The Communibiological Perspective: Implications for Communication in Instruction

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Recent advances in neurobiology and psychobiology have raised serious questions about the generality and usefulness of the social learning model upon which a meaningful portion of the curriculum of many communication departments is based. Evidence is accumulating to indicate there is a major role played by genetics in human communication behavior. These developments, and generations of disputes over "nature" vs. "nurture," have given rise to what has been called the "communibiological perspective." This paper addresses the implications of the perspective for communication curricula in the 21st century. **Keywords:** communibiology, nature/nurture, instruction

While the nature/nurture debate has gone on since antiquity, for most of its duration it has involved one set of unproven assumptions versus another set of unproven assumptions. The advocates on one side lived with one view of the world and the advocates on the other side lived with a different view of the world.

Early in the 20th century, research relating to various learning theories tipped the scale strongly in favor of the nurture view. Social scientists rather consistently demonstrated that one approach or another to guiding the learning of a "subject" (person, rat, pigeon, dog, earthworm, etc.) was statistically significantly superior to another. The major import of this research was to establish that people learned different things or amounts as a function of the external environment, regardless of their own (presumably genetically based) abilities. Clearly, it appeared, "nurture rules."

While research was being conducted on genetic influences during this same period, the extreme abuses of human dignity (to say the least) by German scientists put a major black mark on all related research from World War II to the very recent past. Anyone even talking about such research, much less doing it, was characterized as a Nazi, racist, sexist, and on and on. Work in this area was very "politically incorrect," even though that term was yet to be generated. Many who are not aware of the work that has been done over the past two decades prefer to continue this political correctness crusade.

Work on the part of neurobiologists and psychobiologists has matured in recent years. While this work has been criticized by many, and some with valid concerns, it has generally withstood those challenges and now is represented by strong intellectual subfields within these disciplines. Research has demonstrated the large impact of genetics in many areas of human behavior–including human communication. While we must wait for the completion of work on the human gnome to be able to be fully certain, it appears now that genetics is far more important to the development

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Communication Education, Vol. 49, No. 1, January 2000, pp. 1–6

of human communication behavior than are learning processes. While it is premature to argue that "nature rules," we are beginning suspect that is the case, at least in many important areas of human behavior, such as personality development and communication.

It is important that this position not be perceived as an absolute one. People taking the view that genetic factors are very important do not argue that these factors are the sole determinant of behavior (except some writers of popular books). Rather they take the position that learning models have been reified way beyond the point that the underlying science justifies. The view is that while nurture certainly has some effects (via cultural influences, formal education, experience, etc.) nature has set forth in one's genetic code most of what one will become and do. This, of course, is alleged in the absence of *in vitro* problems infants confront, severe physical or psychological traumas, or intentional medical interventions. Most importantly, genetic interventions may in the future serve to in large part control the development of human personality and behavior–a possibility which ethicists in our society must confront.

When we advanced what has come to be called the "communibiological paradigm," it was our intent to suggest an alternative perspective for communication theorists and researchers (Beatty & McCroskey, 1998; Beatty, McCroskey, & Heisel, 1998). We raised serious questions concerning the usefulness of the social learning paradigm which has dominated thought in the communication literature for most of the 20th century. We noted that theories advanced under this paradigm were supported by research which in most instances indicated the theories accounted for very little variance in human communication behavior. As a result, we argued that an alternative perspective should be considered and that the one we advanced had a much higher probability of generating research accounting for substantially more variance, thus establishing more parsimonious and valid theories of human communication behavior.

In these essays we did not directly address the implications this approach might have for the teaching of communication or research directed toward the teaching and/or learning of communication. Given our previous concerns with instructional research, one might have reasonably expected otherwise, and clearly many people did. As a result of the many questions which have been advanced in this regard, we have devoted considerable thought (and debate) to these concerns. This essay advances the implications of the communibiological perspective for communication instruction as we now see them.

The Importance of Neurological Systems

The communibiological perspective proposes that inborn, neurobiological structures are responsible for communication behavior and associated processes. As such, the influence of cultural, situational, or environmental stimuli are comparatively trivial, estimated at about 20% of the determinant of behavior. Ultimately, however, the exact impacts of genetic and environmental factors is an empirical matter. Such a perspective raises important questions for instruction: If most communication behavior and processes are products of inheritance, how much communication can be taught? In part, a clear understanding of the functional anatomy of the human brain can help answer such questions. At least, we can begin to address what can be learned and to what extent and under what conditions can learning affect behavior.

