by a multitude of contextual factors. Infants tend to display greater stranger anxiety (a) when the caregiver is not present, (b) when the stranger is either tall, unattractive, male, approaches quickly, or touches the infant, (c) when the infant is physically restrained (e.g., in a high chair), and (d) when the infant is in a familiar setting such as the home. The latter finding is explained by considering that infants seem to expect novel stimuli such as strangers in unfamiliar settings. When a stranger enters a familiar setting, it violates the infant’s expectations. Taken as a whole, the above findings suggest that not only is stranger anxiety a function of the infant, but of how the infant perceives his or her relationship with the outside world.

Caregivers often wonder how the incidence and severity of stranger anxiety can be reduced. Infants tend to display fewer negative emotional displays if the stranger slowly approaches them and does not tower over them; if the stranger approaches them in the context of playing with them (e.g., peek-a-boo); if the stranger behaves contingently with infants’ behaviors (e.g., smiling when the infant smiles); if infants are allowed time to familiarize themselves with a novel environment; if infants are allowed to crawl or walk away from the stranger rather than being restrained in a high-chair or similar apparatus; and if the caregiver is present.

In sum, stranger anxiety is an adaptive response that is a normal and healthy behavioral reaction. The incidence of stranger anxiety is influenced by several factors, including the context in which infants find themselves as well as how strangers approach them. These factors and others can be modified to modulate infant wariness toward strangers.

—Matthew J. Hertenstein  
and Rachel Holmes

*See also* Strange Situation