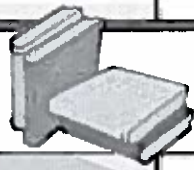


READING



5

Creativity
and Aging

Directions: Read the following selection, then answer the questions that follow.

Would you describe yourself as creative? Recent research indicates that creative people tend to remain creative throughout their lives. Creativity is not reserved for the young. Composers, artists, and musicians often remain productive and creative throughout their lives. Their creativity brings meaning and purpose that enhances the quality of their lives.

Despite a severe intestinal disorder, painter Henri Matisse created some of his greatest work near the end of his life. So did Auguste Renoir, Claude Monet and Pablo Picasso. And some creative people, like Grandma Moses, don't start their creative careers until they're past 70.

Psychologists have been studying the creative lives of older people and how creativity can enhance the aging process. In a range of studies, they've found that being creative can add richness to the aging process; that those who followed their creative passions are happier old people; and that many creative people develop new creative styles in old age.

For the past 20 years, Dean Keith Simonton, Ph.D., professor of psychology at the University of California-Davis, has studied the career trajectories of composers, writers and artists.

Simonton has found, in part, that creativity does not decline with age, though it may change in form.

'Swan-song' creativity

Creative people often change strategies in old age, Simonton has found.

Composer Igor Stravinsky, for example, began in later life to compose pieces much differently than he had earlier, changing from writing traditional polytonal music to more radical 'twelve-tone' music that used the musical scale in a different way.

Relatedly, Simonton has found a 'swan-song' phenomenon: a time in which people's work becomes more meaningful and aesthetically concise as they face death.

Different kinds of artists have different creative peaks, Simonton added: For instance, lyric poets may peak earlier than novelists. In addition, some people—like Grandma Moses—begin creative careers later in life, thus peaking late in life, he noted.

A recent study at University of Nebraska-Lincoln found that thinking and acting creatively can help peo-

ple adapt to the aging process and find meaning in life. Participants in the study—who were a mix of nonartists and artists ages 60 and older—said that being creative enhanced their life satisfaction. In addition, creativity can encourage greater cognitive flexibility, the study found.

Sixty percent of the study participants said they'd become even more creative as they've gotten older. Of the remaining 40 percent, half said they'd remained consistently creative throughout their lives.

Follow your passion

Those who follow their creative passions throughout life are happier people in old age, Stephanie Dudek, Ph.D., has found. . . .

In 1991, Dudek followed up a University of California-Berkeley study by Donald Mackinnon, Ph.D., and colleagues of 124 male architects, engineers and artists between 1958 and 1960. Participants in 1958 were 53-years-old on average.

Dudek interviewed 70 of the original architects in the study, all of those who were still alive in 1991. She divided the architects into three groups: famous; very successful; and 'nice guys,' men who had never strived to be famous, but who had fulfilling careers. All the men in the studies had followed their creative passions in their careers, Dudek said. With few exceptions, they reported that they were happy with their lives and wouldn't do things differently, and that creativity had enhanced their lives and made their old age more successful and enjoyable.

If people exercise creativity throughout their lives, their old age should be no different, Simonton said. 'People with lots of creative potential keep on creating even in old age,' he said.

Source: Margoshes, P. (1995, May). Creative spark lives on, can increase with age. *The APA Monitor*, 26 (5), 37.

Understanding the Reading

Directions: Answer the following questions in the space provided.

1. What does Simonton's study of creativity and aging indicate?

2. What is 'swan-song' creativity?

3. Can creativity increase with age?

4. Into what three groups did Dudek divide the participants in her 1991 study? What were her conclusions?

Thinking Critically

Directions: Answer the following questions in the space provided.