We (Beatty & McCroskey, 1997, 1998, Beatty, et al., 1998) have emphasized the roles of three interrelated neurobiological systems as determinants of two particular communication phenomena; communication apprehension and trait verbal aggressiveness. The three subsystems, first proposed by Gray (1991), are the behavioral activation or approach system (BAS), the behavioral inhibition system (BIS), and the fight or flight system (FFS). It is essential to keep in mind that these three systems are seen as the neurobiological subsystems of human emotion and that emotional traits are viewed as reflecting low thresholds for activating the systems. A person whose BIS threshold is low, for example, is likely to be anxious. Gray (1991) went so far as to argue that the BAS, BIS, and FFS represented neurobiological descriptions of extraversion, neuroticism, and psychoticism.

We have emphasized the three emotional systems because most essential functions of communication fall along these three dimensions. Indeed, Eysenck (1986) contends that extraversion, neuroticism, and psychoticism (E, N, & P) represent the three general ways people interact. Importantly, Eysenck concludes on the bases of identical twins research that E, N, and P are principally inherited traits.

Part of people's resistance to a communibiological perspective usually is based on anecdotal evidence that, contrary to the most extreme approach to genetic-based theory, people can change. And indeed, people can change. However, research indicates that, while a few people can change a great deal, most people can't change much. Furthermore, much of the change which we can observe is due to unfolding genetic programming, not individual volition (e.g., the reason one slows down in the 50 yard dash after age 35 is not because experience mellows runners. Systematic desensitization (an extremely effective form of behavior therapy), for example, can produce lower PRCA scores. However, the change is only about 12 points, less than 15% of the total score range. The combination of systematic desensitization, skills training, and cognitive restructuring (another very effective form of behavior therapy) for an extended period of time can produce larger effects on average but even this potent combination of the most powerful counter-conditioning therapies available can not produce low apprehensives from high apprehensives.

The Role of Cerebral Functioning

Another factor in some people's resistance to some of the premises of communibiology is the result of a misunderstanding of cerebral functioning. Some immediately perceive that if we can't have much of an influence on people's characteristic communication behaviors through instruction, then we can't teach anything at all. This is not the case. If we consider the prospects of teaching content rather than modifying behavioral skills, we are considering things that are altogether different. Each case is unique because each involves attempting to influence different regions of the brain. The cerebral cortex, a fairly thin (about 1/8" thick) region of gray matter, is known as the home of the "conscious mind" (Marieb & Mallatt, 1992). This is the focus of our attention for the teaching of content related to communication.

This region of the brain makes self-awareness, understanding, and communication possible. Its significance to communication is obvious. As Marieb and Mallatt explain "the prefrontal cortex is necessary for the production of abstract ideas, judgment, persistence, planning, social behavior, concern for others, and conscience. . . . The tremendous elaboration of this prefrontal region distinguishes

humans from other animals." (1992, p. 326). When we say that humans only utilize 10 percent of the brain, we mean 10 percent of the cerebral cortex, which makes up about 40% of the brain's total mass. The 60% which is not cortical tissue is committed to regulatory functions (e.g., heart beat). When we hear a news story that playing classical music to infants increases neurological connections, it means connections in the cerebral cortex.

The cortex is important in the context of communication instruction, because unlike anatomical regions of the brain such as the BAS, BIS, and FFS, it responds to input and can change. Although the capacity of the cortex is determined by genetics, its content is not. Thus, while we may be born with a particular temperament which pretty much determines our personality and is very difficult (at best) to change, our belief systems and knowledge bank are up for grabs. So the tenets of communibiology suggest no barrier whatsoever to the teaching of communication principles and content.

It is significant that the cerebral cortex is the newest addition to our brain complex and that it is small in mass compared to the three emotional systems. This is important because, according to the evolutionary imperative, older is stronger. New systems rarely subordinate older, more powerful ones. Hence, the emotional brain systems usually prevail in a struggle against the cerebral cortex. Thus, "just say no" rarely works, people give in to powerful biological urges. Learning skills involved in how to give speeches rarely reduces the stage fright experienced by highly apprehensive communicators. Emotional reactions are difficult to defeat; dysfunctional relational attachments are difficult to terminate. Every time we hear someone say "I know its wrong intellectually, but . . ." or "I knew better, but I just couldn't resist . . ." we are witnessing an emotional system defeat of the cerebral cortex. You don't have to be a professional golfer to understand that Greg Norman has failed to win the Masters not because he has inadequate psychomotor skills or golf knowledge: He has not been able to overcome interference from the emotional systems. For basketball fans, Shaq O'Neill's inability to make important free throws in games, even though he is successful in doing so in practice, has become legendary. In sports, it's called "choking." In communication it is called "stage fright," "shyness," or, in the larger sense, "communication apprehension," the combination of two temperament dimensions–low extraversion coupled with high neuroticism. Another prime example of temperament defeating intellectual power is the ineffectiveness of "just say no" campaigns.

