

# Brain Research and Mediated Experience

## An Interpretation of the Implications for Education

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Important new understandings and explanations about how human beings learn, feel, act, and shape views of reality have resulted from recent developments in brain research. Applying these findings to mediated human experiences uncovers some fascinating implications for education and schooling. The notion that individuals may become addicted to certain media messages counsels that schools should deal with these mediated experiences in the same manner that they deal with legalized drugs. Schools should implement a curriculum that advocates moderation and provides information about the social, cultural, and personal consequences that prolonged and constant exposure to particular media messages can have on an individual's quality of life. In this way, educators can help children develop their own strategies to avert stimulus addiction, a physical dependency on exposure to certain media messages.

Stimulus addiction is physically addicting in exactly the same way that heroine and cocaine are. Stimulus addiction involves a neurotransmitter molecule attaching itself to an opiate receptor on the postsynaptic cell membrane of a neuron in the brain. The neurotransmitter fits the opiate receptor as a key fits its lock. Attaching itself to the opiate receptor, the neurotransmitter induces feelings of pleasure and dulls the sense of pain. Heroine and cocaine have molecular structures similar to these neurotransmitters; and when they are taken into the body, they, too, induce pleasure and dull pain by attaching themselves to opiate receptors. An important difference, however, between stimulus addiction and heroine or cocaine addiction is that, with stimulus addiction, the drugs (neurotransmitters) are already inside

the body; they simply need to be released. These neurotransmitters are called endorphins (endogenous morphines) (Ornstein 1984).

Endorphins comprise small chains of amino acids (peptides). Small as they are, endorphins are powerful peptides that relieve pain and induce feelings of pleasure. Researchers have discovered three separate families of endorphins and many different types within these families, each with its own specific chain of amino acids. The body may host hundreds of different types of endorphins, all of which are able either to relieve pain, to induce euphoria, or to achieve both of these effects simultaneously (Levinthal 1988).

Researchers have found that endorphins in the brain are released in response to stress and to an emotional experience. Any stress or emotional experience, whether real or imagined, can cause a release of multiple forms of endorphins. Released endorphins will relieve pain and induce feelings of pleasure, in varying degrees, depending upon the individual and the stimulus (Beck 1987; Goldstein 1980; Levinthal 1988). In other words, if an individual's perception of a television program causes him or her stress, anxiety, or feelings of cathartic emotion, it is quite possible that endorphins have been released in the brain to numb the sense of pain and suffering and/or to induce feelings of joy and euphoria. A release of endorphins in the brain can occur frequently during television programming and advertising that include elements of suspense, catharsis, fear tactics (i.e., "you won't stop in time without wet weather tires"), or when other emotion-enhancing visual and auditory techniques are included in the media message.

Endorphins that are released in the brain have biochemical properties that make them physically addicting, just like cocaine, morphine, and heroin; and all of us are already addicted to endorphins to some degree. This congenital addiction simply means that one must

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maintain an optimum level of endorphin activity in our brain to remain "normal." Otherwise, one may become depressed, or feel irritable, or even become physically ill, just as heroin addicts must maintain an optimum level of heroin in their bodies in order to feel "normal" or they too experience withdrawal symptoms of depression, irritability, and physical illness (Beck 1987; Levinthal 1988). An optimum level of endorphin release is maintained through everyday social interaction with the environment and its people, its challenges, its beauty, and the successes and stresses of life. These are all sources of stimulus for endorphin release. Before the proliferation of electronic communications systems, these positive-negative social and environmental interactions were our only sources for stimulating endorphin release. Our mediated experiences were limited to attending and participating in live performances, sporting events, religious services, viewing pictures, and reading books, periodicals, and novels.