5. Does a creative person need to achieve fame to find satisfaction with his or her talents? Why or why not?

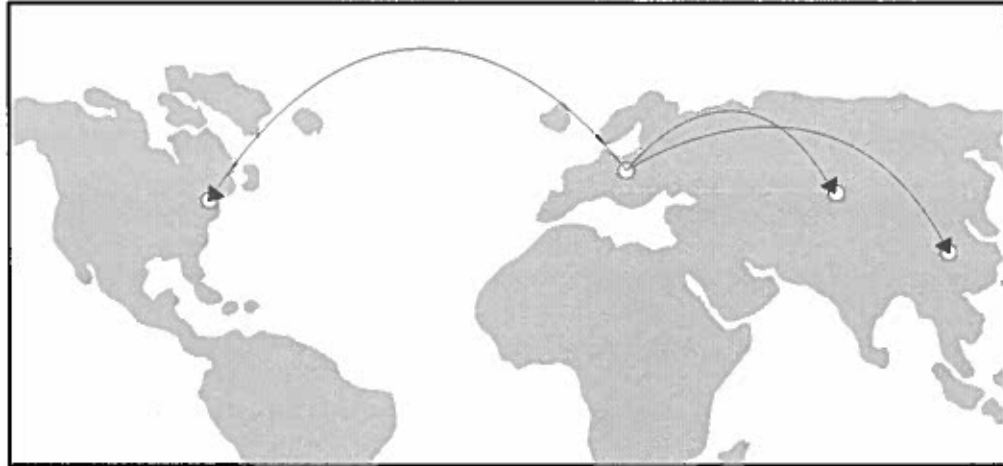
6. List one or more areas in which you are creative. Projecting into the future, develop a life plan that would allow you to use your creativity throughout your life. Consider how you can develop your talents and how you can use them even if physical limitations slow you down.

CASE STUDY

5

Generativity Among Refugees and Survivors

Directions: Read the following case study, then answer the questions that follow.



In 1939, eight million Jews lived in Europe. By the end of World War II in 1945, six million of these Jews had been killed. We know this systematic genocide as the Holocaust. Those who remained at the end of the war could be divided into two groups: refugees and survivors. Refugees fled their homelands for safe havens like the United States, China, and the Soviet Union. Refugee families remained together and suffered relatively few casualties during the war. Survivors were those who lived through the terror of the concentration camps. Many survivors left the camps totally alone in the world, the only surviving member of their families. All had experienced severe deprivation and a multitude of horrors.

Recent studies have compared generativity among refugees and survivors. Four specific generativity behaviors were examined:

1. Biological generativity, which ensures survival through bearing children.
2. Parental generativity, which creates a stable family unit to nurture children.
3. Technical generativity, which passes on skills from one generation to the next.
4. Cultural generativity, which introduces the next generation to the celebrations,

rites, and cultural achievements of past generations.

The participants in the study ranged in age from 63 to 75. They had been adolescents or young adults at the time of the war. The study participants completed two surveys used to assess generativity. Each was also interviewed at length to gather additional data.

Biological Generativity

Although both refugee and survivor groups exhibited strong biological generativity, the survivor group's desire was stronger. The entire survivor group viewed the need for children as a way to continue the family line. Especially strong among the survivor group was the need to have biological children. Adoption was not seen as an option. Refugees also desired children, but were much more open to adoption if reproduction was not possible.

Parental Generativity

Significant differences in parental generativity were apparent between the two groups. The refugee group expressed both material and emo-

(continued)

tional components to raising children. Typical nurturing behaviors found in the population at large characterize the refugee group. The survivor group focused primarily on providing materially for their children. Since all had experienced extreme loss and deprivation, they desired to provide materially for their children so that they would never have to suffer. The emotional distance noted in the survivors also appears to result from their experiences in the camps. With such a tragic and painful past, emotional connections, even with their own children, proved difficult. Typical nurturing behaviors were often a missing component in the homes of survivors. Should they speak of the past to their children? All expressed reluctance, but most eventually shared at least a portion of their stories with their children.

Technical Generativity

Technical generativity was not prevalent in either group. Few participants had completed high school or had any formal professional training. Therefore, they had no technical skills to pass on to their children. Although most participants were economically secure, their achievements resulted from hard work rather than a good education. Both groups valued education highly and made provisions for their children to receive good quality educations. Both groups especially valued higher education, even though they had been denied the right to it.