Through teaching of content, can we get people to understand what communication behaviors can lead to more effective communication? Yes. Can we assure that people will use those behaviors? No, their temperaments may not permit them to do what they know would be best. Can we eliminate all temperamental interference in human communication behavior? Not at present, but in some cases we might be able to reduce it to manageable proportions through carefully administered behavior therapies or mood altering drugs. In the long term we may develop gene therapies which will be even more effective, but that is not currently within our reach.

Achieving the Possible

So what can we accomplish in a quality communication curriculum? Essentially, those things which constitute higher education in the first place. We can teach

principles and theory. We can teach people to better understand others. We can teach them that it is best to stay out of romantic relationships with certain types of people. In other writing (Beatty & McCroskey, 1998) we talked about the importance of matching individuals to environment, or goodness of fit between temperament and situation. We can teach people to identify their temperament as it relates to social interaction and to find good occupational and social "fits." Research strongly supports the effectiveness of fitting environments to people in instructional and parenting contexts (Chess & Thomas, 1989).

While temperament tends to drive choices, ignorance often leads to the wrong choices. For example, while many forest rangers actually sit alone in high outposts and look for signs of fire, the most common entry-level job for people with new degrees in forestry is serving essentially as a "tour guide" in state or national parks. High apprehensives may view the field of forestry as a way to work alone out in the forest, something their temperament might lead them to choose. However, if they are taught what entry level jobs they must pass though in that field to get to be alone in the forest, their temperament will more likely lead them to search for a new field.

Some people might argue that humans are naturally adaptive so they don't need any help with their desires for employing appropriate communication behaviors. However, recent studies of identical twins call that into question. For example, in a master's thesis advised by Beatty, Marshall (1998) found extremely large correlations between identical twins' scores on communication adaptability. The lesson from this study is that those genetically predisposed to adapt probably will, but most others will not. This study reinforces the pattern of findings reported for many dimensions of communicator style (Horvath, 1995), as well as other critical interpersonal communication behaviors such as aggressiveness, nurturance, assertiveness, and empathy (Rushton, Fulker, Neal, Nias, & Eysenck, 1986). As persuasion researchers and practitioners have long known, changing behavior normally is very difficult, at best, and often not possible at all.

As more information becomes available relating directly to temperament, personality, and communication behavior we will be increasingly able to provide instruction to students with regard to dealing with people who have strong temperamental and/or personality orientations. We will also be able to explain more to students about the impact of their own temperament and personality orientations on their communication behavior and how this impacts others. Thus, instead of trying to change people's behaviors we will be trying to help people accommodate to both their own and others' orientations and behaviors. We have known for many years that traits of individuals have a major impact on their behaviors. Now that we are beginning to understand where these traits come from and how difficult it is to change them, we can direct our own and our students' efforts in more appropriate directions.

Conclusions

If we commit our curriculum to changing behaviors in communication classrooms, we should be prepared to pray for good luck. Our chances will not be good. Of course, there will always be those who will believe they are facilitating major change in their classrooms. The evidence that such effects are being produced currently is in very short supply. While many of us teach units on selective perception and memory in our basic courses to warn students against relying on self perceptions for

knowledge claims, we often do not practice what we teach. We remain committed to scientific approaches to validating knowledge claims for such effects rather than self-reports of personal experiences. When empirical research is conducted, little evidence, except for studies with very small effect sizes or seriously flawed designs, can be marshaled to support the effect of instruction on students' communication behavior, especially when the students are observed outside the scrutiny of the instructors. We see the communibiological perspective as stimulating a wide range of research projects targeted at the role of neurobiology in process of learning effective communication.

The field of communication has a varied and rich intellectual content of its own. It is not essential to revert to skills-oriented classes as the center of our curricula. Many of our strongest and largest programs have few skills classes, or none at all. When we view communication as a content discipline we have nothing to fear from the findings of neurobiologists, psychobiologists, or (in the future) communibiologists. Even if they were to find that all communication is genetic, not just genetically based (which we are certain will not be the case), that knowledge has profound implications for human society which will need to be taught. Our target should be the willing and eager "new brain," the cerebral cortex, the one on which most of the most respected fields in academia already focus their primary attention.

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