Today, technology enables us to live beyond our biological limitations. We have gone from the live spectacle and printed page to satellite and optic fiber communications systems in one life time. The changes have been awesome. Today's children have never known a time without digital communications systems, computer information services, electronic games, television, or videotape recorders. They are being socialized differently than past generations of children. Most of the information and entertainment that they experience is coming from visual and auditory media, and most of this mediated experience is through television. They view their world from outer space, examine cells inside the human brain, eavesdrop on foreign cultures, and live multiple vicarious lifetimes through the dramatized entertainment systems of television, computer games, and videotape films.

During their first eighteen years of life, children will witness over 15,000 murders through the media of films and television alone; some may actually dispatch the victims themselves through interactive games and programs. They will be exposed to thousands of selling messages each day, from simple brand-name T-shirts to sophisticated television commercials (South Australian Education Department 1983). In all, they will have more information and entertainment directed at them than anyone of them can physically consume in one life time. This over-abundance of media messages means that the various communications media must compete for audience attention.

### Manipulating the Mind

The best way competing media messages can grab attention is by stimulating the area of the brain called the reticular formation. The reticular activating system is the sensory sorting area of the brain; it responds best to sensory input that is original, novel, or exciting. How-

ever, before alerting the rest of the brain to give undivided attention to the stimulus, the reticular formation asks for a second, subjective opinion from another area of the brain called the amygdala. The amygdala deals with emotional impact and gives a second opinion in the form of an emotional overtone that either depresses or excites a novelty factor in the reticular formation. If the sensory stimulus is deemed emotion laden, new, and exciting, the reticular activating system then alerts the cortex (the thinking top layer of the brain) that *this is worth paying attention to*, and undivided attention is given to that media message (Ornstein 1984).

This is the reason the majority of messages from the media are extraordinary in nature; shown in their best light; simplified into catch cries, phrases, and jingles; short and sweet, horrific, gross, hyped, filled with special effects, colorful and contrasting, authoritative; and most of all, *emotion filled*. Media makers know that red will grab attention; loud, high-pitched sounds are more noticeable; big triumphs over small. They know that stimulating an emotional association in the mind of the individual will grab attention and help to retain the message in long-term memory. These are the rules and conventions of modern day mass communications. Politicians, advertisers, interest groups, movie moguls, journalists, authors, artists, and anyone who wants an audience must play by these rules or lose out. Our society is filled with powerful, emotion-laden vicarious messages that grab attention and continually stimulate endorphin release in the brain.

Constant and prolonged exposure to these kinds of media messages can affect us in two ways. First, we may become addicted to these endorphin-activating stimuli. We may need a daily fix of cartoon shows, horror movies, computer games, sports broadcasts, or televised and/or print news. Second, we can build up an immunity to vicarious emotional stresses and become incapable of producing socially acceptable emotional responses. In short, we may become desensitized. As part of a survey, ten-year-old children, in Adelaide, South Australia, were asked to name the title of a video movie that they enjoyed watching and describe the part of the movie that they always *enjoyed* remembering. "I like the part when the man got chopped in half buy [sic] a front end loaded [sic]" or "The part I like the best was when this man got this other man and put him on a sawing machine and cut his arm off and then put his whole back on it" (South Australian Council for Children's Films and Television, Inc. 1985, 102-103).

Television and other media cannot be blamed for these negative influences on child development. The media are like the electricity that runs them; they have the potential to enhance our lives or they can shock. The role and function of television and other media in our society is determined by how they are used. The medium itself is not a drug; it is a syringe. Syringes can deliver

heroin or penicillin; likewise the media can deliver socially worthwhile information and entertainment, or they can deliver junk.

### The Role of Education

Media education is the key. By providing children with the skills and understandings to be selective and intelligent in their uses of the media and their messages, it is possible to help them avert stimulus addiction to particular mediated experiences and minimize the adverse socializing effects that those messages may have on children's development. Schools and teachers can accomplish these aims by (1) empowering students with the skills and understandings to use the media and their messages in ways that extend and enhance their living and learning environment; (2) providing students with an awareness of the media maker's ability to manipulate and manufacture information; and (3) providing students with an ethical sensitivity towards the social, cul-

tural and personal implications of mediated information-communications processes.

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