Cultural Generativity

The war and the Holocaust virtually destroyed the culture into which the refugees and survivors had been born. During the two decades after the war, both groups showed limited interest in their cultural heritage. As the survivors aged, however, they expressed more interest in passing on Jewish heritage and traditions. For many, the holidays and celebrations of Jewish life gained significance.

One strong component of cultural generativity that appeared in the survivor group was Zionism. Zionism is an ancient concept, but in

the twentieth century it has focused primarily on the establishment and protection of a Jewish homeland. Largely as a result of the Holocaust, the state of Israel was created in 1948 to give the Jews a homeland. Both refugees and survivors have been strong supporters of Zionism. Survivors speak with pride of the one positive effect of the Holocaust. They have contributed generously to the state, although none of the study participants lived in Israel.

For survivors, another consistent cultural theme was that the Holocaust be remembered so that it is never repeated. As the survivors have aged, they have recognized the need to have the events of the Holocaust and their suffering remembered, not only by their families, but also by humanity. This larger cultural context has become a rallying point as the survivors approach the end of their lives.

Conclusions

Disruptions early in life affect one's future drive toward generativity. Refugees lived through the upheaval, but did not experience the terror of the concentration camps. For many of them, guilt was a significant element of their existence. Although their culture was destroyed by the war, they still felt guilty for not having suffered like the concentration camp survivors. They seemed less able than the survivors to make new cultural connections and find significant purpose in life beyond raising their families.

Survivors could not escape their past. It colored every part of their future. They showed stronger generative behaviors largely as a means of defining their past. Except for nurturing skills needed for strong parental generativity, they showed more generative behaviors than the refugees. The interviews with survivors demonstrate that they have used generative behaviors to build a future out of the horrors of the past. Their cry of "Never Again" has become a reminder to all societies of the horrors of the Holocaust.

Source: McAdams, D. & de St. Aubin, E. (1998). *Generativity and Adult Development*. Washington, DC: American Psychological Association.

(continued)

Understanding the Case Study

Directions: Answer the following questions in the space provided.

1. What two groups were used for the study?

2. Which generative behavior was least evident among both groups?

3. What was the primary difference between the two groups in parental generativity?

4. What was the strongest part of cultural generativity for the survivor group?

Thinking Critically

Directions: Answer the following questions in the space provided.

5. Would you expect veterans of World War II to share any of the same generative characteristics with the survivors? Why or why not?

6. Although survivors felt strongly that the Holocaust be remembered so that it would not be repeated, they were reluctant to share their experiences with their children. In fact, several of the adult children of study participants asked the researchers for a copy of their parents' interview so that they could learn more about their parents' Holocaust experience. Explain this apparent contradiction.

READING



6

**Reversing Stroke
and Spinal Cord
Damage**

Directions: Read the following selection, then answer the questions that follow.

Brain injuries, including strokes and severe head trauma, disable tens of thousands of Americans yearly. In addition, spinal cord injuries that result in paralysis occur daily. The disabilities that result can be devastating to the victims. Regenerating brain tissue and repairing spinal cord damage are not yet possible, but strides are being made toward reducing the severity of many disorders and injuries. Eventually, researchers hope to use a combination of methods to repair the damage.

Scientists are on the brink of doing the unthinkable—replenishing the brains of people who have suffered strokes or head injuries to make them whole again. And as if that is not astonishing enough, they think they may be about to reverse paralysis.

The door is at last open to lifting the terrifying sentence these disorders still decree—loss of physical function, cognitive skills, memory, and personality—which costs the nation \$65 billion annually.

Until recently there was virtually nothing doctors could do for the 500,000 Americans who have strokes each year, the 500,000 to 750,000 who experience severe head injury, or the 10,000 people who are paralyzed after spinal cord damage.

But that is about to change. Researchers now think it may be possible to replace destroyed brain cells with new ones to give victims of stroke and brain injury a chance to relearn how to control their body, form new thinking processes, and regain emotions.

And after demolishing the long-standing myth that brain cells can't regenerate or proliferate, scientists are developing ways to stimulate cells to do just that.

Although stroke, head injury, and paralysis are three of the most devastating things that can happen to anyone, scientists have recently learned that the damage they cause is not preordained: it takes place over minutes, hours, and days, giving them a precious opportunity to develop treatments to halt much of the damage.

Most of the new remedies are not yet available, but an explosion of research in the last five to ten years has convinced scientists that some of them will work. . . .

Scientists are finding that treatments that work in one type of injury—stroke, head trauma, or spinal damage—are likely to work in the others. All of these disorders share many of the same mechanisms of cell destruction, which come in two phases, primary and secondary injury.

In the primary, or initial, injury, blood flow to a part of the brain is blocked by a clot that plugs an artery or

by a physical blow. Brain cells, or neurons, are either damaged or die right away because they are deprived of nourishing blood.

This initial destruction then triggers a chemical attack against tissue that was not damaged in the primary injury. The second phase of injury invokes a process called excitotoxicity and it affects nearby healthy cells, often killing more brain tissue than the initial injury.

Like someone yelling "fire" in a crowded theater, damaged and dying cells scream out a slew of chemicals. These chemicals, which normally help brain cells talk to each other, become dangerously toxic in excessive amounts. They literally cause healthy cells to become overexcited to the point of death, when they too spew out their death-throe chemicals.

Interestingly, scientists believe that excitotoxicity is a genetically programmed suicide mechanism devised by nature to kill unneeded or unhealthy cells. Such cell death occurs during fetal development, for instance, to get rid of billions of overproduced brain cells and the webbing between fingers.

It is this same excitotoxic response that is rapidly triggered in stroke, head trauma, or spinal injury to produce the destructive secondary injury. Evidence also indicates that the excitotoxic reaction can occur over a longer period of time, causing a slow form of suicide that may be the final pathway for cellular death in Alzheimer's, Parkinson's, and other degenerative neurological disorders.

The suicide reaction—its scientific name is apoptosis—begins when a damaged or dying neuron releases massive amounts of a neurotransmitter called glutamate. Glutamate is normally one of the most important chemical messengers in the brain.

But when too much glutamate is present, the NMDA receptors ("doors" on cell surfaces) are jammed open. Sodium floods in, causing the cell to swell. Calcium rushes in and smashes at the cell's genetic controls, producing enzymes that eat away the cell's internal support structure and destructive

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molecules, called free radicals, that chew away its membrane wall.

"It would be like going into the cabin of a 747 jet-liner with a sledgehammer and starting to hit left and right," Washington University's Dennis Choi said. "Everything just starts going haywire."

The discovery of the key steps in the suicide cascade of secondary injury is leading to the development

of drugs to block them. Experiments in animals show that by blocking the secondary injury, much of the damage that normally occurs from a stroke, head trauma, or spinal injury can be prevented.

Source: Kotulak, R. (1997). *Inside the Brain: Revolutionary Discoveries of How the Mind Works*. Kansas City, MO: Andrews McMeel Publishing, 173-7.

Understanding the Reading

Directions: Answer the following questions in the space provided.

1. What are the common consequences of strokes, head traumas, and spinal cord injuries?

2. What are the two phases of cell destruction common to strokes, head traumas, and spinal cord injuries?

3. What is the biological purpose of excitotoxicity?

4. What happens when too much glutamate is present in the brain?

Thinking Critically

Directions: Answer the following questions in the space provided.

5. What common psychological effects occur in victims of strokes, head traumas, and spinal cord injuries?

6. Although experiments have been successful in animals, the drugs used are not yet widely available for humans. If someone you cared for experienced a severe head trauma, would you want him or her to participate in a study of these drugs? Why or why not?

CASE STUDY**6****Dual-Brain Psychology**

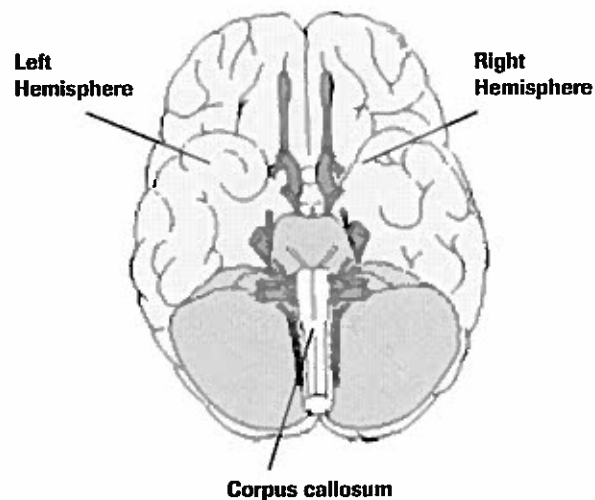
Directions: Read the following case study, then answer the questions that follow.

Neurologists, psychiatrists, and psychologists have demonstrated that different areas of the brain are responsible for different behaviors and control different sensory inputs. For example, studies have shown that the left hemisphere controls the right side of the body, and the right hemisphere controls the left side of the body. Scientists also attribute different abilities to the right and left hemispheres. The left hemisphere controls language and verbal reasoning, while the right hemisphere manages spatial understanding. Recent studies have sought to identify if emotions are processed differently by the two hemispheres. This area of study has been labeled "dual-brain psychology."

Existing Research

Psychiatrist Fredric Schiffer began his studies in dual-brain psychology by reviewing the research done with patients who had undergone commissurotomies, a surgical procedure that separates the brain's two hemispheres by severing the corpus callosum. This radical surgery has proven successful in relieving severe epileptic seizures. Dr. Eran Zaidel researched how the brain functions after this radical surgery. He used simple visual and motor tests to understand how the two halves of the brain work. He had a patient sit in front of a screen. Pictures were flashed to either the right or left side of the screen. Pictures that were flashed to the right side of the screen were processed by the left hemisphere and vice versa. Zaidel asked the patient to name the objects shown in the pictures. The patient could name the objects that were flashed on the right side of the screen, but could not name the objects flashed on the left side of the screen. This seemed to confirm that language is a left brain function and that the right brain is mute.

Zaidel took the study one step further. Even though the right hemisphere is mute, he wondered how the right brain processed the picture.

The Human Brain

He hypothesized that the right brain did recognize the object, but simply had no way to name it. He repeated the experiment. When an image was flashed on the left side of the screen, the patient was asked to use his right hand to select the object from a group of objects. Although the patient could not name the object, he always made the correct selection. Zaidel concluded that although the right brain is mute, it does process visual information correctly.

Other studies with commissurotomy patients have shown that, when divided, the two halves of the brain function independently enough to say that the patient has two minds.

Dual-Brain Psychology Research

Schiffer wondered what applications Zaidel's findings had on those whose brains were intact. Since information is processed differently by the two hemispheres, he hypothesized that emotions are also processed differently. To test his hypothesis, he modified two pairs of safety goggles. On one pair, he used white tape to completely cover the left lens and the left half of the right lens. This allowed vision through the right visual field only. Therefore, the information would be processed by the brain's left hemi-

(continued)

sphere. On the other pair, he completely covered the right lens and the right half of the left lens. This allowed vision through the left visual field, which would be processed by the brain's right hemisphere.

During psychotherapy sessions, he asked patients to select one pair of the goggles to wear. One of the first patients to test the goggles was an agoraphobic woman who feared all unfamiliar places. She needed to travel to a different city and was working with Dr. Schiffer to overcome her phobia. Schiffer had her select a pair of the goggles to wear as the session began. She chose the pair that had the left side completely covered, allowing her to see only from her right visual field. Schiffer asked her to imagine herself in the different city. What was her level of anxiety? Could she deal with it? Her response was that she would feel lost and very anxious. She did not believe that she could go through with the visit.

Schiffer had her put on the other pair of glasses that gave her vision only to the left visual field. After a 15-second period of adjustment, he asked her how she would feel in the different city. This time her responses were much more positive. She thought she could manage the visit and not be overcome with anxiety. She was much calmer when contemplating the trip than when she had been seeing through her right visual field. Subsequent trials indicated differences in about half the patients. Some sensed minor differences in emotions, while some indicated strong differences.

To further test the hypothesis that different hemispheres process emotions differently,

Schiffer used the taped glasses with 70 participants. They were randomly assigned to one pair of glasses. After a 45-second period of adjustment, they were asked to rate their level of anxiety using a 5-point scale (0 for no anxiety to 4 for extreme anxiety). After participants gave their ratings, they were asked to switch to the other pair of glasses. Participants also rated their level of anxiety with the second pair.

Results

Of the 70 participants, 60 percent reported a one-point difference in anxiety level between the two pairs of glasses and 23 percent reported a two point or greater difference. Of the 70 participants, four had a four-point difference in their rating. These four participants exhibited high levels of anxiety. In fact, the only variable that showed significance was level of anxiety. Other possible variables, including gender, handedness, and age, did not significantly affect the results.

Conclusions

The brain's left and right hemispheres do process emotions differently. Treatments can be developed that allow patients to reduce their levels of anxiety by teaching them to use different hemispheres. In addition, the two hemispheres can learn to work together to create a healthy, whole person.

Source: Schiffer, F. (1998). *Of Two Minds: The Revolutionary Science of Dual-Brain Psychology*. New York: The Free Press.

Understanding the Case Study

Directions: Answer the following questions in the space provided.

1. What does the left hemisphere of the brain control?

2. What does the right hemisphere of the brain control?

3. Describe the results of Zaidel's study on commissurotomy patients.

4. What was Schiffer's hypothesis about emotions?

Thinking Critically

Directions: Answer the following questions in the space provided.

5. Why would patients with high levels of anxiety show a greater difference in level of anxiety between the brain's two hemispheres?

6. Anxiety has many causes, including depression, phobias, bipolar disorder, and post-traumatic stress disorder. Describe further research that could be conducted to determine if different causes of anxiety are processed differently by the brain and, therefore, require different types of dual-brain therapy.

READING



7

**Cross-Cultural
Studies of Sleep**

Directions: Read the following selection, then answer the questions that follow.

What is your pattern of sleep? Do people in all cultures and throughout history share similar sleep patterns? Anthropological research indicates that sleep patterns in today's culture may be strikingly different from the patterns of our ancestors. New research may change the way we view sleep.

Ah, the sweet simplicity of sleep. You tramp into your bedroom with sagging eyelids and stifle a yawn. After disrobing, you douse the lights and climb into bed. Maybe a little reading or television massages the nerves, loosening them up for slumber.

There's a surprising twist, however, at the heart of this familiar ritual. It simply doesn't apply to people currently living outside of the modern Western world—or even to inhabitants of Western Europe as recently as 200 years ago.

In such contexts, and probably throughout human evolution, solitary shut-eye organized around a regular bedtime and a single bout of sleep proves about as common as stock car racing or teleconferencing. Surprisingly, anthropologists have rarely scrutinized the sleep patterns and practices of different cultures. . .

An initial attempt to draw back the veils of sleep in hunter-gatherer groups and other traditional societies has uncovered a wide variety of sleep customs, reports anthropologist Carol M. Worthman of Emory University in Atlanta. None of these snooze styles, however, looks anything like what modern Western folk take for granted.

This finding raises profound questions for the burgeoning discipline of sleep research, Worthman says. Over the past 50 years, scientists have avidly delved into slumber's biology. Early research identified periods of rapid-eye-movement (REM) sleep, during which intense dreams often occur. . . Researchers have also taken strides toward treating insomnia and other sleep disturbances.

While investigators readily concede that they don't yet know why people sleep and dream, they assume that they at least know how people should sleep: alone or with a partner for a solid chunk of the night. Sleep studies therefore take place in laboratories where individuals catch winks while hooked up to a bevy of brain and body monitors.

However, the distinctive sleep styles of non-Western groups may mold sleep's biology in ways undreamed of in sleep labs, Worthman suggests. They may influence factors ranging from sleep-related

genes to the brain's electrical output during various sleep phases. . .

A seemingly innocent question awakened Worthman to her discipline's ignorance of how people sleep. In 1994, she had a conversation with pediatrician Ronald E. Dahl of the University of Pittsburgh School of Medicine, who studies the effects of mood disorders on sleep. He asked the Emory scientist to tell him what anthropologists know about the history and prehistory of sleep. "[My] bald, if somewhat overstated, answer was 'zero,'" she says. . .

So, Worthman contacted seven researchers whom she knew had intimate knowledge of one or more traditional societies, including nomadic foragers, herders, and village-based farmers. Among these far-flung populations, none of the investigators, by their own admission, had systematically studied how people sleep. After plumbing what the researchers had absorbed about nighttime activities, Worthman has assembled a preliminary picture of sleep practices in 10 non-Western populations.

Worthman's findings rip the covers off any lingering suspicions that people everywhere sleep pretty much alike. Far from the wallpapered confines of middle-class bedrooms, sleep typically unfolds in shared spaces that feature constant background noise emanating from other sleepers, various domestic animals, fires maintained for warmth and protection from predators, and other people's nearby nighttime activities.

Groups in Worthman's analysis include Ache foragers in Paraguay, Kung hunter-gatherers in Africa, Swat Pathan herders in Pakistan, and Balinese farmers in Indonesia. For all these groups and six others, communal sleep equals safe sleep, because sleepers can count on there being someone else up or easily awakened at all hours of the night to warn others of a threat or emergency. . .

Many rituals occur at night and exploit the need to sleep. For instance, initiation rites often force participants to cope with sleep deprivation. In other ceremonies, individuals enter somnolent, or near-sleep,

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states in order to magnify an occasion's psychological impact and to induce spiritual visions.

Consider the communal sleep of the Gebusi, New Guinea, rainforest dwellers, who grow fruit in small gardens and occasionally hunt wild pigs. Women, girls, and babies crowd into a narrow section of a community longhouse to sleep on mats. Men and boys retreat to an adjacent, more spacious longhouse area, where they sleep on wooden platforms.

Gebusi females retire at dark for about 10 hours of rest and sleep. In contrast, the men stay up later and frequently conduct rituals. About once a month, everyone attends an all-night dance and feast, catching up on sleep the next day.

Each week or two, Gebusi men go to seances led by a "spirit medium," at which they try to keep spirits awake throughout the night. Participants attempt to slip in and out of a near-sleep state as the medium, who's usually adept at operating in this half-conscious condition, sings about the spirit world and other matters.

As in most of the other studied societies, the Gebusi express concerns about exposure to ghosts, evil spirits, and witchcraft during sleep. They consider deep sleep risky, since a sleeper's spirit may wander off too far and fail to return. The Gebusi view group slumber as a way to lessen the danger of spirit loss, which they view as especially likely while a person dreams.

Whether or not one believes that sleeping puts a person's spirit at risk, slumber appears to have crucial effects on body and mind. A culture's sleeping style serves as a growing child's training ground for managing biologically based systems of attention and alertness, Worthman contends. Balinese farmers provide a striking example of this sleep-related tutoring.

Balinese infants are carried and held continuously by caregivers so that they learn to fall asleep even in hectic and noisy situations. This grooms them to exhibit what the Balinese call "fear sleep" later in life, Worthman says. Children and adults enter fear sleep by suddenly slumping over in a deep slumber when they or family members confront intense anxiety or an unexpected fright. They are literally scared into sleep.

Infants in middle-class American homes, who usually sleep alone, may not learn to ground their sleeping and waking cycles in a flow of sensations that include bodily contact, smells, and background noises, Worthman proposes. In fact, babies forced to bounce back and forth between the sensory overload of the waking world and the sensory barrenness of dark, quiet bedrooms may often find it difficult to relax, fall asleep, wake up, or concentrate, she theorizes. . . .

If sleeping patterns in traditional societies remain little known, those of prehistoric humans are a total

mystery. Still, in settings that roughly mimic ancient nighttime conditions, sleep undergoes an intriguing shift, says psychiatrist Thomas A. Wehr of the National Institute of Mental Health (NIMH) in Bethesda, MD.

When prohibited from using artificial light from dusk until dawn, people who formerly slumbered in solid blocks of time begin to sleep in two periods separated by an hour or two of quiet rest and reflection.

Wehr and his coworkers asked 15 healthy adults to rest and sleep in darkness for 14 hours (6 P.M. to 8 A.M.) each night for several weeks. Volunteers slept for 11 hours each of the first few nights, apparently to catch up on their sleep. They then settled into a pattern of lying awake for a couple of hours before falling asleep for 3 to 5 hours in the evening. An hour or so of quiet wakefulness ensued, followed by about 4 more hours of sleep in the early morning. . . .

Participants in Wehr's study usually awoke out of REM sleep to end their first slumber session. During REM sleep, the brain becomes about as active as it is when wide awake. One function of this sleep phase may be to set the stage for waking up, Wehr holds.

If prehistoric people slept in two nightly periods, then regularly awakening out of REM sleep may have allowed them to reflect on and remember their dreams in a semiconscious state that's generally unavailable to modern sleepers. Sleep compressed into a single stint may thus encourage modern humans to lose touch with dreams, myths, and fantasies, Wehr argues.

These results, first reported in 1993, also raise the possibility that people who wake up once or twice each night don't necessarily suffer from insomnia. "A natural human sleep pattern may reassert itself in an unwelcome world and get labeled as a disorder," Wehr says.

The two-phase sleep pattern observed by Wehr corresponds remarkably closely to the way in which most Western Europeans slept between 500 and 200 years ago, according to historian A. Roger Ekirch of Virginia Polytechnic Institute and State University in Blacksburg. While doing research for a book on nighttime behaviors during that era, Ekirch came across several hundred references to what he identifies as "segmented sleep."

From country farms and villages to city apartments, early modern Europeans usually sank each evening into what they called a "first sleep," which lasted for several hours. Shortly after midnight, they awoke and spent 1 or 2 hours in a "watching period." A "second," or "morning," sleep followed.

The watching period presented many opportunities, Ekirch notes. People coming out of their first sleep often stayed in bed to pray, converse with a bedfellow, contemplate the day's events or the meaning of a

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dream, or simply let their minds wander in a semiconscious state of contentment that was prized at the time.

A 16th-century physician wrote that many laborers dozed off exhausted at the start of each night. Sexual intercourse with their wives typically occurred in the watching period, after a recuperative first sleep.

These days, Western societies treat sleep more as an unavoidable stretch of downtime than as a prelude to sex or a time for inner reflection. Only intensive

investigations across cultures and classes will illuminate the lushness of sleep's landscape, Worthman predicts.

Adds Wehr, "We're going to have to reconceptualize what it means to sleep normally."

Source: Bower, B. (1999, September 25). Slumber's unexplored landscape. *Science News*, 156 (13), 205-207.

Understanding the Reading

Directions: Answer the following questions in the space provided.

1. What is the primary difference between the current sleep practices in the United States and historic sleep patterns?

2. Why do people in some cultures sleep in communal groups?

3. What is "fear sleep" as experienced by the Balinese?

4. What did Thomas Wehr discover in his sleep study?

Thinking Critically

Directions: Answer the following questions on a separate sheet of paper.

5. You have a friend who reports that he falls asleep easily around 11 P.M., but then awakens for about an hour most nights around 2 or 3 A.M. He seems near exhaustion. What would be the traditional explanation for his problem? How might the information contributed by anthropologists change this view? Given the anthropological view, what recommendations would you make to your friend?
6. Why do sleep patterns in America differ so greatly from those of our ancestors and those in more traditional cultures?